

## SHADOW - Main Result

Calculation: Tirawley Shadow Flicker Real Case  
 Assumptions for shadow calculations

Maximum distance for influence  
 Calculate only when more than 20 % of sun is covered by the blade  
 Please look in WTG table

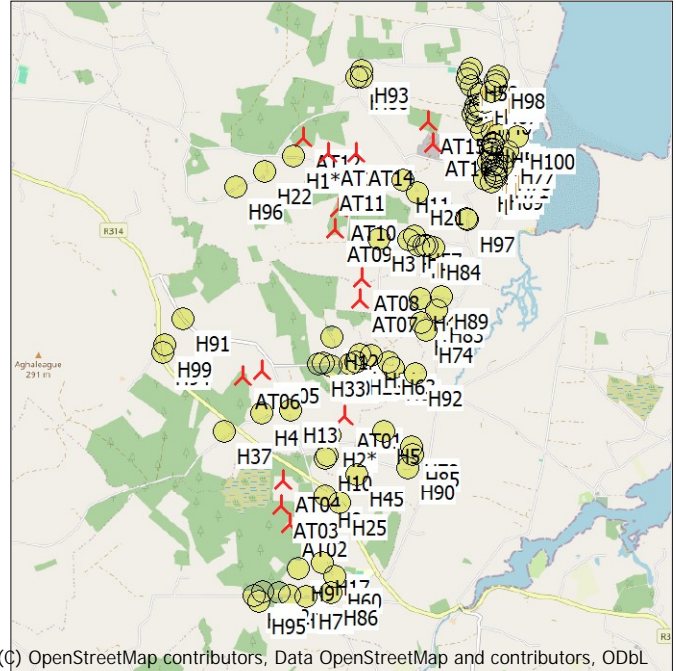
Minimum sun height over horizon for influence 3 °  
 Day step for calculation 1 days  
 Time step for calculation 1 minutes

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

Operational time  
 N NNE NE ENE E ESE SE SSE S SSW SW WSW  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828  
 W WNW NW NNW Sum  
 483 620 606 455 8,760

Monthly aggregation of real case reduction  
 A ZVI (Zones of Visual Influence) calculation is performed before flicker calculation so non visible WTG do not contribute to calculated flicker values. A WTG will be visible if it is visible from any part of the receiver window. The ZVI calculation is based on the following assumptions:  
 DHM: Elevation Grid Data Object: 6289 Tirawley WF\_EMDGrid\_2.wpg (3)  
 Receptor grid resolution: 1.0 m

All coordinates are in  
 Irish ITM-IREN95 (IE), geocentric, GRS80  
 WTGs



Easting	Northing	Z	Row data/Description	WTG type				Shadow data			
				Valid	Manufact.	Type-generator	Power, rated [kW]	Rotor diameter [m]	Hub height [m]	Calculation distance [m]	RPM [RPM]
1	515,725	834,020	42.8 AT01	Yes	VESTAS	V117-4.3-4,300	4,300	117.0	76.5	1,736	13.6
2	514,978	832,589	53.5 AT02	Yes	VESTAS	V117-4.3-4,300	4,300	117.0	76.5	1,736	13.6
3	514,857	832,846	58.2 AT03	Yes	VESTAS	V117-4.3-4,300	4,300	117.0	76.5	1,736	13.6
4	514,889	833,179	55.7 AT04	Yes	VESTAS	V117-4.3-4,300	4,300	117.0	76.5	1,736	13.6
5	514,649	834,627	78.2 AT05	Yes	VESTAS	V117-4.3-4,300	4,300	117.0	76.5	1,736	13.6
6	514,381	834,572	78.6 AT06	Yes	VESTAS	V117-4.3-4,300	4,300	117.0	76.5	1,736	13.6
7	515,958	835,555	102.6 AT07	Yes	VESTAS	V117-4.3-4,300	4,300	117.0	76.5	1,736	13.6
8	515,991	835,837	96.2 AT08	Yes	VESTAS	V117-4.3-4,300	4,300	117.0	76.5	1,736	13.6
9	515,645	836,489	110.2 AT09	Yes	VESTAS	V117-4.3-4,300	4,300	117.0	76.5	1,736	13.6
10	515,700	836,763	110.8 AT10	Yes	VESTAS	V117-4.3-4,300	4,300	117.0	76.5	1,736	13.6
11	515,557	837,162	116.7 AT11	Yes	VESTAS	V117-4.3-4,300	4,300	117.0	76.5	1,736	13.6
12	515,244	837,695	148.5 AT12	Yes	VESTAS	V117-4.3-4,300	4,300	117.0	76.5	1,736	13.6
13	515,574	837,498	128.3 AT13	Yes	VESTAS	V117-4.3-4,300	4,300	117.0	76.5	1,736	13.6
14	515,940	837,488	115.9 AT14	Yes	VESTAS	V117-4.3-4,300	4,300	117.0	76.5	1,736	13.6
15	516,909	837,891	112.8 AT15	Yes	VESTAS	V117-4.3-4,300	4,300	117.0	76.5	1,736	13.6
16	516,972	837,587	118.1 AT16	Yes	VESTAS	V117-4.3-4,300	4,300	117.0	76.5	1,736	13.6

### Shadow receptor-Input

No.	Name	Easting	Northing	Z	Width	Height	Elevation a.g.l.	Slope of window	Direction mode	Eye height (ZVI) a.g.l.
				[m]	[m]	[m]	[m]	[°]		[m]
A	H1*	515,110	837,466	144.6	2.0	2.0	0.5	90.0	"Green house mode"	2.5
B	H2*	515,526	833,767	46.1	2.0	2.0	0.5	90.0	"Green house mode"	2.5
C	H3	516,227	836,339	87.2	2.0	2.0	0.5	90.0	"Green house mode"	2.5
D	H4	514,628	834,072	64.9	2.0	2.0	0.5	90.0	"Green house mode"	2.5
E	H5	516,241	833,804	41.8	2.0	2.0	0.5	90.0	"Green house mode"	2.5
F	H6	515,489	833,504	47.8	2.0	2.0	0.5	90.0	"Green house mode"	2.5
G	H7	517,503	837,983	86.1	2.0	2.0	0.5	90.0	"Green house mode"	2.5
H	H8	515,450	832,962	46.2	2.0	2.0	0.5	90.0	"Green house mode"	2.5
I	H9	515,080	831,996	53.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
J	H10	515,456	833,467	47.3	2.0	2.0	0.5	90.0	"Green house mode"	2.5

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## SHADOW - Main Result

Calculation: Tirawley Shadow Flicker Real Case

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No.	Name	Easting	Northing	Z	Width	Height	Elevation	Slope of	Direction mode	Eye height
				[m]	[m]	[m]	a.g.l.	window		(ZVI) a.g.l.
				[m]	[m]	[m]	[m]	[°]		[m]
K	H11	516,561	837,118	97.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
L	H12	515,575	835,060	97.2	2.0	2.0	0.5	90.0	"Green house mode"	2.5
M	H13	515,019	834,112	57.3	2.0	2.0	0.5	90.0	"Green house mode"	2.5
N	H14	517,530	838,028	85.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
O	H15	517,553	837,950	79.4	2.0	2.0	0.5	90.0	"Green house mode"	2.5
P	H16	517,556	837,865	77.6	2.0	2.0	0.5	90.0	"Green house mode"	2.5
Q	H17	515,390	832,068	38.5	2.0	2.0	0.5	90.0	"Green house mode"	2.5
R	H18	517,622	837,746	68.8	2.0	2.0	0.5	90.0	"Green house mode"	2.5
S	H19	517,552	838,096	83.7	2.0	2.0	0.5	90.0	"Green house mode"	2.5
T	H20	515,559	834,678	65.6	2.0	2.0	0.5	90.0	"Green house mode"	2.5
U	H21	516,744	836,946	80.5	2.0	2.0	0.5	90.0	"Green house mode"	2.5
V	H22	514,721	837,259	133.3	2.0	2.0	0.5	90.0	"Green house mode"	2.5
W	H23	515,805	834,702	58.7	2.0	2.0	0.5	90.0	"Green house mode"	2.5
X	H24	517,581	838,054	80.7	2.0	2.0	0.5	90.0	"Green house mode"	2.5
Y	H25	515,641	832,856	42.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
Z	H26	515,947	834,836	64.9	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AA	H27	517,606	838,071	77.9	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AB	H28	515,886	834,729	56.9	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AC	H29	517,490	838,353	90.3	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AD	H30	515,462	834,716	69.6	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AE	H31	516,107	834,819	61.6	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AF	H32	517,583	838,226	81.8	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AG	H33	515,398	834,709	70.6	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AH	H34	517,725	837,501	50.9	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AI	H35	517,434	838,443	92.9	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AJ	H36	517,697	837,346	48.7	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AK	H37	514,129	833,845	67.9	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AL	H38	517,741	837,449	48.4	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AM	H39	517,762	837,602	51.7	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AN	H40	517,663	838,130	72.4	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AO	H41	517,766	837,561	51.3	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AP	H42	517,762	837,501	49.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AQ	H43	517,767	837,579	51.4	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AR	H44	517,742	837,383	46.6	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AS	H45	515,873	833,236	33.5	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AT	H46	516,625	836,322	65.9	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AU	H47	517,758	837,737	54.2	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AV	H48	516,764	835,557	63.5	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AW	H49	517,632	838,261	76.8	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AX	H50	517,638	837,109	52.3	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AY	H51	517,742	837,283	46.5	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AZ	H52	517,457	838,516	91.5	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BA	H53	516,738	836,261	61.3	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BB	H54	517,836	837,697	46.2	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BC	H55	516,774	835,227	58.5	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BD	H56	517,806	837,295	42.9	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BE	H57	516,697	836,380	64.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BF	H58	517,489	838,569	90.4	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BG	H59	517,798	837,225	45.4	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BH	H60	515,557	831,893	28.4	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BI	H61	516,384	834,641	46.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BJ	H62	517,792	837,189	45.9	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BK	H63	516,320	834,718	54.3	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BL	H64	517,729	837,077	47.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BM	H65	514,818	831,687	50.2	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BN	H66	516,817	836,244	59.2	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BO	H67	517,748	838,272	65.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BP	H68	517,791	837,155	45.9	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BQ	H69	517,804	837,142	44.5	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BR	H70	514,941	831,643	48.4	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BS	H71	517,884	837,289	39.8	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BT	H72	514,595	831,709	50.9	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BU	H73	517,910	837,382	36.5	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BV	H74	516,822	835,130	50.5	2.0	2.0	0.5	90.0	"Green house mode"	2.5

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## SHADOW - Main Result

Calculation: Tirawley Shadow Flicker Real Case

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No.	Name	Easting	Northing	Z	Width	Height	Elevation a.g.l.	Slope of window	Direction mode	Eye height (ZVI) a.g.l.
				[m]	[m]	[m]	[m]	[°]		[m]
BW	H75	516,865	836,247	57.4	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BX	H76	515,173	831,629	39.5	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BY	H77	517,945	837,469	31.7	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BZ	H78	516,609	833,595	26.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CA	H79	515,971	838,486	119.6	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CB	H80	516,040	838,493	120.9	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CC	H81	517,816	838,358	65.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CD	H82	517,798	838,402	68.9	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CE	H83	516,975	835,388	52.2	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CF	H84	516,953	836,216	54.7	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CG	H85	516,624	833,488	21.6	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CH	H86	515,505	831,678	28.4	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CI	H87	514,472	831,653	49.2	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CJ	H88	517,382	836,605	25.1	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CK	H89	517,041	835,575	49.2	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CL	H90	516,551	833,308	21.6	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CM	H91	513,601	835,338	94.1	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CN	H92	516,678	834,560	29.7	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CO	H93	516,041	838,580	118.5	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CP	H94	513,331	834,901	73.9	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CQ	H95	514,539	831,580	45.5	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CR	H96	514,340	837,065	127.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CS	H97	517,409	836,575	22.8	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CT	H98	517,850	838,466	66.8	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CU	H99	513,352	834,999	71.5	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CV	H100	518,085	837,658	18.7	2.0	2.0	0.5	90.0	"Green house mode"	2.5

## Calculation Results

Shadow receptor

No.	Name	Shadow, worst case			Shadow, expected values
		Shadow hours per year [h/year]	Shadow days per year [days/year]	Max shadow hours per day [h/day]	Shadow hours per year [h/year]
A	H1*	109:11	211	0:59	16:33
B	H2*	55:32	155	0:34	6:48
C	H3	110:08	177	0:54	15:30
D	H4	4:42	24	0:18	0:43
E	H5	85:01	161	0:52	15:12
F	H6	57:21	140	0:41	6:45
G	H7	70:29	132	0:45	10:03
H	H8	142:45	250	0:48	22:34
I	H9	0:00	0	0:00	0:00
J	H10	64:39	147	0:44	7:42
K	H11	101:23	227	0:41	17:06
L	H12	8:08	31	0:25	1:04
M	H13	41:26	99	0:37	6:41
N	H14	63:38	131	0:43	8:42
O	H15	61:26	114	0:42	9:05
P	H16	61:25	112	0:42	9:47
Q	H17	0:00	0	0:00	0:00
R	H18	56:07	112	0:41	9:18
S	H19	57:37	127	0:41	7:36
T	H20	14:23	43	0:30	2:13
U	H21	69:29	210	0:31	11:26
V	H22	40:06	148	0:31	6:23
W	H23	8:26	33	0:24	1:16
X	H24	51:26	104	0:39	7:00
Y	H25	73:12	165	0:39	12:18
Z	H26	4:54	23	0:20	0:42
AA	H27	47:39	101	0:38	6:28
AB	H28	6:57	30	0:22	1:02
AC	H29	58:39	122	0:38	6:24
AD	H30	16:56	46	0:34	2:31

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## SHADOW - Main Result

Calculation: Tirawley Shadow Flicker Real Case

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No.	Name	Shadow, worst case			Shadow, expected values
		Shadow hours per year [h/year]	Shadow days per year [days/year]	Max shadow hours per day [h/day]	Shadow hours per year [h/year]
AE	H31	3:38	20	0:17	0:32
AF	H32	52:03	118	0:37	6:23
AG	H33	20:15	49	0:36	3:02
AH	H34	64:07	139	0:36	11:34
AI	H35	53:07	100	0:38	5:34
AJ	H36	50:22	107	0:37	9:09
AK	H37	22:02	89	0:27	2:24
AL	H38	60:03	130	0:36	10:45
AM	H39	44:14	104	0:34	8:14
AN	H40	40:10	94	0:35	5:21
AO	H41	46:55	113	0:34	8:52
AP	H42	58:45	140	0:35	10:41
AO	H43	44:59	107	0:35	8:28
AR	H44	52:31	120	0:36	9:25
AS	H45	33:48	109	0:28	4:37
AT	H46	99:27	259	0:37	14:20
AU	H47	38:48	92	0:34	6:26
AV	H48	48:17	118	0:35	8:57
AW	H49	44:35	109	0:34	5:30
AX	H50	0:00	0	0:00	0:00
AY	H51	47:55	96	0:35	8:36
AZ	H52	45:58	88	0:37	4:36
BA	H53	74:00	222	0:33	11:29
BB	H54	32:58	84	0:31	5:37
BC	H55	40:42	128	0:33	7:06
BD	H56	43:06	106	0:32	7:50
BE	H57	93:13	257	0:35	13:36
BF	H58	38:54	82	0:33	3:51
BG	H59	41:41	90	0:32	7:28
BH	H60	0:00	0	0:00	0:00
BI	H61	20:56	64	0:32	2:21
BJ	H62	37:51	81	0:32	6:42
BK	H63	30:13	82	0:32	2:58
BL	H64	9:20	33	0:21	1:30
BM	H65	0:00	0	0:00	0:00
BN	H66	66:36	209	0:30	10:27
BO	H67	32:06	88	0:30	4:04
BP	H68	33:45	72	0:32	5:53
BQ	H69	32:27	70	0:32	5:38
BR	H70	0:00	0	0:00	0:00
BS	H71	42:36	111	0:30	7:41
BT	H72	0:00	0	0:00	0:00
BU	H73	45:29	125	0:29	8:13
BV	H74	40:07	124	0:31	6:54
BW	H75	63:15	208	0:29	10:00
BX	H76	0:00	0	0:00	0:00
BY	H77	32:03	92	0:28	6:03
BZ	H78	21:00	61	0:30	4:07
CA	H79	39:35	114	0:39	4:25
CB	H80	34:44	92	0:46	4:07
CC	H81	27:55	84	0:27	3:29
CD	H82	29:58	91	0:28	3:39
CE	H83	32:44	105	0:27	6:13
CF	H84	56:19	198	0:27	9:01
CG	H85	30:00	81	0:29	5:21
CH	H86	0:00	0	0:00	0:00
CI	H87	0:00	0	0:00	0:00
CJ	H88	25:42	110	0:18	4:18
CK	H89	39:09	135	0:26	6:52
CL	H90	6:13	43	0:15	0:52
CM	H91	14:44	68	0:24	1:49
CN	H92	9:50	35	0:26	1:16
CO	H93	40:11	100	0:44	4:21

To be continued on next page...

## SHADOW - Main Result

### Calculation: Tirawley Shadow Flicker Real Case

...continued from previous page

No.	Name	Shadow, worst case		Shadow, expected values	
		Shadow hours per year [h/year]	Shadow days per year [days/year]	Max shadow hours per day [h/day]	Shadow hours per year [h/year]
CP	H94	11:45	40	0:29	1:39
CQ	H95	0:00	0	0:00	0:00
CR	H96	29:43	148	0:23	4:50
CS	H97	25:01	110	0:18	4:10
CT	H98	27:27	89	0:26	3:17
CU	H99	12:15	43	0:26	1:43
CV	H100	20:09	65	0:24	3:32

Total amount of flickering on the shadow receptors caused by each WTG

No.	Name	Worst case [h/year]	Expected [h/year]
1	AT01	183:04	28:39
2	AT02	68:58	8:48
3	AT03	122:54	15:20
4	AT04	154:04	23:58
5	AT05	44:11	6:26
6	AT06	64:02	9:29
7	AT07	159:32	23:59
8	AT08	183:29	25:34
9	AT09	105:33	17:51
10	AT10	99:13	15:26
11	AT11	93:43	14:49
12	AT12	61:50	8:24
13	AT13	97:54	17:59
14	AT14	75:22	12:55
15	AT15	353:32	53:52
16	AT16	371:15	55:26

Total times in Receptor wise and WTG wise tables can differ, as a WTG can lead to flicker at 2 or more receptors simultaneously and/or receptors may receive flicker from 2 or more WTGs simultaneously.

The calculation of the total expected values for a given receptor assumes a weighted average directional reduction for all WTGs contributing to shadow flicker within the same day. In the case where shadow flicker from different WTGs is not concurrent within the day, the total expected time at a given receptor may deviate marginally from the individual flicker time caused by each turbine separately.

### SHADOW - Detailed Results

Calculation: Tirawley Shadow Flicker Real Case

Worst case, Shadow hours per year [h/year]

Receptor	WTG																Total
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
A	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	19:29	35:38	0:00	54:00	9:50	0:00	0:00	109:11
B	0:00	0:00	14:39	24:42	0:00	16:11	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	55:32
C	0:00	0:00	0:00	0:00	0:00	0:00	0:00	58:01	47:48	4:19	0:00	0:00	0:00	0:00	0:00	0:00	110:08
D	4:42	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	4:42
E	78:02	0:00	3:13	3:46	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	85:01
F	0:00	0:00	29:39	27:42	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	57:21
G	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	3:19	33:48	33:22	70:29
H	0:00	42:53	33:02	66:50	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	142:45
I	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00
J	0:00	0:20	32:37	31:42	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	64:39
K	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	10:34	13:26	11:25	8:51	15:40	46:26	0:00	0:00	101:23
L	0:00	0:00	0:00	0:00	6:53	2:59	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	8:08
M	18:08	0:00	0:00	0:00	0:00	23:18	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	41:26
N	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	3:08	30:02	30:28	63:38
O	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	3:16	29:36	28:34	61:26
P	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	31:33	29:52	61:25
Q	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00
R	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	29:19	26:48	56:07
S	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	3:00	26:53	28:32	57:37
T	0:00	0:00	0:00	0:00	13:10	6:43	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	14:23
U	0:00	0:00	0:00	0:00	0:00	0:00	0:00	2:41	8:25	10:28	8:55	7:33	12:34	25:00	0:00	0:00	69:29
V	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	5:08	5:13	11:28	0:00	15:16	3:51	0:00	0:00	40:06
W	0:00	0:00	0:00	0:00	7:39	4:11	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	8:26
X	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	25:29	25:57	51:26
Y	0:00	24:01	19:37	29:34	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	73:12
Z	0:00	0:00	0:00	0:00	4:54	2:36	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	4:54
AA	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	23:30	24:09	47:39
AB	0:00	0:00	0:00	0:00	6:26	3:36	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	6:57
AC	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	29:35	29:04	58:39
AD	0:00	0:00	0:00	0:00	16:27	7:58	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	16:56
AE	0:00	0:00	0:00	0:00	3:38	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	3:38
AF	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	23:12	28:51	52:03
AG	0:00	0:00	0:00	0:00	19:42	9:16	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	20:15
AH	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	39:22	24:45	64:07
AI	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	41:33	11:34	53:07
AJ	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	10:29	39:53	50:22
AK	0:46	0:00	9:38	11:38	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	22:02
AL	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	34:40	25:23	60:03
AM	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	23:47	20:27	44:14
AN	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	19:44	20:26	40:10
AO	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	25:56	20:59	46:55
AP	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	36:24	22:21	58:45
AQ	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	24:33	20:26	44:59
AR	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	24:11	28:20	52:31
AS	0:00	11:55	10:01	11:52	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	33:48
AT	0:00	0:00	0:00	0:00	0:00	0:00	31:03	24:52	14:16	24:09	5:07	0:00	0:00	0:00	0:00	0:00	99:27
AU	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	19:57	18:51	38:48
AV	0:00	0:00	0:00	0:00	0:00	0:00	19:33	28:16	0:28	0:00	0:00	0:00	0:00	0:00	0:00	0:00	48:17
AW	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	20:13	24:22	44:35
AX	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00
AY	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	4:24	43:31	47:55
AZ	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	41:38	4:20	45:58
BA	0:00	0:00	0:00	0:00	0:00	0:00	17:37	18:47	11:30	18:04	8:02	0:00	0:00	0:00	0:00	0:00	74:00
BB	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	17:01	15:57	32:58
BC	4:58	0:00	0:00	0:00	0:00	0:00	28:12	7:32	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	40:42
BD	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	15:27	27:39	43:06
BE	0:00	0:00	0:00	0:00	0:00	0:00	26:32	20:45	11:56	16:31	17:29	0:00	0:00	0:00	0:00	0:00	93:13
BF	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	37:52	1:02	38:54
BG	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	2:27	39:14	41:41
BH	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00
BI	20:56	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	20:56
BJ	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	37:51	37:51
BK	27:31	0:00	0:00	0:00	2:42	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	30:13
BL	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	9:20	9:20

To be continued on next page...



## SHADOW - Detailed Results

Calculation: Tirawley Shadow Flicker Real Case

...continued from previous page

Receptor	WTG															Total	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
BM	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00
BN	0:00	0:00	0:00	0:00	0:00	0:00	14:29	15:49	9:57	14:24	11:57	0:00	0:00	0:00	0:00	0:00	66:36
BO	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	15:15	16:51	32:06
BP	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	33:45	33:45
BQ	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	32:27	32:27
BR	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00
BS	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	21:46	20:50	42:36
BT	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00
BU	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	28:22	17:07	45:29
BV	4:43	0:00	0:00	0:00	0:00	0:00	35:24	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	40:07
BW	0:00	0:00	0:00	0:00	0:00	0:00	13:04	14:16	9:02	12:35	14:18	0:00	0:00	0:00	0:00	0:00	63:15
BX	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00
BY	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	17:34	14:29	32:03
BZ	21:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	21:00
CA	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	25:51	0:00	0:00	7:36	6:08	39:35
CB	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	18:12	0:00	0:00	8:52	7:40	34:44
CC	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	13:01	14:54	27:55
CD	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	13:29	16:29	29:58
CE	0:00	0:00	0:00	0:00	0:00	0:00	13:14	19:02	0:28	0:00	0:00	0:00	0:00	0:00	0:00	0:00	32:44
CF	0:00	0:00	0:00	0:00	0:00	0:00	10:57	12:12	8:01	10:28	14:41	0:00	0:00	0:00	0:00	0:00	56:19
CG	30:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	30:00
CH	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00
CI	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00
CJ	0:00	0:00	0:00	0:00	0:00	0:00	0:00	5:40	0:00	4:33	0:00	0:00	0:00	15:29	0:00	0:00	25:42
CK	0:00	0:00	0:00	0:00	0:00	0:00	10:41	13:02	15:26	0:00	0:00	0:00	0:00	0:00	0:00	0:00	39:09
CL	0:05	3:03	0:00	3:05	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	6:13
CM	0:00	0:00	0:00	0:00	4:17	10:27	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	14:44
CN	9:50	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	9:50
CO	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	22:31	0:00	0:00	9:03	8:37	40:11
CP	0:00	0:00	0:00	0:00	4:05	7:40	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	11:45
CQ	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00
CR	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	2:13	2:17	4:27	13:32	5:50	1:24	0:00	0:00	29:43
CS	0:00	0:00	0:00	0:00	0:00	0:00	0:00	5:32	0:00	4:29	0:00	0:00	0:00	15:00	0:00	0:00	25:01
CT	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	12:06	15:21	27:27
CU	0:00	0:00	0:00	0:00	4:19	7:56	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	12:15
CV	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	10:17	9:52	20:09
Total	183:04	68:58	122:54	154:04	44:11	64:02	159:32	183:29	105:33	99:13	93:43	61:50	97:54	75:22	353:32	371:15	

### Worst case, Shadow days per year [days/year]

Receptor	WTG															Total	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
A	0	0	0	0	0	0	0	0	0	60	69	0	81	34	0	0	211
B	0	0	44	66	0	57	0	0	0	0	0	0	0	0	0	0	155
C	0	0	0	0	0	0	0	76	81	20	0	0	0	0	0	0	177
D	24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24
E	118	0	22	21	0	0	0	0	0	0	0	0	0	0	0	0	161
F	0	0	84	56	0	0	0	0	0	0	0	0	0	0	0	0	140
G	0	0	0	0	0	0	0	0	0	0	0	0	20	58	62	132	
H	0	74	57	119	0	0	0	0	0	0	0	0	0	0	0	0	250
I	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
J	0	6	88	59	0	0	0	0	0	0	0	0	0	0	0	0	147
K	0	0	0	0	0	0	0	0	38	39	34	35	47	79	0	0	227
L	0	0	0	0	29	20	0	0	0	0	0	0	0	0	0	0	31
M	46	0	0	0	0	53	0	0	0	0	0	0	0	0	0	0	99
N	0	0	0	0	0	0	0	0	0	0	0	0	19	55	60	131	
O	0	0	0	0	0	0	0	0	0	0	0	0	19	54	55	114	
P	0	0	0	0	0	0	0	0	0	0	0	0	58	54	112	0	0
Q	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
R	0	0	0	0	0	0	0	0	0	0	0	0	0	60	52	112	0
S	0	0	0	0	0	0	0	0	0	0	0	0	19	52	62	127	0
T	0	0	0	0	38	28	0	0	0	0	0	0	0	0	0	0	43
U	0	0	0	0	0	0	18	30	33	31	34	44	59	0	0	0	210
V	0	0	0	0	0	0	0	28	26	36	0	44	22	0	0	0	148
W	0	0	0	0	29	22	0	0	0	0	0	0	0	0	0	0	33
X	0	0	0	0	0	0	0	0	0	0	0	0	0	50	54	104	0

To be continued on next page...

## SHADOW - Detailed Results

Calculation: Tirawley Shadow Flicker Real Case

...continued from previous page

Receptor	WTG																Total
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
Y	0	51	44	70	0	0	0	0	0	0	0	0	0	0	0	0	165
Z	0	0	0	0	23	17	0	0	0	0	0	0	0	0	0	0	23
AA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	48	53	101
AB	0	0	0	0	27	21	0	0	0	0	0	0	0	0	0	0	30
AC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	60	62	122
AD	0	0	0	0	42	30	0	0	0	0	0	0	0	0	0	0	46
AE	0	0	0	0	20	0	0	0	0	0	0	0	0	0	0	0	20
AF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	48	70	118
AG	0	0	0	0	46	32	0	0	0	0	0	0	0	0	0	0	49
AH	0	0	0	0	0	0	0	0	0	0	0	0	0	0	86	53	139
AI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	100	36	100
AJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	35	88	107
AK	10	0	36	43	0	0	0	0	0	0	0	0	0	0	0	0	89
AL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	75	55	130
AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	58	46	104
AN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	45	49	94
AO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	65	48	113
AP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	90	50	140
AQ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	61	46	107
AR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	58	62	120
AS	0	40	33	36	0	0	0	0	0	0	0	0	0	0	0	0	109
AT	0	0	0	0	0	0	80	54	40	68	29	0	0	0	0	0	259
AU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	48	44	92
AV	0	0	0	0	0	0	44	63	11	0	0	0	0	0	0	0	118
AW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	46	63	109
AX	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	23	96	96
AZ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	88	22	88
BA	0	0	0	0	0	0	51	45	35	56	37	0	0	0	0	0	222
BB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	45	39	84
BC	30	0	0	0	0	0	68	30	0	0	0	0	0	0	0	0	128
BD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	46	68	106
BE	0	0	0	0	0	0	78	50	35	48	56	0	0	0	0	0	257
BF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	82	11	82
BG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17	90	90
BH	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BI	64	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	64
BJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	81	81
BK	64	0	0	0	18	0	0	0	0	0	0	0	0	0	0	0	82
BL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	33	33
BM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BN	0	0	0	0	0	0	42	40	32	48	47	0	0	0	0	0	209
BO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	40	48	88
BP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	72	72
BQ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	70	70
BR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	58	55	111
BT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	80	45	125
BV	36	0	0	0	0	0	88	0	0	0	0	0	0	0	0	0	124
BW	0	0	0	0	0	0	42	39	30	43	54	0	0	0	0	0	208
BX	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	53	39	92
BZ	61	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	61
CA	0	0	0	0	0	0	0	0	0	0	0	78	0	0	32	31	114
CB	0	0	0	0	0	0	0	0	0	0	0	62	0	0	34	38	92
CC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	37	47	84
CD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	39	52	91
CE	0	0	0	0	0	0	38	56	11	0	0	0	0	0	0	0	105
CF	0	0	0	0	0	0	36	35	30	38	59	0	0	0	0	0	198
CG	81	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	81
CH	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CJ	0	0	0	0	0	0	0	24	0	21	0	0	0	65	0	0	110
CK	0	0	0	0	0	0	32	39	64	0	0	0	0	0	0	0	135

To be continued on next page...

## SHADOW - Detailed Results

Calculation: Tirawley Shadow Flicker Real Case

...continued from previous page

Receptor	WTG																Total
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
CL	5	18	0	20	0	0	0	0	0	0	0	0	0	0	0	0	43
CM	0	0	0	0	24	44	0	0	0	0	0	0	0	0	0	0	68
CN	35	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	35
CO	0	0	0	0	0	0	0	0	0	0	0	70	0	0	36	47	100
CP	0	0	0	0	22	30	0	0	0	0	0	0	0	0	0	0	40
CQ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CR	0	0	0	0	0	0	0	0	17	17	23	49	29	14	0	0	148
CS	0	0	0	0	0	0	0	25	0	22	0	0	0	63	0	0	110
CT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	37	52	89
CU	0	0	0	0	22	30	0	0	0	0	0	0	0	0	0	0	43
CV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	34	31	65
Total	574	189	408	490	340	384	599	594	482	539	475	328	245	413	2091	2291	

### Worst case, Max shadow hours per day [h/day]

Receptor	WTG																Total
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
A	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:27	0:50	0:00	0:59	0:27	0:00	0:00	0:59
B	0:00	0:00	0:24	0:34	0:00	0:22	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:34
C	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:54	0:47	0:16	0:00	0:00	0:00	0:00	0:00	0:00	0:54
D	0:18	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:18
E	0:52	0:00	0:15	0:17	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:52
F	0:00	0:00	0:32	0:41	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:41
G	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:16	0:45	0:42	0:45
H	0:00	0:47	0:45	0:48	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:48
I	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00
J	0:00	0:04	0:34	0:44	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:44
K	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:26	0:30	0:28	0:20	0:27	0:41	0:00	0:00	0:41
L	0:00	0:00	0:00	0:00	0:23	0:15	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:25
M	0:37	0:00	0:00	0:00	0:00	0:34	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:37
N	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:15	0:43	0:39	0:43
O	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:16	0:42	0:40	0:42
P	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:42	0:42	0:42
Q	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00
R	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:38	0:41	0:41
S	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:15	0:41	0:37	0:41
T	0:00	0:00	0:00	0:00	0:30	0:22	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:30
U	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:11	0:23	0:26	0:23	0:17	0:23	0:31	0:00	0:00	0:31
V	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:18	0:20	0:30	0:00	0:31	0:16	0:00	0:00	0:31
W	0:00	0:00	0:00	0:00	0:24	0:19	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:24
X	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:39	0:37	0:39
Y	0:00	0:39	0:35	0:35	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:39
Z	0:00	0:00	0:00	0:00	0:20	0:14	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:20
AA	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:38	0:36	0:38
AB	0:00	0:00	0:00	0:00	0:22	0:16	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:22
AC	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:38	0:32	0:38
AD	0:00	0:00	0:00	0:00	0:34	0:25	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:34
AE	0:00	0:00	0:00	0:00	0:17	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:17
AF	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:37	0:33	0:37
AG	0:00	0:00	0:00	0:00	0:36	0:27	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:36
AH	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:32	0:36	0:36
AI	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:38	0:24	0:38
AJ	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:22	0:37	0:37
AK	0:06	0:00	0:21	0:27	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:27
AL	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:31	0:36	0:36
AM	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:32	0:34	0:34
AN	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:35	0:32	0:35
AO	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:31	0:34	0:34
AP	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:31	0:35	0:35
AQ	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:32	0:35	0:35
AR	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:30	0:36	0:36
AS	0:00	0:26	0:26	0:28	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:28
AT	0:00	0:00	0:00	0:00	0:00	0:00	0:29	0:35	0:28	0:29	0:14	0:00	0:00	0:00	0:00	0:00	0:37
AU	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:33	0:34	0:34
AV	0:00	0:00	0:00	0:00	0:00	0:00	0:34	0:35	0:03	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:35
AW	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:34	0:31	0:34

To be continued on next page...



## SHADOW - Detailed Results

Calculation: Tirawley Shadow Flicker Real Case

...continued from previous page

Receptor	WTG																Total
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
AX	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00
AY	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:15	0:35	0:35
AZ	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:35	0:15	0:37
BA	0:00	0:00	0:00	0:00	0:00	0:00	0:27	0:33	0:25	0:25	0:17	0:00	0:00	0:00	0:00	0:00	0:33
BB	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:30	0:31	0:31
BC	0:12	0:00	0:00	0:00	0:00	0:00	0:33	0:19	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:33
BD	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:25	0:32	0:32
BE	0:00	0:00	0:00	0:00	0:00	0:00	0:27	0:32	0:26	0:27	0:22	0:00	0:00	0:00	0:00	0:00	0:35
BF	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:33	0:07	0:33
BG	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:11	0:32	0:32
BH	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00
BI	0:32	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:32
BJ	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:32	0:32
BK	0:32	0:00	0:00	0:00	0:14	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:32
BL	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:21	0:21
BM	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00
BN	0:00	0:00	0:00	0:00	0:00	0:00	0:26	0:30	0:24	0:24	0:19	0:00	0:00	0:00	0:00	0:00	0:30
BO	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:30	0:28	0:30
BP	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:32	0:32
BQ	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:32	0:32
BR	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00
BS	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:26	0:30	0:30
BT	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00
BU	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:26	0:29	0:29
BV	0:14	0:00	0:00	0:00	0:00	0:00	0:31	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:31
BW	0:00	0:00	0:00	0:00	0:00	0:00	0:25	0:29	0:23	0:23	0:19	0:00	0:00	0:00	0:00	0:00	0:29
BX	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00
BY	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:26	0:28	0:28
BZ	0:30	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:30
CA	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:27	0:00	0:00	0:23	0:19	0:39
CB	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:26	0:00	0:00	0:25	0:20	0:46
CC	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:27	0:25	0:27
CD	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:28	0:25	0:28
CE	0:00	0:00	0:00	0:00	0:00	0:00	0:27	0:27	0:03	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:27
CF	0:00	0:00	0:00	0:00	0:00	0:00	0:24	0:27	0:21	0:21	0:18	0:00	0:00	0:00	0:00	0:00	0:27
CG	0:29	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:29
CH	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00
CI	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00
CJ	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:18	0:00	0:16	0:00	0:00	0:00	0:18	0:00	0:00	0:18
CK	0:00	0:00	0:00	0:00	0:00	0:00	0:25	0:26	0:18	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:26
CL	0:01	0:15	0:00	0:15	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:15
CM	0:00	0:00	0:00	0:00	0:17	0:24	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:24
CN	0:26	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:26
CO	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:25	0:00	0:00	0:24	0:20	0:44
CP	0:00	0:00	0:00	0:00	0:18	0:25	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:29
CQ	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00
CR	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:13	0:13	0:18	0:23	0:19	0:09	0:00	0:00	0:23
CS	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:18	0:00	0:16	0:00	0:00	0:00	0:17	0:00	0:00	0:18
CT	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:26	0:24	0:26
CU	0:00	0:00	0:00	0:00	0:19	0:24	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:26
CV	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:24	0:24	0:24
Total	4:49	2:11	3:52	4:49	4:34	4:27	5:08	6:34	4:58	5:13	4:18	2:18	2:39	3:41	20:18	22:04	

Real case, Shadow hours per year [h/year]

Receptor	WTG																Total
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
A	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	1:56	4:56	0:00	9:41	1:45	0:00	16:33
B	0:00	0:00	1:13	2:52	0:00	2:43	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	6:48
C	0:00	0:00	0:00	0:00	0:00	0:00	0:00	5:52	8:55	0:43	0:00	0:00	0:00	0:00	0:00	0:00	15:30
D	0:43	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:43
E	14:19	0:00	0:23	0:30	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	15:12
F	0:00	0:00	3:07	3:39	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	6:45
G	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:26	5:16	10:03
H	0:00	5:25	4:46	12:24	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	22:34
I	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00

To be continued on next page...





## SHADOW - Detailed Results

Calculation: Tirawley Shadow Flicker Real Case

...continued from previous page

Receptor	WTG	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Total
J		0:00	0:02	3:28	4:13	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	7:42
K		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	1:18	1:47	2:02	1:44	3:02	8:11	0:00	0:00	17:06
L		0:00	0:00	0:00	0:00	0:55	0:24	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	1:04
M		2:47	0:00	0:00	0:00	0:00	3:55	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	6:41
N		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:25	4:21	3:56	8:42
O		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:26	4:54	3:45	9:05
P		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	5:46	4:02	9:47
Q		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00
R		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	5:22	3:56	9:18
S		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:24	3:45	3:34	7:36
T		0:00	0:00	0:00	0:00	2:03	1:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	2:13
U		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:12	1:07	1:30	1:38	1:29	2:28	4:15	0:00	0:00	11:26
V		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:38	0:45	1:45	0:00	2:44	0:40	0:00	0:00	6:23
W		0:00	0:00	0:00	0:00	1:09	0:37	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	1:16
X		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	3:39	3:21	7:00
Y		0:00	3:12	3:20	5:46	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	12:18
Z		0:00	0:00	0:00	0:00	0:42	0:22	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:42
AA		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	3:21	3:07	6:28
AB		0:00	0:00	0:00	0:00	0:58	0:32	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	1:02
AC		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	3:43	2:42	6:24
AD		0:00	0:00	0:00	0:00	2:27	1:10	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	2:31
AE		0:00	0:00	0:00	0:00	0:32	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:32
AF		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	3:05	3:18	6:23
AG		0:00	0:00	0:00	0:00	2:58	1:22	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	3:02
AH		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	7:03	4:32	11:34
AI		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	4:36	0:59	5:34
AJ		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	1:42	7:27	9:09
AK		0:08	0:00	0:49	1:27	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	2:24
AL		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	6:06	4:40	10:45
AM		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	4:34	3:41	8:14
AN		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	2:44	2:37	5:21
AO		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	5:01	3:52	8:52
AP		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	6:37	4:05	10:41
AQ		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	4:44	3:45	8:28
AR		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	4:06	5:19	9:25
AS		0:00	1:27	1:20	1:50	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	4:37
AT		0:00	0:00	0:00	0:00	0:00	0:00	3:06	3:09	2:36	4:38	0:51	0:00	0:00	0:00	0:00	0:00	14:20
AU		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	3:38	2:48	6:26
AV		0:00	0:00	0:00	0:00	0:00	0:00	3:27	5:26	0:05	0:00	0:00	0:00	0:00	0:00	0:00	0:00	8:57
AW		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	2:41	2:50	5:30
AX		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00
AY		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:43	7:53	8:36
AZ		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	4:16	0:21	4:36
BA		0:00	0:00	0:00	0:00	0:00	0:00	2:05	2:29	2:05	3:31	1:20	0:00	0:00	0:00	0:00	0:00	11:29
BB		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	3:06	2:31	5:37
BC		0:24	0:00	0:00	0:00	0:00	0:00	5:28	1:15	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	7:06
BD		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	2:32	5:18	7:50
BE		0:00	0:00	0:00	0:00	0:00	0:00	2:40	2:36	2:12	3:12	2:57	0:00	0:00	0:00	0:00	0:00	13:36
BF		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	3:46	0:05	3:51
BG		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:24	7:04	7:28
BH		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00
BI		2:21	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	2:21
BJ		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	6:42
BK		2:34	0:00	0:00	0:00	0:24	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	2:58
BL		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	1:31	1:30
BM		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00
BN		0:00	0:00	0:00	0:00	0:00	0:00	1:45	2:06	1:48	2:49	1:59	0:00	0:00	0:00	0:00	0:00	10:27
BO		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	2:02	2:02	4:04
BP		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	5:53	5:53
BQ		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	5:39	5:38
BR		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00
BS		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	3:42	3:59	7:41
BT		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00
BU		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	5:05	3:08	8:13
BV		0:29	0:00	0:00	0:00	0:00	0:00	6:26	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	6:54

To be continued on next page...

## SHADOW - Detailed Results

Calculation: Tirawley Shadow Flicker Real Case

...continued from previous page

Receptor	WTG	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Total
BW		0:00	0:00	0:00	0:00	0:00	0:00	1:36	1:54	1:38	2:28	2:24	0:00	0:00	0:00	0:00	0:00	10:00
BX		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00
BY		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	3:25	2:38	6:03
BZ		4:07	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	4:07
CA		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	2:38	0:00	0:00	1:04	0:44	4:25
CB		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	2:00	0:00	0:00	1:12	0:56	4:07
CC		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	1:44	1:45	3:29
CD		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	1:46	1:53	3:39
CE		0:00	0:00	0:00	0:00	0:00	0:00	2:25	3:43	0:05	0:00	0:00	0:00	0:00	0:00	0:00	0:00	6:13
CF		0:00	0:00	0:00	0:00	0:00	0:00	1:23	1:38	1:27	2:03	2:30	0:00	0:00	0:00	0:00	0:00	9:01
CG		5:22	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	5:21
CH		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00
CI		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00
CJ		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:45	0:00	0:51	0:00	0:00	0:00	2:43	0:00	0:00	4:18
CK		0:00	0:00	0:00	0:00	0:00	0:00	1:48	2:24	2:41	0:00	0:00	0:00	0:00	0:00	0:00	0:00	6:52
CL		0:01	0:24	0:00	0:28	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:52
CM		0:00	0:00	0:00	0:00	0:34	1:15	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	1:49
CN		1:17	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	1:16
CO		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	2:12	0:00	0:00	1:10	0:59	4:21
CP		0:00	0:00	0:00	0:00	0:36	1:04	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	1:39
CQ		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00
CR		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:19	0:19	0:49	2:04	1:04	0:15	0:00	0:00	4:50
CS		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:44	0:00	0:50	0:00	0:00	0:00	2:37	0:00	0:00	4:10
CT		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	1:34	1:43	3:17	
CU		0:00	0:00	0:00	0:00	0:36	1:07	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	1:43
CV		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	1:52	1:40	3:32
Total		28:40	8:48	15:21	23:59	6:26	9:29	24:00	25:34	17:51	15:26	14:50	8:25	18:00	12:55	53:52	55:27	

Total time can be different from the sum in case of concurrent Shadow flicker events

### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: A - H1\*  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January		February		March		April		May		June			
1	08:59	09:33 (10)	08:27	08:56 (11)	07:29		07:13	07:36 (14)	06:02		07:19 (13)	05:12		
	16:24	19	09:52 (10)	17:16	20	09:16 (11)	18:13	20:12	29	08:05 (13)	21:09	28	07:47 (13)	22:00
2	08:58	09:33 (10)	08:26	08:54 (11)	07:26		07:10	07:34 (14)	06:00		07:21 (13)	05:11		
	16:25	20	09:53 (10)	17:18	23	09:17 (11)	18:15	20:14	32	08:06 (13)	21:11	24	07:45 (13)	22:01
3	08:58	09:33 (10)	08:24	08:52 (11)	07:24		07:08	07:32 (14)	05:58		07:24 (13)	05:10		
	16:26	20	09:53 (10)	17:20	25	09:17 (11)	18:17	20:16	36	08:08 (13)	21:13	17	07:41 (13)	22:02
4	08:58	09:32 (10)	08:22	08:50 (11)	07:22		07:05	07:29 (14)	05:56		07:30 (13)	05:09		
	16:27	21	09:53 (10)	17:22	28	09:18 (11)	18:19	20:18	38	08:07 (13)	21:14	5	07:35 (13)	22:04
5	08:57	09:32 (10)	08:20	08:48 (11)	07:19		07:03	07:27 (14)	05:54		07:27 (13)	05:08		
	16:29	22	09:54 (10)	17:24	30	09:18 (11)	18:21	20:20	41	08:08 (13)	21:16			22:05
6	08:57	09:31 (10)	08:18	08:46 (11)	07:17		07:00	07:24 (13)	05:52		07:24 (13)	05:07		
	16:30	23	09:54 (10)	17:26	33	09:19 (11)	18:23	20:22	44	08:08 (13)	21:18			22:06
7	08:57	09:30 (10)	08:16	08:44 (11)	07:14		06:58	07:22 (13)	05:50		07:17 (13)	05:07		
	16:31	24	09:54 (10)	17:28	35	09:19 (11)	18:25	20:24	47	08:09 (13)	21:20			22:07
8	08:56	09:30 (10)	08:14	08:42 (11)	07:12		06:55	07:19 (13)	05:48		07:10 (13)	05:06		
	16:33	25	09:55 (10)	17:30	37	09:19 (11)	18:27	20:26	49	08:08 (13)	21:22			22:08
9	08:55	09:29 (10)	08:12	08:40 (11)	07:10		06:53	07:17 (13)	05:46		07:11 (13)	05:05		
	16:34	25	09:54 (10)	17:32	40	09:20 (11)	18:29	20:28	51	08:08 (13)	21:24			22:09
10	08:55	09:28 (10)	08:10	08:37 (11)	07:07		06:50	07:15 (13)	05:44		07:15 (13)	05:05		
	16:36	26	09:54 (10)	17:34	42	09:19 (11)	18:30	20:29	54	08:09 (13)	21:25			22:10
11	08:54	09:27 (10)	08:08	08:35 (11)	07:05		06:48	07:12 (13)	05:42		07:12 (13)	05:04		
	16:37	27	09:54 (10)	17:36	44	09:19 (11)	18:32	20:31	56	08:08 (13)	21:27			22:10
12	08:53	09:28 (10)	08:06	08:33 (11)	07:02		06:46	07:10 (13)	05:40		07:10 (13)	05:04		
	16:39	26	09:54 (10)	17:38	46	09:19 (11)	18:34	20:33	58	08:08 (13)	21:29			22:11
13	08:52	09:29 (10)	08:04	08:31 (11)	07:00		06:43	07:09 (13)	05:39		07:09 (13)	05:04		
	16:40	25	09:54 (10)	17:41	48	09:19 (11)	18:36	20:35	59	08:08 (13)	21:31			22:12
14	08:52	09:30 (10)	08:02	08:29 (11)	06:57		06:41	07:08 (13)	05:37		07:08 (13)	05:03		
	16:42	24	09:54 (10)	17:43	50	09:19 (11)	18:38	20:37	59	08:07 (13)	21:32			22:13
15	08:51	09:31 (10)	08:00	08:29 (11)	06:55		06:38	07:08 (13)	05:35		07:08 (13)	05:03		
	16:44	23	09:54 (10)	17:45	50	09:19 (11)	18:40	20:39	59	08:07 (13)	21:34			22:13
16	08:50	09:32 (10)	07:58	08:28 (11)	06:52		06:36	07:09 (13)	05:33		07:09 (13)	05:03		
	16:46	20	09:52 (10)	17:47	50	09:18 (11)	18:42	20:41	58	08:07 (13)	21:36			22:14
17	08:49	09:33 (10)	07:56	08:29 (11)	06:50		06:34	07:08 (13)	05:32		07:08 (13)	05:03		
	16:47	19	09:52 (10)	17:49	48	09:17 (11)	18:44	20:43	57	08:05 (13)	21:38			22:14
18	08:47	09:35 (10)	07:54	08:30 (11)	06:47		06:31	07:08 (13)	05:30		07:08 (13)	05:03		
	16:49	16	09:51 (10)	17:51	47	09:17 (11)	18:46	20:45	57	08:05 (13)	21:39			22:15
19	08:46	09:37 (10)	07:52	08:30 (11)	06:45		06:29	07:09 (13)	05:29		07:09 (13)	05:03		
	16:51	12	09:49 (10)	17:53	45	09:15 (11)	18:48	20:46	55	08:04 (13)	21:41			22:15
20	08:45	09:41 (10)	07:49	08:31 (11)	06:42		06:27	07:09 (13)	05:27		07:09 (13)	05:03		
	16:53	5	09:46 (10)	17:55	44	09:15 (11)	18:50	20:48	55	08:04 (13)	21:43			22:15
21	08:44		07:47	08:33 (11)	06:40		06:24	07:09 (13)	05:25		07:09 (13)	05:03		
	16:55		17:57	41	09:14 (11)	18:52	20:50	53	08:02 (13)	21:44			22:16	
22	08:43		07:45	08:33 (11)	06:37		06:22	07:10 (13)	05:24		07:10 (13)	05:03		
	16:56		17:59	39	09:12 (11)	18:53	20:52	51	08:01 (13)	21:46			22:16	
23	08:41		07:43	08:35 (11)	06:35		06:20	07:10 (13)	05:23		07:10 (13)	05:03		
	16:58		18:01	35	09:10 (11)	18:55	20:54	51	08:01 (13)	21:47			22:16	
24	08:40		07:40	08:37 (11)	06:32		06:18	07:11 (13)	05:21		07:11 (13)	05:04		
	17:00		18:03	32	09:09 (11)	18:57	20:56	49	08:00 (13)	21:49			22:16	
25	08:38	09:08 (11)	07:38	08:38 (11)	06:30		06:15	07:12 (13)	05:20		07:12 (13)	05:04		
	17:02	1	09:09 (11)	18:05	28	09:06 (11)	18:59	2	06:56 (14)	20:58	46	07:58 (13)	21:50	22:16
26	08:37	09:07 (11)	07:36	08:41 (11)	06:27		06:51 (14)	06:13	07:13 (13)	05:18			22:16	05:05
	17:04	4	09:11 (11)	18:07	22	09:03 (11)	19:01	5	06:56 (14)	21:00	44	07:57 (13)	21:52	22:16
27	08:35	09:05 (11)	07:33	08:45 (11)	06:25		06:49 (14)	06:11	07:13 (13)	05:17			22:16	05:05
	17:06	6	09:11 (11)	18:09	15	09:00 (11)	19:03	10	06:59 (13)	21:01	42	07:55 (13)	21:53	22:16
28	08:34	09:03 (11)	07:31		06:22		06:46 (14)	06:09	07:14 (13)	05:16			22:16	05:06
	17:08	9	09:12 (11)	18:11		19:05	15	07:01 (13)	21:03	39	07:53 (13)	21:55	22:16	05:06
29	08:32	09:01 (11)			07:20		07:44 (14)	06:06	07:16 (13)	05:15			22:16	05:06
	17:10	12	09:13 (11)		20:07		08:03 (13)	21:05	35	07:51 (13)	21:56		22:16	05:07
30	08:31	08:59 (11)			07:17		07:41 (14)	06:04	07:17 (13)	05:14			22:16	05:07
	17:12	15	09:14 (11)		20:09		08:03 (13)	21:07	33	07:50 (13)	21:57		22:16	05:07
31	08:29	08:58 (11)			07:15		07:39 (14)		05:13				22:16	05:07
	17:14	17	09:15 (11)		20:11		08:05 (13)		21:59				22:16	05:07
Potential sun hours	248		272		367		421		496		513			
Total, worst case		486		997		99		1437		74				
Sun reduction		0.17		0.22		0.22		0.34		0.36				
Oper. time red.		1.00		1.00		1.00		1.00		1.00				
Wind dir. red.		0.66		0.63		0.58		0.58		0.58				
Total reduction		0.11		0.14		0.13		0.20		0.21				
Total, real		54		139		13		287		16				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: A - H1\*  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	July	August	September	October	November	December	
1	05:07 22:15	05:48 21:39	06:44 20:31	07:11 (13) 19:16	07:38 17:04	08:07 (11) 16:19	09:09 (10) 09:36 (10)
2	05:08 22:15	05:50 21:37	06:46 20:29	07:13 (13) 19:14	07:40 17:02	08:09 (11) 16:18	09:11 (10) 09:38 (10)
3	05:09 22:14	05:52 21:35	06:47 20:26	07:15 (13) 19:11	07:42 17:00	08:12 (11) 16:18	09:12 (10) 09:38 (10)
4	05:10 22:14	05:53 21:33	06:49 20:24	07:17 (13) 19:09	07:44 16:58	08:14 (11) 16:17	09:14 (10) 09:39 (10)
5	05:11 22:13	05:55 21:31	06:51 20:21	07:18 (13) 19:06	07:46 16:57	08:16 (11) 16:16	09:15 (10) 09:39 (10)
6	05:12 22:12	05:57 21:29	06:53 20:19	07:20 (13) 19:04	07:47 16:55	08:18 (11) 16:16	09:17 (10) 09:40 (10)
7	05:13 22:12	05:59 21:27	06:55 20:16	07:22 (14) 19:01	07:49 16:53	08:20 (11) 16:15	09:18 (10) 09:40 (10)
8	05:14 22:11	06:00 21:25	06:56 20:14	07:24 (14) 18:59	07:51 16:51	08:22 (11) 16:15	09:20 (10) 09:41 (10)
9	05:15 22:10	06:02 21:23	06:58 20:11	07:25 (14) 18:56	07:53 16:49	08:25 (11) 16:14	09:21 (10) 09:41 (10)
10	05:16 22:09	06:04 21:21	07:00 20:09	07:27 (14) 18:54	07:55 16:47	08:27 (11) 16:14	09:22 (10) 09:42 (10)
11	05:17 22:08	06:06 21:19	07:02 20:06	07:29 (14) 18:52	07:57 16:45	08:29 (11) 16:14	09:24 (10) 09:43 (10)
12	05:18 22:08	06:08 21:17	07:04 20:04	07:30 (14) 18:49	07:59 16:44	08:31 (11) 16:14	09:25 (10) 09:43 (10)
13	05:19 22:06	06:09 21:15	07:05 20:01	07:32 (14) 18:47	08:01 16:42	08:33 (11) 16:14	09:26 (10) 09:44 (10)
14	05:21 22:05	06:11 21:13	07:07 19:59	07:34 (14) 18:44	08:02 09:21 (11) 16:40	08:03 08:44 (11) 16:14	09:27 (10) 09:44 (10)
15	05:22 22:04	06:13 21:10	07:09 19:56	07:36 (14) 18:42	08:04 09:15 (11) 16:39	08:05 08:37 (11) 16:14	09:28 (10) 09:45 (10)
16	05:23 22:03	06:15 21:08	07:11 19:54	07:38 (14) 18:40	08:06 09:12 (11) 16:37	08:07 08:40 (11) 16:14	09:29 (10) 09:45 (10)
17	05:25 22:02	06:17 21:06	07:13 19:51	07:39 (14) 18:37	08:08 09:09 (11) 16:36	08:09 08:42 (11) 16:14	09:30 (10) 09:46 (10)
18	05:26 22:01	06:18 21:04	07:14 19:49	07:41 (14) 18:35	08:10 09:07 (11) 16:34	08:11 08:43 (11) 16:14	09:30 (10) 09:46 (10)
19	05:28 21:59	06:20 21:02	07:16 19:46	07:16 18:33	08:12 09:05 (11) 16:33	08:13 08:44 (11) 16:14	09:31 (10) 09:46 (10)
20	05:29 21:58	06:22 20:59	07:18 19:44	07:18 18:30	08:14 09:04 (11) 16:31	08:14 08:45 (11) 16:15	09:32 (10) 09:47 (10)
21	05:31 21:57	06:24 20:57	07:20 19:41	07:20 18:28	08:16 09:03 (11) 16:30	08:16 08:46 (11) 16:15	09:32 (10) 09:47 (10)
22	05:32 21:55	06:26 20:55	07:22 19:39	07:22 18:26	08:18 09:01 (11) 16:29	08:18 09:17 (10) 16:15	09:33 (10) 09:48 (10)
23	05:34 21:54	06:27 20:52	07:23 19:36	07:23 18:24	08:20 09:00 (11) 16:27	08:20 09:14 (10) 16:16	09:33 (10) 09:48 (10)
24	05:35 21:52	06:29 20:50	07:25 19:34	07:25 18:21	08:22 08:59 (11) 16:26	08:22 09:12 (10) 16:17	09:34 (10) 09:49 (10)
25	05:37 21:51	06:31 20:48	07:27 19:31	07:27 17:19	07:24 09:46 (11) 16:25	08:24 09:11 (10) 16:17	09:34 (10) 09:49 (10)
26	05:38 21:49	06:33 20:45	07:29 19:29	07:29 17:17	07:26 09:01 (11) 16:24	08:25 09:11 (10) 16:18	09:34 (10) 09:50 (10)
27	05:40 21:47	06:35 20:43	07:31 19:26	07:31 17:15	07:28 08:48 (11) 16:23	08:27 09:03 (10) 16:19	09:34 (10) 09:50 (10)
28	05:42 21:46	06:36 20:41	07:33 19:24	07:33 17:13	07:30 08:49 (11) 16:22	08:29 09:10 (10) 16:20	09:34 (10) 09:50 (10)
29	05:43 21:44	06:38 20:38	07:34 19:21	07:34 17:11	07:32 08:01 (11) 16:21	08:30 09:09 (10) 16:20	09:34 (10) 09:51 (10)
30	05:45 21:42	06:40 20:36	07:36 19:19	07:36 17:09	07:34 08:03 (11) 16:20	08:32 09:09 (10) 16:21	09:34 (10) 09:51 (10)
31	05:47 21:41	06:42 20:33	07:10 (13) 08:08 (13)	07:36 17:07	07:36 08:05 (11) 08:49 (11)	08:59 09:35 (10) 16:22	09:34 (10) 09:52 (10)
Potential sun hours	515	461	383	327	257	230	
Total, worst case		1050	584	704	543	577	
Sun reduction		0.27	0.29	0.23	0.20	0.12	
Oper. time red.		1.00	1.00	1.00	1.00	1.00	
Wind dir. red.		0.58	0.58	0.63	0.64	0.66	
Total reduction		0.16	0.17	0.15	0.13	0.08	
Total, real		167	99	104	69	46	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: B - H2\*  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June											
1	08:58	15:04 (3)	08:27	15:53 (4)	07:29	07:13	06:02				05:12						21:09 (6)
	16:24	22	15:26 (3)	17:16	30	16:23 (4)	18:13	20:12	21:09		22:00	16	21:25 (6)				
2	08:58	15:05 (3)	08:25	15:54 (4)	07:26	07:10	06:00				05:11		21:09 (6)				
	16:25	22	15:27 (3)	17:18	28	16:22 (4)	18:15	20:14	21:11		22:01	17	21:26 (6)				
3	08:58	15:05 (3)	08:24	15:55 (4)	07:24	07:08	05:58				05:10		21:09 (6)				
	16:26	21	15:26 (3)	17:20	26	16:21 (4)	18:17	20:16	21:12		22:02	17	21:26 (6)				
4	08:58	15:06 (3)	08:22	15:56 (4)	07:22	07:05	05:56				05:09		21:10 (6)				
	16:27	21	15:27 (3)	17:22	25	16:21 (4)	18:19	20:18	21:14		22:03	18	21:28 (6)				
5	08:57	15:07 (3)	08:20	15:58 (4)	07:19	07:03	05:54				05:08		21:09 (6)				
	16:29	20	15:27 (3)	17:24	21	16:19 (4)	18:21	20:20	21:16		22:04	20	21:29 (6)				
6	08:57	15:08 (3)	08:18	16:00 (4)	07:17	07:00	05:52				05:08		21:10 (6)				
	16:30	19	15:27 (3)	17:26	18	16:18 (4)	18:23	20:22	21:18		22:06	20	21:30 (6)				
7	08:56	15:09 (3)	08:16	16:02 (4)	07:14	06:58	05:50				05:07		21:10 (6)				
	16:31	20	15:54 (4)	17:28	14	16:16 (4)	18:25	20:24	21:20		22:07	21	21:31 (6)				
8	08:56	15:10 (3)	08:14	16:07 (4)	07:12	06:55	05:48				05:06		21:09 (6)				
	16:33	20	15:55 (4)	17:30	4	16:11 (4)	18:27	20:26	21:22		22:08	22	21:31 (6)				
9	08:55	15:11 (3)	08:12		07:09	06:53	05:46				05:06		21:10 (6)				
	16:34	21	15:57 (4)	17:32		18:29	20:27	21:23			22:08	21	21:31 (6)				
10	08:55	15:13 (3)	08:10		07:07	06:50	05:44				05:05		21:11 (6)				
	16:36	21	15:59 (4)	17:34		18:30	20:29	21:25			22:09	21	21:32 (6)				
11	08:54	15:15 (3)	08:08		07:05	06:48	05:42				05:05		21:10 (6)				
	16:37	20	16:01 (4)	17:36		18:32	20:31	21:27			22:10	21	21:31 (6)				
12	08:53	15:17 (3)	08:06		07:02	06:46	05:41				05:04		21:11 (6)				
	16:39	19	16:03 (4)	17:39		18:34	20:33	21:29			22:11	21	21:32 (6)				
13	08:52	15:50 (4)	08:04		07:00	06:43	05:39				05:04		21:11 (6)				
	16:41	14	16:04 (4)	17:41		18:36	20:35	21:31			22:12	21	21:32 (6)				
14	08:51	15:49 (4)	08:02		06:57	06:41	05:37				05:04		21:12 (6)				
	16:42	16	16:05 (4)	17:43		18:38	20:37	21:32			22:12	21	21:33 (6)				
15	08:50	15:49 (4)	08:00		06:55	06:38	05:35				05:03		21:11 (6)				
	16:44	18	16:07 (4)	17:45		18:40	20:39	21:34			22:13	21	21:32 (6)				
16	08:49	15:49 (4)	07:58		06:52	06:36	05:34				05:03		21:11 (6)				
	16:46	21	16:10 (4)	17:47		18:42	20:41	21:36			22:13	21	21:32 (6)				
17	08:48	15:49 (4)	07:56		06:50	06:34	05:32				05:03		21:12 (6)				
	16:47	23	16:12 (4)	17:49		18:44	20:43	21:37			22:14	20	21:32 (6)				
18	08:47	15:50 (4)	07:54		06:47	06:31	05:30				05:03		21:12 (6)				
	16:49	24	16:14 (4)	17:51		18:46	20:44	21:39			22:14	21	21:33 (6)				
19	08:46	15:49 (4)	07:51		06:45	06:29	05:29				05:03		21:12 (6)				
	16:51	27	16:16 (4)	17:53		18:48	20:46	21:41			22:15	21	21:33 (6)				
20	08:45	15:49 (4)	07:49		06:42	06:27	05:27				05:03		21:13 (6)				
	16:53	29	16:18 (4)	17:55		18:50	20:48	21:42			22:15	21	21:34 (6)				
21	08:44	15:49 (4)	07:47		06:40	06:24	05:26				05:03		21:13 (6)				
	16:55	31	16:20 (4)	17:57		18:52	20:50	21:44			22:15	21	21:34 (6)				
22	08:42	15:49 (4)	07:45		06:37	06:22	05:24				05:03		21:13 (6)				
	16:57	33	16:22 (4)	17:59		18:53	20:52	21:46			22:16	21	21:34 (6)				
23	08:41	15:49 (4)	07:43		06:35	06:20	05:23				05:04		21:13 (6)				
	16:58	33	16:22 (4)	18:01		18:55	20:54	21:47			22:16	21	21:34 (6)				
24	08:40	15:50 (4)	07:40		06:32	06:18	05:21	21:13 (6)			05:04		21:14 (6)				
	17:00	33	16:23 (4)	18:03		18:57	20:56	21:49	2	21:15 (6)	22:16	21	21:35 (6)				
25	08:38	15:50 (4)	07:38		06:30	06:15	05:20	21:12 (6)			05:04		21:14 (6)				
	17:02	33	16:23 (4)	18:05		18:59	20:58	21:50	4	21:16 (6)	22:16	20	21:34 (6)				
26	08:37	15:49 (4)	07:36		06:27	06:13	05:19	21:11 (6)			05:05		21:13 (6)				
	17:04	34	16:23 (4)	18:07		19:01	20:59	21:52	7	21:18 (6)	22:16	21	21:34 (6)				
27	08:35	15:50 (4)	07:33		06:25	06:11	05:17	21:11 (6)			05:05		21:14 (6)				
	17:06	34	16:24 (4)	18:09		19:03	21:01	21:53	8	21:19 (6)	22:16	21	21:35 (6)				
28	08:34	15:51 (4)	07:31		06:22	06:09	05:16	21:11 (6)			05:06		21:14 (6)				
	17:08	32	16:23 (4)	18:11		19:05	21:03	21:54	9	21:20 (6)	22:16	21	21:35 (6)				
29	08:32	15:51 (4)			07:20	06:07	05:15	21:10 (6)			05:06		21:14 (6)				
	17:10	32	16:23 (4)		20:07	21:05	21:56	11	21:21 (6)	22:15	21	21:35 (6)					
30	08:30	15:51 (4)			07:17	06:04	05:14	21:10 (6)			05:07		21:15 (6)				
	17:12	32	16:23 (4)		20:09	21:07	21:57	13	21:23 (6)	22:15	21	21:36 (6)					
31	08:29	15:52 (4)			07:15		05:13	21:10 (6)									
	17:14	30	16:22 (4)		20:10		21:59	14	21:24 (6)								
Potential sun hours	248		272		367	421	496			513							
Total, worst case		775		166				68			611						
Sun reduction		0.17		0.22				0.36			0.26						
Oper. time red.		1.00		1.00				1.00			1.00						
Wind dir. red.		0.62		0.61				0.63			0.63						
Total reduction		0.11		0.14				0.23			0.16						
Total, real		82		23				15			99						

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: B - H2\*  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	July	August	September	October	November	December						
1	05:08	21:14 (6)	05:48	06:44	07:38	07:37	08:33	14:57 (3)				
	22:15	22	21:36 (6)	21:39	20:31	19:16	17:05	16:19	20	15:43 (4)		
2	05:08	21:15 (6)	05:50	06:46	07:40	07:39	08:35	14:55 (3)				
	22:14	21	21:36 (6)	21:37	20:28	19:14	17:02	16:18	21	15:41 (4)		
3	05:09	21:15 (6)	05:52	06:47	07:42	07:41	08:36	15:35 (4)	08:36	14:55 (3)		
	22:14	22	21:37 (6)	21:35	20:26	19:11	17:01	6	15:41 (4)	16:18	21	15:41 (4)
4	05:10	21:16 (6)	05:54	06:49	07:44	07:43	08:38	15:32 (4)	08:38	14:55 (3)		
	22:13	21	21:37 (6)	21:33	20:24	19:09	16:59	14	15:46 (4)	16:17	20	15:40 (4)
5	05:11	21:15 (6)	05:55	06:51	07:45	07:45	08:39	15:29 (4)	08:39	14:54 (3)		
	22:13	21	21:36 (6)	21:31	20:21	19:06	16:57	19	15:48 (4)	16:16	20	15:39 (4)
6	05:12	21:15 (6)	05:57	06:53	07:47	07:47	08:41	15:27 (4)	08:41	14:54 (3)		
	22:12	21	21:36 (6)	21:29	20:19	19:04	16:55	22	15:49 (4)	16:16	19	15:13 (3)
7	05:13	21:16 (6)	05:59	06:55	07:49	07:49	08:42	15:26 (4)	08:42	14:54 (3)		
	22:12	19	21:35 (6)	21:27	20:16	19:01	16:53	24	15:50 (4)	16:15	20	15:14 (3)
8	05:14	21:16 (6)	06:01	06:56	07:51	07:51	08:43	15:25 (4)	08:43	14:53 (3)		
	22:11	19	21:35 (6)	21:25	20:14	18:59	16:51	26	15:51 (4)	16:15	21	15:14 (3)
9	05:15	21:16 (6)	06:02	06:58	07:53	07:53	08:45	15:24 (4)	08:45	14:54 (3)		
	22:10	18	21:34 (6)	21:23	20:11	18:56	16:49	28	15:52 (4)	16:15	21	15:15 (3)
10	05:16	21:16 (6)	06:04	07:00	07:55	07:55	08:46	15:24 (4)	08:46	14:54 (3)		
	22:09	17	21:33 (6)	21:21	20:09	18:54	16:47	30	15:54 (4)	16:14	22	15:16 (3)
11	05:17	21:17 (6)	06:06	07:02	07:57	07:57	08:47	15:24 (4)	08:47	14:54 (3)		
	22:08	16	21:33 (6)	21:19	20:06	18:52	16:46	30	15:54 (4)	16:14	22	15:16 (3)
12	05:18	21:17 (6)	06:08	07:04	07:59	07:59	08:48	15:23 (4)	08:48	14:55 (3)		
	22:07	15	21:32 (6)	21:17	20:04	18:49	16:44	32	15:55 (4)	16:14	23	15:18 (3)
13	05:20	21:18 (6)	06:09	07:05	08:00	08:01	08:49	15:23 (4)	08:49	14:55 (3)		
	22:06	14	21:32 (6)	21:15	20:01	18:47	16:42	32	15:55 (4)	16:14	23	15:18 (3)
14	05:21	21:19 (6)	06:11	07:07	08:02	08:03	08:50	15:23 (4)	08:50	14:55 (3)		
	22:05	12	21:31 (6)	21:13	19:59	18:45	16:41	32	15:55 (4)	16:14	24	15:19 (3)
15	05:22	21:19 (6)	06:13	07:09	08:04	08:05	08:51	15:22 (4)	08:51	14:56 (3)		
	22:04	10	21:29 (6)	21:10	19:56	18:42	16:39	33	15:55 (4)	16:14	23	15:19 (3)
16	05:24	21:19 (6)	06:15	07:11	08:06	08:07	08:52	15:22 (4)	08:52	14:56 (3)		
	22:03	9	21:28 (6)	21:08	19:54	18:40	16:37	34	15:56 (4)	16:14	24	15:20 (3)
17	05:25	21:21 (6)	06:17	07:13	08:08	08:09	08:53	15:22 (4)	08:53	14:56 (3)		
	22:02	7	21:28 (6)	21:06	19:51	18:37	16:36	34	15:56 (4)	16:14	24	15:20 (3)
18	05:26	21:21 (6)	06:18	07:14	08:10	08:11	08:54	15:24 (4)	08:54	14:56 (3)		
	22:00	5	21:26 (6)	21:04	19:49	18:35	16:34	33	15:57 (4)	16:14	24	15:20 (3)
19	05:28	21:22 (6)	06:20	07:16	08:12	08:12	08:54	15:24 (4)	08:54	14:57 (3)		
	21:59	3	21:25 (6)	21:01	19:46	18:33	16:33	33	15:57 (4)	16:14	24	15:21 (3)
20	05:29		06:22	07:18	08:14	08:14	08:55	15:24 (4)	08:55	14:57 (3)		
	21:58		20:59	19:44	18:31	16:31	15:57 (4)	16:15	24	15:21 (3)		
21	05:31		06:24	07:20	08:16	08:16	08:56	15:25 (4)	08:56	14:58 (3)		
	21:56		20:57	19:41	18:28	16:30	15:56 (4)	16:15	24	15:22 (3)		
22	05:32		06:26	07:22	08:18	08:18	08:56	15:25 (4)	08:56	14:59 (3)		
	21:55		20:55	19:39	18:26	16:29	15:54 (4)	16:16	24	15:23 (3)		
23	05:34		06:27	07:23	08:20	08:20	08:57	15:26 (4)	08:57	14:59 (3)		
	21:54		20:52	19:36	18:24	16:28	15:53 (4)	16:16	24	15:23 (3)		
24	05:35		06:29	07:25	08:22	08:22	08:57	15:27 (4)	08:57	14:59 (3)		
	21:52		20:50	19:34	18:22	16:26	15:51 (4)	16:17	24	15:23 (3)		
25	05:37		06:31	07:27	08:23	08:23	08:58	15:27 (4)	08:58	15:00 (3)		
	21:50		20:48	19:31	17:19	16:25	15:50 (4)	16:17	24	15:24 (3)		
26	05:38		06:33	07:29	08:25	08:25	08:58	15:28 (4)	08:58	15:01 (3)		
	21:49		20:45	19:29	17:17	16:24	15:49 (4)	16:18	24	15:25 (3)		
27	05:40		06:35	07:31	08:27	08:27	08:59	15:28 (4)	08:59	15:01 (3)		
	21:47		20:43	19:26	17:15	16:23	15:47 (4)	16:19	24	15:25 (3)		
28	05:42		06:37	07:33	08:28	08:28	08:58	15:29 (4)	08:58	15:02 (3)		
	21:46		20:41	19:24	17:13	16:22	15:46 (4)	16:20	23	15:25 (3)		
29	05:43		06:38	07:34	08:30	08:30	08:58	15:30 (4)	08:58	15:02 (3)		
	21:44		20:38	19:21	17:11	16:21	15:45 (4)	16:21	24	15:26 (3)		
30	05:45		06:40	07:36	08:32	08:32	08:58	14:59 (3)	08:58	15:03 (3)		
	21:42		20:36	19:19	17:09	16:20	15:44 (4)	16:22	23	15:26 (3)		
31	05:47		06:42	07:35	08:35	08:35	08:58	15:04 (3)				
	21:40		20:33	17:07	17:07	17:07	16:23	23	15:27 (3)			
Potential sun hours	515		461	382	328	257	231					
Total, worst case		292				719		701				
Sun reduction		0.27				0.20		0.12				
Oper. time red.		1.00				1.00		1.00				
Wind dir. red.		0.63				0.61		0.63				
Total reduction		0.17				0.12		0.08				
Total, real		49				88		53				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: C - H3  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January	February	March	April	May	June
1	08:58	13:58 (8)	08:27	07:29	07:12	06:02
	16:24	53 14:51 (8)	17:16	18:13	20:12	21:09
2	08:58	13:59 (8)	08:25	07:26	07:10	06:00
	16:25	52 14:51 (8)	17:18	18:15	20:14	21:11
3	08:58	14:00 (8)	08:24	07:24	07:08	05:58
	16:26	52 14:52 (8)	17:20	18:17	20:16	21:13
4	08:58	14:00 (8)	08:22	07:22	07:05	05:56
	16:27	52 14:52 (8)	17:22	18:19	20:18	21:14
5	08:57	14:00 (8)	08:20	07:19	07:03	05:54
	16:29	52 14:52 (8)	17:24	18:21	20:20	21:16
6	08:57	14:01 (8)	08:18	07:17	07:00	05:52
	16:30	52 14:53 (8)	17:26	18:23	20:22	21:18
7	08:56	14:01 (8)	08:16	07:14	06:58	05:50
	16:31	52 14:53 (8)	17:28	18:25	20:24	21:20
8	08:56	14:02 (8)	08:14	07:12	06:55	05:48
	16:33	51 14:53 (8)	17:30	18:27	20:26	21:22
9	08:55	14:03 (8)	08:12	07:09	06:53	05:46
	16:34	51 14:54 (8)	17:32	18:28	20:27	21:23
10	08:55	14:04 (8)	08:10	07:07	06:50	05:44
	16:36	50 14:54 (8)	17:34	18:30	20:29	21:25
11	08:54	14:04 (8)	08:08	07:05	06:48	05:42
	16:37	50 14:54 (8)	17:36	18:32	20:31	21:27
12	08:53	14:05 (8)	08:06	07:02	06:46	05:40
	16:39	49 14:54 (8)	17:38	18:34	20:33	21:29
13	08:52	14:06 (8)	08:04	07:00	06:43	05:39
	16:40	48 14:54 (8)	17:40	18:36	20:35	21:31
14	08:51	14:07 (8)	08:02	06:57	06:41	05:37
	16:42	47 14:54 (8)	17:43	18:38	20:37	21:32
15	08:51	14:06 (8)	08:00	06:55	06:38	19:56 (9)
	16:44	47 14:53 (8)	17:45	18:40	20:39	20:02 (9)
16	08:50	14:08 (8)	07:58	06:52	06:36	19:50 (9)
	16:46	45 14:53 (8)	17:47	18:42	20:41	20:07 (9)
17	08:48	14:09 (8)	07:56	06:50	06:34	19:46 (9)
	16:47	45 14:54 (8)	17:49	18:44	20:43	20:09 (9)
18	08:47	14:10 (8)	07:54	06:47	06:31	19:44 (9)
	16:49	44 14:54 (8)	17:51	18:46	20:44	20:12 (9)
19	08:46	14:10 (8)	07:51	06:45	06:29	19:42 (9)
	16:51	43 14:53 (8)	17:53	18:48	20:46	20:13 (9)
20	08:45	14:12 (8)	07:49	06:42	06:27	19:40 (9)
	16:53	41 14:53 (8)	17:55	18:50	20:48	20:14 (9)
21	08:44	14:13 (8)	07:47	06:40	06:24	19:39 (9)
	16:55	39 14:52 (8)	17:57	18:52	20:50	20:15 (9)
22	08:42	14:14 (8)	07:45	06:37	06:22	19:38 (9)
	16:56	38 14:52 (8)	17:59	18:53	20:52	20:16 (9)
23	08:41	14:15 (8)	07:43	06:35	06:20	19:37 (9)
	16:58	35 14:50 (8)	18:01	18:55	20:54	20:17 (9)
24	08:40	14:18 (8)	07:40	06:32	06:17	19:36 (9)
	17:00	32 14:50 (8)	18:03	18:57	20:56	20:18 (9)
25	08:38	14:19 (8)	07:38	06:30	06:15	19:35 (9)
	17:02	29 14:48 (8)	18:05	18:59	20:58	20:18 (9)
26	08:37	14:21 (8)	07:36	06:27	06:13	19:34 (9)
	17:04	26 14:47 (8)	18:07	19:01	20:59	20:18 (9)
27	08:35	14:24 (8)	07:33	06:25	06:11	19:33 (9)
	17:06	21 14:45 (8)	18:09	19:03	21:01	20:18 (9)
28	08:34	14:28 (8)	07:31	06:22	06:09	19:33 (9)
	17:08	14 14:42 (8)	18:11	19:05	21:03	20:18 (9)
29	08:32			07:20	06:06	19:33 (9)
	17:10			20:07	21:05	20:19 (9)
30	08:31			07:17	06:04	19:32 (9)
	17:12			20:09	21:07	20:19 (9)
31	08:29			07:15		05:13
	17:14			20:10		21:59
Potential sun hours	248		272	367	421	496
Total, worst case		1210			565	860
Sun reduction		0.17			0.34	0.36
Oper. time red.		1.00			1.00	1.00
Wind dir. red.		0.67			0.60	0.64
Total reduction		0.11			0.20	0.17
Total, real		137			116	185

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: C - H3

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	July	August	September	October	November	December				
1	05:07	21:28 (10)	05:48	19:45 (9)	06:44	07:38	07:37	08:33	13:46 (8)	
	22:15	4 21:32 (10)	21:39	40 20:25 (9)	20:31	19:16	17:04	16:19	50 14:36 (8)	
2	05:08		05:50	19:45 (9)	06:45	07:40	07:39	08:35	13:46 (8)	
	22:14		21:37	41 20:26 (9)	20:28	19:14	17:02	16:18	50 14:36 (8)	
3	05:09		05:52	19:43 (9)	06:47	07:42	07:41	08:36	13:46 (8)	
	22:14		21:35	43 20:26 (9)	20:26	19:11	17:00	16:18	51 14:37 (8)	
4	05:10		05:53	19:43 (9)	06:49	07:44	07:43	08:38	13:47 (8)	
	22:13		21:33	44 20:27 (9)	20:24	19:09	16:58	16:17	51 14:38 (8)	
5	05:11		05:55	19:43 (9)	06:51	07:45	07:45	08:39	13:46 (8)	
	22:13		21:31	45 20:28 (9)	20:21	19:06	16:56	16:16	52 14:38 (8)	
6	05:12		05:57	19:42 (9)	06:53	07:47	07:47	08:41	13:47 (8)	
	22:12		21:29	45 20:27 (9)	20:19	19:04	16:55	16:16	52 14:39 (8)	
7	05:13		05:59	19:42 (9)	06:55	07:49	07:49	08:42	13:47 (8)	
	22:12		21:27	46 20:28 (9)	20:16	19:01	16:53	16:15	52 14:39 (8)	
8	05:14		06:00	19:42 (9)	06:56	07:51	07:51	08:43	13:48 (8)	
	22:11		21:25	46 20:28 (9)	20:14	18:59	16:51	16:15	52 14:40 (8)	
9	05:15		06:02	19:41 (9)	06:58	07:53	07:53	08:45	13:48 (8)	
	22:10		21:23	46 20:27 (9)	20:11	18:56	16:49	16:14	52 14:40 (8)	
10	05:16		06:04	19:41 (9)	07:00	07:55	07:55	08:46	13:48 (8)	
	22:09		21:21	47 20:28 (9)	20:09	18:54	16:47	16:14	52 14:40 (8)	
11	05:17		06:06	19:41 (9)	07:02	07:57	07:57	08:47	13:48 (8)	
	22:08		21:19	47 20:28 (9)	20:06	18:52	16:45	16:14	53 14:41 (8)	
12	05:18		06:08	19:41 (9)	07:04	07:59	07:59	08:48	13:49 (8)	
	22:07		21:17	46 20:27 (9)	20:04	18:49	16:44	16:14	53 14:42 (8)	
13	05:19		06:09	19:41 (9)	07:05	08:00	08:01	08:49	13:49 (8)	
	22:06		21:15	46 20:27 (9)	20:01	18:47	16:42	16:14	53 14:42 (8)	
14	05:21		06:11	19:41 (9)	07:07	08:02	08:03	08:50	13:50 (8)	
	22:05		21:13	46 20:27 (9)	19:59	18:44	16:40	14 14:14 (8)	16:14	53 14:43 (8)
15	05:22		06:13	19:40 (9)	07:09	08:04	08:05	13:56 (8)	08:51	13:50 (8)
	22:04		21:10	46 20:26 (9)	19:56	18:42	16:39	21 14:17 (8)	16:14	53 14:43 (8)
16	05:23		06:15	19:41 (9)	07:11	08:06	08:07	13:54 (8)	08:52	13:51 (8)
	22:03		21:08	45 20:26 (9)	19:54	18:40	16:37	26 14:20 (8)	16:14	53 14:44 (8)
17	05:25		06:17	19:41 (9)	07:13	08:08	08:09	13:53 (8)	08:53	13:51 (8)
	22:02		21:06	44 20:25 (9)	19:51	18:37	16:36	29 14:22 (8)	16:14	54 14:45 (8)
18	05:26		06:18	19:41 (9)	07:14	08:10	08:11	13:52 (8)	08:54	13:51 (8)
	22:01		21:04	43 20:24 (9)	19:49	18:35	16:34	32 14:24 (8)	16:14	53 14:44 (8)
19	05:28		20:04 (9)	06:20	19:42 (9)	07:16	08:12	13:50 (8)	08:55	13:52 (8)
	21:59	4	20:08 (9)	21:01	41 20:23 (9)	19:46	18:33	35 14:25 (8)	16:14	53 14:45 (8)
20	05:29		19:59 (9)	06:22	19:43 (9)	07:18	08:14	13:49 (8)	08:55	13:53 (8)
	21:58	12	20:11 (9)	20:59	40 20:23 (9)	19:44	18:30	38 14:27 (8)	16:15	53 14:46 (8)
21	05:31		19:57 (9)	06:24	19:43 (9)	07:20	08:16	13:49 (8)	08:56	13:53 (8)
	21:57	17	20:14 (9)	20:57	38 20:21 (9)	19:41	18:28	39 14:28 (8)	16:15	53 14:46 (8)
22	05:32		19:55 (9)	06:26	19:44 (9)	07:22	08:18	13:48 (8)	08:56	13:54 (8)
	21:55	21	20:16 (9)	20:55	36 20:20 (9)	19:39	18:26	41 14:29 (8)	16:15	53 14:47 (8)
23	05:34		19:54 (9)	06:27	19:45 (9)	07:23	08:20	13:47 (8)	08:57	13:54 (8)
	21:54	24	20:18 (9)	20:52	33 20:18 (9)	19:36	18:24	43 14:30 (8)	16:16	53 14:47 (8)
24	05:35		19:52 (9)	06:29	19:46 (9)	07:25	08:22	13:47 (8)	08:57	13:54 (8)
	21:52	27	20:19 (9)	20:50	31 20:17 (9)	19:34	18:21	44 14:31 (8)	16:17	53 14:47 (8)
25	05:37		19:51 (9)	06:31	19:47 (9)	07:27	08:23	13:47 (8)	08:58	13:55 (8)
	21:51	29	20:20 (9)	20:48	27 20:14 (9)	19:31	17:19	45 14:32 (8)	16:17	53 14:48 (8)
26	05:38		19:50 (9)	06:33	19:49 (9)	07:29	08:25	13:47 (8)	08:58	13:55 (8)
	21:49	31	20:21 (9)	20:45	23 20:12 (9)	19:29	17:17	46 14:33 (8)	16:18	53 14:48 (8)
27	05:40		19:49 (9)	06:35	19:52 (9)	07:31	08:27	13:47 (8)	08:58	13:56 (8)
	21:47	33	20:22 (9)	20:43	17 20:09 (9)	19:26	17:15	46 14:33 (8)	16:19	53 14:49 (8)
28	05:42		19:48 (9)	06:36	19:57 (9)	07:33	08:29	13:46 (8)	08:58	13:56 (8)
	21:46	35	20:23 (9)	20:41	5 20:02 (9)	19:24	17:13	47 14:33 (8)	16:20	53 14:49 (8)
29	05:43		19:48 (9)	06:38		07:34	07:31	13:46 (8)	08:58	13:57 (8)
	21:44	36	20:24 (9)	20:38		19:21	17:11	48 14:34 (8)	16:20	53 14:50 (8)
30	05:45		19:46 (9)	06:40		07:36	07:33	13:46 (8)	08:59	13:57 (8)
	21:42	38	20:24 (9)	20:36		19:19	17:09	49 14:35 (8)	16:21	53 14:50 (8)
31	05:47		19:46 (9)	06:42		07:35	07:35	13:46 (8)	08:58	13:58 (8)
	21:40	39	20:25 (9)	20:33		17:06	17:06	16:22	53 14:51 (8)	
Potential sun hours	515		461		382	328	257	231		
Total, worst case		350		1097			643		1628	
Sun reduction		0.27		0.27			0.20		0.12	
Oper. time red.		1.00		1.00			1.00		1.00	
Wind dir. red.		0.60		0.60			0.67		0.67	
Total reduction		0.16		0.16			0.13		0.08	
Total, real		56		179			85		130	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)





### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: D - H4  
 Assumptions for shadow calculations Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:58 16:24	08:27 17:16	07:29 18:13	07:13 20:12	06:02 21:09	05:12 22:00	05:08 22:15	05:48 21:39	06:44 20:31	07:38 19:16	07:37 17:05	08:33 16:19
2	08:58 16:25	08:25 17:18	07:26 18:15	07:10 20:14	06:00 21:11	05:11 22:01	05:08 22:14	05:50 21:37	06:46 20:29	07:40 19:14	07:39 17:03	08:35 16:19
3	08:58 16:26	08:24 17:20	07:24 18:17	07:08 20:16	05:58 21:13	05:10 22:02	05:09 22:14	05:52 21:35	06:47 20:26	07:42 19:11	07:41 17:01	08:36 16:18
4	08:58 16:28	08:22 17:22	07:22 18:19	07:05 20:18	05:56 21:14	05:09 22:03	05:10 22:13	05:54 21:33	06:49 20:24	07:44 19:09	07:43 16:59	08:38 16:17
5	08:57 16:29	08:20 17:24	07:19 18:21	07:03 20:20	05:54 21:16	05:08 22:05	05:11 22:13	05:55 21:31	06:51 20:21	07:46 19:06	07:45 16:57	08:39 16:17
6	08:57 16:30	08:18 17:26	07:17 18:23	07:00 20:22	05:52 21:18	05:08 22:06	05:12 22:12	05:57 21:29	06:53 20:19	07:47 19:04	07:47 16:55	08:41 16:16
7	08:56 16:32	08:16 17:28	07:14 18:25	06:58 20:24	05:50 21:20	05:07 22:07	05:13 22:12	05:59 21:27	06:55 20:16	07:49 19:01	07:49 16:53	08:42 16:15
8	08:56 16:33	08:14 17:30	07:12 18:27	06:55 20:26	05:48 21:22	05:06 22:08	05:14 22:11	06:01 21:25	06:56 20:14	07:51 18:59	07:51 16:51	08:43 16:15
9	08:55 16:34	08:12 17:32	07:10 18:29	06:53 20:28	05:46 21:24	05:06 22:09	05:15 22:10	06:02 21:23	06:58 20:11	07:53 18:57	07:53 16:49	08:45 16:15
10	08:55 16:36	08:10 17:34	07:07 18:31	06:50 20:29	05:44 21:25	05:05 22:09	05:16 22:09	06:04 21:21	07:00 20:09	07:55 18:54	07:55 16:47	08:46 16:14
11	08:54 16:37	08:08 17:37	07:05 18:32	06:48 20:31	05:42 21:27	05:05 22:10	05:17 22:08	06:06 21:19	07:02 20:06	07:57 18:52	07:57 16:46	08:47 16:14
12	08:53 16:39	08:06 17:39	07:02 18:34	06:46 20:33	05:41 21:29	05:04 22:11	05:18 22:07	06:08 21:17	07:04 20:04	7 07:41 (1) 07:50 (1)	07:59 18:49	08:48 16:44
13	08:52 16:41	08:04 17:41	07:00 18:36	06:43 20:35	05:39 21:31	05:04 22:12	05:20 22:06	06:10 21:15	07:05 20:01	07:37 (1) 07:51 (1)	08:01 18:47	08:49 16:42
14	08:51 16:42	08:02 17:43	06:57 18:38	06:41 20:37	05:37 21:32	05:04 22:12	05:21 22:05	06:11 21:13	07:07 19:59	14 07:35 (1) 07:53 (1)	08:02 18:45	08:50 16:41
15	08:50 16:44	08:00 17:45	06:55 18:40	06:38 20:39	05:35 21:34	05:03 22:13	05:22 22:04	06:13 21:10	07:09 19:56	18 07:36 (1) 07:54 (1)	08:04 18:42	08:51 16:39
16	08:50 16:46	07:58 17:47	06:52 18:42	06:36 20:41	05:34 21:36	05:03 22:14	05:24 22:03	06:15 21:08	07:11 19:54	18 07:38 (1) 07:55 (1)	08:06 18:40	08:52 16:37
17	08:48 16:47	07:56 17:49	06:50 18:44	06:34 20:43	05:32 21:37	05:03 22:14	05:25 22:02	06:17 21:06	07:13 19:51	17 07:39 (1) 07:55 (1)	08:08 18:38	08:53 16:36
18	08:47 16:49	07:54 17:51	06:47 18:46	06:31 20:44	05:30 21:39	05:03 22:14	05:26 22:01	06:19 21:04	07:14 19:49	16 07:41 (1) 07:55 (1)	08:10 18:35	08:54 16:34
19	08:46 16:51	07:52 17:53	06:45 18:48	06:29 20:46	05:29 21:41	05:03 22:15	05:28 21:59	06:20 21:02	07:16 19:46	12 07:43 (1) 07:55 (1)	08:12 18:33	08:55 16:33
20	08:45 16:53	07:49 17:55	06:42 18:50	06:27 20:48	05:27 21:42	05:03 22:15	05:29 21:58	06:22 20:59	07:18 19:44	10 07:45 (1) 07:55 (1)	08:14 18:31	08:55 16:32
21	08:44 16:55	07:47 17:57	06:40 18:52	06:24 20:50	05:26 21:44	05:03 22:15	05:31 21:57	06:24 20:57	07:20 19:41	10 07:46 (1) 07:54 (1)	08:16 18:28	08:56 16:30
22	08:42 16:57	07:45 17:59	06:37 18:54	06:22 20:52	05:24 21:46	05:03 22:16	05:32 21:55	06:26 20:55	07:22 19:39	8 07:48 (1) 07:53 (1)	08:18 18:26	08:56 16:29
23	08:41 16:58	07:43 18:01	06:35 18:55	06:19 20:54	05:23 21:47	05:04 22:16	05:34 21:54	06:28 20:52	07:23 19:36	5 07:50 (1) 07:52 (1)	08:20 18:24	08:57 16:28
24	08:40 17:00	07:40 18:03	06:32 18:57	06:18 20:56	05:21 21:49	05:04 22:16	05:35 21:52	06:29 20:50	07:25 19:34	2 07:52 (1)	08:22 18:22	08:57 16:26
25	08:38 17:02	07:38 18:05	06:30 18:59	06:15 20:58	05:20 21:50	05:04 22:16	05:37 21:51	06:31 20:48	07:27 19:31	08:22 17:19	08:23 16:25	08:58 16:17
26	08:37 17:04	07:36 18:07	06:27 19:01	06:11 21:00	05:19 21:52	05:05 22:16	05:38 21:49	06:33 20:45	07:29 19:29	08:25 17:17	08:25 16:24	08:58 16:18
27	08:35 17:06	07:33 18:09	06:25 19:03	06:09 21:01	05:17 21:53	05:05 22:16	05:40 21:47	06:35 20:43	07:31 19:26	07:28 17:15	08:27 16:23	08:58 16:19
28	08:34 17:08	07:31 18:11	06:23 19:05	06:09 21:03	05:16 21:55	05:06 22:16	05:42 21:46	06:37 20:41	07:33 19:24	07:30 17:13	08:29 16:22	08:58 16:20
29	08:32 17:10	07:29 18:14	06:20 19:08	06:07 21:05	05:15 21:56	05:06 22:15	05:43 21:44	06:38 20:38	07:34 19:21	07:32 17:11	08:30 16:21	08:58 16:21
30	08:31 17:12	07:28 18:17	06:18 19:09	06:04 21:07	05:14 21:57	05:07 22:15	05:45 21:42	06:40 20:36	07:36 19:19	07:33 17:09	08:32 16:20	08:58 16:22
31	08:29 17:14	07:25 18:11	06:15 19:01	07:48 (1) 20:11	05:13 21:59	05:07 22:15	05:47 21:40	06:42 20:33	07:35 19:17	07:35 17:07	08:58 16:23	
Potential sun hours	248	272	367	421	496	513	515	461	382	328	257	231
Total, worst case			139						143			
Sun reduction			0.22						0.29			
Oper. time red.			1.00						1.00			
Wind dir. red.			0.59						0.59			
Total reduction			0.13						0.17			
Total, real			18						25			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: E - H5  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June
1	08:58 16:24	08:27 17:16	16:33 (3) 16:43 (3)	07:29 18:13	07:12 20:12	06:02 20:07 (1)
2	08:58 16:25	08:25 17:18	16:34 (3) 16:46 (3)	07:26 18:15	07:10 20:14	06:00 21:11
3	08:58 16:26	08:24 17:20	16:35 (3) 16:49 (3)	07:24 18:17	07:08 20:16	05:58 21:12
4	08:58 16:27	08:22 17:22	16:36 (3) 16:50 (3)	07:21 18:19	07:05 20:18	05:56 21:14
5	08:57 16:29	08:20 17:24	16:37 (3) 16:49 (3)	07:19 18:21	07:03 20:20	05:54 21:16
6	08:57 16:30	08:18 17:26	16:38 (3) 16:48 (3)	07:17 18:23	07:00 20:22	05:52 21:18
7	08:56 16:31	08:16 17:28	16:41 (3) 16:46 (3)	07:14 18:25	06:58 20:24	05:50 21:20
8	08:56 16:33	08:14 17:30	16:46 (3) 16:50 (3)	07:12 18:27	06:55 20:26	05:48 21:22
9	08:55 16:34	08:12 17:32	16:50 (3) 16:54 (3)	07:09 18:28	06:53 20:27	05:46 21:23
10	08:55 16:36	08:10 17:34	16:55 (3) 16:59 (3)	07:07 18:30	06:50 20:29	05:44 21:25
11	08:54 16:37	08:08 17:36	16:59 (3) 17:03 (3)	07:05 18:32	06:48 20:31	05:42 21:27
12	08:53 16:39	08:06 17:38	17:03 (3) 17:07 (3)	07:02 18:34	06:46 20:33	05:41 21:29
13	08:52 16:41	08:04 17:41	17:08 (3) 17:12 (3)	07:00 18:36	06:43 20:35	05:39 21:30
14	08:51 16:42	08:02 17:43	17:10 (4) 17:13 (4)	06:57 18:38	06:41 20:37	05:37 21:32
15	08:50 16:44	08:00 17:45	17:14 (4) 17:15 (4)	06:55 18:40	06:38 20:39	05:35 21:34
16	08:49 16:46	07:58 17:47	17:16 (4) 17:17 (4)	06:52 18:42	06:36 20:41	05:33 21:36
17	08:48 16:47	07:56 17:49	17:18 (4) 17:20 (4)	06:50 18:44	06:34 20:42	05:32 21:37
18	08:47 16:49	07:54 17:51	17:21 (4) 17:22 (4)	06:47 18:46	06:31 20:44	05:30 21:39
19	08:46 16:51	07:51 17:53	17:23 (4) 17:24 (4)	06:45 18:48	06:29 20:46	05:29 21:41
20	08:45 16:53	07:49 17:55	17:25 (4) 17:26 (4)	06:42 18:50	06:27 20:48	05:27 21:42
21	08:44 16:55	07:47 17:57	17:27 (4) 17:25 (4)	06:40 18:52	06:24 20:50	05:26 21:44
22	08:42 16:56	07:45 17:59	17:28 (4) 17:23 (4)	06:37 18:53	06:22 20:52	05:24 21:45
23	08:41 16:58	07:42 18:01	17:24 (4) 17:21 (4)	06:35 18:55	06:20 20:54	05:23 21:47
24	08:40 17:00	07:40 18:03	17:22 (4) 17:10 (4)	06:32 18:57	06:18 20:56	05:21 21:49
25	08:38 17:02	07:38 18:05	17:11 (4) 17:08 (4)	06:30 18:59	3 20:24 (1) 20:19 (1)	49 20:02 (1) 20:03 (1)
26	08:37 17:04	07:36 18:07	17:09 (4) 17:07 (4)	06:27 19:01	9 20:28 (1) 20:16 (1)	48 20:01 (1) 20:03 (1)
27	08:35 17:06	07:33 18:09	17:08 (4) 17:06 (4)	06:25 19:03	14 20:30 (1) 20:13 (1)	48 20:01 (1) 20:04 (1)
28	08:34 17:08	07:31 18:11	16:34 (3) 16:35 (3)	06:22 19:05	18 20:31 (1) 20:11 (1)	47 20:01 (1) 20:04 (1)
29	08:32 17:10	07:29 18:13	16:36 (3) 16:37 (3)	06:20 20:07	22 20:33 (1) 20:09 (1)	47 20:01 (1) 20:05 (1)
30	08:30 17:12	07:27 18:15	16:38 (3) 16:39 (3)	06:17 20:09	26 20:35 (1) 20:08 (1)	45 20:01 (1) 20:05 (1)
31	08:29 17:14	07:25 18:17	16:40 (3) 16:41 (3)	06:15 20:10	28 20:36 (1) 20:10 (1)	45 20:01 (1) 20:06 (1)
Potential sun hours	248	272	367	421	496	513
Total, worst case	18	190	120	1452	1077	
Sun reduction	0.17	0.22	0.34	0.36	0.26	
Oper. time red.	1.00	1.00	1.00	1.00	1.00	
Wind dir. red.	0.58	0.58	0.62	0.62	0.62	
Total reduction	0.10	0.13	0.21	0.22	0.16	
Total, real	2	25	25	325	172	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: E - H5  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	July		August		September		October		November		December	
1	05:08	20:16 (1)	05:48	20:11 (1)	06:44	07:38			07:37		08:33	
	22:15	36	20:52 (1)	21:39	51	21:02 (1)	20:31		17:04		16:19	
2	05:08	20:16 (1)	05:50	20:11 (1)	06:46	07:40			07:39		08:35	
	22:14	36	20:52 (1)	21:37	51	21:02 (1)	20:28		17:02		16:18	
3	05:09	20:16 (1)	05:52	20:11 (1)	06:47	07:42			07:41		08:36	
	22:14	37	20:53 (1)	21:35	50	21:01 (1)	20:26		19:11		16:18	
4	05:10	20:16 (1)	05:54	20:12 (1)	06:49	07:44			07:43	16:10 (3)	08:38	
	22:13	38	20:54 (1)	21:33	49	21:01 (1)	20:24		16:58	6	16:16 (3)	16:17
5	05:11	20:15 (1)	05:55	20:12 (1)	06:51	07:45			07:45		16:08 (3)	08:39
	22:13	38	20:53 (1)	21:31	48	21:00 (1)	20:21		16:57	10	16:18 (3)	16:16
6	05:12	20:15 (1)	05:57	20:12 (1)	06:53	07:47			07:47		16:06 (3)	08:41
	22:12	39	20:54 (1)	21:29	45	20:57 (1)	20:19		16:55	13	16:19 (3)	16:16
7	05:13	20:15 (1)	05:59	20:13 (1)	06:55	07:49			07:49		16:05 (3)	08:42
	22:11	40	20:55 (1)	21:27	43	20:56 (1)	20:16		16:53	15	16:20 (3)	16:15
8	05:14	20:15 (1)	06:01	20:14 (1)	06:56	07:51			07:51		16:05 (3)	08:43
	22:11	40	20:55 (1)	21:25	41	20:55 (1)	20:14		16:51	13	16:18 (3)	16:15
9	05:15	20:14 (1)	06:02	20:13 (1)	06:58	07:53			07:53		16:04 (3)	08:45
	22:10	42	20:56 (1)	21:23	39	20:52 (1)	20:11		16:49	12	16:16 (3)	16:15
10	05:16	20:14 (1)	06:04	20:14 (1)	07:00	07:55			07:55		16:05 (3)	08:46
	22:09	42	20:56 (1)	21:21	36	20:50 (1)	20:09		16:47	10	16:15 (3)	16:14
11	05:17	20:14 (1)	06:06	20:16 (1)	07:02	07:57			07:57		16:05 (3)	08:47
	22:08	43	20:57 (1)	21:19	33	20:49 (1)	20:06		16:46	8	16:13 (3)	16:14
12	05:18	20:13 (1)	06:08	20:16 (1)	07:04	07:59			07:59		16:05 (3)	08:48
	22:07	44	20:57 (1)	21:17	30	20:46 (1)	20:04		16:44	6	16:11 (3)	16:14
13	05:20	20:14 (1)	06:09	20:17 (1)	07:05	08:00			08:01		16:05 (3)	08:49
	22:06	44	20:58 (1)	21:15	27	20:44 (1)	20:01		16:42	4	16:09 (3)	16:14
14	05:21	20:14 (1)	06:11	20:18 (1)	07:07	08:02			08:03		16:06 (3)	08:50
	22:05	45	20:59 (1)	21:12	25	20:43 (1)	19:59		16:40	1	16:07 (3)	16:14
15	05:22	20:13 (1)	06:13	20:19 (1)	07:09	08:04			08:05			08:51
	22:04	46	20:59 (1)	21:10	21	20:40 (1)	19:56		16:39			16:14
16	05:23	20:13 (1)	06:15	20:21 (1)	07:11	08:06			08:07			08:52
	22:03	46	20:59 (1)	21:08	17	20:38 (1)	19:54		16:37			16:14
17	05:25	20:13 (1)	06:17	20:23 (1)	07:13	08:08			08:09			08:53
	22:02	47	21:00 (1)	21:06	13	20:36 (1)	19:51		16:36			16:14
18	05:26	20:13 (1)	06:18	20:25 (1)	07:14	08:10			08:11			08:54
	22:00	47	21:00 (1)	21:04	9	20:34 (1)	19:49		17:48 (4)			16:14
19	05:28	20:12 (1)	06:20	20:31 (1)	07:16	08:12			08:12			08:54
	21:59	48	21:00 (1)	21:01	1	20:32 (1)	19:46		17:43 (4)			16:14
20	05:29	20:12 (1)	06:22		07:18	08:14			17:53 (4)			16:33
	21:58	48	21:00 (1)	20:59		07:18	08:14		17:41 (4)			08:14
21	05:31	20:12 (1)	06:24		19:44	18:30			17:55 (4)	14		16:31
	21:56	49	21:01 (1)	20:57		07:20	08:16		17:40 (4)			08:16
22	05:32	20:11 (1)	06:26		19:41	18:28			17:56 (4)	16		16:30
	21:55	50	21:01 (1)	20:55		07:22	08:18		17:39 (4)			08:18
23	05:34	20:12 (1)	06:27		19:39	18:26			17:56 (4)	17		16:29
	21:53	50	21:02 (1)	20:52		07:23	08:20		17:38 (4)			08:20
24	05:35	20:11 (1)	06:29		19:36	18:24			17:53 (4)	15		16:28
	21:52	51	21:02 (1)	20:50		07:25	08:22		17:38 (4)			08:22
25	05:37	20:12 (1)	06:31		19:34	18:21			17:51 (4)	13		16:26
	21:50	51	21:03 (1)	20:48		07:27	07:24		16:38 (4)			08:23
26	05:38	20:11 (1)	06:33		19:31	17:19			17:40 (4)	10		16:25
	21:49	51	21:02 (1)	20:45		07:29	07:26		16:38 (4)			08:25
27	05:40	20:12 (1)	06:35		19:29	17:17			16:46 (4)	8		16:24
	21:47	51	21:03 (1)	20:43		07:31	07:27		16:38 (4)			08:27
28	05:42	20:11 (1)	06:36		19:26	17:15			16:44 (4)	6		16:23
	21:46	51	21:02 (1)	20:40		07:33	07:29		16:39 (4)			08:28
29	05:43	20:11 (1)	06:38		19:24	17:13			16:42 (4)	3		16:22
	21:44	52	21:03 (1)	20:38		07:34	07:31					08:30
30	05:45	20:11 (1)	06:40		19:21	17:11			16:21			16:21
	21:42	51	21:02 (1)	20:36		07:36	07:33		16:21			08:32
31	05:47	20:11 (1)	06:42		19:19	17:09			16:20			16:22
	21:40	51	21:02 (1)	20:33		07:35	07:35					08:58
Potential sun hours	515		461		382	328			257			231
Total, worst case	1404		629			113			98			
Sun reduction	0.27		0.27			0.23			0.20			
Oper. time red.	1.00		1.00			1.00			1.00			
Wind dir. red.	0.62		0.62			0.58			0.58			
Total reduction	0.16		0.17			0.14			0.12			
Total, real	231		106			15			11			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: F - H6  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June			
1	08:58 16:24	15:32 (3) 15:45 (3)	08:27 17:16	15:49 (3) 16:00 (3)	07:29 18:13	16:41 (4) 17:12 (4)	07:13 20:12	06:02 21:09	05:12 22:00
2	08:58 16:25	15:33 (3) 15:47 (3)	08:25 17:18		07:26 18:15	16:42 (4) 17:10 (4)	07:10 20:14	06:00 21:11	05:11 22:01
3	08:58 16:26	15:32 (3) 15:48 (3)	08:24 17:20		07:24 18:17	16:45 (4) 17:08 (4)	07:08 20:16	05:58 21:12	05:10 22:02
4	08:58 16:28	15:33 (3) 15:50 (3)	08:22 17:22		07:22 18:19	16:46 (4) 17:05 (4)	07:05 20:18	05:56 21:14	05:09 22:03
5	08:57 16:29	15:33 (3) 15:51 (3)	08:20 17:24		07:19 18:21	16:51 (4) 17:01 (4)	07:03 20:20	05:54 21:16	05:08 22:04
6	08:57 16:30	15:33 (3) 15:53 (3)	08:18 17:26	16:52 (4) 16:55 (4)	07:17 18:23		07:00 20:22	05:52 21:18	05:08 22:06
7	08:56 16:32	15:33 (3) 15:54 (3)	08:16 17:28	16:49 (4) 16:58 (4)	07:14 18:25		06:58 20:24	05:50 21:20	05:07 22:07
8	08:56 16:33	15:33 (3) 15:55 (3)	08:14 17:30	16:46 (4) 17:00 (4)	07:12 18:27		06:55 20:26	05:48 21:22	05:06 22:08
9	08:55 16:34	15:33 (3) 15:57 (3)	08:12 17:32	16:44 (4) 17:01 (4)	07:09 18:29		06:53 20:27	05:46 21:23	05:06 22:08
10	08:55 16:36	15:34 (3) 15:59 (3)	08:10 17:34	16:43 (4) 17:04 (4)	07:07 18:30		06:50 20:29	05:44 21:25	05:05 22:09
11	08:54 16:37	15:34 (3) 16:01 (3)	08:08 17:36	16:42 (4) 17:06 (4)	07:05 18:32		06:48 20:31	05:42 21:27	05:05 22:10
12	08:53 16:39	15:34 (3) 16:03 (3)	08:06 17:39	16:41 (4) 17:08 (4)	07:02 18:34		06:46 20:33	05:41 21:29	05:04 22:11
13	08:52 16:41	15:35 (3) 16:04 (3)	08:04 17:41	16:40 (4) 17:11 (4)	07:00 18:36		06:43 20:35	05:39 21:31	05:04 22:12
14	08:51 16:42	15:34 (3) 16:05 (3)	08:02 17:43	16:40 (4) 17:13 (4)	06:57 18:38		06:41 20:37	05:37 21:32	05:04 22:12
15	08:50 16:44	15:34 (3) 16:06 (3)	08:00 17:45	16:38 (4) 17:15 (4)	06:55 18:40		06:38 20:39	05:35 21:34	05:03 22:13
16	08:49 16:46	15:35 (3) 16:07 (3)	07:58 17:47	16:38 (4) 17:17 (4)	06:52 18:42		06:36 20:41	05:34 21:36	05:03 22:13
17	08:48 16:47	15:35 (3) 16:07 (3)	07:56 17:49	16:38 (4) 17:17 (4)	06:50 18:44		06:34 20:43	05:32 21:37	05:03 22:14
18	08:47 16:49	15:35 (3) 16:07 (3)	07:54 17:51	16:38 (4) 17:18 (4)	06:47 18:46		06:31 20:44	05:30 21:39	05:03 22:14
19	08:46 16:51	15:36 (3) 16:08 (3)	07:51 17:53	16:37 (4) 17:17 (4)	06:45 18:48		06:29 20:46	05:29 21:41	05:03 22:15
20	08:45 16:53	15:36 (3) 16:08 (3)	07:49 17:55	16:37 (4) 17:18 (4)	06:42 18:50		06:27 20:48	05:27 21:42	05:03 22:15
21	08:44 16:55	15:36 (3) 16:08 (3)	07:47 17:57	16:37 (4) 17:18 (4)	06:40 18:52		06:24 20:50	05:26 21:44	05:03 22:15
22	08:42 16:57	15:37 (3) 16:08 (3)	07:45 17:59	16:37 (4) 17:17 (4)	06:37 18:53		06:22 20:52	05:24 21:46	05:03 22:16
23	08:41 16:58	15:38 (3) 16:08 (3)	07:43 18:01	16:37 (4) 17:17 (4)	06:35 18:55		06:20 20:54	05:23 21:47	05:04 22:16
24	08:40 17:00	15:39 (3) 16:08 (3)	07:40 18:03	16:38 (4) 17:17 (4)	06:32 18:57		06:18 20:56	05:21 21:49	05:04 22:16
25	08:38 17:02	15:39 (3) 16:08 (3)	07:38 18:05	16:38 (4) 17:15 (4)	06:30 18:59		06:15 20:58	05:20 21:50	05:04 22:16
26	08:37 17:04	15:40 (3) 16:07 (3)	07:36 18:07	16:39 (4) 17:15 (4)	06:27 19:01		06:13 20:59	05:19 21:52	05:05 22:16
27	08:35 17:06	15:41 (3) 16:07 (3)	07:33 18:09	16:39 (4) 17:13 (4)	06:25 19:03		06:11 21:01	05:17 21:53	05:05 22:16
28	08:34 17:08	15:42 (3) 16:07 (3)	07:31 18:11	16:40 (4) 17:13 (4)	06:22 19:05		06:09 21:03	05:16 21:54	05:06 22:16
29	08:32 17:10	15:43 (3) 16:06 (3)			07:20 20:07		06:07 21:05	05:15 21:56	05:06 22:15
30	08:30 17:12	15:45 (3) 16:04 (3)			07:17 20:09		06:04 21:07	05:14 21:57	05:07 22:15
31	08:29 17:14	15:46 (3) 16:03 (3)			07:15 20:10		05:13 21:58		
Potential sun hours	248		272	367	421	496	513		
Total, worst case	786		726	111					
Sun reduction	0.17		0.22	0.22					
Oper. time red.	1.00		1.00	1.00					
Wind dir. red.	0.62		0.58	0.58					
Total reduction	0.11		0.13	0.13					
Total, real	83		94	14					

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: F - H6  
Assumptions for shadow calculations  
Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	July	August	September	October	November	December
1	05:08	05:48	06:44	07:38	07:37	16:12 (4)
	22:15	21:39	20:31	19:16	17:05	21 16:33 (4)
2	05:08	05:50	06:46	07:40	07:39	16:14 (4)
	22:14	21:37	20:28	19:14	17:03	17 16:31 (4)
3	05:09	05:52	06:47	07:42	07:41	16:15 (4)
	22:14	21:35	20:26	19:11	17:01	13 16:28 (4)
4	05:10	05:54	06:49	07:44	07:43	16:19 (4)
	22:13	21:33	20:24	19:09	16:59	8 16:27 (4)
5	05:11	05:55	06:51	07:45	07:45	16:22 (4)
	22:13	21:31	20:21	19:06	16:57	3 16:25 (4)
6	05:12	05:57	06:53	07:47	07:47	16:16
	22:12	21:29	20:19	19:04	16:55	20 16:16
7	05:13	05:59	06:55	07:49	07:49	16:16
	22:11	21:27	20:16	19:01	16:53	18 16:15
8	05:14	06:01	06:56	07:51	07:51	16:16
	22:11	21:25	20:14	18:59	16:51	17 16:15
9	05:15	06:02	06:58	07:53	17:23 (4)	07:53
	22:10	21:23	20:11	18:56	15 17:38 (4)	16:49
10	05:16	06:04	07:00	07:55	17:20 (4)	07:55
	22:09	21:21	20:09	18:54	21 17:41 (4)	16:47
11	05:17	06:06	07:02	07:57	17:18 (4)	07:57
	22:08	21:19	20:06	18:52	25 17:43 (4)	16:46
12	05:18	06:08	07:04	07:59	17:16 (4)	07:59
	22:07	21:17	20:04	18:49	28 17:44 (4)	16:44
13	05:20	06:09	07:05	08:00	17:14 (4)	08:01
	22:06	21:15	20:01	18:47	31 17:45 (4)	16:42
14	05:21	06:11	07:07	08:02	17:13 (4)	08:03
	22:05	21:12	19:59	18:45	33 17:46 (4)	16:41
15	05:22	06:13	07:09	08:04	17:11 (4)	08:05
	22:04	21:10	19:56	18:42	36 17:47 (4)	16:39
16	05:24	06:15	07:11	08:06	17:10 (4)	08:07
	22:03	21:08	19:54	18:40	37 17:47 (4)	16:37
17	05:25	06:17	07:13	08:08	17:10 (4)	08:09
	22:02	21:06	19:51	18:37	38 17:48 (4)	16:36
18	05:26	06:18	07:14	08:10	17:09 (4)	08:11
	22:00	21:04	19:49	18:35	39 17:48 (4)	16:34
19	05:28	06:20	07:16	08:12	17:08 (4)	08:12
	21:59	21:01	19:46	18:33	40 17:48 (4)	16:33
20	05:29	06:22	07:18	08:14	17:08 (4)	08:14
	21:58	20:59	19:44	18:31	40 17:48 (4)	16:32
21	05:31	06:24	07:20	08:16	17:07 (4)	08:16
	21:56	20:57	19:41	18:28	41 17:48 (4)	16:30
22	05:32	06:26	07:22	08:18	17:07 (4)	08:18
	21:55	20:55	19:39	18:26	41 17:48 (4)	16:29
23	05:34	06:28	07:23	08:20	17:07 (4)	08:20
	21:54	20:52	19:36	18:24	41 17:48 (4)	16:28
24	05:35	06:29	07:25	08:22	17:07 (4)	08:22
	21:52	20:50	19:34	18:22	40 17:47 (4)	16:26
25	05:37	06:31	07:27	07:24	16:07 (4)	08:23
	21:50	20:48	19:31	17:19	40 16:47 (4)	16:25
26	05:38	06:33	07:29	07:26	16:07 (4)	08:25
	21:49	20:45	19:29	17:17	39 16:46 (4)	16:24
27	05:40	06:35	07:31	07:28	16:08 (4)	08:27
	21:47	20:43	19:26	17:15	36 16:44 (4)	16:23
28	05:42	06:37	07:33	07:29	16:09 (4)	08:28
	21:46	20:41	19:24	17:13	33 16:42 (4)	16:22
29	05:43	06:38	07:34	07:31	16:10 (4)	08:30
	21:44	20:38	19:21	17:11	30 16:40 (4)	16:21
30	05:45	06:40	07:36	07:33	16:11 (4)	08:32
	21:42	20:36	19:19	17:09	26 16:37 (4)	16:20
31	05:47	06:42	07:35	07:35	16:11 (4)	08:58
	21:40	20:33	19:17	17:07	24 16:35 (4)	16:23
Potential sun hours	515	461	382	328	257	231
Total, worst case				774	644	400
Sun reduction				0.23	0.20	0.12
Oper. time red.				1.00	1.00	1.00
Wind dir. red.				0.58	0.62	0.62
Total reduction				0.14	0.12	0.07
Total, real				105	79	30

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: G - H7  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January	February	March	April	May	June			
1	08:58 16:24	08:27 17:16	16:11 (16) 16:35 (16)	07:29 18:13	17:32 (14) 17:45 (14)	07:12 20:12	18:27 (15) 19:07 (15)	06:02 21:09	05:11 22:00
2	08:58 16:25	08:25 17:18	16:10 (16) 16:37 (16)	07:26 18:15	17:32 (14) 17:47 (14)	07:10 20:14	18:28 (15) 19:06 (15)	06:00 21:11	05:10 22:01
3	08:58 16:26	08:24 17:20	16:08 (16) 16:38 (16)	07:24 18:17	17:32 (14) 17:48 (14)	07:07 20:16	18:28 (15) 19:04 (15)	05:58 21:13	05:10 22:02
4	08:58 16:27	08:22 17:22	16:07 (16) 16:39 (16)	07:21 18:19	17:33 (14) 17:46 (14)	07:05 20:18	18:29 (15) 19:03 (15)	05:56 21:14	05:09 22:03
5	08:57 16:28	08:20 17:24	16:06 (16) 16:40 (16)	07:19 18:21	17:34 (14) 17:45 (14)	07:02 20:20	18:31 (15) 19:02 (15)	05:54 21:16	05:08 22:05
6	08:57 16:30	08:18 17:26	16:06 (16) 16:41 (16)	07:17 18:23	17:37 (14) 17:41 (14)	07:00 20:22	18:32 (15) 19:00 (15)	05:52 21:18	05:07 22:06
7	08:56 16:31	08:16 17:28	16:05 (16) 16:42 (16)	07:14 18:24	06:58 20:24	18:34 (15) 21:20	05:50 21:20	05:06 22:07	
8	08:56 16:33	08:14 17:30	16:05 (16) 16:43 (16)	07:12 18:26	06:55 20:26	18:36 (15) 18:54 (15)	05:48 21:22	05:06 22:08	
9	08:55 16:34	08:12 17:32	16:03 (16) 16:43 (16)	07:09 18:28	06:53 20:27	18:41 (15) 18:49 (15)	05:46 21:23	05:05 22:09	
10	08:55 16:36	08:10 17:34	16:03 (16) 16:43 (16)	07:07 18:30	06:50 20:29	05:44 21:25	05:44 21:25	05:05 22:09	
11	08:54 16:37	08:08 17:36	16:03 (16) 16:44 (16)	07:05 18:32	06:48 20:31	05:42 21:27	05:42 21:27	05:04 22:10	
12	08:53 16:39	08:06 17:38	16:03 (16) 16:44 (16)	07:02 18:34	17:47 (15) 17:58 (15)	06:45 20:33	05:40 21:29	05:04 22:11	
13	08:52 16:40	08:04 17:40	16:03 (16) 16:45 (16)	07:00 18:36	17:43 (15) 18:02 (15)	06:43 20:35	05:38 21:31	05:04 22:12	
14	08:51 16:42	08:02 17:42	16:03 (16) 16:45 (16)	06:57 18:38	17:39 (15) 18:04 (15)	06:41 20:37	05:37 21:32	05:03 22:12	
15	08:51 16:44	08:00 17:44	16:02 (16) 16:44 (16)	06:55 18:40	17:38 (15) 18:07 (15)	06:38 20:39	05:35 21:34	05:03 22:13	
16	08:50 16:45	07:58 17:46	16:03 (16) 16:44 (16)	06:52 18:42	17:35 (15) 18:08 (15)	06:36 20:41	05:33 21:36	05:03 22:14	
17	08:48 16:47	07:56 17:49	16:03 (16) 16:44 (16)	06:50 18:44	17:34 (15) 18:09 (15)	06:33 20:42	05:32 21:37	05:03 22:14	
18	08:47 16:49	07:54 17:51	16:04 (16) 16:44 (16)	06:47 18:46	17:32 (15) 18:10 (15)	06:31 20:44	05:30 21:39	05:03 22:15	
19	08:46 16:51	07:51 17:53	16:04 (16) 16:43 (16)	06:45 18:48	17:31 (15) 18:11 (15)	06:29 20:46	05:28 21:41	05:03 22:15	
20	08:45 16:53	07:49 17:55	16:05 (16) 16:43 (16)	06:42 18:50	17:30 (15) 18:11 (15)	06:26 20:48	05:27 21:42	05:03 22:15	
21	08:44 16:54	07:47 17:57	16:06 (16) 16:42 (16)	06:40 18:51	17:29 (15) 18:12 (15)	06:24 20:50	05:25 21:44	05:03 22:16	
22	08:42 16:56	07:45 17:59	16:06 (16) 16:41 (16)	06:37 18:53	17:28 (15) 18:11 (15)	06:22 20:52	05:24 21:46	05:03 22:16	
23	08:41 16:58	07:42 18:01	16:07 (16) 16:40 (16)	06:35 18:55	17:28 (15) 18:12 (15)	06:20 20:54	05:22 21:47	05:03 22:16	
24	08:40 17:00	07:40 18:03	16:09 (16) 16:39 (16)	06:32 18:57	17:27 (15) 18:11 (15)	06:17 20:56	05:21 21:49	05:04 22:16	
25	08:38 17:02	07:38 18:05	16:10 (16) 17:36 (14)	06:30 18:59	17:27 (15) 18:12 (15)	06:15 20:58	05:20 21:50	05:04 22:16	
26	08:37 17:04	07:36 18:07	16:12 (16) 17:39 (14)	06:27 19:01	17:26 (15) 18:11 (15)	06:13 20:59	05:18 21:52	05:04 22:16	
27	08:35 17:06	07:33 18:09	16:14 (16) 17:40 (14)	06:25 19:03	17:26 (15) 18:11 (15)	06:11 21:01	05:17 21:53	05:05 22:16	
28	08:34 17:08	07:31 18:11	16:20 (16) 17:43 (14)	06:22 19:05	17:26 (15) 18:10 (15)	06:08 21:03	05:16 21:55	05:05 22:16	
29	08:32 17:10	16:18 (16) 16:25 (16)	07:20 20:07	18:26 (15) 19:10 (15)	06:06 21:05	05:15 21:56	05:15 22:15	05:06 22:15	
30	08:31 17:12	16:14 (16) 16:29 (16)	07:17 20:08	18:26 (15) 19:09 (15)	06:04 21:07	05:14 21:57	05:14 22:15	05:07 22:15	
31	08:29 17:14	16:12 (16) 16:32 (16)	07:15 20:10	18:27 (15) 19:08 (15)	05:12 21:59	05:12 21:59	05:12 21:59	05:07 22:15	
Potential sun hours	248	272	367	421	496	513			
Total, worst case	42	980	824	257					
Sun reduction	0.17	0.22	0.22	0.34					
Oper. time red.	1.00	1.00	1.00	1.00					
Wind dir. red.	0.59	0.59	0.57	0.57					
Total reduction	0.10	0.13	0.13	0.20					
Total, real	4	129	105	50					

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)



### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case  
 Assumptions for shadow calculations

Shadow receptor: G - H7

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	July	August	September	October	November	December	
1	05:07 22:15	05:48 21:39	06:44 20:31	07:38 19:16	18:25 (15) 18:40 (15)	07:37 17:04	15:33 (16) 16:19
2	05:08 22:14	05:50 21:37	06:45 20:28	07:40 19:14	18:25 (15) 17:02	15:33 (16) 16:18	
3	05:09 22:14	05:52 21:35	06:47 20:26	18:39 (15) 18:47 (15)	07:42 19:11	15:34 (16) 16:17	
4	05:10 22:14	05:53 21:33	06:49 20:24	18:33 (15) 18:51 (15)	07:44 19:09	15:35 (16) 16:17	
5	05:11 22:13	05:55 21:31	06:51 20:21	18:30 (15) 18:54 (15)	07:45 19:06	15:36 (16) 16:16	
6	05:12 22:12	05:57 21:29	06:53 20:19	18:28 (15) 18:56 (15)	07:47 19:04	15:36 (16) 16:16	
7	05:12 22:12	05:59 21:27	06:54 20:16	18:26 (15) 18:57 (15)	07:49 19:01	15:37 (16) 16:15	
8	05:14 22:11	06:00 21:25	06:56 20:14	18:24 (15) 18:57 (15)	07:51 18:19 (14)	15:38 (16) 16:15	
9	05:15 22:10	06:02 21:23	06:58 20:11	18:22 (15) 18:58 (15)	07:53 18:56 (15)	15:39 (16) 16:14	
10	05:16 22:09	06:04 21:21	07:00 20:09	18:21 (15) 18:59 (15)	07:55 18:54	15:42 (16) 16:14	
11	05:17 22:08	06:06 21:19	07:02 20:06	18:20 (15) 19:00 (15)	07:57 18:51	15:44 (16) 16:14	
12	05:18 22:07	06:07 21:17	07:03 20:04	18:18 (15) 19:00 (15)	07:58 18:49	15:46 (16) 16:14	
13	05:19 22:06	06:09 21:15	07:05 20:01	18:17 (15) 19:00 (15)	08:00 18:47	15:51 (16) 16:13	
14	05:21 22:05	06:11 21:13	07:07 19:59	18:17 (15) 19:00 (15)	08:02 18:44	08:03 16:40	
15	05:22 22:04	06:13 21:10	07:09 19:56	18:16 (15) 19:00 (15)	08:04 18:42	08:05 16:39	
16	05:23 22:03	06:15 21:08	07:11 19:54	18:15 (15) 18:59 (15)	08:06 18:40	08:07 16:37	
17	05:25 22:02	06:16 21:06	07:12 19:51	18:15 (15) 18:59 (15)	08:08 18:37	08:09 16:36	
18	05:26 22:01	06:18 21:04	07:14 19:49	18:14 (15) 18:59 (15)	08:10 18:35	08:11 16:34	
19	05:27 21:59	06:20 21:01	07:16 19:46	18:14 (15) 18:59 (15)	08:12 18:33	08:12 16:33	
20	05:29 21:58	06:22 20:59	07:18 19:44	18:13 (15) 18:58 (15)	08:14 18:30	08:14 16:31	
21	05:30 21:57	06:24 20:57	07:20 19:41	18:14 (15) 18:57 (15)	08:16 18:28	08:16 16:30	
22	05:32 21:55	06:25 20:55	07:21 19:39	18:14 (15) 18:56 (15)	08:18 18:26	08:18 16:29	
23	05:33 21:54	06:27 20:52	07:23 19:36	18:14 (15) 18:56 (15)	08:20 18:24	08:20 16:27	
24	05:35 21:52	06:29 20:50	07:25 19:34	18:15 (15) 18:55 (15)	08:22 18:21	08:22 16:26	
25	05:37 21:51	06:31 20:48	07:27 19:31	18:16 (15) 18:54 (15)	07:24 17:19	08:23 16:25	
26	05:38 21:49	06:33 20:45	07:29 19:28	18:15 (15) 18:51 (15)	07:26 17:17	08:25 16:24	
27	05:40 21:47	06:35 20:43	07:31 19:26	18:16 (15) 18:50 (15)	07:27 17:15	08:27 16:23	
28	05:41 21:46	06:36 20:40	07:32 19:23	18:18 (15) 18:48 (15)	07:29 17:13	08:29 16:22	
29	05:43 21:44	06:38 20:38	07:34 19:21	18:19 (15) 18:46 (15)	07:31 17:11	08:30 16:21	
30	05:45 21:42	06:40 20:36	07:36 19:18	18:22 (15) 18:43 (15)	07:33 17:08	08:32 16:20	
31	05:46 21:40	06:42 20:33		07:35 17:06	15:33 (16) 16:13 (16)	08:58 16:22	
Potential sun hours	515	461	383	327	257	230	
Total, worst case			1004	746	376		
Sun reduction			0.29	0.23	0.20		
Oper. time red.			1.00	1.00	1.00		
Wind dir. red.			0.57	0.59	0.59		
Total reduction			0.17	0.14	0.12		
Total, real			167	103	44		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: H - H8  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January	February	March	April	May	June											
1	08:58 16:24	08:27 17:16	15:58 (2) 16:41 (2)	07:29 18:13	07:13 20:12	18:32 (3) 21:09	06:02 20:01 (4)	05:12 22:00	20:05 (4) 20:39 (4)								
2	08:58 16:25	08:25 17:18	15:58 (2) 16:42 (2)	07:26 18:15	07:10 20:14	18:36 (3) 21:11	06:00 20:40 (4)	05:11 22:01	20:05 (4) 20:38 (4)								
3	08:58 16:26	08:24 17:20	15:58 (2) 16:43 (2)	07:24 18:17	07:08 20:16	18:50 (3) 21:11	05:58 19:59 (4)	05:10 22:02	20:07 (4) 20:39 (4)								
4	08:58 16:28	08:22 17:22	15:58 (2) 16:43 (2)	07:22 18:19	07:05 20:18	18:02 (3) 21:14	05:56 20:43 (4)	05:09 22:03	20:07 (4) 20:38 (4)								
5	08:57 16:29	08:20 17:24	15:57 (2) 16:44 (2)	07:19 18:21	07:03 20:20	18:02 (3) 21:16	05:54 19:59 (4)	05:08 22:04	20:08 (4) 20:37 (4)								
6	08:57 16:30	08:18 17:26	15:57 (2) 16:44 (2)	07:17 18:23	07:00 20:22	17:43 (3) 21:18	05:52 20:43 (4)	05:08 22:05	20:09 (4) 20:37 (4)								
7	08:56 16:32	08:16 17:28	15:57 (2) 16:44 (2)	07:14 18:25	06:58 20:24	17:58 (3) 21:20	05:50 20:43 (4)	05:07 22:07	20:10 (4) 20:36 (4)								
8	08:56 16:33	08:14 17:30	15:57 (2) 16:43 (2)	07:12 18:27	06:55 20:26	17:36 (3) 21:22	05:48 20:43 (4)	05:06 22:07	20:11 (4) 20:37 (4)								
9	08:55 16:34	08:12 17:32	15:57 (2) 16:43 (2)	07:09 18:29	06:53 20:27	17:35 (3) 21:23	05:46 20:43 (4)	05:06 22:08	20:11 (4) 20:36 (4)								
10	08:55 16:36	08:10 17:34	15:57 (2) 16:44 (2)	07:07 18:30	06:50 20:29	17:32 (3) 21:25	05:44 20:44 (4)	05:05 22:09	20:12 (4) 20:36 (4)								
11	08:54 16:37	08:08 17:37	15:58 (2) 16:44 (2)	07:05 18:32	06:48 20:31	17:31 (3) 21:27	05:42 20:44 (4)	05:05 22:10	20:12 (4) 20:35 (4)								
12	08:53 16:39	08:06 17:39	15:58 (2) 16:43 (2)	07:02 18:34	06:46 20:33	18:02 (3) 21:29	05:41 20:44 (4)	05:04 22:11	20:13 (4) 20:35 (4)								
13	08:52 16:41	08:04 17:41	15:59 (2) 16:43 (2)	07:00 18:36	06:43 20:35	17:29 (3) 21:31	05:39 20:44 (4)	05:04 22:12	20:14 (4) 20:35 (4)								
14	08:51 16:42	08:02 17:43	15:59 (2) 16:43 (2)	06:57 18:38	06:41 20:37	17:27 (3) 21:32	05:37 20:44 (4)	05:04 22:12	20:15 (4) 20:34 (4)								
15	08:50 16:44	08:00 17:45	15:59 (2) 16:42 (2)	06:55 18:40	06:38 20:39	17:27 (3) 21:34	05:35 20:43 (4)	05:03 22:13	20:15 (4) 20:33 (4)								
16	08:49 16:46	07:58 17:47	16:00 (2) 16:41 (2)	06:52 18:42	06:36 20:41	17:26 (3) 21:36	05:34 20:44 (4)	05:03 22:13	20:16 (4) 20:33 (4)								
17	08:48 16:47	07:56 17:49	16:01 (2) 16:41 (2)	06:50 18:44	06:34 20:43	17:25 (3) 21:37	05:32 20:43 (4)	05:03 22:14	20:16 (4) 20:33 (4)								
18	08:47 16:49	07:54 17:51	16:03 (2) 16:40 (2)	06:47 18:46	06:31 20:44	17:24 (3) 21:39	05:30 20:43 (4)	05:03 22:14	20:17 (4) 20:33 (4)								
19	08:46 16:51	16:10 (2) 17:53	07:51 16:03 (2)	06:45 18:48	06:29 20:46	17:25 (3) 21:41	05:29 20:43 (4)	05:03 22:15	20:17 (4) 20:33 (4)								
20	08:45 16:53	16:08 (2) 17:55	07:49 16:05 (2)	06:42 18:50	06:27 20:48	17:24 (3) 21:42	05:27 20:43 (4)	05:03 22:15	20:19 (4) 20:34 (4)								
21	08:44 16:55	16:06 (2) 17:57	07:47 16:02 (2)	06:40 18:52	06:24 20:50	17:24 (3) 21:44	05:26 20:43 (4)	05:03 22:15	20:19 (4) 20:34 (4)								
22	08:42 16:57	16:05 (2) 17:59	07:45 16:02 (2)	06:37 18:53	06:22 20:52	17:24 (3) 21:45	05:24 20:43 (4)	05:03 22:16	20:19 (4) 20:34 (4)								
23	08:41 16:58	16:03 (2) 18:01	07:43 16:12 (2)	06:35 18:55	06:20 20:54	17:24 (3) 21:47	05:23 20:42 (4)	05:04 22:16	20:18 (4) 20:34 (4)								
24	08:40 17:00	16:03 (2) 18:03	07:40 16:17 (2)	06:32 18:57	06:18 20:56	17:24 (3) 21:49	05:21 20:26 (4)	05:04 22:16	20:19 (4) 20:35 (4)								
25	08:38 17:02	16:02 (2) 18:05	07:38 16:06 (3)	06:30 18:59	06:15 20:58	17:25 (3) 21:50	05:20 20:41 (4)	05:04 22:16	20:19 (4) 20:35 (4)								
26	08:37 17:04	16:01 (2) 18:07	07:36 16:30 (2)	06:27 19:01	06:13 20:59	17:25 (3) 21:52	05:19 20:30 (4)	05:05 22:16	20:18 (4) 20:35 (4)								
27	08:35 17:06	16:01 (2) 18:09	07:33 16:33 (2)	06:25 19:03	06:11 21:01	17:26 (3) 21:01	05:17 20:07 (4)	05:05 22:16	20:18 (4) 20:36 (4)								
28	08:34 17:08	16:00 (2) 18:11	07:31 16:35 (2)	06:22 19:05	06:09 21:03	17:26 (3) 21:03	05:16 20:05 (4)	05:06 22:16	20:19 (4) 20:37 (4)								
29	08:32 17:10	15:59 (2) 18:13	07:29 16:37 (2)	06:20 20:07	06:07 21:05	18:28 (3) 21:05	05:15 20:35 (4)	05:06 22:15	20:18 (4) 20:37 (4)								
30	08:30 17:12	15:59 (2) 18:15	07:28 16:39 (2)	06:19 20:09	06:04 21:07	18:28 (3) 21:07	05:14 20:36 (4)	05:07 22:15	20:18 (4) 20:39 (4)								
31	08:29 17:14	15:58 (2) 18:17	07:27 16:40 (2)	06:18 20:10	06:03 21:08	18:31 (3) 21:09	05:13 21:58	05:08 22:16	20:19 (4) 20:36 (4)								
Potential sun hours	248	272	367	421	496	513											
Total, worst case	334	945	945	206	1346	643											
Sun reduction	0.17	0.22	0.22	0.34	0.36	0.26											
Oper. time red.	1.00	1.00	1.00	1.00	1.00	1.00											
Wind dir. red.	0.60	0.60	0.57	0.61	0.61	0.61											
Total reduction	0.10	0.13	0.13	0.21	0.22	0.16											
Total, real	34	126	120	43	299	102											

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: H - H8  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	July	August	September	October	November	December
1	05:08 22:15	20:17 (4) 20:39 (4)	05:48 21:39	20:06 (4) 20:54 (4)	06:44 20:31	
2	05:08 22:14	20:17 (4) 20:40 (4)	05:50 21:37	20:07 (4) 20:54 (4)	06:46 20:28	
3	05:09 22:14	20:17 (4) 20:41 (4)	05:52 21:35	20:07 (4) 20:54 (4)	06:47 20:26	
4	05:10 22:13	20:16 (4) 20:42 (4)	05:54 21:33	20:07 (4) 20:54 (4)	06:49 20:24	
5	05:11 22:13	20:16 (4) 20:42 (4)	05:55 21:31	20:07 (4) 20:54 (4)	06:51 20:21	
6	05:12 22:12	20:15 (4) 20:42 (4)	05:57 21:29	20:07 (4) 20:53 (4)	06:53 20:19	
7	05:13 22:11	20:15 (4) 20:43 (4)	05:59 21:27	20:08 (4) 20:53 (4)	06:55 20:16	
8	05:14 22:11	20:14 (4) 20:44 (4)	06:01 21:25	20:08 (4) 20:52 (4)	06:56 20:14	
9	05:15 22:10	20:14 (4) 20:45 (4)	06:02 21:23	20:08 (4) 20:51 (4)	06:58 20:11	
10	05:16 22:09	20:13 (4) 20:45 (4)	06:04 21:21	20:09 (4) 20:50 (4)	07:00 20:09	
11	05:17 22:08	20:13 (4) 20:46 (4)	06:06 21:19	20:10 (4) 20:49 (4)	07:02 20:06	
12	05:18 22:07	20:13 (4) 20:48 (4)	06:08 21:17	20:10 (4) 20:46 (4)	07:04 20:04	
13	05:20 22:06	20:12 (4) 20:48 (4)	06:09 21:15	20:11 (4) 20:44 (4)	07:05 20:01	
14	05:21 22:05	20:12 (4) 20:48 (4)	06:11 21:12	20:12 (4) 20:43 (4)	07:07 19:59	
15	05:22 22:04	20:11 (4) 20:49 (4)	06:13 21:10	20:12 (4) 20:40 (4)	07:09 19:56	
16	05:24 22:03	20:10 (4) 20:49 (4)	06:15 21:08	20:14 (4) 20:38 (4)	07:11 19:54	
17	05:25 22:02	20:11 (4) 20:51 (4)	06:17 21:06	20:16 (4) 20:36 (4)	07:13 19:51	
18	05:26 22:00	20:10 (4) 20:51 (4)	06:18 21:04	20:17 (4) 20:34 (4)	07:14 19:49	
19	05:28 21:59	20:09 (4) 20:51 (4)	06:20 21:01	20:21 (4) 19:46	07:16 19:46	
20	05:29 21:58	20:10 (4) 20:52 (4)	06:22 20:59	07:18 19:44	18:11 (3) 18:54 (3)	
21	05:31 21:56	20:09 (4) 20:52 (4)	06:24 20:57	07:20 19:41	18:09 (3) 18:53 (3)	
22	05:32 21:55	20:08 (4) 20:52 (4)	06:26 20:55	07:22 19:39	18:09 (3) 18:53 (3)	
23	05:34 21:54	20:09 (4) 20:53 (4)	06:28 20:52	07:23 19:36	18:08 (3) 18:53 (3)	
24	05:35 21:52	20:08 (4) 20:53 (4)	06:29 20:50	07:25 19:34	18:08 (3) 18:53 (3)	
25	05:37 21:50	20:08 (4) 20:54 (4)	06:31 20:48	07:27 19:31	18:08 (3) 18:53 (3)	
26	05:38 21:49	20:07 (4) 20:54 (4)	06:33 20:45	07:29 19:29	18:07 (3) 18:51 (3)	
27	05:40 21:47	20:08 (4) 20:54 (4)	06:35 20:43	07:31 19:26	18:07 (3) 18:51 (3)	
28	05:42 21:46	20:07 (4) 20:54 (4)	06:37 20:40	07:33 19:24	18:07 (3) 18:50 (3)	
29	05:43 21:44	20:07 (4) 20:55 (4)	06:38 20:38	07:34 19:21	18:08 (3) 18:50 (3)	
30	05:45 21:42	20:07 (4) 20:54 (4)	06:40 20:36	07:36 19:19	18:08 (3) 18:49 (3)	
31	05:47 21:40	20:07 (4) 20:55 (4)	06:42 20:33		07:35 17:07	
Potential sun hours	515		461	382	328	257
Total, worst case		1156	694	798	704	794
Sun reduction		0.27	0.27	0.29	0.23	0.20
Oper. time red.		1.00	1.00	1.00	1.00	1.00
Wind dir. red.		0.61	0.61	0.57	0.59	0.60
Total reduction		0.16	0.17	0.17	0.14	0.12
Total, real		189	117	132	97	95

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: I - H9

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:58	08:27	07:29	07:13	06:02	05:12	05:08	05:48	06:44	07:38	07:37	08:33
	16:24	17:16	18:13	20:12	21:09	22:00	22:15	21:39	20:31	19:16	17:05	16:19
2	08:58	08:25	07:26	07:10	06:00	05:11	05:09	05:50	06:46	07:40	07:39	08:35
	16:25	17:18	18:15	20:14	21:11	22:01	22:14	21:37	20:28	19:14	17:03	16:19
3	08:58	08:24	07:24	07:08	05:58	05:10	05:09	05:52	06:47	07:42	07:41	08:36
	16:26	17:20	18:17	20:16	21:12	22:02	22:14	21:35	20:26	19:11	17:01	16:18
4	08:58	08:22	07:22	07:05	05:56	05:09	05:10	05:54	06:49	07:44	07:43	08:38
	16:28	17:22	18:19	20:18	21:14	22:03	22:13	21:33	20:24	19:09	16:59	16:17
5	08:57	08:20	07:19	07:03	05:54	05:08	05:11	05:55	06:51	07:45	07:45	08:39
	16:29	17:24	18:21	20:20	21:16	22:04	22:13	21:31	20:21	19:06	16:57	16:17
6	08:57	08:18	07:17	07:00	05:52	05:08	05:12	05:57	06:53	07:47	07:47	08:41
	16:30	17:26	18:23	20:22	21:18	22:05	22:12	21:29	20:19	19:04	16:55	16:16
7	08:56	08:16	07:14	06:58	05:50	05:07	05:13	05:59	06:55	07:49	07:49	08:42
	16:32	17:28	18:25	20:24	21:20	22:06	22:11	21:27	20:16	19:01	16:53	16:16
8	08:56	08:14	07:12	06:55	05:48	05:06	05:14	06:01	06:56	07:51	07:51	08:43
	16:33	17:30	18:27	20:26	21:22	22:07	22:11	21:25	20:14	18:59	16:51	16:15
9	08:55	08:12	07:10	06:53	05:46	05:06	05:15	06:02	06:58	07:53	07:53	08:45
	16:34	17:32	18:29	20:27	21:23	22:08	22:10	21:23	20:11	18:57	16:49	16:15
10	08:55	08:10	07:07	06:50	05:44	05:05	05:16	06:04	07:00	07:55	07:55	08:46
	16:36	17:35	18:31	20:29	21:25	22:09	22:09	21:21	20:09	18:54	16:47	16:14
11	08:54	08:08	07:05	06:48	05:42	05:05	05:17	06:06	07:02	07:57	07:57	08:47
	16:38	17:37	18:32	20:31	21:27	22:10	22:08	21:19	20:06	18:52	16:46	16:14
12	08:53	08:06	07:02	06:46	05:41	05:04	05:19	06:08	07:04	07:59	07:59	08:48
	16:39	17:39	18:34	20:33	21:29	22:11	22:07	21:17	20:04	18:49	16:44	16:14
13	08:52	08:04	07:00	06:43	05:39	05:04	05:20	06:10	07:05	08:00	08:01	08:49
	16:41	17:41	18:36	20:35	21:30	22:12	22:06	21:15	20:01	18:47	16:42	16:14
14	08:51	08:02	06:57	06:41	05:37	05:04	05:21	06:11	07:07	08:02	08:03	08:50
	16:42	17:43	18:38	20:37	21:32	22:12	22:05	21:12	19:59	18:45	16:41	16:14
15	08:50	08:00	06:55	06:38	05:35	05:04	05:22	06:13	07:09	08:04	08:05	08:51
	16:44	17:45	18:40	20:39	21:34	22:13	22:04	21:10	19:56	18:42	16:39	16:14
16	08:49	07:58	06:52	06:36	05:34	05:03	05:24	06:15	07:11	08:06	08:07	08:52
	16:46	17:47	18:42	20:41	21:36	22:13	22:03	21:08	19:54	18:40	16:37	16:14
17	08:48	07:56	06:50	06:34	05:32	05:03	05:25	06:17	07:13	08:08	08:09	08:53
	16:48	17:49	18:44	20:43	21:37	22:14	22:02	21:06	19:51	18:38	16:36	16:14
18	08:47	07:54	06:47	06:31	05:30	05:03	05:26	06:19	07:14	08:10	08:11	08:54
	16:49	17:51	18:46	20:44	21:39	22:14	22:00	21:04	19:49	18:35	16:34	16:14
19	08:46	07:51	06:45	06:29	05:29	05:03	05:28	06:20	07:16	08:12	08:12	08:54
	16:51	17:53	18:48	20:46	21:41	22:15	21:59	21:01	19:46	18:33	16:33	16:15
20	08:45	07:49	06:42	06:27	05:27	05:03	05:29	06:22	07:18	08:14	08:14	08:55
	16:53	17:55	18:50	20:48	21:42	22:15	21:58	20:59	19:44	18:31	16:32	16:15
21	08:44	07:47	06:40	06:24	05:26	05:03	05:31	06:24	07:20	08:16	08:16	08:56
	16:55	17:57	18:52	20:50	21:44	22:15	21:56	20:57	19:41	18:28	16:30	16:15
22	08:42	07:45	06:37	06:22	05:24	05:04	05:32	06:26	07:22	08:18	08:18	08:56
	16:57	17:59	18:53	20:52	21:45	22:15	21:55	20:55	19:39	18:26	16:29	16:16
23	08:41	07:43	06:35	06:20	05:23	05:04	05:34	06:28	07:23	08:20	08:20	08:57
	16:59	18:01	18:55	20:54	21:47	22:16	21:53	20:52	19:36	18:24	16:28	16:16
24	08:40	07:40	06:32	06:18	05:21	05:04	05:35	06:29	07:25	08:22	08:21	08:57
	17:00	18:03	18:57	20:56	21:49	22:16	21:52	20:50	19:34	18:22	16:26	16:17
25	08:38	07:38	06:30	06:15	05:20	05:04	05:37	06:31	07:27	08:24	08:23	08:57
	17:02	18:05	18:59	20:58	21:50	22:16	21:50	20:48	19:31	17:19	16:25	16:17
26	08:37	07:36	06:27	06:13	05:19	05:05	05:39	06:33	07:29	08:26	08:25	08:58
	17:04	18:07	19:01	20:59	21:52	22:16	21:49	20:45	19:29	17:17	16:24	16:18
27	08:35	07:33	06:25	06:11	05:17	05:05	05:40	06:35	07:31	08:27	08:27	08:58
	17:06	18:09	19:03	21:01	21:53	22:16	21:47	20:43	19:26	17:15	16:23	16:19
28	08:34	07:31	06:22	06:09	05:16	05:06	05:42	06:37	07:33	08:29	08:28	08:58
	17:08	18:11	19:05	21:03	21:54	22:15	21:46	20:40	19:24	17:13	16:22	16:20
29	08:32		07:20	06:07	05:15	05:06	05:43	06:38	07:34	08:31	08:30	08:58
	17:10		20:07	21:05	21:56	22:15	21:44	20:38	19:21	17:11	16:21	16:21
30	08:30		07:18	06:04	05:14	05:07	05:45	06:40	07:36	08:33	08:32	08:58
	17:12		20:09	21:07	21:57	22:15	21:42	20:36	19:19	17:09	16:20	16:22
31	08:29		07:15		05:13		05:47	06:42		07:35		08:58
	17:14		20:10		21:58		21:40	20:33		17:07		16:23
Potential sun hours	248	272	367	421	496	513	515	461	382	328	257	231
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: J - H10

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January		February		March		April		May		June	
1	08:58	15:32 (3)	08:27	15:44 (3)	07:29	16:41 (4)	07:13	06:02	05:12			
	16:24	13	15:45 (3)	17:16	21	16:05 (3)	18:13	40	17:21 (4)	20:12	21:09	22:00
2	08:58	15:33 (3)	08:25	15:47 (3)	07:26	16:41 (4)	07:10	06:00	05:11			
	16:25	14	15:47 (3)	17:18	17	16:04 (3)	18:15	38	17:19 (4)	20:14	21:11	22:01
3	08:58	15:32 (3)	08:24	15:50 (3)	07:24	16:42 (4)	07:08	05:58	05:10			
	16:26	16	15:48 (3)	17:20	11	16:01 (3)	18:17	36	17:18 (4)	20:16	21:12	22:02
4	08:58	15:33 (3)	08:22		07:22	16:42 (4)	07:05	05:56	05:09			
	16:28	17	15:50 (3)	17:22		18:19	35	17:17 (4)	20:18	21:14	22:03	
5	08:57	15:32 (3)	08:20		07:19	16:44 (4)	07:03	05:54	05:08			
	16:29	19	15:51 (3)	17:24		18:21	32	17:16 (4)	20:20	21:16	22:04	
6	08:57	15:33 (3)	08:18		07:17	16:45 (4)	07:00	05:52	05:08			
	16:30	20	15:53 (3)	17:26		18:23	28	17:13 (4)	20:22	21:18	22:06	
7	08:56	15:33 (3)	08:16		07:14	16:47 (4)	06:58	05:50	05:07			
	16:32	21	15:54 (3)	17:28		18:25	25	17:12 (4)	20:24	21:20	22:07	
8	08:56	15:33 (3)	08:14		07:12	16:49 (4)	06:55	05:48	05:06			
	16:33	22	15:55 (3)	17:30		18:27	20	17:09 (4)	20:26	21:22	22:08	
9	08:55	15:33 (3)	08:12	16:54 (4)	07:09	16:53 (4)	06:53	05:46	05:06			
	16:34	24	15:57 (3)	17:32	7	17:01 (4)	18:29	12	17:05 (4)	20:27	21:23	22:08
10	08:55	15:34 (3)	08:10	16:51 (4)	07:07		06:50	05:44	05:05			
	16:36	25	15:59 (3)	17:34	13	17:04 (4)	18:30		20:29	21:25	22:09	
11	08:54	15:34 (3)	08:08	16:49 (4)	07:05		06:48	05:42	05:05			
	16:37	27	16:01 (3)	17:37	17	17:06 (4)	18:32		20:31	21:27	22:10	
12	08:53	15:34 (3)	08:06	16:48 (4)	07:02		06:46	05:41	05:04			
	16:39	29	16:03 (3)	17:39	20	17:08 (4)	18:34		20:33	21:29	22:11	
13	08:52	15:34 (3)	08:04	16:46 (4)	07:00		06:43	05:39	05:04			
	16:41	31	16:05 (3)	17:41	25	17:11 (4)	18:36		20:35	21:31	22:12	
14	08:51	15:33 (3)	08:02	16:45 (4)	06:57		06:41	05:37	05:04			
	16:42	32	16:05 (3)	17:43	28	17:13 (4)	18:38		20:37	21:32	22:12	
15	08:50	15:33 (3)	08:00	16:43 (4)	06:55		06:38	05:35	05:03			
	16:44	33	16:06 (3)	17:45	32	17:15 (4)	18:40		20:39	21:34	22:13	
16	08:49	15:34 (3)	07:58	16:43 (4)	06:52		06:36	05:34	05:03			
	16:46	33	16:07 (3)	17:47	34	17:17 (4)	18:42		20:41	21:36	22:13	
17	08:48	15:34 (3)	07:56	16:42 (4)	06:50		06:34	05:32	05:03			
	16:47	34	16:08 (3)	17:49	38	17:20 (4)	18:44		20:43	21:37	22:14	
18	08:47	15:34 (3)	07:54	16:42 (4)	06:47		06:31	05:30	05:03			
	16:49	34	16:08 (3)	17:51	40	17:22 (4)	18:46		20:44	21:39	22:14	
19	08:46	15:35 (3)	07:51	16:40 (4)	06:45		06:29	05:29	05:03			
	16:51	33	16:08 (3)	17:53	42	17:22 (4)	18:48		20:46	21:41	22:15	
20	08:45	15:35 (3)	07:49	16:40 (4)	06:42		06:27	05:27	05:03			
	16:53	34	16:09 (3)	17:55	42	17:22 (4)	18:50		20:48	21:42	22:15	
21	08:44	15:35 (3)	07:47	16:40 (4)	06:40		06:24	05:26	05:03			
	16:55	34	16:09 (3)	17:57	43	17:23 (4)	18:52		20:50	21:44	22:15	
22	08:42	15:36 (3)	07:45	16:39 (4)	06:37		06:22	05:24	05:03			
	16:57	33	16:09 (3)	17:59	43	17:22 (4)	18:53		20:52	21:46	22:16	
23	08:41	15:36 (3)	07:43	16:39 (4)	06:35		06:20	05:23	05:04			
	16:58	33	16:09 (3)	18:01	44	17:23 (4)	18:55		20:54	21:47	22:16	
24	08:40	15:37 (3)	07:40	16:40 (4)	06:32		06:18	05:21	05:04			
	17:00	33	16:10 (3)	18:03	43	17:23 (4)	18:57		20:56	21:49	22:16	
25	08:38	15:37 (3)	07:38	16:39 (4)	06:30		06:15	05:20	05:04			
	17:02	32	16:09 (3)	18:05	43	17:22 (4)	18:59		20:58	21:50	22:16	
26	08:37	15:38 (3)	07:36	16:39 (4)	06:27		06:13	05:19	05:05			
	17:04	31	16:09 (3)	18:07	43	17:22 (4)	19:01		20:59	21:52	22:16	
27	08:35	15:39 (3)	07:33	16:39 (4)	06:25		06:11	05:17	05:05			
	17:06	30	16:09 (3)	18:09	42	17:21 (4)	19:03		21:01	21:53	22:16	
28	08:34	15:40 (3)	07:31	16:40 (4)	06:22		06:09	05:16	05:06			
	17:08	29	16:09 (3)	18:11	41	17:21 (4)	19:05		21:03	21:54	22:16	
29	08:32	15:41 (3)			07:20		06:07	05:15	05:06			
	17:10	27	16:08 (3)		20:07		21:05	21:56	22:15			
30	08:30	15:42 (3)			07:17		06:04	05:14	05:07			
	17:12	25	16:07 (3)		20:09		21:07	21:57	22:15			
31	08:29	15:43 (3)			07:15			05:13				
	17:14	23	16:06 (3)		20:10			21:58				
Potential sun hours	248		272		367		421	496	513			
Total, worst case	841		729		266							
Sun reduction	0.17		0.22		0.22							
Oper. time red.	1.00		1.00		1.00							
Wind dir. red.	0.62		0.58		0.58							
Total reduction	0.11		0.13		0.13							
Total, real	89		95		35							

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: J - H10  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	July	August	September	October	November	December
1	05:08	05:48	06:44	07:38	07:37	16:21 (4) 08:33 15:16 (3)
	22:15	21:39	20:31	19:16	17:05	12 16:33 (4) 16:19 27 15:43 (3)
2	05:08	05:50	06:46	07:40	07:39	16:25 (4) 08:35 15:16 (3)
	22:14	21:37	20:28	19:14	17:03	6 16:31 (4) 16:19 25 15:41 (3)
3	05:09	05:52	06:47	07:42	07:41	08:36 15:17 (3)
	22:14	21:35	20:26	19:11	17:01	16:18 24 15:41 (3)
4	05:10	05:54	06:49	07:44	17:34 (4) 07:43	08:38 15:18 (3)
	22:13	21:33	20:24	19:09	5 17:39 (4) 16:59	16:17 22 15:40 (3)
5	05:11	05:55	06:51	07:45	17:28 (4) 07:45	08:39 15:18 (3)
	22:13	21:31	20:21	19:06	16 17:44 (4) 16:57	16:16 21 15:39 (3)
6	05:12	05:57	06:53	07:47	17:24 (4) 07:47	08:41 15:19 (3)
	22:12	21:29	20:19	19:04	23 17:47 (4) 16:55	16:16 20 15:39 (3)
7	05:13	05:59	06:55	07:49	17:22 (4) 07:49	08:42 15:20 (3)
	22:11	21:27	20:16	19:01	27 17:49 (4) 16:53	16:15 18 15:38 (3)
8	05:14	06:01	06:56	07:51	17:20 (4) 07:51	15:20 (3) 08:43 15:20 (3)
	22:11	21:25	20:14	18:59	30 17:50 (4) 16:51	12 15:32 (3) 16:15 17 15:37 (3)
9	05:15	06:02	06:58	07:53	17:18 (4) 07:53	15:17 (3) 08:45 15:21 (3)
	22:10	21:23	20:11	18:56	33 17:51 (4) 16:49	17 15:34 (3) 16:15 16 15:37 (3)
10	05:16	06:04	07:00	07:55	17:17 (4) 07:55	15:16 (3) 08:46 15:22 (3)
	22:09	21:21	20:09	18:54	35 17:52 (4) 16:47	21 15:37 (3) 16:14 14 15:36 (3)
11	05:17	06:06	07:02	07:57	17:15 (4) 07:57	15:15 (3) 08:47 15:22 (3)
	22:08	21:19	20:06	18:52	38 17:53 (4) 16:46	23 15:38 (3) 16:14 14 15:36 (3)
12	05:18	06:08	07:04	07:59	17:14 (4) 07:59	15:13 (3) 08:48 15:24 (3)
	22:07	21:17	20:04	18:49	39 17:53 (4) 16:44	26 15:39 (3) 16:14 12 15:36 (3)
13	05:20	06:09	07:05	08:00	17:13 (4) 08:01	15:12 (3) 08:49 15:25 (3)
	22:06	21:15	20:01	18:47	41 17:54 (4) 16:42	28 15:40 (3) 16:14 11 15:36 (3)
14	05:21	06:11	07:07	08:02	17:13 (4) 08:03	15:12 (3) 08:50 15:25 (3)
	22:05	21:12	19:59	18:45	41 17:54 (4) 16:41	28 15:40 (3) 16:14 11 15:36 (3)
15	05:22	06:13	07:09	08:04	17:12 (4) 08:05	15:11 (3) 08:51 15:26 (3)
	22:04	21:10	19:56	18:42	42 17:54 (4) 16:39	30 15:41 (3) 16:14 10 15:36 (3)
16	05:24	06:15	07:11	08:06	17:11 (4) 08:07	15:11 (3) 08:52 15:27 (3)
	22:03	21:08	19:54	18:40	43 17:54 (4) 16:37	31 15:42 (3) 16:14 9 15:36 (3)
17	05:25	06:17	07:13	08:08	17:11 (4) 08:09	15:10 (3) 08:53 15:27 (3)
	22:02	21:06	19:51	18:37	43 17:54 (4) 16:36	32 15:42 (3) 16:14 8 15:35 (3)
18	05:26	06:18	07:14	08:10	17:11 (4) 08:11	15:11 (3) 08:54 15:28 (3)
	22:00	21:04	19:49	18:35	43 17:54 (4) 16:34	33 15:44 (3) 16:14 7 15:35 (3)
19	05:28	06:20	07:16	08:12	17:11 (4) 08:12	15:11 (3) 08:54 14:37 (2)
	21:59	21:01	19:46	18:33	43 17:54 (4) 16:33	33 15:44 (3) 16:14 9 15:36 (3)
20	05:29	06:22	07:18	08:14	17:11 (4) 08:14	15:11 (3) 08:55 14:36 (2)
	21:58	20:59	19:44	18:31	43 17:54 (4) 16:32	33 15:44 (3) 16:15 11 15:35 (3)
21	05:31	06:24	07:20	08:16	17:11 (4) 08:16	15:11 (3) 08:56 14:37 (2)
	21:56	20:57	19:41	18:28	42 17:53 (4) 16:30	34 15:45 (3) 16:15 11 15:36 (3)
22	05:32	06:26	07:22	08:18	17:11 (4) 08:18	15:11 (3) 08:56 14:37 (2)
	21:55	20:55	19:39	18:26	42 17:53 (4) 16:29	34 15:45 (3) 16:16 11 15:36 (3)
23	05:34	06:28	07:23	08:20	17:11 (4) 08:20	15:12 (3) 08:57 14:38 (2)
	21:54	20:52	19:36	18:24	41 17:52 (4) 16:28	33 15:45 (3) 16:16 11 15:37 (3)
24	05:35	06:29	07:25	08:22	17:11 (4) 08:22	15:12 (3) 08:57 14:39 (2)
	21:52	20:50	19:34	18:22	40 17:51 (4) 16:26	34 15:46 (3) 16:17 10 15:38 (3)
25	05:37	06:31	07:27	07:24	16:12 (4) 08:23	15:12 (3) 08:58 15:31 (3)
	21:50	20:48	19:31	17:19	36 16:48 (4) 16:25	34 15:46 (3) 16:17 7 15:38 (3)
26	05:38	06:33	07:29	07:26	16:12 (4) 08:25	15:13 (3) 08:58 15:32 (3)
	21:49	20:45	19:29	17:17	34 16:46 (4) 16:24	33 15:46 (3) 16:18 8 15:40 (3)
27	05:40	06:35	07:31	07:28	16:13 (4) 08:27	15:13 (3) 08:58 15:32 (3)
	21:47	20:43	19:26	17:15	31 16:44 (4) 16:23	32 15:45 (3) 16:19 8 15:40 (3)
28	05:42	06:37	07:33	07:29	16:15 (4) 08:28	15:13 (3) 08:58 15:32 (3)
	21:46	20:41	19:24	17:13	27 16:42 (4) 16:22	33 15:46 (3) 16:20 9 15:41 (3)
29	05:43	06:38	07:34	07:31	16:16 (4) 08:30	15:14 (3) 08:58 15:32 (3)
	21:44	20:38	19:21	17:11	24 16:40 (4) 16:21	31 15:45 (3) 16:21 10 15:42 (3)
30	05:45	06:40	07:36	07:33	16:17 (4) 08:32	15:15 (3) 08:58 15:33 (3)
	21:42	20:36	19:19	17:09	20 16:37 (4) 16:20	29 15:44 (3) 16:22 10 15:43 (3)
31	05:47	06:42	07:35	07:35	16:19 (4) 08:58	15:32 (3)
	21:40	20:33	17:07	16:35 (4) 16:23	12 15:44 (3)	
Potential sun hours	515	461	382	328	257	231
Total, worst case				938	692	413
Sun reduction				0.23	0.20	0.12
Oper. time red.				1.00	1.00	1.00
Wind dir. red.				0.58	0.62	0.62
Total reduction				0.14	0.12	0.07
Total, real				128	86	31

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: K - H11  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June					
1	08:58 16:24	08:27 17:16	16:29 (9) 18:13	07:29 28	17:06 (10) 20:12	07:12 26	19:19 (11) 21:09	06:02 24	20:14 (13) 22:00	05:12 40	20:37 (14) 21:17 (14)
2	08:58 16:25	08:25 17:18	16:28 (9) 18:15	07:26 27	17:06 (10) 20:14	07:10 28	19:19 (11) 21:11	06:00 27	20:13 (13) 22:01	05:11 40	20:37 (14) 21:17 (14)
3	08:58 16:26	08:24 17:20	16:28 (9) 18:17	07:24 24	17:08 (10) 20:16	07:07 28	19:18 (11) 21:13	05:58 30	20:12 (13) 22:02	05:10 40	20:37 (14) 21:17 (14)
4	08:58 16:27	08:22 17:22	16:28 (9) 18:19	07:22 22	17:08 (10) 20:18	07:05 27	19:19 (11) 21:14	05:56 31	20:12 (13) 22:03	05:09 41	20:37 (14) 21:18 (14)
5	08:57 16:29	08:20 17:24	16:28 (9) 18:21	07:19 19	17:10 (10) 20:20	07:03 27	19:19 (11) 21:16	05:54 33	20:12 (13) 22:05	05:08 41	20:37 (14) 21:18 (14)
6	08:57 16:30	08:18 17:26	16:28 (9) 18:23	07:17 14	17:12 (10) 20:22	07:00 25	19:19 (11) 21:18	05:52 33	20:13 (13) 22:06	05:07 40	20:37 (14) 21:17 (14)
7	08:56 16:31	08:16 17:28	16:28 (9) 18:25	07:14 6	17:16 (10) 20:24	06:58 24	19:20 (11) 21:20	05:50 34	20:12 (13) 22:07	05:07 41	20:37 (14) 21:18 (14)
8	08:56 16:33	08:14 17:30	16:29 (9) 18:27	07:12 9	17:22 (10) 20:24	06:55 22	19:20 (11) 21:22	05:48 34	20:12 (13) 22:08	05:06 41	20:37 (14) 21:18 (14)
9	08:55 16:34	08:12 17:32	16:29 (9) 18:28	07:09 23	16:53 (9) 18:34	06:53 20	19:21 (11) 21:24	05:46 33	20:13 (13) 22:09	05:05 41	20:38 (14) 21:19 (14)
10	08:55 16:36	08:10 17:34	16:30 (9) 18:30	07:07 22	16:52 (9) 18:30	06:50 16	19:23 (11) 21:25	05:44 32	20:13 (13) 22:09	05:05 41	20:37 (14) 21:18 (14)
11	08:54 16:37	08:08 17:36	16:31 (9) 18:32	07:05 20	16:51 (9) 18:32	06:48 11	19:25 (11) 21:27	05:42 32	20:14 (13) 22:10	05:04 41	20:38 (14) 21:19 (14)
12	08:53 16:39	08:06 17:38	16:32 (9) 18:34	07:02 18	16:50 (9) 18:34	06:45 22	19:26 (11) 21:29	05:40 31	20:14 (13) 22:11	05:04 41	20:38 (14) 21:19 (14)
13	08:52 16:40	08:04 17:40	16:34 (9) 18:36	07:00 14	16:48 (9) 18:36	06:43 20	19:27 (11) 21:31	05:39 32	20:15 (13) 22:12	05:04 41	20:39 (14) 21:20 (14)
14	08:51 16:42	08:02 17:42	16:37 (9) 18:38	06:57 9	16:46 (9) 18:38	06:41 20	19:28 (11) 21:32	05:37 39	20:16 (13) 22:12	05:03 41	20:38 (14) 21:19 (14)
15	08:51 16:44	08:00 17:45	16:46 (9) 18:40	06:55 17	16:45 (9) 18:40	06:38 20	19:29 (11) 21:33	05:35 40	20:17 (13) 22:13	05:03 40	20:39 (14) 21:19 (14)
16	08:50 16:45	07:58 17:47	17:16 (10) 18:42	06:52 1	17:17 (10) 18:42	06:36 20	19:30 (11) 21:34	05:33 41	20:19 (13) 22:14	05:03 41	20:39 (14) 21:20 (14)
17	08:48 16:47	07:56 17:49	17:13 (10) 18:44	06:50 6	17:19 (10) 18:44	06:34 20	19:31 (11) 21:35	05:32 37	20:21 (13) 22:14	05:03 41	20:39 (14) 21:20 (14)
18	08:47 16:49	07:54 17:51	17:12 (10) 18:46	06:47 10	17:22 (10) 18:46	06:31 20	19:32 (11) 21:36	05:30 24	20:22 (13) 22:15	05:03 41	20:39 (14) 21:20 (14)
19	08:46 16:51	07:51 17:53	17:10 (10) 18:48	06:45 13	17:23 (10) 18:48	06:29 20	19:33 (11) 21:37	05:28 26	20:23 (13) 22:15	05:03 41	20:39 (14) 21:20 (14)
20	08:45 16:53	07:49 17:55	17:09 (10) 18:50	06:42 17	17:26 (10) 18:50	06:27 20	19:34 (11) 21:38	05:27 29	20:24 (13) 22:15	05:03 40	20:40 (14) 21:20 (14)
21	08:44 16:54	07:47 17:57	17:08 (10) 18:52	06:40 20	17:28 (10) 18:52	06:24 20	19:35 (11) 21:39	05:25 31	20:25 (13) 22:16	05:03 40	20:41 (14) 21:21 (14)
22	08:42 16:56	07:45 17:59	17:07 (10) 18:53	06:37 23	17:29 (10) 18:53	06:22 20	19:36 (11) 21:40	05:24 33	20:26 (13) 22:16	05:03 40	20:41 (14) 21:21 (14)
23	08:41 16:58	07:43 18:01	17:06 (10) 18:55	06:35 26	17:32 (10) 18:55	06:20 20	19:37 (11) 21:41	05:22 35	20:27 (13) 22:16	05:03 41	20:40 (14) 21:21 (14)
24	08:40 17:00	07:40 18:03	17:06 (10) 18:57	06:32 29	17:35 (10) 18:57	06:17 20	19:38 (11) 21:42	05:21 35	20:28 (13) 22:16	05:04 41	20:40 (14) 21:21 (14)
25	08:38 17:02	07:38 18:05	17:05 (10) 18:59	06:30 30	17:36 (10) 18:59	06:15 20	19:39 (11) 21:43	05:20 36	20:29 (13) 22:16	05:04 41	20:41 (14) 21:22 (14)
26	08:37 17:04	07:36 18:07	17:06 (10) 19:01	06:27 5	17:37 (10) 19:01	06:13 10	18:29 (11) 20:59	05:18 9	20:30 (13) 21:52	05:04 41	20:41 (14) 21:22 (14)
27	08:35 17:06	16:32 (9) 18:09	17:05 (10) 19:03	06:25 10	17:38 (10) 19:03	06:11 13	18:26 (11) 21:01	05:17 37	20:31 (13) 21:53	05:05 41	20:42 (14) 21:23 (14)
28	08:34 17:08	16:31 (9) 18:11	17:04 (10) 19:05	06:22 13	17:39 (10) 19:05	06:09 17	18:24 (11) 21:03	05:16 39	20:32 (13) 21:55	05:05 41	20:41 (14) 21:22 (14)
29	08:32 17:10	16:30 (9) 16:37 (9)	17:34 (10) 19:05	06:20 17	17:40 (10) 19:05	06:06 20	18:23 (11) 21:05	05:15 39	20:33 (13) 21:56	05:06 41	20:42 (14) 21:23 (14)
30	08:31 17:12	16:29 (9) 16:39 (9)	17:35 (10) 19:07	06:19 20	17:41 (10) 19:07	06:04 23	19:21 (11) 21:07	05:14 39	20:34 (13) 21:57	05:07 40	20:42 (14) 21:22 (14)
31	08:29 17:14	16:28 (9) 16:41 (9)	17:36 (10) 19:09	06:17 22	17:42 (10) 19:09	06:03 22	19:22 (11) 21:08	05:13 40	20:35 (13) 21:58	05:07 513	20:42 (14) 21:22 (14)
Potential sun hours	248	272	367	421	496	513					
Total, worst case	35	543	227	341	1043	1221					
Sun reduction	0.17	0.22	0.22	0.34	0.36	0.26					
Oper. time red.	1.00	1.00	1.00	1.00	1.00	1.00					
Wind dir. red.	0.58	0.58	0.58	0.60	0.62	0.63					
Total reduction	0.10	0.13	0.13	0.20	0.22	0.16					
Total, real	3	70	30	70	235	197					

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: K - H11

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

		July		August		September		October		November		December				
1	05:07	20:42 (14)	05:48	20:24 (13)	06:44	19:23 (11)	07:38			07:37	15:59 (9)	08:33				
	22:15	41	21:23 (14)	21:39	31	20:55 (12)	20:31	12	19:35 (11)	19:16	17:04	22	16:21 (9)	16:19		
2	05:08	20:43 (14)	05:50	20:24 (13)	06:45	19:21 (11)	07:40			07:39	15:58 (9)	08:35				
	22:14	40	21:23 (14)	21:37	32	20:56 (12)	20:28	16	19:37 (11)	19:14	17:02	24	16:22 (9)	16:18		
3	05:09	20:43 (14)	05:52	20:23 (13)	06:47	19:19 (11)	07:42			07:41	15:59 (9)	08:36				
	22:14	41	21:24 (14)	21:35	33	20:56 (12)	20:26	20	19:39 (11)	19:11	17:00	24	16:23 (9)	16:18		
4	05:10	20:42 (14)	05:53	20:23 (13)	06:49	19:17 (11)	07:44			07:43	15:58 (9)	08:38				
	22:14	41	21:23 (14)	21:33	33	20:56 (12)	20:24	22	19:39 (11)	19:09	16:58	25	16:23 (9)	16:17		
5	05:11	20:43 (14)	05:55	20:23 (13)	06:51	19:16 (11)	07:45			07:45	15:58 (9)	08:39				
	22:13	41	21:24 (14)	21:31	33	20:56 (12)	20:21	24	19:40 (11)	19:06	16:56	25	16:23 (9)	16:16		
6	05:12	20:43 (14)	05:57	20:22 (13)	06:53	19:15 (11)	07:47			07:47	15:58 (9)	08:41				
	22:12	41	21:24 (14)	21:29	33	20:55 (12)	20:19	25	19:40 (11)	19:04	16:55	24	16:22 (9)	16:16		
7	05:13	20:43 (14)	05:59	20:22 (13)	06:54	19:14 (11)	07:49			07:49	15:58 (9)	08:42				
	22:12	41	21:24 (14)	21:27	33	20:55 (12)	20:16	27	19:41 (11)	19:01	11	18:00 (10)	16:53	22	16:20 (9)	16:15
8	05:14	20:44 (14)	06:00	20:22 (13)	06:56	19:13 (11)	07:51			17:46 (10)	07:51	15:58 (9)	08:43			
	22:11	40	21:24 (14)	21:25	33	20:55 (12)	20:14	27	19:40 (11)	18:59	17	18:03 (10)	16:51	20	16:18 (9)	16:15
9	05:15	20:44 (14)	06:02	20:22 (13)	06:58	19:13 (11)	07:53			17:44 (10)	07:53	15:59 (9)	08:45			
	22:10	40	21:24 (14)	21:23	30	20:52 (12)	20:11	27	19:40 (11)	18:56	20	18:04 (10)	16:49	18	16:17 (9)	16:14
10	05:16	20:44 (14)	06:04	20:22 (13)	07:00	19:13 (11)	07:55			17:42 (10)	07:55	15:59 (9)	08:46			
	22:09	40	21:24 (14)	21:21	29	20:51 (12)	20:09	27	19:40 (11)	18:54	24	18:06 (10)	16:47	16	16:15 (9)	16:14
11	05:17	20:44 (14)	06:06	20:21 (13)	07:02	19:13 (11)	07:57			17:41 (10)	07:57	16:00 (9)	08:47			
	22:08	40	21:24 (14)	21:19	27	20:48 (12)	20:06	25	19:38 (11)	18:52	25	18:06 (10)	16:45	12	16:12 (9)	16:14
12	05:18	20:44 (14)	06:08	20:22 (13)	07:04	19:12 (11)	07:59			17:40 (10)	07:59	16:01 (9)	08:48			
	22:07	40	21:24 (14)	21:17	24	20:46 (12)	20:04	23	19:35 (11)	18:49	27	18:07 (10)	16:44	9	16:10 (9)	16:14
13	05:19	20:45 (14)	06:09	20:23 (13)	07:05	19:12 (11)	08:00			17:39 (10)	08:01	16:02 (9)	08:49			
	22:06	39	21:24 (14)	21:15	22	20:45 (13)	20:01	21	19:33 (11)	18:47	28	18:07 (10)	16:42	6	16:08 (9)	16:14
14	05:21	20:46 (14)	06:11	20:24 (13)	07:07	19:13 (11)	08:02			17:39 (10)	08:03	16:03 (9)	08:50			
	22:05	39	21:25 (14)	21:13	19	20:43 (13)	19:59	18	19:31 (11)	18:44	29	18:08 (10)	16:40	4	16:07 (9)	16:13
15	05:22	20:46 (14)	06:13	20:24 (13)	07:09	19:14 (11)	08:04			17:38 (10)	08:05	16:04 (9)	08:51			
	22:04	38	21:24 (14)	21:10	16	20:40 (13)	19:56	14	19:28 (11)	18:42	30	18:08 (10)	16:39	1	16:05 (9)	16:13
16	05:23	20:46 (14)	06:15	20:26 (13)	07:11	19:15 (11)	08:06			17:38 (10)	08:07		08:52			
	22:03	38	21:24 (14)	21:08	12	20:38 (13)	19:54	10	19:25 (11)	18:40	29	18:07 (10)	16:37		16:14	
17	05:25	20:46 (14)	06:16	20:28 (13)	07:13	19:17 (11)	08:08			17:38 (10)	08:09		08:53			
	22:02	37	21:23 (14)	21:06	9	20:37 (13)	19:51	6	19:23 (11)	18:37	29	18:07 (10)	16:36		16:14	
18	05:26	20:47 (14)	06:18	20:30 (13)	07:14		08:10			17:38 (10)	08:11		08:54			
	22:01	37	21:24 (14)	21:04	4	20:34 (13)	19:49			18:35	27	18:05 (10)	16:34		16:14	
19	05:28	20:48 (14)	06:20		07:16		08:12			17:38 (10)	08:13		08:55			
	21:59	35	21:23 (14)	21:01		19:46				18:33	25	18:03 (10)	16:33		16:14	
20	05:29	20:48 (14)	06:22		07:18		08:14			17:38 (10)	08:14		08:55			
	21:58	35	21:23 (14)	20:59		19:44				18:30	22	18:00 (10)	16:31		16:14	
21	05:30	20:49 (14)	06:24		07:20		08:16			17:39 (10)	08:16		08:56			
	21:57	34	21:23 (14)	20:57		19:41				18:28	19	17:58 (10)	16:30		16:15	
22	05:32	20:49 (14)	06:26		07:22		08:18			17:39 (10)	08:18		08:56			
	21:55	32	21:21 (14)	20:55		19:39				18:26	16	17:55 (10)	16:29		16:15	
23	05:33	20:51 (14)	06:27		07:23		08:20			17:40 (10)	08:20		08:57			
	21:54	30	21:21 (14)	20:52		19:36				18:24	13	17:53 (10)	16:27		16:16	
24	05:35	20:51 (14)	06:29		07:25		08:22			17:42 (10)	08:22		08:57			
	21:52	28	21:19 (14)	20:50		19:34				18:21	9	17:51 (10)	16:26		16:16	
25	05:37	20:51 (14)	06:31		07:27		07:24			16:43 (10)	08:23		08:58			
	21:51	26	21:17 (14)	20:48		19:31				17:19	5	16:48 (10)	16:25		16:17	
26	05:38	20:34 (13)	06:33		07:29		07:26			16:48 (10)	08:25		08:58			
	21:49	32	21:16 (14)	20:45		19:29				17:17			16:24		16:18	
27	05:40	20:30 (13)	06:35		07:31		07:28			17:15			08:27		08:58	
	21:47	41	21:14 (14)	20:43		19:26				17:15			16:23		16:19	
28	05:41	20:29 (13)	06:36		07:32		07:29			16:06 (9)	08:29		08:58			
	21:46	41	21:13 (14)	20:41		19:24				17:13	10	16:16 (9)	16:22		16:19	
29	05:43	20:27 (13)	06:38		07:34		07:31			16:03 (9)	08:30		08:58			
	21:44	40	21:11 (14)	20:38		19:21				17:11	15	16:18 (9)	16:21		16:20	
30	05:45	20:26 (13)	06:40		07:36		07:33			16:01 (9)	08:32		08:59			
	21:42	37	21:10 (14)	20:36		19:19				17:08	19	16:20 (9)	16:20		16:21	
31	05:46	20:26 (13)	06:42				07:35			16:00 (9)			08:59			
	21:40	29	20:55 (12)	20:33			17:06			16:21 (9)			16:22		16:22	
Potential sun hours	515		461		383		327			257			231			
Total, worst case	1154		453		344		470			252						
Sun reduction	0.27		0.27		0.29		0.23			0.20						
Oper. time red.	1.00		1.00		1.00		1.00			1.00						
Wind dir. red.	0.63		0.62		0.59		0.58			0.58						
Total reduction	0.17		0.17		0.17		0.14			0.12						
Total, real	192		76		59		64			29						

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: L - H12  
 Assumptions for shadow calculations Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:58 16:24	08:27 17:16	07:29 18:13	07:13 20:12	06:02 21:09	05:12 22:00	05:08 22:15	05:48 21:39	06:44 20:31	07:38 19:16	07:37 17:04	08:33 16:19
2	08:58 16:25	08:25 17:18	07:26 18:15	07:10 20:14	06:00 21:11	05:11 22:01	05:08 22:14	05:50 21:37	06:46 20:28	07:40 19:14	07:39 17:02	08:35 16:18
3	08:58 16:26	08:24 17:20	07:24 18:17	07:08 20:16	05:58 21:13	05:10 22:02	05:09 22:14	05:52 21:35	06:47 20:26	07:42 19:11	07:41 17:00	08:36 16:18
4	08:58 16:27	08:22 17:22	07:22 18:19	07:05 20:18	05:56 21:14	05:09 22:03	05:10 22:13	05:53 21:33	06:49 20:24	07:44 19:09	07:43 16:58	08:38 16:17
5	08:57 16:29	08:20 17:24	07:19 18:21	07:03 20:20	05:54 21:16	05:08 22:05	05:11 22:13	05:55 21:31	06:51 20:21	07:45 19:06	07:45 16:57	08:39 16:16
6	08:57 16:30	08:18 17:26	07:17 18:23	07:00 20:22	05:52 21:18	05:07 22:06	05:12 22:12	05:57 21:29	06:53 20:19	07:47 19:07	07:47 16:55	08:41 16:16
7	08:56 16:31	08:16 17:28	07:14 18:25	06:58 20:24	05:50 21:20	05:07 22:07	05:13 22:12	05:59 21:27	06:55 20:16	07:49 19:01	07:49 16:53	08:42 16:15
8	08:56 16:33	08:14 17:30	07:12 18:27	06:55 20:26	05:48 21:22	05:06 22:08	05:14 22:11	06:01 21:25	06:56 20:14	07:51 18:59	07:51 16:51	08:43 16:15
9	08:55 16:34	08:12 17:32	07:09 18:29	06:53 20:27	05:46 21:23	05:06 22:09	05:15 22:10	06:02 21:23	06:58 20:11	07:53 18:56	07:53 16:49	08:45 16:15
10	08:55 16:36	08:10 17:34	07:07 18:30	06:50 20:29	05:44 21:25	05:05 22:09	05:16 22:09	06:04 21:21	07:00 20:09	07:55 18:54	07:55 16:47	08:46 16:14
11	08:54 16:37	08:08 17:36	17:05 (5) 07:05	17:06 (5) 18:32	06:48 20:31	05:42 21:27	05:05 22:10	05:17 22:08	06:06 21:19	07:02 20:06	07:57 18:52	08:47 16:46
12	08:53 16:39	08:06 17:38	17:05 (5) 07:02	17:08 (5) 18:34	06:46 20:33	05:40 21:29	05:04 22:11	05:18 22:07	06:08 21:17	07:04 20:04	07:59 18:49	08:48 16:44
13	08:52 16:41	08:04 17:41	17:04 (5) 07:00	17:11 (5) 18:36	06:43 20:35	05:39 21:31	05:04 22:12	05:20 22:06	06:09 21:15	07:05 20:01	08:00 18:47	08:49 16:42
14	08:51 16:42	08:02 17:43	17:04 (5) 06:57	17:13 (5) 18:38	06:41 20:37	05:37 21:32	05:04 22:12	05:21 22:05	06:11 21:13	07:07 19:59	08:02 18:44	08:50 16:40
15	08:50 16:44	08:00 17:45	17:03 (5) 06:55	17:15 (5) 18:40	06:38 20:39	05:35 21:34	05:03 22:13	05:22 22:04	06:13 21:10	07:09 19:56	08:04 18:42	08:51 16:39
16	08:49 16:46	07:58 17:47	17:03 (5) 06:52	17:17 (5) 18:42	06:36 20:41	05:33 21:36	05:03 22:14	05:23 22:03	06:15 21:08	07:11 18:06	17:55 (6) 08:06	08:52 16:37
17	08:48 16:47	07:56 17:49	17:14 (5) 06:50	17:19 (6) 18:44	06:34 20:43	05:32 21:37	05:03 22:14	05:25 22:02	06:17 21:06	07:13 19:51	18:40 18:37	08:09 16:36
18	08:47 16:49	07:54 17:51	17:04 (5) 06:47	17:22 (6) 18:46	06:31 20:44	05:30 21:39	05:03 22:14	05:26 22:01	06:18 21:04	07:14 19:49	18:40 18:35	08:11 16:34
19	08:46 16:51	07:51 17:53	17:04 (5) 06:45	17:23 (6) 18:48	06:29 20:46	05:29 21:41	05:03 22:15	05:28 21:59	06:20 21:01	07:16 19:46	18:12 18:33	08:12 16:33
20	08:45 16:53	07:49 17:55	17:04 (5) 06:42	17:23 (6) 18:48	06:27 20:42	05:27 21:42	05:03 22:15	05:29 21:58	06:22 20:59	07:18 19:44	18:14 18:31	08:14 16:31
21	08:44 16:55	07:47 17:57	17:05 (5) 06:40	17:26 (6) 18:50	06:24 20:48	05:26 21:42	05:03 22:15	05:31 21:57	06:24 20:57	07:20 19:41	18:16 18:28	08:16 16:30
22	08:42 16:56	07:45 17:59	17:06 (5) 06:37	17:28 (6) 18:52	06:22 20:50	05:24 21:44	05:03 22:15	05:32 21:57	06:26 20:57	07:22 19:41	18:18 18:28	08:18 16:30
23	08:41 16:58	07:43 18:01	17:07 (5) 06:35	17:30 (6) 18:53	06:20 20:52	05:23 21:46	05:04 22:16	05:34 21:55	06:27 20:55	07:23 19:39	18:20 18:26	08:20 16:29
24	08:40 17:00	07:40 18:03	17:10 (5) 06:32	17:32 (6) 18:55	06:18 20:56	05:21 21:49	05:04 22:16	05:35 21:52	06:29 20:50	07:25 19:34	18:24 18:22	08:22 16:26
25	08:38 17:02	07:38 18:05	17:12 (5) 06:30	17:34 (6) 18:59	06:15 20:58	05:20 21:50	05:04 22:16	05:37 21:51	06:31 20:48	07:27 19:31	18:24 17:19	08:23 16:25
26	08:37 17:04	07:36 18:07	17:24 (6) 06:27	17:31 (6) 19:01	06:13 20:59	05:19 21:52	05:05 22:16	05:38 21:49	06:33 20:45	07:29 19:29	18:26 17:17	08:25 16:24
27	08:35 17:06	07:33 18:09	17:31 (6) 06:25	17:31 (6) 19:03	06:11 21:01	05:17 21:53	05:05 22:16	05:40 21:47	06:35 20:43	07:31 19:26	18:28 17:15	08:27 16:23
28	08:34 17:08	07:31 18:11	06:22 19:05	06:09 21:03	05:16 21:55	05:06 22:16	05:42 21:46	05:37 20:41	06:37 20:41	07:33 19:24	18:30 17:13	08:29 16:22
29	08:32 17:10	07:29 18:11	06:20 20:07	06:07 21:05	05:15 21:56	05:06 22:15	05:43 21:44	05:38 21:44	06:38 20:38	07:34 19:21	18:31 17:11	08:30 16:21
30	08:31 17:12	07:28 18:12	06:19 20:07	06:04 21:07	05:14 21:57	05:07 22:15	05:45 21:42	05:40 20:36	06:40 19:19	07:36 17:09	16:46 (5) 16:37 (5)	08:32 16:20
31	08:29 17:14	07:26 18:14	06:18 20:10	06:03 21:09	05:13 21:59	05:07 21:59	05:47 21:40	06:42 20:33	07:35 17:07	18:29 16:45	17:07 16:45	08:58 16:22
Potential sun hours	248	272	367	421	496	513	515	461	382	328	257	231
Total, worst case		246								242		
Sun reduction		0.22								0.23		
Oper. time red.		1.00								1.00		
Wind dir. red.		0.58								0.58		
Total reduction		0.13								0.14		
Total, real		32								33		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: M - H13

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June
1	08:58 16:24	08:27 17:16	07:29 18:13	07:13 20:12	08:04 (1) 08:21 (1)	06:02 21:09
2	08:58 16:25	08:25 17:18	07:26 18:15	07:10 20:14	08:09 (1) 08:16 (1)	06:00 21:11
3	08:58 16:26	08:24 17:20	07:24 18:17	07:08 20:16	05:58 21:13	05:10 22:02
4	08:58 16:28	08:22 17:22	07:22 18:19	07:05 20:18	05:56 21:14	05:09 22:03
5	08:57 16:29	08:20 17:24	07:19 18:21	07:03 20:20	05:54 21:16	05:08 22:05
6	08:57 16:30	08:18 17:26	07:17 18:23	07:00 20:22	05:52 21:18	05:08 22:06
7	08:56 16:32	08:16 17:28	07:14 18:25	06:58 20:24	05:50 21:20	05:07 22:07
8	08:56 16:33	08:14 17:30	07:12 18:27	06:55 20:26	05:48 21:22	05:06 22:08
9	08:55 16:34	08:12 17:32	07:10 18:29	06:53 20:27	05:46 21:23	05:06 22:09
10	08:55 16:36	08:10 17:34	07:07 18:31	06:50 20:29	05:44 21:25	05:05 22:09
11	08:54 16:37	08:08 17:37	07:05 18:32	07:29 (1) 07:30 (1)	06:48 20:31	05:05 21:27
12	08:53 16:39	08:06 17:39	07:02 18:34	07:26 (1) 07:32 (1)	06:46 20:33	05:04 21:29
13	08:52 16:41	08:04 17:41	07:00 18:36	07:24 (1) 07:33 (1)	06:43 20:35	05:04 21:31
14	08:51 16:42	08:02 17:43	06:57 18:38	07:21 (1) 07:34 (1)	06:41 20:37	05:04 21:32
15	08:50 16:44	08:00 17:45	06:55 18:40	07:19 (1) 07:35 (1)	06:38 20:39	05:03 21:34
16	08:49 16:46	07:58 17:47	06:52 18:42	07:16 (1) 07:35 (1)	06:36 20:41	05:03 21:36
17	08:48 16:47	07:56 17:49	06:50 18:44	07:14 (1) 07:36 (1)	06:34 20:43	05:03 21:37
18	08:47 16:49	07:54 17:51	06:47 18:46	07:11 (1) 07:36 (1)	06:31 20:44	05:03 21:39
19	08:46 16:51	07:51 17:53	06:45 18:48	07:09 (1) 07:36 (1)	06:29 20:46	05:03 21:41
20	08:45 16:53	07:49 17:55	06:42 18:50	07:06 (1) 07:36 (1)	06:27 20:48	05:03 21:42
21	08:44 16:55	07:47 17:57	06:40 18:52	07:04 (1) 07:36 (1)	06:24 20:50	05:03 21:44
22	08:42 16:57	07:45 17:59	06:37 18:53	07:01 (1) 07:35 (1)	06:22 20:52	05:03 21:46
23	08:41 16:58	07:43 18:01	06:35 18:55	06:59 (1) 07:35 (1)	06:20 20:54	05:04 21:47
24	08:40 17:00	07:40 18:03	06:32 18:57	06:57 (1) 07:34 (1)	06:18 20:56	05:04 21:49
25	08:38 17:02	07:38 18:05	06:30 18:59	06:57 (1) 07:33 (1)	06:15 20:58	05:04 21:50
26	08:37 17:04	07:36 18:07	06:27 19:01	06:57 (1) 07:32 (1)	06:13 20:59	05:19 21:52
27	08:35 17:06	07:33 18:09	06:25 19:03	06:58 (1) 07:31 (1)	06:11 21:01	05:17 21:53
28	08:34 17:08	07:31 18:11	06:22 19:05	06:58 (1) 07:29 (1)	06:09 21:03	05:16 21:55
29	08:32 17:10		07:20 20:07	08:00 (1) 08:28 (1)	06:07 21:05	05:15 21:56
30	08:31 17:12		07:18 20:09	08:00 (1) 08:26 (1)	06:04 21:07	05:14 21:57
31	08:29 17:14		07:15 20:11	08:02 (1) 08:24 (1)	06:04 21:07	05:13 21:59
Potential sun hours	248	272	367	421	496	513
Total, worst case			518	24	76	932
Sun reduction			0.22	0.34	0.36	0.26
Oper. time red.			1.00	1.00	1.00	1.00
Wind dir. red.			0.59	0.59	0.63	0.63
Total reduction			0.13	0.20	0.23	0.16
Total, real			69	5	17	152

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: M - H13

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	July	August	September	October	November	December		
1	05:08	21:06 (6)	05:48	06:44	07:38	08:05 (1)	07:37	08:33
	22:15	32 21:38 (6)	21:39	20:31	19:16	7 08:12 (1)	17:05	16:19
2	05:08	21:06 (6)	05:50	06:46	07:40	08:07 (1)	07:39	08:35
	22:14	32 21:38 (6)	21:37	20:28	19:14	3 08:10 (1)	17:03	16:19
3	05:09	21:07 (6)	05:52	06:47	07:42		07:41	08:36
	22:14	31 21:38 (6)	21:35	20:26	19:11		17:01	16:18
4	05:10	21:08 (6)	05:54	06:49	07:44		07:43	08:38
	22:13	30 21:38 (6)	21:33	20:24	19:09		16:59	16:17
5	05:11	21:07 (6)	05:55	06:51	07:45		07:45	08:39
	22:13	29 21:36 (6)	21:31	20:21	19:06		16:57	16:16
6	05:12	21:08 (6)	05:57	06:53	07:47		07:47	08:41
	22:12	28 21:36 (6)	21:29	20:19	19:04		16:55	16:16
7	05:13	21:08 (6)	05:59	06:55	07:49		07:49	08:42
	22:12	27 21:35 (6)	21:27	20:16	19:01		16:53	16:15
8	05:14	21:09 (6)	06:01	06:56	07:51		07:51	08:43
	22:11	26 21:35 (6)	21:25	20:14	18:59		16:51	16:15
9	05:15	21:10 (6)	06:02	06:58	07:53		07:53	08:45
	22:10	24 21:34 (6)	21:23	20:11	18:57		16:49	16:15
10	05:16	21:10 (6)	06:04	07:00	08:03 (1)	07:55	07:55	08:46
	22:09	23 21:33 (6)	21:21	20:09	5 08:08 (1)	18:54	16:47	16:14
11	05:17	21:11 (6)	06:06	07:02	07:58 (1)	07:57	07:57	08:47
	22:08	22 21:33 (6)	21:19	20:06	15 08:13 (1)	18:52	16:46	16:14
12	05:18	21:13 (6)	06:08	07:04	07:55 (1)	07:59	07:59	08:48
	22:07	20 21:33 (6)	21:17	20:04	21 08:16 (1)	18:49	16:44	16:14
13	05:20	21:14 (6)	06:09	07:05	07:52 (1)	08:00	08:01	08:49
	22:06	18 21:32 (6)	21:15	20:01	25 08:17 (1)	18:47	16:42	16:14
14	05:21	21:15 (6)	06:11	07:07	07:50 (1)	08:02	08:03	08:50
	22:05	16 21:31 (6)	21:13	19:59	28 08:18 (1)	18:45	16:41	16:14
15	05:22	21:16 (6)	06:13	07:09	07:49 (1)	08:04	08:05	08:51
	22:04	13 21:29 (6)	21:10	19:56	31 08:20 (1)	18:42	16:39	16:14
16	05:24	21:17 (6)	06:15	07:11	07:48 (1)	08:06	08:07	08:52
	22:03	11 21:28 (6)	21:08	19:54	33 08:21 (1)	18:40	16:37	16:14
17	05:25	21:20 (6)	06:17	07:13	07:46 (1)	08:08	08:09	08:53
	22:02	8 21:28 (6)	21:06	19:51	34 08:20 (1)	18:37	16:36	16:14
18	05:26	06:18	07:14	08:10	07:45 (1)	08:10	08:11	08:54
	22:01	06:18	19:49	36 08:21 (1)	18:35	16:34	16:14	
19	05:28	06:20	07:16	08:12	07:44 (1)	08:12	08:12	08:55
	21:59	21:01	19:46	37 08:21 (1)	18:33	16:33	16:14	
20	05:29	06:22	07:18	08:14	07:45 (1)	08:14	08:14	08:55
	21:58	20:59	19:44	36 08:21 (1)	18:31	16:32	16:15	
21	05:31	06:24	07:20	08:16	07:46 (1)	08:16	08:16	08:56
	21:56	20:57	19:41	35 08:21 (1)	18:28	16:30	16:15	
22	05:32	06:26	07:22	08:18	07:48 (1)	08:18	08:18	08:56
	21:55	20:55	19:39	32 08:20 (1)	18:26	16:29	16:16	
23	05:34	06:28	07:23	08:20	07:50 (1)	08:20	08:20	08:57
	21:54	20:52	19:36	30 08:20 (1)	18:24	16:28	16:16	
24	05:35	06:29	07:25	08:22	07:52 (1)	08:22	08:22	08:57
	21:52	20:50	19:34	28 08:20 (1)	18:22	16:26	16:17	
25	05:37	06:31	07:27	08:24	07:54 (1)	07:24	08:23	08:58
	21:51	20:48	19:31	25 08:19 (1)	17:19	16:25	16:17	
26	05:38	06:33	07:29	08:26	07:55 (1)	07:26	08:25	08:58
	21:49	20:45	19:29	23 08:18 (1)	17:17	16:24	16:18	
27	05:40	06:35	07:31	08:28	07:57 (1)	07:28	08:27	08:58
	21:47	20:43	19:26	20 08:17 (1)	17:15	16:23	16:19	
28	05:42	06:37	07:33	08:30	07:59 (1)	07:30	08:28	08:58
	21:46	20:41	19:24	17 08:16 (1)	17:13	16:22	16:20	
29	05:43	06:38	07:34	08:31	08:01 (1)	07:31	08:30	08:58
	21:44	20:38	19:21	14 08:15 (1)	17:11	16:21	16:21	
30	05:45	06:40	07:36	08:33	08:03 (1)	07:33	08:32	08:58
	21:42	20:36	19:19	11 08:14 (1)	17:09	16:20	16:22	
31	05:47	06:42		07:35			08:58	
	21:40	20:33		17:07			16:23	
Potential sun hours	515	461	382	328		257	231	
Total, worst case		390		536		10		
Sun reduction		0.27		0.29		0.23		
Oper. time red.		1.00		1.00		1.00		
Wind dir. red.		0.63		0.59		0.59		
Total reduction		0.17		0.17		0.14		
Total, real		66		93		1		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: N - H14  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January	February	March	April	May	June			
1	08:58 16:24	08:27 17:16	16:03 (16) 18:13	07:29 15	17:29 (14) 17:44 (14)	07:12 20:12	18:28 (15) 18:45 (15)	06:02 21:09	05:11 22:00
2	08:58 16:25	08:25 17:18	16:02 (16) 18:15	07:26 14	17:29 (14) 17:43 (14)	07:10 20:14	18:33 (15) 18:40 (15)	06:00 21:11	05:10 22:01
3	08:58 16:26	08:24 17:20	16:01 (16) 18:17	07:24 10	17:31 (14) 17:41 (14)	07:07 20:16	05:58 21:13	05:10 22:02	
4	08:58 16:27	08:22 17:22	16:01 (16) 18:19	07:21 5	17:33 (14) 17:38 (14)	07:05 20:18	05:56 21:14	05:09 22:03	
5	08:57 16:28	08:20 17:24	16:01 (16) 18:21	07:19 18:21	07:02 20:20	05:54 21:16	05:08 22:05		
6	08:57 16:30	08:18 17:26	16:00 (16) 18:23	07:17 18:23	07:00 20:22	05:52 21:18	05:07 22:06		
7	08:56 16:31	08:16 17:28	16:00 (16) 18:24	07:14 14	17:36 (15) 17:50 (15)	06:58 20:24	05:50 21:20	05:06 22:07	
8	08:56 16:33	08:14 17:30	16:00 (16) 18:26	07:12 21	17:32 (15) 17:53 (15)	06:55 20:26	05:48 21:22	05:06 22:08	
9	08:55 16:34	08:12 17:32	15:59 (16) 18:28	07:09 26	17:30 (15) 17:56 (15)	06:53 20:27	05:46 21:23	05:05 22:09	
10	08:55 16:36	08:10 17:34	15:59 (16) 18:30	07:07 29	17:28 (15) 17:57 (15)	06:50 20:29	05:44 21:25	05:05 22:09	
11	08:54 16:37	08:08 17:36	15:59 (16) 18:32	07:05 33	17:26 (15) 17:59 (15)	06:48 20:31	05:42 21:27	05:04 22:10	
12	08:53 16:39	08:06 17:38	15:59 (16) 18:34	07:02 35	17:24 (15) 17:59 (15)	06:45 20:33	05:40 21:29	05:04 22:11	
13	08:52 16:40	08:04 17:40	16:00 (16) 18:36	07:00 36	17:24 (15) 18:00 (15)	06:43 20:35	05:38 21:31	05:04 22:12	
14	08:51 16:42	08:02 17:42	16:00 (16) 18:38	06:57 38	17:22 (15) 18:00 (15)	06:41 20:37	05:37 21:32	05:03 22:12	
15	08:51 16:44	08:00 17:44	16:00 (16) 18:40	06:55 40	17:21 (15) 18:01 (15)	06:38 20:39	05:35 21:34	05:03 22:13	
16	08:50 16:45	07:58 17:46	16:01 (16) 18:42	06:52 41	17:20 (15) 18:01 (15)	06:36 20:41	05:33 21:36	05:03 22:14	
17	08:48 16:47	07:56 17:49	16:02 (16) 18:44	06:50 42	17:20 (15) 18:02 (15)	06:33 20:42	05:32 21:37	05:03 22:14	
18	08:47 16:49	07:54 17:51	16:03 (16) 18:46	06:47 42	17:19 (15) 18:01 (15)	06:31 20:44	05:30 21:39	05:03 22:15	
19	08:46 16:51	07:51 17:53	16:03 (16) 18:48	06:45 43	17:19 (15) 18:02 (15)	06:29 20:46	05:28 21:41	05:03 22:15	
20	08:45 16:53	07:49 17:55	16:05 (16) 18:50	06:42 43	17:18 (15) 18:01 (15)	06:26 20:48	05:27 21:42	05:03 22:15	
21	08:44 16:54	07:47 17:57	16:07 (16) 18:51	06:40 42	17:19 (15) 18:01 (15)	06:24 20:50	05:25 21:44	05:03 22:16	
22	08:42 16:56	07:45 17:59	16:08 (16) 18:53	06:37 42	17:18 (15) 18:00 (15)	06:22 20:52	05:24 21:46	05:03 22:16	
23	08:41 16:58	07:42 18:01	16:11 (16) 18:55	06:35 41	17:19 (15) 18:00 (15)	06:20 20:54	05:22 21:47	05:03 22:16	
24	08:40 17:00	07:40 18:03	16:17 (16) 18:57	06:32 40	17:18 (15) 17:58 (15)	06:17 20:56	05:21 21:49	05:04 22:16	
25	08:38 17:02	07:38 18:05	17:29 (14) 18:59	06:30 39	17:19 (15) 17:58 (15)	06:15 20:58	05:20 21:50	05:04 22:16	
26	08:37 17:04	16:11 (16) 18:07	07:36 10	06:27 37	17:29 (14) 17:39 (14)	06:13 20:59	05:18 21:52	05:04 22:16	
27	08:35 17:06	16:09 (16) 18:09	07:33 12	06:25 36	17:28 (14) 17:40 (14)	06:11 21:01	05:17 21:53	05:05 22:16	
28	08:34 17:08	16:07 (16) 18:11	07:31 15	06:22 33	17:28 (14) 17:43 (14)	06:08 21:03	05:16 21:55	05:05 22:16	
29	08:32 17:10	16:05 (16) 16:29 (16)	07:20 20:07	06:20 31	18:22 (15) 18:53 (15)	06:06 21:05	05:15 21:56	05:06 22:15	
30	08:31 17:12	16:04 (16) 16:30 (16)	07:17 20:08	06:19 27	18:23 (15) 18:50 (15)	06:04 21:07	05:14 21:57	05:07 22:15	
31	08:29 17:14	16:03 (16) 16:32 (16)	07:15 20:10	06:18 22	18:26 (15) 18:48 (15)	05:12 21:59	05:12 21:59	05:07 22:15	
Potential sun hours	248	272	367	421	496	513			
Total, worst case	125	833	917	24					
Sun reduction	0.17	0.22	0.22	0.34					
Oper. time red.	1.00	1.00	1.00	1.00					
Wind dir. red.	0.60	0.60	0.57	0.57					
Total reduction	0.10	0.13	0.13	0.20					
Total, real	13	111	117	5					

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)



## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: N - H14  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	July	August	September	October	November	December		
1	05:07 22:15	05:48 21:39	06:44 20:31	07:38 19:16	18:04 (15) 18:39 (15)	07:37 17:04	15:29 (16) 16:08 (16)	08:33 16:19
2	05:08 22:14	05:50 21:37	06:45 20:28	07:40 19:14	18:04 (15) 18:37 (15)	07:39 17:02	15:28 (16) 16:07 (16)	08:35 16:18
3	05:09 22:14	05:52 21:35	06:47 20:26	07:42 19:11	18:05 (15) 18:35 (15)	07:41 17:00	15:29 (16) 16:07 (16)	08:36 16:17
4	05:10 22:14	05:53 21:33	06:49 20:24	07:44 19:09	18:06 (15) 18:34 (15)	07:43 16:58	15:30 (16) 16:08 (16)	08:38 16:17
5	05:11 22:13	05:55 21:31	06:51 20:21	07:45 19:07	18:08 (15) 18:31 (15)	07:45 16:56	15:30 (16) 16:07 (16)	08:39 16:16
6	05:11 22:12	05:57 21:29	06:53 20:19	07:47 19:04	18:11 (15) 18:28 (15)	07:47 16:54	15:30 (16) 16:07 (16)	08:41 16:16
7	05:12 22:12	05:59 21:27	06:54 20:16	07:49 19:01	18:15 (15) 18:23 (15)	07:49 16:53	15:31 (16) 16:06 (16)	08:42 16:15
8	05:14 22:11	06:00 21:25	06:56 20:14	07:51 18:59	18:23 (15) 18:51	16:53 16:51	16:06 (16) 15:31 (16)	16:15 08:43
9	05:15 22:10	06:02 21:23	06:58 20:11	07:53 18:56	18:59 18:56	16:51 16:49	16:05 (16) 16:04 (16)	16:15 16:14
10	05:16 22:09	06:04 21:21	07:00 20:09	07:55 18:28 (15) 18:32 (15)	18:06 (14) 18:14 (14)	07:55 16:47	15:34 (16) 16:04 (16)	08:46 16:14
11	05:17 22:08	06:06 21:19	07:02 20:06	07:57 18:22 (15) 18:38 (15)	18:04 (14) 18:16 (14)	07:57 16:45	15:35 (16) 16:03 (16)	08:47 16:14
12	05:18 22:07	06:07 21:17	07:03 20:04	07:58 18:39 (15) 18:15 (15)	18:03 (14) 18:17 (14)	07:59 16:44	15:36 (16) 16:02 (16)	08:48 16:14
13	05:19 22:06	06:09 21:15	07:05 20:01	08:00 18:41 (15) 18:13 (15)	18:02 (14) 18:17 (14)	08:01 16:42	15:37 (16) 16:01 (16)	08:49 16:13
14	05:21 22:05	06:11 21:13	07:07 19:59	08:02 18:43 (15) 18:11 (15)	18:01 (14) 18:15 (14)	08:03 16:40	15:39 (16) 15:59 (16)	08:50 16:13
15	05:22 22:04	06:13 21:10	07:09 19:56	08:04 18:11 (15) 18:44 (15)	18:01 (14) 18:13 (14)	08:05 16:39	15:41 (16) 15:57 (16)	08:51 16:13
16	05:23 22:03	06:15 21:08	07:11 19:54	08:06 18:09 (15) 18:44 (15)	18:01 (14) 18:10 (14)	08:07 16:37	15:44 (16) 15:54 (16)	08:52 16:13
17	05:25 22:02	06:16 21:06	07:12 19:51	08:08 18:08 (15) 18:45 (15)	18:01 (14) 18:08 (14)	08:09 16:36	16:03 (16) 16:04 (16)	08:53 16:14
18	05:26 22:01	06:18 21:04	07:14 19:49	08:10 18:07 (15) 18:45 (15)	16:46 (16) 18:05 (14)	08:11 16:34	16:04 (16) 16:34	08:54 16:14
19	05:27 21:59	06:20 21:01	07:16 19:46	08:12 18:06 (15) 18:46 (15)	16:41 (16) 16:59 (16)	08:12 16:33	16:05 (16) 16:33	08:55 16:14
20	05:29 21:58	06:22 20:59	07:18 19:44	08:14 18:04 (15) 18:45 (15)	16:39 (16) 17:01 (16)	08:14 16:31	16:08 (16) 16:31	08:55 16:14
21	05:30 21:57	06:24 20:57	07:20 19:41	08:16 18:04 (15) 18:45 (15)	16:36 (16) 17:03 (16)	08:16 16:30	16:08 (16) 16:30	08:56 16:15
22	05:32 21:55	06:25 20:55	07:21 19:39	08:18 18:03 (15) 18:45 (15)	16:35 (16) 17:04 (16)	08:18 16:29	16:08 (16) 16:29	08:56 16:15
23	05:33 21:54	06:27 20:52	07:23 19:36	08:20 18:03 (15) 18:45 (15)	16:33 (16) 17:05 (16)	08:20 16:27	16:08 (16) 16:27	08:57 16:16
24	05:35 21:52	06:29 20:50	07:25 19:34	08:22 18:03 (15) 18:45 (15)	16:32 (16) 17:06 (16)	08:22 16:26	16:08 (16) 16:26	08:57 16:16
25	05:37 21:51	06:31 20:48	07:27 19:31	08:24 18:03 (15) 18:45 (15)	15:31 (16) 16:06 (16)	08:23 16:25	16:08 (16) 16:25	08:58 16:17
26	05:38 21:49	06:33 20:45	07:29 19:28	08:26 18:02 (15) 18:44 (15)	15:30 (16) 16:07 (16)	08:25 16:24	16:08 (16) 16:24	08:58 16:18
27	05:40 21:47	06:35 20:43	07:31 19:26	08:27 18:02 (15) 18:43 (15)	15:29 (16) 16:07 (16)	08:27 16:23	16:08 (16) 16:23	08:58 16:19
28	05:41 21:46	06:36 20:40	07:32 19:23	08:29 18:02 (15) 18:42 (15)	15:30 (16) 16:08 (16)	08:29 16:22	16:08 (16) 16:22	08:58 16:19
29	05:43 21:44	06:38 20:38	07:34 19:21	08:30 18:03 (15) 18:42 (15)	15:29 (16) 16:08 (16)	08:30 16:21	16:08 (16) 16:21	08:58 16:20
30	05:45 21:42	06:40 20:36	07:36 19:18	08:33 18:03 (15) 18:41 (15)	15:29 (16) 16:08 (16)	08:32 16:20	16:08 (16) 16:20	08:59 16:21
31	05:46 21:40	06:42 20:33		07:35 17:06	15:29 (16) 16:08 (16)		16:20 16:22	08:58 16:22
Potential sun hours	515	461	383	327	257		230	
Total, worst case			731	705	483			
Sun reduction			0.29	0.23	0.20			
Oper. time red.			1.00	1.00	1.00			
Wind dir. red.			0.57	0.59	0.60			
Total reduction			0.17	0.14	0.12			
Total, real			122	97	58			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: O - H15

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June						
1	08:58	08:27	07:29	16:23 (16)	07:12	18:37 (15)	06:02	05:11				
	16:24	17:16	18:13	39	17:45 (14)	20:12	42	19:19 (15)	21:09	22:00		
2	08:58	08:25	07:26	16:24 (16)	07:10	18:38 (15)	06:00	05:10				
	16:25	17:18	18:15	39	17:47 (14)	20:14	41	19:19 (15)	21:11	22:01		
3	08:58	08:24	07:24	16:26 (16)	07:07	18:37 (15)	05:58	05:10				
	16:26	17:20	18:17	38	17:49 (14)	20:16	41	19:18 (15)	21:13	22:02		
4	08:58	08:22	07:21	16:27 (16)	07:05	18:38 (15)	05:56	05:09				
	16:27	17:22	18:19	37	17:51 (14)	20:18	40	19:18 (15)	21:14	22:03		
5	08:57	08:20	07:19	16:30 (16)	07:02	18:39 (15)	05:54	05:08				
	16:28	17:24	18:21	32	17:52 (14)	20:20	38	19:17 (15)	21:16	22:05		
6	08:57	08:18	07:17	16:34 (16)	07:00	18:39 (15)	05:52	05:07				
	16:30	17:26	18:23	22	17:51 (14)	20:22	37	19:16 (15)	21:18	22:06		
7	08:56	08:16	16:37 (16)	07:14	17:38 (14)	06:58	18:40 (15)	05:50	05:06			
	16:31	17:28	5	16:42 (16)	18:24	12	17:50 (14)	20:24	35	19:15 (15)	21:20	22:07
8	08:56	08:14	16:32 (16)	07:12	17:40 (14)	06:55	18:40 (15)	05:48	05:06			
	16:33	17:30	15	16:47 (16)	18:26	7	17:47 (14)	20:25	33	19:13 (15)	21:22	22:08
9	08:55	08:12	16:29 (16)	07:09	06:53	18:41 (15)	05:46	05:05				
	16:34	17:32	20	16:49 (16)	18:28	20:27	31	19:12 (15)	21:23	22:09		
10	08:55	08:10	16:27 (16)	07:07	06:50	18:42 (15)	05:44	05:05				
	16:36	17:34	24	16:51 (16)	18:30	20:29	27	19:09 (15)	21:25	22:09		
11	08:54	08:08	16:26 (16)	07:05	06:48	18:44 (15)	05:42	05:04				
	16:37	17:36	27	16:53 (16)	18:32	20:31	24	19:08 (15)	21:27	22:10		
12	08:53	08:06	16:25 (16)	07:02	06:45	18:47 (15)	05:40	05:04				
	16:39	17:38	30	16:55 (16)	18:34	20:33	18	19:05 (15)	21:29	22:11		
13	08:52	08:04	16:24 (16)	07:00	06:43	18:49 (15)	05:38	05:04				
	16:40	17:40	32	16:56 (16)	18:36	20:35	12	19:01 (15)	21:31	22:12		
14	08:51	08:02	16:23 (16)	06:57	06:41	05:37	05:03					
	16:42	17:42	34	16:57 (16)	18:38	20:37	21:32	22:12				
15	08:51	08:00	16:22 (16)	06:55	06:38	05:35	05:03					
	16:44	17:44	35	16:57 (16)	18:40	20:39	21:34	22:13				
16	08:50	07:58	16:21 (16)	06:52	06:36	05:33	05:03					
	16:45	17:46	37	16:58 (16)	18:42	20:41	21:36	22:14				
17	08:48	07:56	16:21 (16)	06:50	06:33	05:32	05:03					
	16:47	17:49	38	16:59 (16)	18:44	20:42	21:37	22:14				
18	08:47	07:54	16:21 (16)	06:47	17:57 (15)	06:31	05:30	05:03				
	16:49	17:51	39	17:00 (16)	18:46	11	18:08 (15)	20:44	21:39	22:15		
19	08:46	07:51	16:20 (16)	06:45	17:53 (15)	06:29	05:28	05:03				
	16:51	17:53	39	16:59 (16)	18:48	19	18:12 (15)	20:46	21:41	22:15		
20	08:45	07:49	16:20 (16)	06:42	17:50 (15)	06:26	05:27	05:03				
	16:53	17:55	40	17:00 (16)	18:50	24	18:14 (15)	20:48	21:42	22:15		
21	08:44	07:47	16:20 (16)	06:40	17:48 (15)	06:24	05:25	05:03				
	16:54	17:57	40	17:00 (16)	18:51	28	18:16 (15)	20:50	21:44	22:16		
22	08:42	07:45	16:19 (16)	06:37	17:46 (15)	06:22	05:24	05:03				
	16:56	17:59	40	16:59 (16)	18:53	31	18:17 (15)	20:52	21:46	22:16		
23	08:41	07:42	16:20 (16)	06:35	17:45 (15)	06:20	05:22	05:03				
	16:58	18:01	39	16:59 (16)	18:55	33	18:18 (15)	20:54	21:47	22:16		
24	08:40	07:40	16:20 (16)	06:32	17:43 (15)	06:17	05:21	05:04				
	17:00	18:03	39	16:59 (16)	18:57	36	18:19 (15)	20:56	21:49	22:16		
25	08:38	07:38	16:20 (16)	06:30	17:42 (15)	06:15	05:20	05:04				
	17:02	18:05	38	16:58 (16)	18:59	38	18:20 (15)	20:58	21:50	22:16		
26	08:37	07:36	16:21 (16)	06:27	17:41 (15)	06:13	05:18	05:04				
	17:04	18:07	37	16:58 (16)	19:01	39	18:20 (15)	20:59	21:52	22:16		
27	08:35	07:33	16:21 (16)	06:25	17:40 (15)	06:11	05:17	05:05				
	17:06	18:09	36	16:57 (16)	19:03	40	18:20 (15)	21:01	21:53	22:16		
28	08:34	07:31	16:22 (16)	06:22	17:39 (15)	06:08	05:16	05:05				
	17:08	18:11	38	17:43 (14)	19:05	41	18:20 (15)	21:03	21:55	22:16		
29	08:32		07:20	06:06	18:39 (15)	06:06	05:15	05:06				
	17:10		20:07	41	19:20 (15)	21:05	21:56	22:15				
30	08:31		07:17	06:04	18:38 (15)	06:04	05:14	05:07				
	17:12		20:08	42	19:20 (15)	21:07	21:57	22:15				
31	08:29		07:15	05:12	18:38 (15)		05:12					
	17:14		20:10	42	19:20 (15)		21:59					
Potential sun hours	248	272	367	421	496	513						
Total, worst case		722	691	419								
Sun reduction		0.22	0.22	0.34								
Oper. time red.		1.00	1.00	1.00								
Wind dir. red.		0.58	0.58	0.58								
Total reduction		0.13	0.13	0.20								
Total, real		93	89	83								

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: O - H15

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	July	August	September	October	November	December
1	05:07 22:15	05:48 21:39	06:44 20:31	18:43 (15) 19:07 (15)	07:38 17:04	08:33 16:19
2	05:08 22:14	05:50 21:37	06:45 20:28	18:41 (15) 19:08 (15)	07:40 17:14	08:35 16:18
3	05:09 22:14	05:52 21:35	06:47 20:26	18:39 (15) 19:10 (15)	07:42 17:11	08:36 16:17
4	05:10 22:14	05:53 21:33	06:49 20:24	18:37 (15) 19:10 (15)	07:44 19:09	08:38 16:17
5	05:11 22:13	05:55 21:31	06:51 20:21	18:36 (15) 19:11 (15)	07:45 19:06	08:39 16:16
6	05:12 22:12	05:57 21:29	06:53 20:19	18:35 (15) 19:12 (15)	07:47 19:04	08:41 16:16
7	05:12 22:12	05:59 21:27	06:54 20:16	18:34 (15) 19:12 (15)	07:49 19:01	08:42 16:15
8	05:14 22:11	06:00 21:25	06:56 20:14	18:32 (15) 19:12 (15)	07:51 18:59	08:43 16:15
9	05:15 22:10	06:02 21:23	06:58 20:11	18:32 (15) 19:12 (15)	07:53 18:56	08:45 16:14
10	05:16 22:09	06:04 21:21	07:00 20:09	18:31 (15) 19:12 (15)	07:55 18:54	08:46 16:14
11	05:17 22:08	06:06 21:19	07:02 20:06	18:31 (15) 19:12 (15)	07:57 18:51	08:47 16:14
12	05:18 22:07	06:07 21:17	07:03 20:04	18:29 (15) 19:11 (15)	07:58 18:49	08:48 16:14
13	05:19 22:06	06:09 21:15	07:05 20:01	18:29 (15) 19:11 (15)	08:00 18:47	08:49 16:13
14	05:21 22:05	06:11 21:13	07:07 19:59	18:29 (15) 19:11 (15)	08:02 18:44	08:50 16:13
15	05:22 22:04	06:13 21:10	07:09 19:56	18:29 (15) 19:10 (15)	08:04 18:42	08:51 16:13
16	05:23 22:03	06:15 21:08	07:11 19:54	18:29 (15) 19:09 (15)	08:06 18:40	08:52 16:13
17	05:25 22:02	06:16 21:06	07:12 19:51	18:29 (15) 19:08 (15)	08:08 18:37	08:53 16:14
18	05:26 22:01	06:18 21:04	07:14 19:49	18:30 (15) 19:07 (15)	08:10 18:35	08:54 16:14
19	05:27 21:59	06:20 21:01	07:16 19:46	18:30 (15) 19:06 (15)	08:12 18:33	08:55 16:14
20	05:29 21:58	06:22 20:59	07:18 19:44	18:30 (15) 19:04 (15)	08:14 18:30	08:55 16:14
21	05:30 21:57	06:24 20:57	07:20 19:41	18:31 (15) 19:03 (15)	08:16 18:28	08:56 16:15
22	05:32 21:55	06:25 20:55	07:21 19:39	18:32 (15) 19:01 (15)	08:18 18:26	08:56 16:15
23	05:33 21:54	06:27 20:52	07:23 19:36	18:34 (15) 18:59 (15)	08:20 18:24	08:57 16:16
24	05:35 21:52	06:29 20:50	07:25 19:33	18:36 (15) 18:57 (15)	08:22 18:21	08:57 16:16
25	05:37 21:51	06:31 20:48	07:27 19:31	18:39 (15) 18:53 (15)	07:24 17:19	08:23 16:25
26	05:38 21:49	06:33 20:45	07:29 19:28	18:39 (15) 17:17	07:26 17:17	08:25 16:24
27	05:40 21:47	06:35 20:43	07:31 19:26	17:15 17:15	36 16:27 (16)	08:27 16:23
28	05:41 21:46	06:36 20:40	07:32 19:23	17:19 17:13	34 16:27 (16)	08:29 16:22
29	05:43 21:44	06:38 20:38	07:34 19:21	17:11 17:11	31 16:25 (16)	08:30 16:21
30	05:45 21:42	06:40 20:36	18:50 (15) 19:02 (15)	07:36 19:18	07:33 17:08	08:32 16:20
31	05:46 21:40	06:42 20:33	18:47 (15) 19:06 (15)	07:35 17:06	29 15:56 (16)	08:32 16:22
Potential sun hours	515	461	383	327	257	230
Total, worst case		31	861	906	56	
Sun reduction		0.27	0.29	0.23	0.20	
Oper. time red.		1.00	1.00	1.00	1.00	
Wind dir. red.		0.58	0.58	0.58	0.58	
Total reduction		0.16	0.17	0.14	0.12	
Total, real		5	146	123	6	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: P - H16

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June
1	08:58 16:24	08:27 17:16	07:29 18:13	16:39 (16) 17:20 (16)	07:12 20:12	19:09 (15) 21:09
2	08:58 16:25	08:25 17:18	07:26 18:15	41 16:38 (16) 42 17:20 (16)	26 07:10 30 20:14	19:35 (15) 21:11
3	08:58 16:26	08:24 17:20	07:24 18:17	42 16:38 (16) 42 17:20 (16)	07:07 20:16	19:05 (15) 21:13
4	08:58 16:27	08:22 17:22	07:21 18:19	42 16:38 (16) 42 17:20 (16)	07:05 20:18	19:04 (15) 21:14
5	08:57 16:28	08:20 17:24	07:19 18:21	42 16:38 (16) 42 17:20 (16)	07:02 20:20	19:03 (15) 21:16
6	08:57 16:30	08:18 17:26	07:17 18:23	41 16:38 (16) 41 17:19 (16)	07:00 20:22	19:02 (15) 21:18
7	08:56 16:31	08:16 17:28	07:14 18:24	41 16:38 (16) 41 17:19 (16)	06:58 20:24	19:01 (15) 21:20
8	08:56 16:33	08:14 17:30	07:12 18:26	40 16:38 (16) 40 17:18 (16)	06:55 20:25	19:00 (15) 21:22
9	08:55 16:34	08:12 17:32	07:09 18:28	40 16:39 (16) 38 17:17 (16)	06:53 20:27	18:59 (15) 21:23
10	08:55 16:36	08:10 17:34	07:07 18:30	37 16:39 (16) 37 17:16 (16)	06:50 20:29	18:58 (15) 21:25
11	08:54 16:37	08:08 17:36	07:05 18:32	35 16:40 (16) 35 17:15 (16)	06:48 20:31	18:58 (15) 21:27
12	08:53 16:39	08:06 17:38	07:02 18:34	32 16:41 (16) 32 17:13 (16)	06:45 20:33	18:58 (15) 21:29
13	08:52 16:40	08:04 17:40	07:00 18:36	29 16:43 (16) 29 17:12 (16)	06:43 20:35	18:58 (15) 21:31
14	08:51 16:42	08:02 17:42	06:57 18:38	26 16:44 (16) 26 17:10 (16)	06:41 20:37	18:58 (15) 21:32
15	08:50 16:44	08:00 17:44	06:55 18:40	22 16:46 (16) 22 17:08 (16)	06:38 20:39	18:58 (15) 21:34
16	08:50 16:45	07:58 17:46	06:52 18:42	15 16:49 (16) 15 17:04 (16)	06:36 20:41	18:58 (15) 21:36
17	08:48 16:47	07:56 17:49	06:50 18:44	06:33 20:42	39 18:58 (15) 39 19:37 (15)	05:32 21:37
18	08:47 16:49	07:54 17:51	16:57 (16) 17:05 (16)	06:47 18:46	06:31 20:44	18:59 (15) 19:37 (15)
19	08:46 16:51	07:51 17:53	16:52 (16) 17:09 (16)	06:45 18:48	06:29 20:46	19:00 (15) 19:36 (15)
20	08:45 16:53	07:49 17:55	16:49 (16) 17:12 (16)	06:42 18:50	06:26 20:48	19:00 (15) 19:34 (15)
21	08:44 16:54	07:47 17:57	16:48 (16) 17:14 (16)	06:40 18:51	06:24 20:50	19:01 (15) 19:33 (15)
22	08:42 16:56	07:45 17:59	16:45 (16) 17:15 (16)	06:37 18:53	06:22 20:52	19:02 (15) 19:32 (15)
23	08:41 16:58	07:42 18:01	16:44 (16) 17:16 (16)	06:35 18:55	06:20 20:54	19:04 (15) 19:30 (15)
24	08:40 17:00	07:40 18:03	16:43 (16) 17:18 (16)	06:32 18:57	06:17 20:56	19:06 (15) 19:29 (15)
25	08:38 17:02	07:38 18:05	16:42 (16) 17:18 (16)	06:30 18:59	06:15 20:58	19:07 (15) 19:25 (15)
26	08:37 17:04	07:36 18:07	16:41 (16) 17:19 (16)	06:27 19:01	06:13 20:59	19:10 (15) 19:22 (15)
27	08:35 17:06	07:33 18:09	16:40 (16) 17:19 (16)	06:25 19:03	06:11 21:01	05:17 21:53
28	08:34 17:08	07:31 18:11	16:39 (16) 17:20 (16)	06:22 19:05	06:08 21:03	05:16 21:55
29	08:32 17:10		07:20 20:07	3 19:22 (15) 3 19:25 (15)	06:06 21:05	05:15 21:56
30	08:31 17:12		07:17 20:08	16 19:15 (15) 16 19:31 (15)	06:04 21:07	05:14 21:57
31	08:29 17:14		07:15 20:10	22 19:12 (15) 22 19:34 (15)		05:12 21:59
Potential sun hours	248	272	367	421	496	513
Total, worst case		325	606	898		
Sun reduction		0.22	0.22	0.34		
Oper. time red.		1.00	1.00	1.00		
Wind dir. red.		0.58	0.58	0.59		
Total reduction		0.13	0.13	0.20		
Total, real		42	79	182		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: P - H16

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	July	August	September	October	November	December		
1	05:07 22:15	05:48 21:39	06:44 20:31	18:57 (15) 19:39 (15)	07:38 19:16	17:21 (16) 17:53 (16)	07:37 17:04	08:33 16:19
2	05:08 22:14	05:50 21:37	06:45 20:28	18:57 (15) 19:39 (15)	07:40 19:14	17:19 (16) 17:52 (16)	07:39 17:02	08:35 16:18
3	05:09 22:14	05:52 21:35	06:47 20:26	18:57 (15) 19:39 (15)	07:42 19:11	17:17 (16) 17:53 (16)	07:41 17:00	08:36 16:17
4	05:10 22:14	05:53 21:33	06:49 20:24	18:57 (15) 19:37 (15)	07:44 19:09	17:16 (16) 17:54 (16)	07:43 16:58	08:38 16:17
5	05:11 22:13	05:55 21:31	06:51 20:21	18:57 (15) 19:37 (15)	07:45 19:06	17:15 (16) 17:54 (16)	07:45 16:56	08:39 16:16
6	05:12 22:12	05:57 21:29	06:53 20:19	18:58 (15) 19:36 (15)	07:47 19:04	17:15 (16) 17:55 (16)	07:47 16:54	08:41 16:16
7	05:12 22:12	05:59 21:27	06:54 20:16	18:58 (15) 19:35 (15)	07:49 19:01	17:14 (16) 17:55 (16)	07:49 16:53	08:42 16:15
8	05:14 22:11	06:00 21:25	06:56 20:14	18:58 (15) 19:33 (15)	07:51 18:59	17:13 (16) 17:55 (16)	07:51 16:51	08:43 16:15
9	05:15 22:10	06:02 21:23	06:58 20:11	18:59 (15) 19:32 (15)	07:53 18:56	17:13 (16) 17:55 (16)	07:53 16:49	08:45 16:14
10	05:16 22:09	06:04 21:21	07:00 20:09	19:00 (15) 19:30 (15)	07:55 18:54	17:13 (16) 17:55 (16)	07:55 16:47	08:46 16:14
11	05:17 22:08	06:06 21:19	07:02 20:06	19:02 (15) 19:29 (15)	07:57 18:51	17:12 (16) 17:54 (16)	07:57 16:45	08:47 16:14
12	05:18 22:07	06:07 21:17	07:03 20:04	19:03 (15) 19:25 (15)	07:58 18:49	17:12 (16) 17:54 (16)	07:59 16:44	08:48 16:14
13	05:19 22:06	06:09 21:15	07:05 20:01	19:05 (15) 19:22 (15)	08:00 18:47	17:13 (16) 17:53 (16)	08:01 16:42	08:49 16:13
14	05:21 22:05	06:11 21:13	07:07 19:59	19:10 (15) 19:17 (15)	08:02 18:44	17:13 (16) 17:53 (16)	08:03 16:40	08:50 16:13
15	05:22 22:04	06:13 21:10	07:09 19:56	07:09 19:56	08:04 18:42	17:13 (16) 17:52 (16)	08:05 16:39	08:51 16:13
16	05:23 22:03	06:15 21:08	07:11 19:54	07:11 19:54	08:06 18:40	17:13 (16) 17:51 (16)	08:07 16:37	08:52 16:13
17	05:25 22:02	06:16 21:06	19:17 (15) 19:30 (15)	07:12 19:51	08:08 18:37	17:14 (16) 17:50 (16)	08:09 16:36	08:53 16:14
18	05:26 22:01	06:18 21:04	19:13 (15) 19:32 (15)	07:14 19:49	08:10 18:35	17:15 (16) 17:49 (16)	08:11 16:34	08:54 16:14
19	05:27 21:59	06:20 21:01	19:11 (15) 19:35 (15)	07:16 19:46	08:12 18:33	17:16 (16) 17:47 (16)	08:12 16:33	08:55 16:14
20	05:29 21:58	06:22 20:59	19:09 (15) 19:36 (15)	07:18 19:44	08:14 18:30	17:17 (16) 17:46 (16)	08:14 16:31	08:55 16:14
21	05:30 21:57	06:24 20:57	19:07 (15) 19:37 (15)	07:20 19:41	08:16 18:28	17:18 (16) 17:44 (16)	08:16 16:30	08:56 16:15
22	05:32 21:55	06:25 20:55	19:05 (15) 19:38 (15)	07:21 19:39	08:18 18:26	17:20 (16) 17:41 (16)	08:18 16:29	08:56 16:15
23	05:33 21:54	06:27 20:52	19:04 (15) 19:39 (15)	07:23 19:36	08:20 18:24	17:23 (16) 17:38 (16)	08:20 16:27	08:57 16:16
24	05:35 21:52	06:29 20:50	19:02 (15) 19:39 (15)	07:25 19:33	08:22 18:21	08:22 16:26	08:22 16:26	08:57 16:16
25	05:37 21:51	06:31 20:48	19:02 (15) 19:40 (15)	07:27 19:31	07:24 17:19	08:23 16:25	08:23 16:17	08:58 16:17
26	05:38 21:49	06:33 20:45	19:01 (15) 19:40 (15)	07:29 19:28	07:26 17:17	08:25 16:24	08:25 16:18	08:58 16:18
27	05:40 21:47	06:35 20:43	19:00 (15) 19:41 (15)	07:31 19:26	17:32 (16) 17:44 (16)	07:27 17:15	08:27 16:23	08:58 16:19
28	05:41 21:46	06:36 20:40	18:59 (15) 19:40 (15)	07:32 19:23	17:28 (16) 17:47 (16)	07:29 17:13	08:29 16:22	08:58 16:19
29	05:43 21:44	06:38 20:38	18:59 (15) 19:40 (15)	07:34 19:21	17:25 (16) 17:50 (16)	07:31 17:11	08:30 16:21	08:58 16:20
30	05:45 21:42	06:40 20:36	18:58 (15) 19:40 (15)	07:36 19:18	17:23 (16) 17:51 (16)	07:33 17:08	08:32 16:20	08:59 16:21
31	05:46 21:40	06:42 20:33	18:58 (15) 19:40 (15)	07:35 19:18	17:08 17:06	16:20 16:22	16:20 16:22	08:58 16:22
Potential sun hours	515	461	383	327	257	230		
Total, worst case		502	536	818				
Sun reduction		0.27	0.29	0.23				
Oper. time red.		1.00	1.00	1.00				
Wind dir. red.		0.59	0.59	0.58				
Total reduction		0.16	0.17	0.14				
Total, real		81	92	112				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: Q - H17

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:58	08:27	07:29	07:13	06:02	05:12	05:08	05:48	06:44	07:38	07:37	08:33
	16:24	17:16	18:13	20:12	21:09	22:00	22:15	21:38	20:31	19:16	17:05	16:19
2	08:58	08:25	07:26	07:10	06:00	05:11	05:09	05:50	06:46	07:40	07:39	08:35
	16:25	17:18	18:15	20:14	21:11	22:01	22:14	21:37	20:28	19:14	17:03	16:19
3	08:58	08:24	07:24	07:08	05:58	05:10	05:09	05:52	06:47	07:42	07:41	08:36
	16:26	17:20	18:17	20:16	21:12	22:02	22:14	21:35	20:26	19:11	17:01	16:18
4	08:58	08:22	07:22	07:05	05:56	05:09	05:10	05:54	06:49	07:44	07:43	08:38
	16:28	17:22	18:19	20:18	21:14	22:03	22:13	21:33	20:24	19:09	16:59	16:17
5	08:57	08:20	07:19	07:03	05:54	05:08	05:11	05:55	06:51	07:45	07:45	08:39
	16:29	17:24	18:21	20:20	21:16	22:04	22:13	21:31	20:21	19:06	16:57	16:17
6	08:57	08:18	07:17	07:00	05:52	05:08	05:12	05:57	06:53	07:47	07:47	08:41
	16:30	17:26	18:23	20:22	21:18	22:05	22:12	21:29	20:19	19:04	16:55	16:16
7	08:56	08:16	07:14	06:58	05:50	05:07	05:13	05:59	06:55	07:49	07:49	08:42
	16:32	17:28	18:25	20:24	21:20	22:06	22:11	21:27	20:16	19:01	16:53	16:15
8	08:56	08:14	07:12	06:55	05:48	05:06	05:14	06:01	06:56	07:51	07:51	08:43
	16:33	17:30	18:27	20:26	21:22	22:07	22:11	21:25	20:14	18:59	16:51	16:15
9	08:55	08:12	07:09	06:53	05:46	05:06	05:15	06:02	06:58	07:53	07:53	08:45
	16:34	17:32	18:29	20:27	21:23	22:08	22:10	21:23	20:11	18:57	16:49	16:15
10	08:55	08:10	07:07	06:50	05:44	05:05	05:16	06:04	07:00	07:55	07:55	08:46
	16:36	17:34	18:30	20:29	21:25	22:09	22:09	21:21	20:09	18:54	16:47	16:14
11	08:54	08:08	07:05	06:48	05:42	05:05	05:17	06:06	07:02	07:57	07:57	08:47
	16:38	17:37	18:32	20:31	21:27	22:10	22:08	21:19	20:06	18:52	16:46	16:14
12	08:53	08:06	07:02	06:46	05:41	05:04	05:19	06:08	07:04	07:59	07:59	08:48
	16:39	17:39	18:34	20:33	21:29	22:11	22:07	21:17	20:04	18:49	16:44	16:14
13	08:52	08:04	07:00	06:43	05:39	05:04	05:20	06:10	07:05	08:00	08:01	08:49
	16:41	17:41	18:36	20:35	21:30	22:12	22:06	21:15	20:01	18:47	16:42	16:14
14	08:51	08:02	06:57	06:41	05:37	05:04	05:21	06:11	07:07	08:02	08:03	08:50
	16:42	17:43	18:38	20:37	21:32	22:12	22:05	21:12	19:59	18:45	16:41	16:14
15	08:50	08:00	06:55	06:38	05:35	05:03	05:22	06:13	07:09	08:04	08:05	08:51
	16:44	17:45	18:40	20:39	21:34	22:13	22:04	21:10	19:56	18:42	16:39	16:14
16	08:49	07:58	06:52	06:36	05:34	05:03	05:24	06:15	07:11	08:06	08:07	08:52
	16:46	17:47	18:42	20:41	21:36	22:13	22:03	21:08	19:54	18:40	16:37	16:14
17	08:48	07:56	06:50	06:34	05:32	05:03	05:25	06:17	07:13	08:08	08:09	08:53
	16:48	17:49	18:44	20:42	21:37	22:14	22:02	21:06	19:51	18:37	16:36	16:14
18	08:47	07:54	06:47	06:31	05:30	05:03	05:26	06:19	07:14	08:10	08:10	08:54
	16:49	17:51	18:46	20:44	21:39	22:14	22:00	21:04	19:49	18:35	16:34	16:14
19	08:46	07:51	06:45	06:29	05:29	05:03	05:28	06:20	07:16	08:12	08:12	08:54
	16:51	17:53	18:48	20:46	21:41	22:15	21:59	21:01	19:46	18:33	16:33	16:14
20	08:45	07:49	06:42	06:27	05:27	05:03	05:29	06:22	07:18	08:14	08:14	08:55
	16:53	17:55	18:50	20:48	21:42	22:15	21:58	20:59	19:44	18:31	16:32	16:15
21	08:44	07:47	06:40	06:24	05:26	05:03	05:31	06:24	07:20	08:16	08:16	08:56
	16:55	17:57	18:52	20:50	21:44	22:15	21:56	20:57	19:41	18:28	16:30	16:15
22	08:42	07:45	06:37	06:22	05:24	05:04	05:32	06:26	07:22	08:18	08:18	08:56
	16:57	17:59	18:53	20:52	21:45	22:15	21:55	20:55	19:39	18:26	16:29	16:16
23	08:41	07:42	06:35	06:20	05:23	05:04	05:34	06:28	07:23	08:20	08:20	08:57
	16:59	18:01	18:55	20:54	21:47	22:16	21:53	20:52	19:36	18:24	16:28	16:16
24	08:40	07:40	06:32	06:18	05:21	05:04	05:35	06:29	07:25	08:22	08:21	08:57
	17:00	18:03	18:57	20:56	21:49	22:16	21:52	20:50	19:34	18:22	16:26	16:17
25	08:38	07:38	06:30	06:15	05:20	05:04	05:37	06:31	07:27	08:24	08:23	08:57
	17:02	18:05	18:59	20:58	21:50	22:16	21:50	20:48	19:31	17:19	16:25	16:17
26	08:37	07:36	06:27	06:13	05:19	05:05	05:39	06:33	07:29	08:26	08:25	08:58
	17:04	18:07	19:01	20:59	21:52	22:16	21:49	20:45	19:29	17:17	16:24	16:18
27	08:35	07:33	06:25	06:11	05:17	05:05	05:40	06:35	07:31	08:27	08:27	08:58
	17:06	18:09	19:03	21:01	21:53	22:16	21:47	20:43	19:26	17:15	16:23	16:19
28	08:34	07:31	06:22	06:09	05:16	05:06	05:42	06:37	07:33	08:29	08:28	08:58
	17:08	18:11	19:05	21:03	21:54	22:15	21:46	20:40	19:24	17:13	16:22	16:20
29	08:32		07:20	06:07	05:15	05:06	05:43	06:38	07:34	08:30	08:30	08:58
	17:10		20:07	21:05	21:56	22:15	21:44	20:38	19:21	17:11	16:21	16:21
30	08:30		07:17	06:04	05:14	05:07	05:45	06:40	07:36	08:33	08:32	08:58
	17:12		20:09	21:07	21:57	22:15	21:42	20:36	19:19	17:09	16:20	16:22
31	08:29		07:15		05:13		05:47	06:42		07:35		08:58
	17:14		20:10		21:58		21:40	20:33		17:07		16:23
Potential sun hours	248	272	367	421	496	513	515	461	382	328	257	231
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: R - H18  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June
1	08:58	08:27	07:29	07:12	18:20 (16)	05:11
	16:24	17:16	18:13	20:12	18:38 (16)	22:00
2	08:58	08:25	07:26	07:10	18:25 (16)	05:11
	16:25	17:18	18:15	20:14	18:34 (16)	22:01
3	08:58	08:24	07:24	07:07	05:58	05:10
	16:26	17:20	18:17	20:16	21:12	22:02
4	08:58	08:22	07:21	07:05	05:56	05:09
	16:27	17:22	18:19	20:18	21:14	22:03
5	08:57	08:20	07:19	07:02	05:54	05:08
	16:28	17:24	18:21	20:20	21:16	22:05
6	08:57	08:18	07:17	07:00	05:52	05:07
	16:30	17:26	18:23	20:22	21:18	22:06
7	08:56	08:16	07:14	06:58	05:50	05:06
	16:31	17:28	18:24	20:24	21:20	22:07
8	08:56	08:14	07:12	17:34 (16)	06:55	05:06
	16:33	17:30	18:26	17:37 (16)	20:25	22:08
9	08:55	08:12	07:09	17:28 (16)	06:53	05:05
	16:34	17:32	18:28	17:43 (16)	20:27	22:09
10	08:55	08:10	07:07	17:24 (16)	06:50	05:05
	16:36	17:34	18:30	17:46 (16)	20:29	22:09
11	08:54	08:08	07:05	17:22 (16)	06:48	05:04
	16:37	17:36	18:32	17:48 (16)	20:31	22:10
12	08:53	08:06	07:02	17:20 (16)	06:45	05:04
	16:39	17:38	18:34	17:49 (16)	20:33	22:11
13	08:52	08:04	07:00	17:19 (16)	06:43	05:04
	16:40	17:40	18:36	17:51 (16)	20:35	22:12
14	08:51	08:02	06:57	17:17 (16)	06:41	05:03
	16:42	17:42	18:38	17:51 (16)	20:37	22:12
15	08:50	08:00	06:55	17:16 (16)	06:38	05:03
	16:44	17:44	18:40	17:52 (16)	20:39	22:13
16	08:49	07:58	06:52	17:15 (16)	06:36	05:03
	16:45	17:46	18:42	17:52 (16)	20:41	22:14
17	08:48	07:56	06:50	17:14 (16)	06:33	05:03
	16:47	17:49	18:44	17:53 (16)	20:42	22:14
18	08:47	07:54	06:47	17:13 (16)	06:31	05:03
	16:49	17:51	18:46	17:52 (16)	20:44	22:15
19	08:46	07:51	06:45	17:13 (16)	06:29	05:03
	16:51	17:53	18:48	17:53 (16)	20:46	22:15
20	08:45	07:49	06:42	17:12 (16)	06:26	05:03
	16:53	17:55	18:50	17:52 (16)	20:48	22:15
21	08:44	07:47	06:40	17:12 (16)	06:24	05:03
	16:54	17:57	18:51	17:53 (16)	20:50	22:15
22	08:42	07:45	06:37	17:12 (16)	06:22	05:03
	16:56	17:59	18:53	17:52 (16)	20:52	22:16
23	08:41	07:42	06:35	17:12 (16)	06:20	05:03
	16:58	18:01	18:55	17:52 (16)	20:54	22:16
24	08:40	07:40	06:32	17:12 (16)	06:17	05:04
	17:00	18:03	18:57	17:50 (16)	20:56	22:16
25	08:38	07:38	06:30	17:13 (16)	06:15	05:04
	17:02	18:05	18:59	17:50 (16)	20:58	22:16
26	08:37	07:36	06:27	17:12 (16)	06:13	05:04
	17:04	18:07	19:01	17:49 (16)	20:59	22:16
27	08:35	07:33	06:25	17:14 (16)	06:11	05:05
	17:06	18:09	19:03	17:48 (16)	21:01	22:16
28	08:34	07:31	06:22	17:14 (16)	06:08	05:05
	17:08	18:11	19:05	17:46 (16)	21:03	22:16
29	08:32		07:20	18:15 (16)	06:06	05:06
	17:10		20:07	18:45 (16)	21:05	22:15
30	08:31		07:17	18:16 (16)	06:04	05:07
	17:12		20:08	18:43 (16)	21:07	22:15
31	08:29		07:15	18:18 (16)		05:12
	17:14		20:10	18:41 (16)		21:59
Potential sun hours	248	272	367	421	496	513
Total, worst case			771	590	314	
Sun reduction			0.22	0.34	0.36	
Oper. time red.			1.00	1.00	1.00	
Wind dir. red.			0.57	0.59	0.59	
Total reduction			0.13	0.20	0.21	
Total, real			99	119	67	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: R - H18

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	July	August	September	October	November	December		
1	05:07	05:48	19:50 (15)	06:44	07:38	17:59 (16)	07:37	08:33
	22:15	21:39	11 20:01 (15)	20:31	19:16	30 18:29 (16)	17:04	16:19
2	05:08	05:50	19:48 (15)	06:45	07:40	17:59 (16)	07:39	08:35
	22:14	21:37	16 20:04 (15)	20:28	19:14	28 18:27 (16)	17:02	16:18
3	05:09	05:52	19:45 (15)	06:47	07:42	18:01 (16)	07:41	08:36
	22:14	21:35	20 20:05 (15)	20:26	19:11	24 18:25 (16)	17:00	16:17
4	05:10	05:53	19:44 (15)	06:49	07:43	18:03 (16)	07:43	08:38
	22:13	21:33	23 20:07 (15)	20:23	19:09	19 18:22 (16)	16:58	16:17
5	05:11	05:55	19:43 (15)	06:51	07:45	18:07 (16)	07:45	08:39
	22:13	21:31	26 20:09 (15)	20:21	19:06	11 18:18 (16)	16:56	16:16
6	05:12	05:57	19:41 (15)	06:53	07:47		07:47	08:41
	22:12	21:29	28 20:09 (15)	20:19	19:04		16:54	16:16
7	05:12	05:59	19:40 (15)	06:54	07:49		07:49	08:42
	22:12	21:27	30 20:10 (15)	20:16	19:01		16:53	16:15
8	05:14	06:00	19:39 (15)	06:56	07:51		07:51	08:43
	22:11	21:25	31 20:10 (15)	20:14	18:59		16:51	16:15
9	05:15	06:02	19:38 (15)	06:58	07:53		07:53	08:45
	22:10	21:23	33 20:11 (15)	20:11	18:56		16:49	16:14
10	05:16	06:04	19:38 (15)	07:00	18:19 (16)	07:55	07:55	08:46
	22:09	21:21	34 20:12 (15)	20:09	7 18:26 (16)	18:54	16:47	16:14
11	05:17	06:06	19:36 (15)	07:02	18:14 (16)	07:57	07:57	08:47
	22:08	21:19	36 20:12 (15)	20:06	17 18:31 (16)	18:51	16:45	16:14
12	05:18	06:07	19:36 (15)	07:03	18:10 (16)	07:58	07:59	08:48
	22:07	21:17	36 20:12 (15)	20:04	22 18:32 (16)	18:49	16:44	16:14
13	05:19	06:09	19:36 (15)	07:05	18:08 (16)	08:00	08:01	08:49
	22:06	21:15	37 20:13 (15)	20:01	26 18:34 (16)	18:47	16:42	16:13
14	05:21	06:11	19:35 (15)	07:07	18:06 (16)	08:02	08:03	08:50
	22:05	21:13	37 20:12 (15)	19:59	29 18:35 (16)	18:44	16:40	16:13
15	05:22	06:13	19:35 (15)	07:09	18:04 (16)	08:04	08:05	08:51
	22:04	21:10	38 20:13 (15)	19:56	32 18:36 (16)	18:42	16:39	16:13
16	05:23	06:15	19:35 (15)	07:11	18:02 (16)	08:06	08:07	08:52
	22:03	21:08	38 20:13 (15)	19:54	34 18:36 (16)	18:40	16:37	16:13
17	05:25	06:16	19:35 (15)	07:12	18:01 (16)	08:08	08:09	08:53
	22:02	21:06	38 20:13 (15)	19:51	36 18:37 (16)	18:37	16:36	16:14
18	05:26	06:18	19:34 (15)	07:14	18:00 (16)	08:10	08:11	08:54
	22:01	21:04	38 20:12 (15)	19:49	37 18:37 (16)	18:35	16:34	16:14
19	05:27	06:20	19:34 (15)	07:16	17:59 (16)	08:12	08:12	08:55
	21:59	21:01	38 20:12 (15)	19:46	39 18:38 (16)	18:33	16:33	16:14
20	05:29	06:22	19:34 (15)	07:18	17:58 (16)	08:14	08:14	08:55
	21:58	20:59	37 20:11 (15)	19:44	39 18:37 (16)	18:30	16:31	16:14
21	05:30	06:24	19:34 (15)	07:20	17:57 (16)	08:16	08:16	08:56
	21:57	20:57	36 20:10 (15)	19:41	40 18:37 (16)	18:28	16:30	16:15
22	05:32	06:25	19:35 (15)	07:21	17:57 (16)	08:18	08:18	08:56
	21:55	20:55	34 20:09 (15)	19:39	40 18:37 (16)	18:26	16:29	16:15
23	05:33	06:27	19:35 (15)	07:23	17:57 (16)	08:20	08:20	08:57
	21:54	20:52	34 20:09 (15)	19:36	40 18:37 (16)	18:24	16:27	16:16
24	05:35	06:29	19:35 (15)	07:25	17:57 (16)	08:22	08:22	08:57
	21:52	20:50	32 20:07 (15)	19:33	40 18:37 (16)	18:21	16:26	16:16
25	05:37	06:31	19:36 (15)	07:27	17:56 (16)	07:24	08:23	08:58
	21:51	20:48	30 20:06 (15)	19:31	39 18:35 (16)	17:19	16:25	16:17
26	05:38	06:33	19:37 (15)	07:29	17:56 (16)	07:26	08:25	08:58
	21:49	20:45	28 20:05 (15)	19:28	39 18:35 (16)	17:17	16:24	16:18
27	05:40	06:35	19:39 (15)	07:31	17:56 (16)	07:27	08:27	08:58
	21:47	20:43	24 20:03 (15)	19:26	38 18:34 (16)	17:15	16:23	16:19
28	05:41	06:36	19:40 (15)	07:32	17:57 (16)	07:29	08:29	08:58
	21:46	20:40	20 20:00 (15)	19:23	36 18:33 (16)	17:13	16:22	16:19
29	05:43	06:38	19:42 (15)	07:34	17:57 (16)	07:31	08:30	08:58
	21:44	20:38	15 19:57 (15)	19:21	35 18:32 (16)	17:11	16:21	16:20
30	05:45	06:40	19:48 (15)	07:36	17:58 (16)	07:33	08:32	08:58
	21:42	20:36	4 19:52 (15)	19:18	33 18:31 (16)	17:08	16:20	16:21
31	05:46	06:42			07:35		08:58	
	21:40	20:33			17:06		16:22	
Potential sun hours	515	461	383	327	257	230		
Total, worst case		882	698	112				
Sun reduction		0.27	0.29	0.23				
Oper. time red.		1.00	1.00	1.00				
Wind dir. red.		0.59	0.57	0.57				
Total reduction		0.16	0.17	0.13				
Total, real		142	117	15				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: S - H19

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June
1	08:58 16:24	08:27 17:16	15:51 (16) 16:26 (16)	07:29 18:13	17:17 (15) 17:40 (15)	07:12 20:12
2	08:58 16:25	08:25 17:18	15:51 (16) 16:27 (16)	07:26 18:15	17:14 (15) 17:41 (15)	07:10 20:14
3	08:58 16:26	08:24 17:20	15:51 (16) 16:27 (16)	07:24 18:17	17:13 (15) 17:43 (15)	07:07 20:16
4	08:58 16:27	08:22 17:22	15:51 (16) 16:27 (16)	07:21 18:19	17:11 (15) 17:44 (15)	07:05 20:18
5	08:57 16:28	08:20 17:24	15:51 (16) 16:27 (16)	07:19 18:21	17:10 (15) 17:45 (15)	07:02 20:20
6	08:57 16:30	08:18 17:26	15:51 (16) 16:27 (16)	07:17 18:23	17:09 (15) 17:45 (15)	07:00 20:22
7	08:56 16:31	08:16 17:28	15:51 (16) 16:27 (16)	07:14 18:24	17:08 (15) 17:46 (15)	06:58 20:24
8	08:56 16:33	08:14 17:30	15:52 (16) 16:27 (16)	07:12 18:26	17:07 (15) 17:46 (15)	06:55 20:25
9	08:55 16:34	08:12 17:32	15:51 (16) 16:26 (16)	07:09 18:28	17:07 (15) 17:46 (15)	06:53 20:27
10	08:55 16:36	08:10 17:34	15:52 (16) 16:26 (16)	07:07 18:30	17:06 (15) 17:46 (15)	06:50 20:29
11	08:54 16:37	08:08 17:36	15:53 (16) 16:25 (16)	07:05 18:32	17:06 (15) 17:46 (15)	06:48 20:31
12	08:53 16:39	08:06 17:38	15:54 (16) 16:25 (16)	07:02 18:34	17:05 (15) 17:46 (15)	06:45 20:33
13	08:52 16:40	08:04 17:40	15:55 (16) 16:24 (16)	07:00 18:36	17:06 (15) 17:46 (15)	06:43 20:35
14	08:51 16:42	08:02 17:42	15:57 (16) 16:23 (16)	06:57 18:38	17:05 (15) 17:45 (15)	06:41 20:37
15	08:51 16:44	08:00 17:44	15:57 (16) 16:21 (16)	06:55 18:40	17:06 (15) 17:44 (15)	06:38 20:39
16	08:50 16:45	07:58 17:46	16:00 (16) 16:19 (16)	06:52 18:42	17:06 (15) 17:43 (15)	06:36 20:41
17	08:48 16:47	07:56 17:49	16:03 (16) 16:17 (16)	06:50 18:44	17:07 (15) 17:43 (15)	06:33 20:42
18	08:47 16:49	07:54 17:51	16:09 (16) 16:12 (16)	06:47 18:46	17:07 (15) 17:41 (15)	06:31 20:44
19	08:46 16:51	07:51 16:03 (16) 17:53	07:51 16:06 (16)	06:45 18:48	17:08 (15) 17:40 (15)	06:29 20:46
20	08:45 16:53	07:49 16:11 (16) 17:55	07:49 16:11 (16)	06:42 17:25 (14)	17:09 (15) 17:38 (15)	06:26 20:48
21	08:44 16:54	07:47 16:13 (16) 17:57	07:47 16:13 (16)	06:40 17:28 (14)	17:11 (15) 17:37 (15)	06:24 20:50
22	08:42 16:56	07:45 16:16 (16) 17:59	07:45 16:16 (16)	06:37 17:23 (14)	17:12 (15) 17:34 (15)	06:22 20:52
23	08:41 16:58	07:42 16:17 (16) 18:01	07:42 16:17 (16)	06:35 17:23 (14)	17:15 (15) 17:31 (15)	06:20 20:54
24	08:40 17:00	07:40 16:19 (16) 18:03	07:40 16:19 (16)	06:32 17:23 (14)	17:20 (15) 17:25 (15)	06:17 20:56
25	08:38 17:02	07:38 16:20 (16) 18:05	07:38 16:20 (16)	06:30 17:36 (14)	06:15 20:58	05:20 21:50
26	08:37 17:04	07:36 16:21 (16) 18:07	07:36 16:21 (16)	06:27 17:23 (14)	06:13 20:59	05:18 21:52
27	08:35 17:06	07:33 16:23 (16) 18:09	07:33 16:23 (16)	06:25 17:23 (14)	06:11 21:01	05:17 21:53
28	08:34 17:08	07:31 16:23 (16) 18:11	07:31 16:23 (16)	06:22 17:19 (15)	06:08 21:03	05:16 21:55
29	08:32 17:10	07:29 16:24 (16)	07:29 16:24 (16)	07:20 20:07	06:06 21:05	05:15 21:57
30	08:31 17:12	07:27 16:24 (16)	07:27 16:24 (16)	07:17 20:08	06:04 21:07	05:14 21:57
31	08:29 17:14	07:25 16:25 (16)	07:25 16:25 (16)	07:15 20:10	05:12 21:59	05:12 21:59
Potential sun hours	248	272	367	421	496	513
Total, worst case	316	625	776			
Sun reduction	0.17	0.22	0.22			
Oper. time red.	1.00	1.00	1.00			
Wind dir. red.	0.61	0.60	0.58			
Total reduction	0.10	0.13	0.13			
Total, real	33	84	101			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: S - H19  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	July	August	September	October	November	December			
1	05:07	05:48	06:44	07:38	17:45 (15)	08:33			
	22:15	21:39	20:31	19:16	40 18:25 (15)	17:04 33 15:55 (16)	16:19		
2	05:08	05:50	06:45	07:40	17:44 (15)	07:39	15:21 (16)	08:35	
	22:14	21:37	20:28	19:14	40 18:24 (15)	17:02 35 15:56 (16)	16:18		
3	05:09	05:52	06:47	07:42	17:44 (15)	07:41	15:20 (16)	08:36	
	22:14	21:35	20:26	19:11	40 18:24 (15)	17:00 36 15:56 (16)	16:17		
4	05:10	05:53	06:49	07:44	17:44 (15)	07:43	15:21 (16)	08:38	
	22:14	21:33	20:24	19:09	40 18:24 (15)	16:58 36 15:57 (16)	16:17		
5	05:11	05:55	06:51	07:45	17:44 (15)	07:45	15:21 (16)	08:39	
	22:13	21:31	20:21	19:06	39 18:23 (15)	16:56 36 15:57 (16)	16:16		
6	05:11	05:57	06:53	07:47	17:44 (15)	07:47	15:20 (16)	08:41	
	22:12	21:29	20:19	19:04	38 18:22 (15)	16:54 37 15:57 (16)	16:16		
7	05:12	05:59	06:54	07:49	17:45 (15)	07:49	15:20 (16)	08:42	
	22:12	21:27	20:16	19:01	37 18:22 (15)	16:53 37 15:57 (16)	16:15		
8	05:14	06:00	06:56	07:51	17:45 (15)	07:51	15:20 (16)	08:43	
	22:11	21:25	20:14	18:59	36 18:21 (15)	16:51 37 15:57 (16)	16:15		
9	05:15	06:02	06:58	07:53	17:46 (15)	07:53	15:21 (16)	08:45	
	22:10	21:23	20:11	18:56	33 18:19 (15)	16:49 35 15:56 (16)	16:14		
10	05:16	06:04	07:00	07:55	17:47 (15)	07:55	15:22 (16)	08:46	
	22:09	21:21	20:09	18:54	31 18:18 (15)	16:47 35 15:57 (16)	16:14		
11	05:17	06:06	07:02	07:57	17:48 (15)	07:57	15:22 (16)	08:47	
	22:08	21:19	20:06	18:51	29 18:17 (15)	16:45 35 15:57 (16)	16:14		
12	05:18	06:07	07:03	07:58	17:49 (15)	07:59	15:23 (16)	08:48	
	22:07	21:17	20:04	18:49	26 18:15 (15)	16:44 33 15:56 (16)	16:14		
13	05:19	06:09	07:05	08:00	17:51 (15)	08:01	15:23 (16)	08:49	
	22:06	21:15	20:01	18:47	21 18:12 (15)	16:42 33 15:56 (16)	16:13		
14	05:21	06:11	07:07	08:02	17:54 (15)	08:03	15:24 (16)	08:50	
	22:05	21:13	19:59	18:44	15 18:09 (14)	16:40 31 15:55 (16)	16:13		
15	05:22	06:13	07:09	08:04	17:56 (14)	08:05	15:24 (16)	08:51	
	22:04	21:10	19:56	18:42	14 18:10 (14)	16:39 31 15:55 (16)	16:13		
16	05:23	06:15	07:11	08:06	17:55 (14)	08:07	15:25 (16)	08:52	
	22:03	21:08	19:54	18:40	15 18:10 (14)	16:37 29 15:54 (16)	16:13		
17	05:25	06:16	07:12	08:08	17:54 (14)	08:09	15:27 (16)	08:53	
	22:02	21:06	19:51	18:37	14 18:08 (14)	16:36 27 15:54 (16)	16:14		
18	05:26	06:18	07:14	08:10	17:54 (14)	08:11	15:28 (16)	08:54	
	22:01	21:04	19:49	18:35	11 18:05 (14)	16:34 25 15:53 (16)	16:14		
19	05:27	06:20	07:16	08:12	17:54 (14)	08:12	15:30 (16)	08:55	
	21:59	21:01	19:46	18:33	9 18:03 (14)	16:33 22 15:52 (16)	16:14		
20	05:29	06:22	07:18	18:02 (15)	08:14	17:54 (14)	08:14	15:31 (16)	08:55
	21:58	20:59	19:44	14 18:16 (15)	18:30 6 18:00 (14)	16:31 20 15:51 (16)	16:14		
21	05:30	06:24	07:20	17:59 (15)	08:16	17:55 (14)	08:16	15:33 (16)	08:56
	21:57	20:57	19:41	20 18:19 (15)	18:28 3 17:58 (14)	16:30 16 15:49 (16)	16:15		
22	05:32	06:25	07:21	17:56 (15)	08:18	08:18	15:36 (16)	08:56	
	21:55	20:55	19:39	25 18:21 (15)	18:26 11 15:47 (16)	16:15			
23	05:33	06:27	07:23	17:54 (15)	08:20	08:20	15:40 (16)	08:57	
	21:54	20:52	19:36	28 18:22 (15)	18:24 3 15:43 (16)	16:16			
24	05:35	06:29	07:25	17:52 (15)	08:22	16:36 (16)	08:22	08:57	
	21:52	20:50	19:34	32 18:24 (15)	18:21 8 16:44 (16)	16:26 16:16			
25	05:37	06:31	07:27	17:51 (15)	07:24	15:31 (16)	08:23	08:58	
	21:51	20:48	19:31	33 18:24 (15)	17:19 16 15:47 (16)	16:25 16:17			
26	05:38	06:33	07:29	17:49 (15)	07:26	15:29 (16)	08:25	08:58	
	21:49	20:45	19:28	35 18:24 (15)	17:17 20 15:49 (16)	16:24 16:18			
27	05:40	06:35	07:31	17:48 (15)	07:27	15:26 (16)	08:27	08:58	
	21:47	20:43	19:26	37 18:25 (15)	17:15 25 15:51 (16)	16:23 16:19			
28	05:41	06:36	07:32	17:47 (15)	07:29	15:26 (16)	08:29	08:58	
	21:46	20:40	19:23	38 18:25 (15)	17:13 27 15:53 (16)	16:22 16:19			
29	05:43	06:38	07:34	17:46 (15)	07:31	15:24 (16)	08:30	08:58	
	21:44	20:38	19:21	39 18:25 (15)	17:11 30 15:54 (16)	16:21 16:20			
30	05:45	06:40	07:36	17:46 (15)	07:33	15:23 (16)	08:32	08:59	
	21:42	20:36	19:18	39 18:25 (15)	17:08 31 15:54 (16)	16:20 16:21			
31	05:46	06:42		07:35	15:22 (16)		08:58		
	21:40	20:33		17:06	33 15:55 (16)		16:22		
Potential sun hours	515	461	383	327	257	230			
Total, worst case			340	727	673				
Sun reduction			0.29	0.23	0.20				
Oper. time red.			1.00	1.00	1.00				
Wind dir. red.			0.58	0.59	0.61				
Total reduction			0.17	0.14	0.12				
Total, real			58	100	82				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: T - H20

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.36	2.16	2.65	4.82	5.79	4.41	4.42	4.07	3.73	2.48	1.71	0.89

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January	February	March	April	May	June	July	August	September	October	November	December	
1	08:58 16:24	08:27 17:16	07:29 18:13	07:13 20:12	19:03 (5) 21:09	06:02 22:00	05:12 22:15	05:08 22:15	05:48 21:39	06:44 20:31	07:38 19:16	07:37 17:04	08:33 16:19
2	08:58 16:25	08:25 17:18	07:26 18:15	07:10 20:14	19:05 (5) 21:11	06:00 22:01	05:11 22:14	05:08 21:37	05:50 20:28	06:46 20:28	07:40 19:14	07:39 17:02	08:35 16:18
3	08:58 16:26	08:24 17:20	07:24 18:17	07:08 20:16	19:08 (5) 21:13	05:58 22:02	05:10 22:14	05:09 21:35	05:52 20:26	06:47 20:26	07:42 19:11	07:41 17:00	08:36 16:18
4	08:58 16:27	08:22 17:22	07:22 18:19	07:05 20:18	19:12 (5) 21:14	05:56 22:03	05:09 22:13	05:10 21:33	05:54 20:24	06:49 20:24	07:44 19:09	07:43 16:59	08:38 16:17
5	08:57 16:29	08:20 17:24	07:19 18:21	07:03 20:20	19:15 (5) 21:16	05:54 22:05	05:08 22:13	05:11 21:31	05:55 20:21	06:51 20:21	07:45 19:06	07:45 16:57	08:39 16:16
6	08:57 16:30	08:18 17:26	07:17 18:23	07:00 20:22	05:52 21:18	05:07 22:06	05:12 22:12	05:11 21:29	05:57 20:19	06:53 20:19	07:47 19:04	07:47 16:55	08:41 16:16
7	08:56 16:31	08:16 17:28	07:14 18:25	06:58 20:24	05:50 21:20	05:07 22:07	05:13 22:12	05:59 21:27	06:55 20:16	06:55 20:16	07:49 19:01	07:49 16:53	08:42 16:15
8	08:56 16:33	08:14 17:30	07:12 18:27	06:55 20:26	05:54 21:22	05:06 22:08	05:14 22:11	06:01 21:25	06:56 20:14	06:56 20:14	07:51 18:59	07:51 16:51	08:43 16:15
9	08:55 16:34	08:12 17:32	07:09 18:29	06:53 20:27	05:46 21:23	05:06 22:09	05:15 22:10	06:02 21:23	06:58 20:11	19:01 (5) 19:14 (5)	07:53 18:56	07:53 16:49	08:45 16:15
10	08:55 16:36	08:10 17:34	07:07 18:30	06:50 20:29	05:44 21:25	05:05 22:09	05:16 22:09	06:04 21:21	07:00 20:09	19:16 (5) 18:54	07:55 16:47	07:55 16:47	08:46 16:14
11	08:54 16:37	08:08 17:36	07:05 18:32	06:48 20:31	05:42 21:27	05:05 22:10	05:17 22:08	06:06 21:19	07:02 20:06	18:57 (5) 19:18 (5)	07:57 18:52	07:57 16:46	08:47 16:14
12	08:53 16:39	08:06 17:39	07:02 18:34	06:46 20:33	05:41 21:29	05:04 22:11	05:18 22:07	06:08 21:17	07:04 20:04	18:54 (5) 19:18 (5)	07:59 18:49	07:59 16:44	08:48 16:14
13	08:52 16:41	08:04 17:41	07:00 18:36	06:43 20:35	05:39 21:31	05:04 22:12	05:20 22:06	06:09 21:15	07:05 20:01	18:53 (5) 19:19 (5)	08:00 18:47	08:01 16:42	08:49 16:14
14	08:51 16:42	08:02 17:43	06:57 18:38	18:10 (6) 20:37	06:41 20:37	05:37 21:32	05:04 22:12	06:11 22:05	07:07 19:59	18:52 (5) 19:20 (5)	08:02 18:44	08:03 16:40	08:50 16:14
15	08:50 16:44	08:00 17:45	06:55 18:40	18:08 (6) 20:39	06:38 20:39	05:35 21:34	05:03 22:13	06:13 22:04	07:09 19:56	18:51 (5) 19:20 (5)	08:04 18:42	08:05 16:39	08:51 16:14
16	08:49 16:46	07:58 17:47	06:52 18:42	18:06 (6) 20:41	06:36 20:41	05:33 21:36	05:03 22:14	06:15 22:03	07:11 19:54	18:50 (5) 19:19 (5)	08:06 18:40	08:07 16:37	08:52 16:14
17	08:48 16:47	07:56 17:49	06:50 18:44	18:05 (6) 20:43	06:34 20:43	05:32 21:37	05:03 22:14	06:17 21:06	07:13 19:51	18:50 (5) 19:19 (5)	08:08 18:37	08:09 16:36	08:53 16:14
18	08:47 16:49	07:54 17:51	06:47 18:46	18:04 (6) 20:44	06:31 20:44	05:30 21:39	05:03 22:14	06:18 22:01	07:14 19:49	18:49 (5) 19:19 (5)	08:10 18:35	08:11 16:34	08:54 16:14
19	08:46 16:51	07:51 17:53	06:45 18:48	18:04 (6) 20:46	06:29 20:46	05:29 21:41	05:03 22:15	06:20 21:59	07:16 19:46	18:49 (5) 19:18 (5)	08:12 18:33	08:12 16:33	08:54 16:14
20	08:45 16:53	07:49 17:55	06:42 18:50	18:03 (6) 20:48	06:27 20:48	05:27 21:42	05:03 22:15	06:22 21:58	07:18 19:44	18:49 (5) 19:16 (5)	08:14 18:31	08:14 16:31	08:55 16:15
21	08:44 16:55	07:47 17:57	06:40 18:52	18:03 (6) 20:50	06:24 20:50	05:26 21:44	05:03 22:15	06:24 21:56	07:20 20:57	18:48 (6) 19:12 (5)	08:16 18:28	08:16 16:30	08:56 16:15
22	08:42 16:57	07:45 17:59	06:37 18:53	18:03 (6) 20:52	06:22 20:52	05:24 21:46	05:03 22:16	06:26 21:55	07:22 20:55	18:48 (6) 19:39	08:18 18:26	08:18 16:29	08:56 16:16
23	08:41 16:58	07:43 18:01	06:35 18:55	18:03 (5) 20:54	06:20 20:54	05:23 21:47	05:04 22:16	06:27 21:54	07:23 20:52	18:48 (6) 19:08 (6)	08:20 18:24	08:20 16:28	08:57 16:16
24	08:40 17:00	07:40 18:03	06:32 18:57	18:02 (5) 20:56	06:18 20:56	05:21 21:49	05:04 22:16	06:29 21:52	07:25 20:34	18:47 (6) 19:05 (6)	08:22 18:24	08:22 16:26	08:57 16:17
25	08:38 17:02	07:38 18:05	06:30 18:59	18:02 (5) 20:58	06:15 20:58	05:20 21:50	05:04 22:15	06:31 21:51	07:27 20:48	18:48 (6) 19:31	07:24 19:31	08:23 16:25	08:58 16:17
26	08:37 17:04	07:36 18:07	06:27 19:01	18:01 (5) 20:59	06:13 20:59	05:19 21:52	05:05 22:16	06:33 21:49	07:29 20:45	18:47 (6) 19:00 (6)	07:26 17:17	08:25 16:24	08:58 16:18
27	08:35 17:06	07:33 18:09	06:25 19:03	18:01 (5) 21:01	06:11 21:01	05:17 21:53	05:05 22:16	06:35 21:47	07:31 20:43	18:47 (6) 19:26	07:28 19:26	08:27 16:23	08:58 16:19
28	08:34 17:08	07:31 18:11	06:22 19:05	18:01 (5) 21:03	06:09 21:03	05:16 21:55	05:06 22:16	06:37 21:46	07:33 20:41	18:48 (6) 19:24	07:29 17:13	08:28 16:22	08:58 16:20
29	08:32 17:10	07:20 18:07	06:20 19:05	19:02 (5) 21:05	06:07 21:05	05:15 21:56	05:06 22:15	06:38 21:44	07:34 20:38	18:50 (6) 19:21	07:31 17:11	08:30 16:21	08:58 16:21
30	08:31 17:12	07:17 18:09	06:19 19:02	19:02 (5) 21:07	06:04 21:07	05:14 21:57	05:07 22:15	06:40 21:42	07:36 20:36	18:53 (6) 19:19	07:33 17:09	08:32 16:20	08:58 16:21
31	08:29 17:14	07:15 18:10	06:18 19:05	19:03 (5) 21:07	06:04 21:07	05:13 21:59	05:07 21:40	06:42 20:33	07:36 20:33	18:53 (6) 19:19	07:33 17:07	08:32 16:21	08:58 16:23
Potential sun hours	248	272	367	421	496	513	515	461	382	434	328	257	231
Total, worst case			373	56									
Sun reduction			0.22	0.34						0.29			
Oper. time red.			1.00	1.00						1.00			
Wind dir. red.			0.58	0.58						0.58			
Total reduction			0.13	0.20						0.17			
Total, real			49	11						74			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)



# SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: U - H21  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January	February	March	April	May	June
1	08:58 16:24	08:27 17:16	07:29 18:13	17:11 (9) 20:12	06:02 21:09	05:12 22:00
2	08:58 16:25	08:25 17:18	07:26 18:15	17:12 (9) 20:14	06:00 21:11	05:11 22:01
3	08:58 16:26	08:24 17:20	07:24 18:17	17:15 (9) 20:16	05:58 21:13	05:10 22:02
4	08:58 16:27	08:22 17:22	07:22 18:19	17:26 (9) 20:18	05:56 21:14	20:36 (13) 22:03
5	08:57 16:29	08:20 17:24	07:19 18:21	17:52 (10) 20:20	05:54 21:16	20:34 (13) 22:05
6	08:57 16:30	08:18 17:26	07:17 18:23	18:05 (10) 20:22	05:52 21:18	20:33 (13) 22:06
7	08:56 16:31	08:16 17:28	07:14 18:25	18:01 (10) 20:24	05:50 21:20	20:32 (13) 22:07
8	08:56 16:33	08:14 17:30	07:12 18:26	17:56 (10) 20:26	05:48 21:22	20:31 (13) 22:08
9	08:55 16:34	08:12 17:32	07:09 18:28	17:52 (10) 20:27	05:46 21:23	20:30 (13) 22:09
10	08:55 16:36	08:10 17:34	07:07 18:30	17:50 (10) 20:29	05:44 21:25	20:29 (13) 22:09
11	08:54 16:37	08:08 17:36	07:05 18:32	18:03 (10) 20:31	05:42 21:27	20:30 (13) 22:10
12	08:53 16:39	08:06 17:38	07:02 18:34	17:47 (10) 20:33	05:40 21:29	20:29 (13) 22:11
13	08:52 16:40	08:04 17:40	07:00 18:36	17:46 (10) 20:35	05:39 21:31	20:29 (13) 22:12
14	08:51 16:42	08:02 17:42	06:57 18:38	17:45 (10) 20:37	05:37 21:32	20:29 (13) 22:12
15	08:51 16:44	08:00 17:45	06:55 18:40	17:45 (10) 20:39	05:35 21:34	20:29 (13) 22:13
16	08:50 16:45	07:58 17:47	06:52 18:42	17:44 (10) 20:41	05:33 21:36	20:30 (13) 22:14
17	08:48 16:47	07:56 17:49	17:17 (9) 18:44	17:44 (10) 20:43	05:32 21:37	20:30 (13) 22:14
18	08:47 16:49	07:54 17:51	17:15 (9) 18:46	17:44 (10) 20:44	05:30 21:39	20:31 (13) 22:15
19	08:46 16:51	07:51 17:53	17:13 (9) 18:48	17:44 (10) 20:46	05:28 21:41	20:31 (13) 22:15
20	08:45 16:53	07:49 17:55	17:12 (9) 18:50	17:44 (10) 20:48	05:27 21:42	20:32 (13) 22:15
21	08:44 16:54	07:47 17:57	17:11 (9) 18:51	17:46 (10) 20:50	05:25 21:44	20:33 (13) 22:15
22	08:42 16:56	07:45 17:59	17:10 (9) 18:53	17:47 (10) 20:52	05:24 21:46	20:33 (13) 22:16
23	08:41 16:58	07:43 18:01	17:10 (9) 18:55	17:49 (10) 20:54	05:22 21:47	20:35 (13) 22:16
24	08:40 17:00	07:40 18:03	17:10 (9) 18:57	17:52 (10) 20:56	05:21 21:49	20:36 (13) 22:16
25	08:38 17:02	07:38 18:05	17:09 (9) 18:59	17:09 (9) 20:58	05:20 21:50	20:39 (14) 22:16
26	08:37 17:04	07:36 18:07	17:09 (9) 19:01	17:09 (9) 20:59	05:18 21:52	21:02 (14) 22:16
27	08:35 17:06	07:33 18:09	17:09 (9) 19:03	17:09 (9) 21:01	05:17 21:53	21:01 (14) 22:16
28	08:34 17:08	07:31 18:11	17:10 (9) 19:05	17:10 (9) 21:03	05:16 21:55	20:59 (14) 22:16
29	08:32 17:10		17:31 (9) 20:07	17:31 (9) 21:05	05:15 21:56	21:20 (14) 22:15
30	08:31 17:12		07:17 20:09	07:17 21:07	05:14 21:57	20:59 (14) 22:15
31	08:29 17:14		07:15 20:10	07:15 21:09	05:13 21:59	20:58 (14) 22:15
Potential sun hours	248	272	367	421	496	513
Total, worst case		204	360	421	496	513
Sun reduction		0.22	0.22	0.34	0.36	0.26
Oper. time red.		1.00	1.00	1.00	1.00	1.00
Wind dir. red.		0.58	0.57	0.59	0.62	0.63
Total reduction		0.13	0.13	0.20	0.23	0.16
Total, real		26	46	53	129	142

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)





### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: V - H22  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January	February	March	April	May	June
1	08:59 16:24	08:27 17:16	09:00 (9) 09:15 (9)	07:29 18:13	07:13 20:12	06:02 21:09
2	08:58 16:25	08:26 17:18	09:02 (9) 09:14 (9)	07:26 18:15	07:10 20:14	06:00 21:11
3	08:58 16:26	08:24 17:20	09:05 (9) 09:11 (9)	07:24 18:17	07:08 20:16	05:58 21:13
4	08:58 16:27	08:22 17:22	07:22 18:19	07:05 20:18	05:56 21:15	06:37 (13) 07:00 (13)
5	08:58 16:29	08:20 17:24	07:19 18:21	07:03 20:20	05:54 21:16	06:39 (13) 07:00 (13)
6	08:57 16:30	08:18 17:26	07:17 18:23	07:00 20:22	05:52 21:18	06:40 (13) 06:58 (13)
7	08:57 16:31	08:16 17:28	07:14 18:25	06:58 20:24	05:50 21:20	06:42 (13) 06:56 (13)
8	08:56 16:33	08:14 17:30	07:12 18:27	06:55 20:26	05:48 21:22	06:44 (13) 06:53 (13)
9	08:55 16:34	08:13 17:32	07:10 18:29	06:53 20:28	05:46 21:24	05:05 22:09
10	08:55 16:36	08:11 17:34	07:07 18:31	06:50 20:29	07:15 (14) 07:17 (14)	05:44 21:25
11	08:54 16:37	08:09 17:36	07:05 18:32	06:48 20:31	07:12 (14) 07:17 (14)	05:42 21:27
12	08:53 16:39	08:06 17:38	08:33 (10) 08:34 (10)	07:02 18:34	06:46 20:33	05:40 21:29
13	08:52 16:41	08:04 17:41	08:31 (10) 08:35 (10)	07:00 18:36	07:24 (11) 07:25 (11)	06:43 20:35
14	08:52 16:42	08:02 17:43	08:29 (10) 08:36 (10)	06:57 18:38	07:22 (11) 07:27 (11)	06:41 20:37
15	08:51 16:44	08:00 17:45	08:27 (10) 08:36 (10)	06:55 18:40	07:19 (11) 07:27 (11)	06:38 20:39
16	08:50 16:46	07:58 17:47	08:24 (10) 08:35 (10)	06:52 18:42	07:17 (11) 07:29 (11)	06:36 20:41
17	08:49 16:47	07:56 17:49	08:22 (10) 08:35 (10)	06:50 18:44	07:14 (11) 07:28 (11)	06:34 20:43
18	08:47 16:49	07:54 17:51	08:20 (10) 08:35 (10)	06:47 18:46	07:11 (11) 07:28 (11)	06:31 20:45
19	08:46 16:51	07:52 17:53	08:17 (10) 08:34 (10)	06:45 18:48	07:09 (11) 07:29 (11)	06:29 20:46
20	08:45 16:53	07:49 17:55	08:15 (10) 08:34 (10)	06:42 18:50	07:06 (11) 07:28 (11)	06:27 20:48
21	08:44 16:55	09:14 (9) 09:16 (9)	07:47 17:57	06:40 18:52	07:04 (11) 07:28 (11)	06:24 20:50
22	08:43 16:56	09:13 (9) 09:17 (9)	07:45 17:59	06:37 18:54	07:01 (11) 07:27 (11)	06:22 20:52
23	08:41 16:58	09:11 (9) 09:17 (9)	07:43 18:01	06:35 18:55	06:59 (11) 07:27 (11)	06:20 20:54
24	08:40 17:00	09:10 (9) 09:18 (9)	07:40 18:03	06:32 18:57	06:56 (11) 07:26 (11)	06:18 20:56
25	08:38 17:02	09:08 (9) 09:18 (9)	07:38 18:05	06:30 18:59	06:56 (11) 07:25 (11)	06:15 20:58
26	08:37 17:04	09:07 (9) 09:18 (9)	07:36 18:07	06:27 19:01	06:56 (11) 07:23 (11)	06:13 21:00
27	08:35 17:06	09:05 (9) 09:18 (9)	07:33 18:09	06:25 19:03	06:58 (11) 07:22 (11)	06:11 21:01
28	08:34 17:08	09:03 (9) 09:18 (9)	07:31 18:11	06:22 19:05	06:58 (11) 07:20 (11)	06:09 21:03
29	08:32 17:10	09:01 (9) 09:17 (9)	07:20 18:07	06:06 19:08	08:00 (11) 08:18 (11)	06:06 21:05
30	08:31 17:12	08:59 (9) 09:16 (9)	07:18 18:09	06:04 19:09	08:02 (11) 08:14 (11)	06:04 21:07
31	08:29 17:14	08:59 (9) 09:17 (9)	07:15 18:11	06:03 19:10	07:15 (14) 20:11	05:13 21:59
Potential sun hours	248	272	367	421	496	513
Total, worst case	120	189	339	381	165	
Sun reduction	0.17	0.22	0.22	0.34	0.36	
Oper. time red.	1.00	1.00	1.00	1.00	1.00	
Wind dir. red.	0.64	0.63	0.59	0.57	0.58	
Total reduction	0.11	0.14	0.13	0.20	0.21	
Total, real	13	26	45	75	34	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: V - H22  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	July	August	September	October	November	December
1	05:08	05:48	06:44	07:11 (14)	07:38	07:38
	22:15	21:39	20:31	5 07:16 (14)	19:16	17:04
2	05:08	05:50	06:46	07:13 (14)	07:40	07:40
	22:15	21:37	20:29	2 07:15 (14)	19:14	17:02
3	05:09	05:52	06:47		07:42	07:41
	22:14	21:35	20:26		19:11	17:00
4	05:10	05:53	06:49		07:44	07:43
	22:14	21:33	20:24		19:09	16:58
5	05:11	05:55	06:50 (13)	06:51	07:46	07:45
	22:13	21:31	11 07:04 (13)	20:21	19:06	16:57
6	05:12	05:57	06:50 (13)	06:53	07:47	07:47
	22:12	21:29	16 07:06 (13)	20:19	19:04	16:55
7	05:13	05:59	06:49 (13)	06:55	07:49	07:49
	22:12	21:27	19 07:08 (13)	20:16	19:01	16:53
8	05:14	06:00	06:48 (13)	06:56	07:51	07:51
	22:11	21:25	22 07:10 (13)	20:14	18:59	7 08:34 (9)
9	05:15	06:02	06:46 (13)	06:58	07:53	07:53
	22:10	21:23	24 07:10 (13)	20:11	18:57	13 08:45 (9)
10	05:16	06:04	06:45 (13)	07:00	07:55	07:55
	22:09	21:21	26 07:11 (13)	20:09	18:54	15 08:46 (9)
11	05:17	06:06	06:45 (13)	07:02	07:57	07:57
	22:08	21:19	27 07:12 (13)	20:06	18:52	18 08:47 (9)
12	05:18	06:08	06:43 (13)	07:04	07:59	07:59
	22:08	21:17	29 07:12 (13)	20:04	18:49	16:44
13	05:20	06:09	06:43 (13)	07:05	08:01	08:01
	22:07	21:15	30 07:13 (13)	20:01	18:47	16:42
14	05:21	06:11	06:43 (13)	07:07	07:51 (11)	08:02
	22:05	21:13	30 07:13 (13)	19:59	18:45	16:40
15	05:22	06:13	06:42 (13)	07:09	07:49 (11)	08:04
	22:04	21:10	31 07:13 (13)	19:56	18:42	16:39
16	05:23	06:15	06:44 (13)	07:11	07:47 (11)	08:06
	22:03	21:08	29 07:13 (13)	19:54	18:40	16:37
17	05:25	06:17	06:46 (13)	07:13	07:45 (11)	08:08
	22:02	21:06	27 07:13 (13)	19:51	18:37	16:36
18	05:26	06:18	06:47 (13)	07:14	07:44 (11)	08:10
	22:01	21:04	25 07:12 (13)	19:49	18:35	11 08:48 (10)
19	05:28	06:20	06:49 (13)	07:16	07:43 (11)	08:12
	21:59	21:02	23 07:12 (13)	19:46	18:33	15 09:01 (10)
20	05:29	06:22	06:51 (13)	07:18	07:45 (11)	08:14
	21:58	20:59	21 07:12 (13)	19:44	18:31	19 09:03 (10)
21	05:31	06:24	06:53 (13)	07:20	07:46 (11)	08:16
	21:57	20:57	19 07:12 (13)	19:41	18:28	20 09:04 (10)
22	05:32	06:26	06:54 (13)	07:22	07:48 (11)	08:18
	21:55	20:55	16 07:10 (13)	19:39	18:26	18 09:04 (10)
23	05:34	06:27	06:56 (13)	07:23	07:50 (11)	08:20
	21:54	20:52	17 07:13 (14)	19:36	18:24	17 09:05 (10)
24	05:35	06:29	06:58 (13)	07:25	07:52 (11)	08:22
	21:52	20:50	17 07:15 (14)	19:34	18:22	15 09:05 (10)
25	05:37	06:31	06:59 (14)	07:27	07:54 (11)	08:24
	21:51	20:48	16 07:15 (14)	19:31	18:20	13 08:05 (10)
26	05:38	06:33	07:01 (14)	07:29	07:55 (11)	08:26
	21:49	20:45	15 07:16 (14)	19:29	18:18	11 08:06 (10)
27	05:40	06:35	07:03 (14)	07:31	07:57 (11)	08:27
	21:47	20:43	14 07:17 (14)	19:26	18:16	8 08:05 (10)
28	05:42	06:37	07:05 (14)	07:33	07:59 (11)	08:29
	21:46	20:41	13 07:18 (14)	19:24	18:14	6 08:05 (10)
29	05:43	06:38	07:06 (14)	07:34	08:01 (11)	08:30
	21:44	20:38	11 07:17 (14)	19:21	18:11	3 08:04 (10)
30	05:45	06:40	07:08 (14)	07:36	08:03 (11)	08:32
	21:42	20:36	9 07:17 (14)	19:19	18:09	1 08:04 (10)
31	05:47	06:42	07:10 (14)		07:36	
	21:41	20:33	7 07:17 (14)		17:07	
Potential sun hours	515	461	383	327	257	230
Total, worst case		544	356	157	155	
Sun reduction		0.27	0.29		0.20	
Oper. time red.		1.00	1.00		1.00	
Wind dir. red.		0.57	0.59		0.64	
Total reduction		0.16	0.17		0.13	
Total, real		85	61	23	20	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: W - H23  
 Assumptions for shadow calculations Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

		Operational time																
		N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
		263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760
		January	February	March	April	May	June	July	August	September	October	November	December					
1	08:58	08:27	07:29	07:12	06:02	05:12	05:08	05:48	06:44		07:38	07:37	08:33					
	16:24	17:16	18:13	20:12	21:09	22:00	22:15	21:39	20:31		19:16	17:04	16:19					
2	08:58	08:25	07:26	07:10	06:00	05:11	05:08	05:50	06:46		07:40	07:39	08:35					
	16:25	17:18	18:15	20:14	21:11	22:01	22:14	21:37	20:28		19:14	17:02	16:18					
3	08:58	08:24	07:24	07:08	05:58	05:10	05:09	05:52	06:47		07:42	07:41	08:36					
	16:26	17:20	18:17	20:16	21:12	22:02	22:14	21:35	20:26		19:11	17:00	16:18					
4	08:58	08:22	07:22	07:05	05:56	05:09	05:10	05:53	06:49		07:44	07:43	08:38					
	16:27	17:22	18:19	20:18	21:14	22:03	22:13	21:33	20:24		19:09	16:58	16:17					
5	08:57	08:20	07:19	07:03	05:54	05:08	05:11	05:55	06:51		07:45	07:45	08:39					
	16:29	17:24	18:21	20:20	21:16	22:05	22:13	21:31	20:21		19:06	16:57	16:16					
6	08:57	08:18	07:17	07:00	05:52	05:07	05:12	05:57	06:53		07:47	07:47	08:41					
	16:30	17:26	18:23	20:22	21:18	22:06	22:12	21:29	20:19		19:04	16:55	16:16					
7	08:56	08:16	07:14	06:58	05:50	05:07	05:13	05:59	06:55		07:49	07:49	08:42					
	16:31	17:28	18:25	20:24	21:20	22:07	22:12	21:27	20:16		19:01	16:53	16:15					
8	08:56	08:14	07:12	06:55	05:48	05:06	05:14	06:01	06:56		07:51	07:51	08:43					
	16:33	17:30	18:27	20:26	21:22	22:08	22:11	21:25	20:14		18:59	16:51	16:15					
9	08:55	08:12	07:09	06:53	05:46	05:06	05:15	06:02	06:58		07:53	07:53	08:45					
	16:34	17:32	18:29	20:27	21:23	22:08	22:10	21:23	20:11		18:56	16:49	16:15					
10	08:55	08:10	07:07	06:50	05:44	05:05	05:16	06:04	07:00		07:55	07:55	08:46					
	16:36	17:34	18:30	20:29	21:25	22:09	22:09	21:21	20:09		18:54	16:47	16:14					
11	08:54	08:08	07:05	06:48	05:42	05:05	05:17	06:06	07:02		07:57	07:57	08:47					
	16:37	17:36	18:32	20:31	21:27	22:10	22:08	21:19	20:06		18:52	16:46	16:14					
12	08:53	08:06	07:02	06:46	05:40	05:04	05:18	06:08	07:04		07:59	07:59	08:48					
	16:39	17:38	18:34	20:33	21:29	22:11	22:07	21:17	20:04		18:49	16:44	16:14					
13	08:52	08:04	07:00	06:43	05:39	05:04	05:20	06:09	07:05	19:03 (5)	08:00	08:01	08:49					
	16:41	17:41	18:36	20:35	21:31	22:12	22:06	21:15	20:01	7	19:10 (5)	18:47	16:42	16:14				
14	08:51	08:02	06:57	06:41	05:37	05:04	05:21	06:11	07:07	13	19:00 (5)	18:44	16:40	16:14				
	16:42	17:43	18:38	20:37	21:32	22:12	22:05	21:13	19:59	13	19:13 (5)	18:44	16:40	16:14				
15	08:50	08:00	06:55	18:10 (6)	06:38	05:35	05:03	05:22	06:13	07:09	18:58 (5)	18:04	16:39	16:14				
	16:44	17:45	18:40	18:13 (6)	20:39	21:34	22:13	22:04	21:10	19:56	17	19:15 (5)	18:42	16:39	16:14			
16	08:49	07:58	06:52	18:08 (6)	06:36	05:33	05:03	05:23	06:15	07:11	18:55 (5)	18:06	16:38	16:14				
	16:46	17:47	18:42	18:15 (6)	20:41	21:36	22:14	22:03	21:08	19:54	20	19:15 (5)	18:40	16:37	16:14			
17	08:48	07:56	06:50	18:08 (6)	06:34	05:32	05:03	05:25	06:17	07:13	18:54 (5)	18:08	16:37	16:14				
	16:47	17:49	18:44	18:17 (6)	20:43	21:37	22:14	22:02	21:06	19:51	21	19:15 (5)	18:37	16:36	16:14			
18	08:47	07:54	06:47	18:06 (6)	06:31	05:30	05:03	05:26	06:18	07:14	18:53 (5)	18:10	16:35	16:14				
	16:49	17:51	18:46	18:19 (6)	20:44	21:39	22:14	22:01	21:04	19:49	23	19:16 (5)	18:35	16:34	16:14			
19	08:46	07:51	06:45	18:06 (6)	06:29	05:29	05:03	05:28	06:20	07:16	18:53 (5)	18:12	16:33	16:14				
	16:51	17:53	18:48	18:21 (6)	20:46	21:41	22:15	21:59	21:01	19:46	23	19:16 (5)	18:33	16:33	16:14			
20	08:45	07:49	06:42	18:06 (6)	06:27	05:27	05:03	05:29	06:22	07:18	18:53 (5)	18:14	16:32	16:14				
	16:53	17:55	18:50	18:22 (6)	20:48	21:42	22:15	21:58	20:59	19:44	23	19:16 (5)	18:31	16:31	16:15			
21	08:44	07:47	06:40	18:06 (6)	06:24	05:26	05:03	05:31	06:24	07:20	18:51 (5)	18:16	16:30	16:15				
	16:55	17:57	18:52	18:25 (6)	20:50	21:44	22:15	21:56	20:57	19:41	21	19:12 (5)	18:28	16:30	16:15			
22	08:42	07:45	06:37	18:06 (6)	06:22	05:24	05:03	05:32	06:26	07:22	18:51 (6)	18:18	16:29	16:15				
	16:56	17:59	18:53	18:26 (5)	20:52	21:46	22:16	21:55	20:55	19:39	19	19:10 (5)	18:26	16:29	16:16			
23	08:41	07:43	06:35	18:06 (5)	06:20	05:23	05:04	05:34	06:27	07:23	18:51 (6)	18:20	16:28	16:16				
	16:58	18:01	18:55	18:29 (5)	20:54	21:47	22:16	21:54	20:52	19:36	17	19:08 (6)	18:24	16:28	16:16			
24	08:40	07:40	06:32	18:05 (5)	06:18	05:21	05:04	05:35	06:29	07:25	18:50 (6)	18:22	16:27	16:17				
	17:00	18:03	18:57	18:29 (5)	20:56	21:49	22:16	21:52	20:50	19:34	15	19:05 (6)	18:22	16:26	16:17			
25	08:38	07:38	06:30	18:06 (5)	06:15	05:20	05:04	05:37	06:31	07:27	18:50 (6)	18:24	16:25	16:17				
	17:02	18:05	18:59	18:28 (5)	20:58	21:50	22:16	21:50	20:48	19:31	13	19:03 (6)	17:19	16:25	16:17			
26	08:37	07:36	06:27	18:06 (5)	06:13	05:19	05:05	05:38	06:33	07:29	18:49 (6)	18:26	16:24	16:18				
	17:04	18:07	19:01	18:27 (5)	20:59	21:52	22:16	21:49	20:45	19:29	11	19:00 (6)	17:17	16:24	16:18			
27	08:35	07:33	06:25	18:07 (5)	06:11	05:17	05:05	05:40	06:35	07:31	18:50 (6)	18:28	16:23	16:19				
	17:06	18:09	19:03	18:26 (5)	21:01	21:53	22:16	21:47	20:43	19:26	7	18:57 (6)	17:15	16:23	16:19			
28	08:34	07:31	06:22	18:07 (5)	06:09	05:16	05:06	05:42	06:37	07:33	18:50 (6)	18:29	16:22	16:20				
	17:08	18:11	19:05	18:24 (5)	21:03	21:54	22:16	21:46	20:41	19:24	5	18:55 (6)	17:13	16:22	16:20			
29	08:32		07:20	19:09 (5)	06:07	05:15	05:06	05:43	06:38	07:34	18:52 (6)	18:31	16:21	16:21				
	17:10		20:07	19:23 (5)	21:05	21:56	22:15	21:44	20:38	19:21	1	18:53 (6)	17:11	16:21	16:21			
30	08:31		07:17	19:11 (5)	06:04	05:14	05:07	05:45	06:40	07:36		07:33	16:20	16:21	16:21			
	17:12		20:09	19:19 (5)	21:07	21:57	22:15	21:42	20:36	19:19		17:09	16:20	16:21	16:21			
31	08:29		07:15			05:13		05:47	06:42			07:35		16:22	16:22	16:22		
	17:14		20:10			21:59		21:40	20:33			17:07						
Potential sun hours	248	272	367	421	496	513	515	461	382		328	257	231					
Total, worst case			250						256									
Sun reduction			0.22						0.29									
Oper. time red.			1.00						1.00									
Wind dir. red.			0.58						0.58									
Total reduction			0.13						0.17									
Total, real			33						43									

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)





### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: X - H24

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January	February	March	April	May	June
1	08:58 16:24	08:27 17:16	16:09 (16) 16:35 (16)	07:29 18:13		07:12 20:12
2	08:58 16:25	08:25 17:18	16:08 (16) 16:36 (16)	07:26 18:15		07:10 20:14
3	08:58 16:26	08:24 17:20	16:07 (16) 16:37 (16)	07:24 18:17		07:07 20:16
4	08:58 16:27	08:22 17:22	16:06 (16) 16:38 (16)	07:21 18:19		07:05 20:18
5	08:57 16:28	08:20 17:24	16:06 (16) 16:39 (16)	07:19 18:21	7	17:37 (15) 17:44 (15)
6	08:57 16:30	08:18 17:26	16:06 (16) 16:39 (16)	07:17 18:23	16	17:32 (15) 17:48 (15)
7	08:56 16:31	08:16 17:28	16:05 (16) 16:40 (16)	07:14 18:24	22	17:29 (15) 17:51 (15)
8	08:56 16:33	08:14 17:30	16:05 (16) 16:41 (16)	07:12 18:26	26	17:27 (15) 17:53 (15)
9	08:55 16:34	08:12 17:32	16:04 (16) 16:40 (16)	07:09 18:28	29	17:25 (15) 17:54 (15)
10	08:55 16:36	08:10 17:34	16:04 (16) 16:40 (16)	07:07 18:30	32	17:23 (15) 17:55 (15)
11	08:54 16:37	08:08 17:36	16:04 (16) 16:41 (16)	07:05 18:32	33	17:23 (15) 17:56 (15)
12	08:53 16:39	08:06 17:38	16:04 (16) 16:41 (16)	07:02 18:34	35	17:21 (15) 17:56 (15)
13	08:52 16:40	08:04 17:40	16:05 (16) 16:41 (16)	07:00 18:36	36	17:21 (15) 17:57 (15)
14	08:51 16:42	08:02 17:42	16:05 (16) 16:41 (16)	06:57 18:38	38	17:19 (15) 17:57 (15)
15	08:51 16:44	08:00 17:44	16:05 (16) 16:39 (16)	06:55 18:40	39	17:19 (15) 17:58 (15)
16	08:50 16:45	07:58 17:46	16:06 (16) 16:39 (16)	06:52 18:42	39	17:18 (15) 17:57 (15)
17	08:48 16:47	07:56 17:49	16:07 (16) 16:39 (16)	06:50 18:44	39	17:18 (15) 17:57 (15)
18	08:47 16:49	07:54 17:51	16:08 (16) 16:38 (16)	06:47 18:46	39	17:18 (15) 17:57 (15)
19	08:46 16:51	07:51 17:53	16:08 (16) 16:36 (16)	06:45 18:48	39	17:18 (15) 17:57 (15)
20	08:45 16:53	07:49 17:55	16:10 (16) 16:35 (16)	06:42 18:50	39	17:17 (15) 17:56 (15)
21	08:44 16:54	07:47 17:57	16:12 (16) 16:34 (16)	06:40 18:51	37	17:18 (15) 17:55 (15)
22	08:42 16:56	07:45 17:59	16:14 (16) 16:31 (16)	06:37 18:53	36	17:18 (15) 17:54 (15)
23	08:41 16:58	07:42 18:01	16:17 (16) 16:28 (16)	06:35 18:55	34	17:19 (15) 17:53 (15)
24	08:40 17:00	07:40 18:03		06:32 18:57	33	17:19 (15) 17:52 (15)
25	08:38 17:02	07:38 18:05		06:30 18:59	30	17:21 (15) 17:51 (15)
26	08:37 17:04	07:36 18:07		06:27 19:01	28	17:21 (15) 17:49 (15)
27	08:35 17:06	07:33 18:09		06:25 19:03	23	17:24 (15) 17:47 (15)
28	08:34 17:08	07:31 18:11	16:15 (16) 16:26 (16)	06:22 19:05	19	17:25 (15) 17:44 (15)
29	08:32 17:10	16:12 (16) 16:29 (16)		07:20 20:07	12	18:29 (15) 18:41 (15)
30	08:31 17:12	16:11 (16) 16:31 (16)		07:17 20:08		21:05 21:07
31	08:29 17:14	16:09 (16) 16:33 (16)		07:15 20:10		05:12 21:59
Potential sun hours	248	272	367	421	496	513
Total, worst case	72	703	760			
Sun reduction	0.17	0.22	0.22			
Oper. time red.	1.00	1.00	1.00			
Wind dir. red.	0.59	0.59	0.57			
Total reduction	0.10	0.13	0.13			
Total, real	7	93	97			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: X - H24  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	July	August	September	October	November	December		
1	05:07 22:15	05:48 21:39	06:44 20:31	07:38 19:16	18:01 (15) 18:37 (15)	07:37 17:04	15:34 (16) 16:10 (16)	08:33 16:19
2	05:08 22:14	05:50 21:37	06:45 20:28	07:40 19:14	18:00 (15) 18:35 (15)	07:39 17:02	15:34 (16) 16:10 (16)	08:35 16:18
3	05:09 22:14	05:52 21:35	06:47 20:26	07:42 19:11	18:01 (15) 18:33 (15)	07:41 17:00	15:34 (16) 16:09 (16)	08:36 16:17
4	05:10 22:14	05:53 21:33	06:49 20:24	07:44 19:09	18:02 (15) 18:32 (15)	07:43 16:58	15:35 (16) 16:10 (16)	08:38 16:17
5	05:11 22:13	05:55 21:31	06:51 20:21	07:45 19:06	18:03 (15) 18:30 (15)	07:45 16:56	15:35 (16) 16:09 (16)	08:39 16:16
6	05:11 22:12	05:57 21:29	06:53 20:19	07:47 19:04	18:04 (15) 18:28 (15)	07:47 16:54	15:36 (16) 16:08 (16)	08:41 16:16
7	05:12 22:12	05:59 21:27	06:54 20:16	07:49 19:01	18:06 (15) 18:26 (15)	07:49 16:53	15:36 (16) 16:08 (16)	08:42 16:15
8	05:14 22:11	06:00 21:25	06:56 20:14	07:51 18:59	18:10 (15) 18:22 (15)	07:51 16:51	15:37 (16) 16:07 (16)	08:43 16:15
9	05:15 22:10	06:02 21:23	06:58 20:11	07:53 18:56	07:53 16:49	15:38 (16) 16:06 (16)	08:45 16:14	
10	05:16 22:09	06:04 21:21	07:00 20:09	07:55 18:54	07:55 16:47	15:40 (16) 16:06 (16)	08:46 16:14	
11	05:17 22:08	06:06 21:19	07:02 20:06	07:57 18:51	07:57 16:45	15:41 (16) 16:04 (16)	08:47 16:14	
12	05:18 22:07	06:07 21:17	07:03 20:04	07:58 18:49	07:59 16:44	15:42 (16) 16:03 (16)	08:48 16:14	
13	05:19 22:06	06:09 21:15	07:05 20:01	08:00 18:47	08:01 16:42	15:44 (16) 16:01 (16)	08:49 16:13	
14	05:21 22:05	06:11 21:13	07:07 19:59	18:20 (15) 18:30 (15)	08:02 18:44	08:03 16:40	15:47 (16) 15:58 (16)	08:50 16:13
15	05:22 22:04	06:13 21:10	07:09 19:56	18:16 (15) 18:34 (15)	08:04 18:42	08:05 16:39	08:51 16:13	
16	05:23 22:03	06:15 21:08	07:11 19:54	18:12 (15) 18:35 (15)	08:06 18:40	08:07 16:37	08:52 16:13	
17	05:25 22:02	06:16 21:06	07:12 19:51	18:10 (15) 18:37 (15)	08:08 18:37	08:09 16:36	08:53 16:14	
18	05:26 22:01	06:18 21:04	07:14 19:49	18:08 (15) 18:38 (15)	08:10 18:35	08:11 16:34	08:54 16:14	
19	05:27 21:59	06:20 21:01	07:16 19:46	18:07 (15) 18:39 (15)	08:12 18:33	16:47 (16) 17:01 (16)	08:12 16:33	
20	05:29 21:58	06:22 20:59	07:18 19:44	18:05 (15) 18:39 (15)	08:14 18:30	16:44 (16) 17:03 (16)	08:14 16:31	
21	05:30 21:57	06:24 20:57	07:20 19:41	18:04 (15) 18:39 (15)	08:16 18:28	16:42 (16) 17:05 (16)	08:16 16:30	
22	05:32 21:55	06:25 20:55	07:21 19:39	18:03 (15) 18:40 (15)	08:18 18:26	16:40 (16) 17:06 (16)	08:18 16:29	
23	05:33 21:54	06:27 20:52	07:23 19:36	18:02 (15) 18:40 (15)	08:20 18:24	16:38 (16) 17:07 (16)	08:20 16:27	
24	05:35 21:52	06:29 20:50	07:25 19:33	18:02 (15) 18:40 (15)	08:22 18:21	16:37 (16) 17:08 (16)	08:22 16:26	
25	05:37 21:51	06:31 20:48	07:27 19:31	18:01 (15) 18:40 (15)	07:24 17:19	15:36 (16) 16:08 (16)	08:23 16:25	
26	05:38 21:49	06:33 20:45	07:29 19:28	18:00 (15) 18:39 (15)	07:26 17:17	15:35 (16) 16:09 (16)	08:25 16:24	
27	05:40 21:47	06:35 20:43	07:31 19:26	18:00 (15) 18:39 (15)	07:27 17:15	15:34 (16) 16:09 (16)	08:27 16:23	
28	05:41 21:46	06:36 20:40	07:32 19:23	18:00 (15) 18:39 (15)	07:29 17:13	15:35 (16) 16:10 (16)	08:29 16:22	
29	05:43 21:44	06:38 20:38	07:34 19:21	18:00 (15) 18:38 (15)	07:31 17:11	15:34 (16) 16:10 (16)	08:30 16:21	
30	05:45 21:42	06:40 20:36	07:36 19:18	18:00 (15) 18:37 (15)	07:33 17:08	15:34 (16) 16:10 (16)	08:32 16:20	
31	05:46 21:40	06:42 20:33		07:35 17:06	36	15:34 (16) 16:10 (16)	08:58 16:22	
Potential sun hours	515	461	383	327	257		230	
Total, worst case			553	602	396			
Sun reduction			0.29	0.23	0.20			
Oper. time red.			1.00	1.00	1.00			
Wind dir. red.			0.57	0.59	0.59			
Total reduction			0.17	0.14	0.12			
Total, real			93	83	47			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: Y - H25

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January	February	March	April	May	June
1	08:58 16:24	08:27 17:16	07:29 18:13	17:00 (2) 20:12	07:13 19:02 (3)	06:02 20:19 (4)
2	08:58 16:25	08:25 17:18	07:26 18:15	38 17:38 (2) 20:14	35 19:37 (3) 21:11	19 20:38 (4) 22:01
3	08:58 16:26	08:24 17:20	07:24 18:17	38 17:37 (2) 20:16	34 19:37 (3) 21:12	22 20:40 (4) 22:02
4	08:58 16:28	08:22 17:22	07:22 18:19	37 17:36 (2) 20:18	33 19:35 (3) 21:14	27 20:44 (4) 22:03
5	08:57 16:29	08:20 17:24	07:19 18:21	37 17:36 (2) 20:20	32 19:35 (3) 21:16	30 20:46 (4) 22:04
6	08:57 16:30	08:18 17:26	07:17 18:23	36 17:35 (2) 20:22	30 19:33 (3) 21:18	31 20:47 (4) 22:05
7	08:56 16:32	08:16 17:28	07:14 18:25	34 17:34 (2) 20:24	28 19:32 (3) 21:20	34 20:49 (4) 22:06
8	08:56 16:33	08:14 17:30	07:12 18:27	33 17:33 (2) 20:26	26 19:30 (3) 21:22	34 20:49 (4) 22:07
9	08:55 16:34	08:12 17:32	07:09 18:29	30 17:32 (2) 20:27	23 19:29 (3) 21:23	35 20:49 (4) 22:08
10	08:55 16:36	08:10 17:34	07:07 18:30	27 17:30 (2) 20:29	19 19:27 (3) 21:25	35 20:50 (4) 22:09
11	08:54 16:37	08:08 17:37	07:05 18:32	23 17:28 (2) 20:31	14 19:24 (3) 21:27	35 20:49 (4) 22:10
12	08:53 16:39	08:06 17:39	07:02 18:34	19 17:25 (2) 20:33	19 21:29 21:29	35 20:49 (4) 22:11
13	08:52 16:41	08:04 17:41	07:00 18:36	12 17:22 (2) 20:35	12 20:35 21:30	34 20:49 (4) 22:12
14	08:51 16:42	08:02 17:43	06:57 18:38	06:41 20:37	05:37 21:32	34 20:49 (4) 22:12
15	08:50 16:44	08:00 17:45	06:55 18:40	06:38 20:39	05:35 21:34	34 20:48 (4) 22:13
16	08:49 16:46	07:58 17:47	06:52 18:42	06:36 20:41	05:34 21:36	33 20:48 (4) 22:13
17	08:48 16:47	07:56 17:49	17:14 (2) 18:44	06:50 20:42	06:34 21:37	33 20:48 (4) 22:14
18	08:47 16:49	07:54 17:51	17:11 (2) 18:46	06:47 20:44	06:31 21:39	32 20:48 (4) 22:14
19	08:46 16:51	07:51 17:53	17:08 (2) 18:48	06:45 20:46	06:29 21:41	31 20:48 (4) 22:15
20	08:45 16:53	07:49 17:55	17:06 (2) 18:50	06:42 20:48	06:27 21:42	30 20:47 (4) 22:15
21	08:44 16:55	07:47 17:57	17:05 (2) 18:52	06:40 7 18:25 (3)	06:24 20:50	29 20:46 (4) 22:15
22	08:42 16:57	07:45 17:59	17:03 (2) 18:53	06:37 12 18:26 (3)	06:22 20:52	28 20:46 (4) 22:16
23	08:41 16:58	07:42 18:01	17:03 (2) 18:55	06:35 17 18:29 (3)	06:20 20:54	26 20:45 (4) 22:16
24	08:40 17:00	07:40 18:03	17:02 (2) 18:57	06:32 21 18:30 (3)	06:18 20:56	25 20:45 (4) 22:16
25	08:38 17:02	07:38 18:05	17:01 (2) 18:59	06:30 24 18:32 (3)	06:15 20:58	23 20:44 (4) 22:16
26	08:37 17:04	07:36 18:07	17:00 (2) 19:01	06:27 28 18:34 (3)	06:13 20:59	21 20:43 (4) 22:16
27	08:35 17:06	07:33 18:09	16:59 (2) 19:03	06:25 30 18:36 (3)	06:11 21:01	2 20:32 (4) 21:53
28	08:34 17:08	07:31 18:11	16:59 (2) 19:05	06:22 33 18:37 (3)	06:09 21:03	8 20:33 (4) 21:54
29	08:32 17:10		07:20 20:07	34 19:38 (3)	06:07 21:05	12 20:35 (4) 21:56
30	08:30 17:12		07:17 20:09	34 19:37 (3)	06:04 21:07	15 20:36 (4) 21:57
31	08:29 17:14		07:15 20:10	35 19:38 (3)	05:13 21:58	8 20:37 (4) 22:15
Potential sun hours	248	272	367	421	496	513
Total, worst case		317	677	346	848	
Sun reduction		0.22	0.22	0.34	0.36	
Oper. time red.		1.00	1.00	1.00	1.00	
Wind dir. red.		0.58	0.58	0.59	0.62	
Total reduction		0.13	0.13	0.20	0.22	
Total, real		41	88	70	190	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)



### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: Y - H25  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

July		August		September		October		November		December				
1	05:08		05:48	20:24 (4)	06:44		19:09 (3)	07:38		17:48 (2)	07:37	08:33		
	22:15		21:39	35	20:59 (4)	20:31	14	19:23 (3)	19:16	18:04 (2)	17:05	16:19		
2	05:08		05:50		20:25 (4)	06:46		19:06 (3)	07:40	17:44 (2)	07:39	08:35		
	22:14		21:37	35	21:00 (4)	20:28	19	19:25 (3)	19:14	18:05 (2)	17:03	16:19		
3	05:09		05:52		20:25 (4)	06:47		19:04 (3)	07:42	17:41 (2)	07:41	08:36		
	22:14		21:35	35	21:00 (4)	20:26	23	19:27 (3)	19:11	18:07 (2)	17:01	16:18		
4	05:10		05:54		20:24 (4)	06:49		19:02 (3)	07:44	17:40 (2)	07:43	08:38		
	22:13		21:33	35	20:59 (4)	20:24	26	19:28 (3)	19:09	18:08 (2)	16:59	16:17		
5	05:11		05:55		20:25 (4)	06:51		19:00 (3)	07:45	17:38 (2)	07:45	08:39		
	22:13		21:31	34	20:59 (4)	20:21	28	19:28 (3)	19:06	18:09 (2)	16:57	16:16		
6	05:12		05:57		20:25 (4)	06:53		18:59 (3)	07:47	17:37 (2)	07:47	08:41		
	22:12		21:29	32	20:57 (4)	20:19	30	19:29 (3)	19:04	18:10 (2)	16:55	16:16		
7	05:13		05:59		20:25 (4)	06:55		18:58 (3)	07:49	17:36 (2)	07:49	08:42		
	22:11		21:27	31	20:56 (4)	20:16	32	19:30 (3)	19:01	18:11 (2)	16:53	16:15		
8	05:14		06:01		20:26 (4)	06:56		18:57 (3)	07:51	17:35 (2)	07:51	08:43		
	22:11		21:25	28	20:54 (4)	20:14	33	19:30 (3)	18:59	18:11 (2)	16:51	16:15		
9	05:15		06:02		20:26 (4)	06:58		18:56 (3)	07:53	17:34 (2)	07:53	08:45		
	22:10		21:23	26	20:52 (4)	20:11	34	19:30 (3)	18:56	18:11 (2)	16:49	16:15		
10	05:16		06:04		20:27 (4)	07:00		18:55 (3)	07:55	17:34 (2)	07:55	08:46		
	22:09		21:21	23	20:50 (4)	20:09	35	19:30 (3)	18:54	18:11 (2)	16:47	16:14		
11	05:17		06:06		20:28 (4)	07:02		18:55 (3)	07:57	17:33 (2)	07:57	08:47		
	22:08		21:19	21	20:49 (4)	20:06	35	19:30 (3)	18:52	18:11 (2)	16:46	16:14		
12	05:18		06:08		20:28 (4)	07:04		18:54 (3)	07:59	17:33 (2)	07:59	08:48		
	22:07	5	20:39 (4)	20:44 (4)	21:17	18	20:46 (4)	20:04	35	19:29 (3)	18:49	18:11 (2)	16:44	16:14
13	05:20		06:09		20:30 (4)	07:05		18:54 (3)	08:00	17:33 (2)	08:01	08:49		
	22:06	10	20:47 (4)	21:15	14	20:44 (4)	20:01	35	19:29 (3)	18:47	18:11 (2)	16:42	16:14	
14	05:21		06:11		20:32 (4)	07:07		18:54 (3)	08:02	17:33 (2)	08:03	08:50		
	22:05	13	20:48 (4)	21:12	11	20:43 (4)	19:59	34	19:28 (3)	18:45	18:11 (2)	16:41	16:14	
15	05:22		06:13		20:33 (4)	07:09		18:54 (3)	08:04	17:33 (2)	08:05	08:51		
	22:04	17	20:50 (4)	21:10	7	20:40 (4)	19:56	34	19:28 (3)	18:42	18:10 (2)	16:39	16:14	
16	05:24		06:15			07:11		18:54 (3)	08:06	17:33 (2)	08:07	08:52		
	22:03	19	20:51 (4)	21:08		19:54	31	19:25 (3)	18:40	18:09 (2)	16:37	16:14		
17	05:25		06:17		20:32 (4)	07:13		18:55 (3)	08:08	17:33 (2)	08:09	08:53		
	22:02	21	20:53 (4)	21:06		19:51	28	19:23 (3)	18:37	18:08 (2)	16:36	16:14		
18	05:26		06:18		20:31 (4)	07:14		18:55 (3)	08:10	17:34 (2)	08:11	08:54		
	22:00	22	20:53 (4)	21:04		19:49	25	19:20 (3)	18:35	18:05 (2)	16:34	16:14		
19	05:28		06:20		20:30 (4)	07:16		18:56 (3)	08:12	17:34 (2)	08:12	08:54		
	21:59	24	20:54 (4)	21:01		19:46	22	19:18 (3)	18:33	18:03 (2)	16:33	16:14		
20	05:29		06:22		20:30 (4)	07:18		18:58 (3)	08:14	17:35 (2)	08:14	08:55		
	21:58	25	20:55 (4)	20:59		19:44	18	19:16 (3)	18:31	18:01 (2)	16:32	16:15		
21	05:31		06:24		20:29 (4)	07:20		18:59 (3)	08:16	17:36 (2)	08:16	08:56		
	21:56	27	20:56 (4)	20:57		19:41	13	19:12 (3)	18:28	17:58 (2)	16:30	16:15		
22	05:32		06:26		20:28 (4)	07:22		19:01 (3)	08:18	17:37 (2)	08:18	08:56		
	21:55	28	20:56 (4)	20:55		19:39	9	19:10 (3)	18:26	17:56 (2)	16:29	16:16		
23	05:34		06:28		20:28 (4)	07:23			08:20	17:39 (2)	08:20	08:57		
	21:53	29	20:57 (4)	20:52		19:36			18:24	17:53 (2)	16:28	16:16		
24	05:35		06:29		20:27 (4)	07:25			08:22	17:41 (2)	08:22	08:57		
	21:52	30	20:57 (4)	20:50		19:34			18:22	17:51 (2)	16:26	16:17		
25	05:37		06:31		20:27 (4)	07:27			07:24	16:45 (2)	08:23	08:58		
	21:50	31	20:58 (4)	20:48		19:31			17:19	3	16:48 (2)	16:25	16:17	
26	05:38		06:33		20:26 (4)	07:29			07:26		08:25	08:58		
	21:49	32	20:58 (4)	20:45		19:29			17:17		16:24	16:18		
27	05:40		06:35		20:26 (4)	07:31			07:27		08:27	08:58		
	21:47	33	20:59 (4)	20:43		19:26			17:15		16:23	16:19		
28	05:42		06:37		20:25 (4)	07:33			07:29		08:28	08:58		
	21:46	34	20:59 (4)	20:40		19:24			17:13		16:22	16:20		
29	05:43		06:38		20:25 (4)	07:34			07:31		08:30	08:58		
	21:44	35	21:00 (4)	20:38		19:21			17:11		16:21	16:21		
30	05:45		06:40		20:25 (4)	07:36			17:52 (2)	07:33	08:32	08:58		
	21:42	34	20:59 (4)	20:36		19:19	8	18:00 (2)	17:09		16:20	16:22		
31	05:47		06:42		20:25 (4)				07:35			08:58		
	21:40	35	21:00 (4)	20:33					17:07			16:23		
Potential sun hours	515		461			382		328		257		231		
Total, worst case		504		385		601		714						
Sun reduction		0.27		0.27		0.29		0.23						
Oper. time red.		1.00		1.00		1.00		1.00						
Wind dir. red.		0.62		0.62		0.59		0.58						
Total reduction		0.16		0.17		0.17		0.14						
Total, real		83		65		103		97						

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)



### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: Z - H26  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June	July	August	September	October	November	December	
1	08:58 16:24	08:27 17:16	07:29 18:13	07:12 20:12	06:02 21:09	05:12 22:00	05:08 22:15	05:48 21:39	06:44 20:31	07:38 19:16	18:34 (5) 18:48 (6)	07:37 17:04	08:33 16:19
2	08:58 16:25	08:25 17:18	07:26 18:15	07:10 20:14	06:00 21:11	05:11 22:01	05:08 22:14	05:50 21:37	06:46 20:28	07:40 19:14	18:34 (5) 18:45 (6)	07:39 17:02	08:35 16:18
3	08:58 16:26	08:24 17:20	07:24 18:17	07:08 20:16	05:58 21:12	05:10 22:02	05:09 22:14	05:52 21:35	06:47 20:26	07:42 19:11	18:34 (5) 18:42 (6)	07:41 17:00	08:36 16:18
4	08:58 16:27	08:22 17:22	07:22 18:19	07:05 20:18	05:56 21:14	05:09 22:03	05:10 22:13	05:53 21:33	06:49 20:24	07:44 19:09	18:35 (6) 18:40 (6)	07:43 16:58	08:38 16:17
5	08:57 16:29	08:20 17:24	07:19 18:21	07:03 20:20	05:54 21:16	05:08 22:05	05:11 22:13	05:55 21:31	06:51 20:21	07:45 19:06	18:36 (6) 18:37 (6)	07:45 16:57	08:39 16:16
6	08:57 16:30	08:18 17:26	07:17 18:23	07:00 20:22	05:52 21:18	05:07 22:06	05:12 22:12	05:57 21:29	06:53 20:19	07:47 19:04	18:37 (6) 18:42 (6)	07:47 16:55	08:41 16:16
7	08:56 16:31	08:16 17:28	07:14 18:25	06:58 20:24	05:50 21:20	05:07 22:07	05:13 22:12	05:59 21:27	06:55 20:16	07:49 19:01	18:35 (6) 18:36 (6)	07:49 16:53	08:42 16:15
8	08:56 16:33	08:14 17:30	07:12 18:27	06:55 20:26	05:48 21:22	05:06 22:08	05:14 22:11	06:01 21:25	06:56 20:14	07:51 18:59	18:37 (6) 18:42 (6)	07:51 16:51	08:43 16:15
9	08:55 16:34	08:12 17:32	07:09 18:29	17:58 (6) 18:01 (6)	06:53 20:27	05:46 21:23	05:06 22:08	05:15 22:10	06:02 20:11	07:53 18:56	18:43 (6) 18:48 (6)	07:53 16:49	08:45 16:15
10	08:55 16:36	08:10 17:34	07:07 18:30	17:56 (5) 18:03 (6)	06:50 20:29	05:44 21:25	05:05 22:09	05:16 22:09	06:04 20:09	07:55 18:54	18:40 (6) 18:45 (6)	07:55 16:47	08:46 16:14
11	08:54 16:37	08:08 17:36	07:05 18:32	17:56 (5) 18:05 (6)	06:48 20:31	05:42 21:27	05:05 22:10	05:17 22:08	06:06 20:06	07:57 18:52	18:42 (6) 18:47 (6)	07:57 16:46	08:47 16:14
12	08:53 16:39	08:06 17:38	07:02 18:34	17:54 (5) 18:07 (6)	06:46 20:33	05:40 21:29	05:04 22:11	05:18 22:07	06:08 21:17	07:59 18:49	18:43 (6) 18:48 (6)	07:59 16:44	08:48 16:14
13	08:52 16:41	08:04 17:41	07:00 18:36	17:54 (5) 18:09 (6)	06:43 20:35	05:39 21:31	05:04 22:12	05:20 22:06	06:09 21:15	08:00 18:47	18:43 (6) 18:48 (6)	08:01 16:42	08:49 16:14
14	08:51 16:42	08:02 17:43	06:57 18:38	17:54 (5) 18:11 (6)	06:41 20:37	05:37 21:32	05:04 22:12	05:21 22:05	06:11 21:13	08:02 19:59	18:43 (6) 18:48 (6)	08:03 16:40	08:50 16:14
15	08:50 16:44	08:00 17:45	06:55 18:40	17:54 (5) 18:13 (5)	06:38 20:39	05:35 21:34	05:03 22:13	05:22 22:04	06:13 21:10	08:04 19:56	18:42 (6) 18:47 (6)	08:05 16:39	08:51 16:14
16	08:49 16:46	07:58 17:47	06:52 18:42	17:54 (5) 18:13 (5)	06:36 20:41	05:33 21:36	05:03 22:14	05:23 22:03	06:15 21:08	08:06 19:54	18:42 (6) 18:47 (6)	08:07 16:37	08:52 16:14
17	08:48 16:47	07:56 17:51	06:50 18:44	17:55 (5) 18:12 (5)	06:34 20:43	05:32 21:37	05:03 22:14	05:25 22:02	06:17 21:06	08:08 19:51	18:42 (6) 18:47 (6)	08:09 16:36	08:53 16:14
18	08:47 16:49	07:54 17:51	06:47 18:46	17:56 (5) 18:10 (5)	06:31 20:44	05:30 21:39	05:03 22:14	05:26 22:01	06:18 21:04	08:10 19:49	18:42 (6) 18:47 (6)	08:11 16:34	08:54 16:14
19	08:46 16:51	07:51 17:53	06:45 18:48	17:58 (5) 18:09 (5)	06:29 20:46	05:29 21:41	05:03 22:15	05:28 21:59	06:20 21:01	08:12 19:46	18:42 (6) 18:47 (6)	08:12 16:33	08:54 16:14
20	08:45 16:53	07:49 17:55	06:42 18:50	06:27 20:48	05:27 21:42	05:03 22:15	05:29 21:58	06:22 20:59	07:18 19:44	08:14 18:30	18:42 (6) 18:47 (6)	08:14 16:31	08:55 16:15
21	08:44 16:55	07:47 17:57	06:40 18:52	06:24 20:50	05:25 21:44	05:03 22:15	05:31 21:56	06:24 20:57	07:20 19:41	08:16 18:28	18:42 (6) 18:47 (6)	08:16 16:30	08:56 16:15
22	08:42 16:56	07:45 17:59	06:37 18:53	06:22 20:52	05:24 21:46	05:03 22:16	05:32 21:55	06:26 20:55	07:22 19:39	08:18 18:26	18:42 (6) 18:47 (6)	08:18 16:29	08:56 16:16
23	08:41 16:58	07:43 18:01	06:35 18:55	06:20 20:54	05:23 21:47	05:04 22:16	05:34 21:54	06:27 20:52	07:23 19:36	08:20 18:24	18:42 (6) 18:47 (6)	08:20 16:27	08:57 16:16
24	08:40 17:00	07:40 18:03	06:32 18:57	06:18 20:56	05:21 21:49	05:04 22:16	05:35 21:52	06:29 20:50	07:25 19:34	08:22 18:34 (5)	18:43 (5) 18:48 (5)	08:22 16:26	08:57 16:17
25	08:38 17:02	07:38 18:05	06:30 18:59	06:15 20:58	05:20 21:50	05:04 22:16	05:37 21:50	06:31 20:48	07:27 19:31	08:24 18:31 (5)	18:40 (5) 18:45 (5)	07:24 16:25	08:58 16:17
26	08:37 17:04	07:36 18:07	06:27 19:01	06:13 20:59	05:19 21:52	05:05 22:16	05:38 21:49	06:33 20:45	07:29 19:29	08:25 18:37 (5)	18:35 (5) 18:40 (5)	07:26 16:25	08:58 16:18
27	08:35 17:06	07:33 18:09	06:25 19:03	06:11 21:01	05:17 21:53	05:05 22:16	05:40 21:47	06:35 20:43	07:31 19:26	08:27 18:35 (5)	18:36 (5) 18:41 (5)	07:28 16:23	08:58 16:19
28	08:34 17:08	07:31 18:11	06:22 19:05	06:09 21:03	05:16 21:54	05:06 22:16	05:42 21:46	06:36 20:41	07:33 19:24	08:28 18:35 (5)	18:36 (5) 18:41 (5)	07:29 16:22	08:58 16:20
29	08:32 17:10	07:20 18:07	06:20 19:05	06:06 21:05	05:15 21:56	05:06 22:15	05:43 21:44	06:38 20:38	07:34 19:21	08:30 18:33 (5)	18:36 (5) 18:41 (5)	07:31 16:21	08:58 16:21
30	08:31 17:12	07:17 18:09	06:19 19:03	06:04 21:07	05:14 21:57	05:07 22:15	05:45 21:42	06:40 20:36	07:36 19:19	08:32 18:30 (6)	18:34 (5) 18:39 (5)	07:33 17:09	08:58 16:20
31	08:29 17:14	07:15 18:15	06:15 19:05	05:13 21:59	05:13 21:59	05:13 21:59	05:47 21:40	06:42 20:33	07:35 19:07	08:35 17:07	18:35 (5) 18:40 (5)	07:35 16:22	08:58 16:22
Potential sun hours	248	272	367	421	496	513	515	461	382	328	257	231	
Total, worst case			144						111	39			
Sun reduction			0.22						0.29	0.23			
Oper. time red.			1.00						1.00	1.00			
Wind dir. red.			0.57						0.57	0.57			
Total reduction			0.13						0.17	0.13			
Total, real			18						18	5			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: AA - H27

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June
1	08:58 16:24	08:27 17:16	16:10 (16) 16:35 (16)	07:29 18:13	07:12 20:12	06:02 21:09
2	08:58 16:25	08:25 17:18	16:09 (16) 16:36 (16)	07:26 18:15	07:10 20:14	06:00 21:11
3	08:58 16:26	08:24 17:20	16:08 (16) 16:37 (16)	07:24 18:17	07:07 20:16	05:58 21:13
4	08:58 16:27	08:22 17:22	16:08 (16) 16:38 (16)	07:21 18:19	17:35 (15) 20:18	05:56 21:14
5	08:57 16:28	08:20 17:24	16:07 (16) 16:39 (16)	07:19 18:21	17:30 (15) 20:20	05:54 21:16
6	08:57 16:30	08:18 17:26	16:07 (16) 16:39 (16)	07:17 18:23	17:27 (15) 20:22	05:52 21:18
7	08:56 16:31	08:16 17:28	16:07 (16) 16:40 (16)	07:14 18:24	17:25 (15) 20:24	05:50 21:20
8	08:56 16:33	08:14 17:30	16:06 (16) 16:41 (16)	07:12 18:26	17:23 (15) 20:25	05:48 21:22
9	08:55 16:34	08:12 17:32	16:05 (16) 16:40 (16)	07:09 18:28	17:22 (15) 20:27	05:46 21:23
10	08:55 16:36	08:10 17:34	16:05 (16) 16:40 (16)	07:07 18:30	17:20 (15) 20:29	05:44 21:25
11	08:54 16:37	08:08 17:36	16:05 (16) 16:41 (16)	07:05 18:32	17:20 (15) 20:31	05:42 21:27
12	08:53 16:39	08:06 17:38	16:06 (16) 16:41 (16)	07:02 18:34	17:18 (15) 20:33	05:40 21:29
13	08:52 16:40	08:04 17:40	16:06 (16) 16:41 (16)	07:00 18:36	17:18 (15) 20:35	05:38 21:31
14	08:51 16:42	08:02 17:42	16:07 (16) 16:41 (16)	06:57 18:38	17:17 (15) 20:37	05:37 21:32
15	08:51 16:44	08:00 17:44	16:06 (16) 16:39 (16)	06:55 18:40	17:17 (15) 20:39	05:35 21:34
16	08:50 16:45	07:58 17:46	16:07 (16) 16:39 (16)	06:52 18:42	17:16 (15) 20:41	05:33 21:36
17	08:48 16:47	07:56 17:49	16:08 (16) 16:39 (16)	06:50 18:44	17:17 (15) 20:42	05:32 21:37
18	08:47 16:49	07:54 17:51	16:09 (16) 16:38 (16)	06:47 18:46	17:16 (15) 20:44	05:30 21:39
19	08:46 16:51	07:51 17:53	16:10 (16) 16:36 (16)	06:45 18:48	17:17 (15) 20:46	05:28 21:41
20	08:45 16:53	07:49 17:55	16:12 (16) 16:35 (16)	06:42 18:50	17:17 (15) 20:48	05:26 21:42
21	08:44 16:54	07:47 17:57	16:14 (16) 16:33 (16)	06:40 18:51	17:18 (15) 20:50	05:25 21:44
22	08:42 16:56	07:45 17:59	16:16 (16) 16:30 (16)	06:37 18:53	17:18 (15) 20:52	05:24 21:46
23	08:41 16:58	07:42 18:01		06:35 18:55	17:19 (15) 20:54	05:22 21:47
24	08:40 17:00	07:40 18:03		06:32 18:57	17:20 (15) 20:56	05:21 21:49
25	08:38 17:02	07:38 18:05		06:30 18:59	17:22 (15) 20:58	05:20 21:50
26	08:37 17:04	07:36 18:07		06:27 19:01	17:23 (15) 20:59	05:18 21:52
27	08:35 17:06	07:33 18:09		06:25 19:03	17:27 (15) 21:01	05:17 21:53
28	08:34 17:08	07:31 16:18 (16) 18:11		06:22 19:05	17:39 (15) 21:03	05:16 21:55
29	08:32 17:10	7 16:14 (16) 16:28 (16)		07:20 20:07	21:06 21:05	05:15 21:56
30	08:31 17:12	14 16:12 (16) 16:31 (16)		20:07 20:08	21:05 21:07	05:14 21:57
31	08:29 17:14	19 16:11 (16) 16:32 (16)		07:15 20:10	21:07 21:59	05:12 21:59
Potential sun hours	248	272	367	421	496	513
Total, worst case	61	660	700			
Sun reduction	0.17	0.22	0.22			
Oper. time red.	1.00	1.00	1.00			
Wind dir. red.	0.59	0.59	0.57			
Total reduction	0.10	0.13	0.13			
Total, real	6	87	90			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)



## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: AA - H27  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	July	August	September	October	November	December
1	05:07 22:15	05:48 21:39	06:44 20:31	07:38 19:16	17:58 (15) 18:34 (15)	08:33 16:19
2	05:08 22:14	05:50 21:37	06:45 20:28	07:40 19:14	17:57 (15) 18:32 (15)	08:35 16:18
3	05:09 22:14	05:52 21:35	06:47 20:26	07:42 19:11	17:58 (15) 18:31 (15)	08:36 16:17
4	05:10 22:14	05:53 21:33	06:49 20:24	07:44 19:09	17:59 (15) 18:30 (15)	08:38 16:17
5	05:11 22:13	05:55 21:31	06:51 20:21	07:45 19:06	17:59 (15) 18:29 (15)	08:39 16:16
6	05:11 22:12	05:57 21:29	06:53 20:19	07:47 19:04	18:01 (15) 18:27 (15)	08:41 16:16
7	05:12 22:12	05:59 21:27	06:54 20:16	07:49 19:01	18:02 (15) 18:25 (15)	08:42 16:15
8	05:14 22:11	06:00 21:25	06:56 20:14	07:51 18:59	18:04 (15) 18:23 (15)	08:43 16:15
9	05:15 22:10	06:02 21:23	06:58 20:11	07:53 18:56	18:07 (15) 18:20 (15)	08:45 16:14
10	05:16 22:09	06:04 21:21	07:00 20:09	07:55 18:54	07:55 16:47	08:46 16:14
11	05:17 22:08	06:06 21:19	07:02 20:06	07:57 18:51	07:57 16:45	08:47 16:14
12	05:18 22:07	06:07 21:17	07:03 20:04	07:58 18:49	07:59 16:44	08:48 16:14
13	05:19 22:06	06:09 21:15	07:05 20:01	08:00 18:47	08:01 16:42	08:49 16:13
14	05:21 22:05	06:11 21:13	07:07 19:59	08:02 18:44	08:03 16:40	08:50 16:13
15	05:22 22:04	06:13 21:10	07:09 19:56	08:04 18:42	08:05 16:39	08:51 16:13
16	05:23 22:03	06:15 21:08	07:11 19:54	18:16 (15) 18:26 (15)	08:06 16:37	08:52 16:13
17	05:25 22:02	06:16 21:06	07:12 19:51	18:12 (15) 18:30 (15)	08:08 18:37	08:53 16:14
18	05:26 22:01	06:18 21:04	07:14 19:49	18:10 (15) 18:32 (15)	08:10 18:35	08:54 16:14
19	05:27 21:59	06:20 21:01	07:16 19:46	18:08 (15) 18:34 (15)	08:12 18:33	08:55 16:14
20	05:29 21:58	06:22 20:59	07:18 19:44	18:05 (15) 18:34 (15)	08:14 18:30	08:55 16:14
21	05:30 21:57	06:24 20:57	07:20 19:41	18:04 (15) 18:35 (15)	08:16 18:28	08:56 16:15
22	05:32 21:55	06:25 20:55	07:21 19:39	18:02 (15) 18:35 (15)	08:18 18:26	08:56 16:15
23	05:33 21:54	06:27 20:52	07:23 19:36	18:01 (15) 18:36 (15)	08:20 18:24	08:57 16:16
24	05:35 21:52	06:29 20:50	07:25 19:33	18:01 (15) 18:36 (15)	08:22 18:21	08:57 16:16
25	05:37 21:51	06:31 20:48	07:27 19:31	18:00 (15) 18:37 (15)	07:24 17:19	08:23 16:17
26	05:38 21:49	06:33 20:45	07:29 19:28	17:58 (15) 18:36 (15)	07:26 17:17	08:25 16:18
27	05:40 21:47	06:35 20:43	07:31 19:26	17:58 (15) 18:36 (15)	07:27 17:15	08:27 16:23
28	05:41 21:46	06:36 20:40	07:32 19:23	17:58 (15) 18:36 (15)	07:29 17:13	08:29 16:22
29	05:43 21:44	06:38 20:38	07:34 19:21	17:58 (15) 18:35 (15)	07:31 17:11	08:30 16:20
30	05:45 21:42	06:40 20:36	07:36 19:18	17:58 (15) 18:35 (15)	07:33 17:08	08:32 16:21
31	05:46 21:40	06:42 20:33		07:35 17:06	15:35 (16) 16:10 (16)	08:58 16:22
Potential sun hours	515	461	383	327	257	230
Total, worst case			464	603	371	
Sun reduction			0.29	0.23	0.20	
Oper. time red.			1.00	1.00	1.00	
Wind dir. red.			0.57	0.59	0.59	
Total reduction			0.17	0.14	0.12	
Total, real			78	83	44	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: AB - H28  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June	July	August	September	October	November	December	
1	08:58 16:24	08:27 17:16	07:29 18:13	07:12 20:12	06:02 21:09	05:12 22:00	05:08 22:15	05:48 21:39	06:44 20:31	07:38 19:16	07:37 17:04	08:33 16:19	
2	08:58 16:25	08:25 17:18	07:26 18:15	07:10 20:14	06:00 21:11	05:11 22:01	05:08 22:14	05:50 21:37	06:46 20:28	07:40 19:14	07:39 17:02	08:35 16:18	
3	08:58 16:26	08:24 17:20	07:24 18:17	07:08 20:16	05:58 21:12	05:10 22:02	05:09 22:14	05:52 21:35	06:47 20:26	07:42 19:11	07:41 17:00	08:36 16:18	
4	08:58 16:27	08:22 17:22	07:22 18:19	07:05 20:18	05:56 21:14	05:09 22:03	05:10 22:13	05:53 21:33	06:49 20:24	07:44 19:09	07:43 16:58	08:38 16:17	
5	08:57 16:29	08:20 17:24	07:19 18:21	07:03 20:20	05:54 21:16	05:08 22:05	05:11 22:13	05:55 21:31	06:51 20:21	07:45 19:06	07:45 16:57	08:39 16:16	
6	08:57 16:30	08:18 17:26	07:17 18:23	07:00 20:22	05:52 21:18	05:07 22:06	05:12 22:12	05:57 21:29	06:53 20:19	07:47 19:04	07:47 16:55	08:41 16:16	
7	08:56 16:31	08:16 17:28	07:14 18:25	06:58 20:24	05:50 21:20	05:07 22:07	05:13 22:12	05:59 21:27	06:55 20:16	07:49 19:01	07:49 16:53	08:42 16:15	
8	08:56 16:33	08:14 17:30	07:12 18:27	06:55 20:26	05:48 21:22	05:06 22:08	05:14 22:11	06:01 21:25	06:56 20:14	07:51 18:59	07:51 16:51	08:43 16:15	
9	08:55 16:34	08:12 17:32	07:09 18:29	06:53 20:27	05:46 21:23	05:06 22:08	05:15 22:10	06:02 21:23	06:58 20:11	07:53 18:56	07:53 16:49	08:45 16:15	
10	08:55 16:36	08:10 17:34	07:07 18:30	06:50 20:29	05:44 21:25	05:05 22:09	05:16 22:09	06:04 21:21	07:00 20:09	07:55 18:54	07:55 16:47	08:46 16:14	
11	08:54 16:37	08:08 17:36	07:05 18:32	06:48 20:31	05:42 21:27	05:05 22:10	05:17 22:08	06:06 21:19	07:02 20:06	07:57 18:52	07:57 16:46	08:47 16:14	
12	08:53 16:39	08:06 17:38	07:02 18:34	06:46 20:33	05:40 21:29	05:04 22:11	05:18 22:07	06:08 21:17	07:04 20:04	07:59 18:49	07:59 16:59	08:48 16:14	
13	08:52 16:41	08:04 17:41	07:00 18:36	06:43 20:35	05:39 21:31	05:04 22:12	05:20 22:06	06:09 21:15	07:05 20:01	08:00 18:47	08:01 16:42	08:49 16:14	
14	08:51 16:42	08:02 17:43	06:57 18:38	18:08 (6) 18:11 (6)	06:41 20:37	05:37 21:32	05:04 22:12	05:21 22:05	07:07 21:13	08:02 19:59	08:03 16:40	08:50 16:14	
15	08:50 16:44	08:00 17:45	06:55 18:40	18:07 (6) 18:13 (6)	06:38 20:39	05:35 21:34	05:03 22:13	05:22 22:04	06:13 21:10	07:09 19:56	08:04 18:42	08:05 16:39	
16	08:49 16:46	07:58 17:47	06:52 18:42	18:06 (6) 18:15 (6)	06:36 20:41	05:33 21:36	05:03 22:14	05:23 22:03	06:15 21:08	07:11 19:54	18:57 (5) 19:07 (5)	08:06 18:40	08:07 16:37
17	08:48 16:47	07:56 17:49	06:50 18:44	18:06 (6) 18:17 (6)	06:34 20:43	05:32 21:37	05:03 22:14	05:25 22:02	06:17 21:06	07:13 19:51	18:55 (5) 19:09 (5)	08:08 18:37	08:09 16:36
18	08:47 16:49	07:54 17:51	06:47 18:46	18:05 (6) 18:19 (6)	06:31 20:44	05:30 21:39	05:03 22:14	05:26 22:01	06:18 21:04	07:14 19:49	18:53 (5) 19:11 (5)	08:10 18:35	08:11 16:34
19	08:46 16:51	07:51 17:53	06:45 18:48	18:05 (6) 18:21 (6)	06:29 20:46	05:29 21:41	05:03 22:15	05:28 21:59	06:20 21:01	07:16 19:46	18:52 (5) 19:12 (5)	08:12 18:33	08:12 16:33
20	08:45 16:53	07:49 17:55	06:42 18:50	18:05 (6) 18:22 (5)	06:27 20:48	05:27 21:42	05:03 22:15	05:29 21:58	06:22 20:59	07:18 19:44	18:51 (5) 19:12 (5)	08:14 18:30	08:14 16:31
21	08:44 16:55	07:47 17:57	06:40 18:52	18:05 (5) 18:25 (5)	06:24 20:50	05:26 21:44	05:03 22:15	05:31 21:56	06:24 20:57	07:20 19:41	18:50 (5) 19:11 (5)	08:16 18:28	08:16 16:30
22	08:42 16:56	07:45 17:59	06:37 18:53	18:04 (5) 18:26 (5)	06:22 20:52	05:24 21:46	05:03 22:16	05:32 21:55	06:26 20:55	07:22 19:39	18:49 (5) 19:10 (5)	08:18 18:26	08:18 16:29
23	08:41 16:58	07:43 18:01	06:35 18:55	18:04 (5) 18:26 (5)	06:20 20:54	05:23 21:47	05:04 22:16	05:34 21:54	06:27 20:52	07:23 19:36	18:49 (5) 19:08 (5)	08:20 18:24	08:20 16:28
24	08:40 17:00	07:40 18:03	06:32 18:57	18:04 (5) 18:24 (5)	06:18 20:56	05:21 21:49	05:04 22:16	05:35 21:52	06:29 20:50	07:25 19:34	18:49 (6) 19:05 (6)	08:22 18:22	08:22 16:26
25	08:38 17:02	07:38 18:05	06:30 18:59	18:05 (5) 18:23 (5)	06:15 20:58	05:20 21:50	05:04 22:16	05:37 21:50	06:31 20:48	07:27 19:31	18:49 (6) 19:03 (6)	07:24 17:19	08:23 16:25
26	08:37 17:04	07:36 18:07	06:27 19:01	18:06 (5) 18:21 (5)	06:13 20:59	05:19 21:52	05:05 22:16	05:38 21:49	06:33 20:45	07:29 19:29	18:47 (6) 19:00 (6)	07:26 17:17	08:25 16:24
27	08:35 17:06	07:33 18:09	06:25 19:03	18:08 (5) 18:20 (5)	06:11 21:01	05:17 21:53	05:05 22:16	05:40 21:47	06:35 20:43	07:31 19:26	18:47 (6) 18:57 (6)	07:28 17:15	08:27 16:23
28	08:34 17:08	07:31 18:11	06:22 19:05	18:12 (5) 18:14 (5)	06:09 21:03	05:16 21:54	05:06 22:16	05:42 21:46	06:36 20:41	07:33 19:24	18:48 (6) 18:55 (6)	07:29 17:13	08:28 16:22
29	08:32 17:10		07:20 20:07	06:06 21:05	05:15 21:56	05:06 22:15	05:43 21:44	06:38 20:38	07:34 19:21	07:34 18:53 (6)	18:48 (6) 18:49 (6)	07:31 17:11	08:30 16:21
30	08:31 17:12		07:17 20:09	06:04 21:07	05:14 21:57	05:07 22:15	05:45 21:42	06:40 20:36	07:36 19:19	07:36 18:50 (6)	18:49 (6) 17:09	07:33 16:20	08:32 16:21
31	08:29 17:14		07:15 20:10	05:13 21:59	05:13 21:59	05:47 21:40	06:42 20:33	07:35 17:07	07:35 17:07			08:58 16:22	
Potential sun hours	248	272	367	421	496	513	515	461	382	210	328	257	231
Total, worst case			207						210				
Sun reduction			0.22						0.29				
Oper. time red.			1.00						1.00				
Wind dir. red.			0.58						0.58				
Total reduction			0.13						0.17				
Total, real			27						36				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: AC - H29

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June		
1	08:58	14:48 (16)	08:27	16:03 (15)	07:29	07:12	06:02	05:11
	16:24	32 15:20 (16)	17:16	34 16:37 (15)	18:13	20:12	21:09	22:00
2	08:58	14:49 (16)	08:25	16:02 (15)	07:26	07:10	06:00	05:10
	16:25	32 15:21 (16)	17:18	36 16:38 (15)	18:15	20:14	21:11	22:01
3	08:58	14:50 (16)	08:24	16:02 (15)	07:24	07:07	05:58	05:10
	16:26	31 15:21 (16)	17:20	36 16:38 (15)	18:17	20:16	21:13	22:02
4	08:58	14:50 (16)	08:22	16:02 (15)	07:21	07:05	05:56	05:09
	16:27	31 15:21 (16)	17:22	37 16:39 (15)	18:19	20:18	21:14	22:04
5	08:57	14:51 (16)	08:20	16:02 (15)	07:19	07:02	05:54	05:08
	16:28	31 15:22 (16)	17:24	37 16:39 (15)	18:21	20:20	21:16	22:05
6	08:57	14:51 (16)	08:18	16:02 (15)	07:17	07:00	05:52	05:07
	16:30	31 15:22 (16)	17:26	37 16:39 (15)	18:23	20:22	21:18	22:06
7	08:56	14:51 (16)	08:16	16:02 (15)	07:14	06:58	05:50	05:06
	16:31	31 15:22 (16)	17:28	38 16:40 (15)	18:24	20:24	21:20	22:07
8	08:56	14:52 (16)	08:14	16:02 (15)	07:12	06:55	05:48	05:06
	16:33	30 15:22 (16)	17:30	38 16:40 (15)	18:26	20:26	21:22	22:08
9	08:55	14:53 (16)	08:12	16:01 (15)	07:09	06:53	05:46	05:05
	16:34	30 15:23 (16)	17:32	38 16:39 (15)	18:28	20:27	21:24	22:09
10	08:55	14:54 (16)	08:10	16:02 (15)	07:07	06:50	05:44	05:05
	16:36	29 15:23 (16)	17:34	37 16:39 (15)	18:30	20:29	21:25	22:09
11	08:54	14:54 (16)	08:08	16:02 (15)	07:05	06:48	05:42	05:04
	16:37	29 15:23 (16)	17:36	37 16:39 (15)	18:32	20:31	21:27	22:10
12	08:53	14:55 (16)	08:06	16:03 (15)	07:02	06:45	05:40	05:04
	16:39	28 15:23 (16)	17:38	35 16:38 (15)	18:34	20:33	21:29	22:11
13	08:52	14:56 (16)	08:04	16:04 (15)	07:00	06:43	05:38	05:03
	16:40	27 15:23 (16)	17:40	34 16:38 (15)	18:36	20:35	21:31	22:12
14	08:51	14:57 (16)	08:02	16:05 (15)	06:57	06:41	05:37	05:03
	16:42	26 15:23 (16)	17:42	32 16:37 (15)	18:38	20:37	21:32	22:12
15	08:51	14:57 (16)	08:00	16:05 (15)	06:55	06:38	05:35	05:03
	16:44	25 15:22 (16)	17:44	31 16:36 (15)	18:40	20:39	21:34	22:13
16	08:50	14:58 (16)	07:58	16:06 (15)	06:52	06:36	05:33	05:03
	16:45	24 15:22 (16)	17:46	29 16:35 (15)	18:42	20:41	21:36	22:14
17	08:48	15:00 (16)	07:56	16:08 (15)	06:50	06:33	05:32	05:03
	16:47	22 15:22 (16)	17:49	26 16:34 (15)	18:44	20:43	21:37	22:14
18	08:47	15:01 (16)	07:54	16:10 (15)	06:47	06:31	05:30	05:03
	16:49	21 15:22 (16)	17:51	23 16:33 (15)	18:46	20:44	21:39	22:15
19	08:46	15:02 (16)	07:51	16:11 (15)	06:45	06:29	05:28	05:03
	16:51	18 15:20 (16)	17:53	19 16:30 (15)	18:48	20:46	21:41	22:15
20	08:45	15:05 (16)	07:49	16:15 (15)	06:42	06:26	05:27	05:03
	16:53	14 15:19 (16)	17:55	12 16:27 (15)	18:50	20:48	21:42	22:15
21	08:44	15:07 (16)	07:47	06:40	06:24	05:25	05:03	
	16:54	10 15:17 (16)	17:57	18:51	20:50	21:44	22:16	
22	08:42	16:13 (15)	07:45	06:37	06:22	05:24	05:03	
	16:56	8 16:21 (15)	17:59	18:53	20:52	21:46	22:16	
23	08:41	16:10 (15)	07:42	06:35	06:20	05:22	05:03	
	16:58	13 16:23 (15)	18:01	18:55	20:54	21:47	22:16	
24	08:40	16:09 (15)	07:40	06:32	06:17	05:21	05:04	
	17:00	17 16:26 (15)	18:03	18:57	20:56	21:49	22:16	
25	08:38	16:07 (15)	07:38	06:30	06:15	05:20	05:04	
	17:02	21 16:28 (15)	18:05	18:59	20:58	21:50	22:16	
26	08:37	16:05 (15)	07:36	06:27	06:13	05:18	05:04	
	17:04	25 16:30 (15)	18:07	19:01	20:59	21:52	22:16	
27	08:35	16:05 (15)	07:33	06:25	06:11	05:17	05:05	
	17:06	27 16:32 (15)	18:09	19:03	21:01	21:53	22:16	
28	08:34	16:04 (15)	07:31	06:22	06:08	05:16	05:05	
	17:08	29 16:33 (15)	18:11	19:05	21:03	21:55	22:16	
29	08:32	16:03 (15)		07:20	06:06	05:15	05:06	
	17:10	31 16:34 (15)		20:07	21:05	21:56	22:16	
30	08:31	16:03 (15)		07:17	06:04	05:14	05:07	
	17:12	32 16:35 (15)		20:09	21:07	21:57	22:15	
31	08:29	16:02 (15)		07:15		05:12		
	17:14	34 16:36 (15)		20:10		21:59		
Potential sun hours	248		272	367	421	496	513	
Total, worst case	789		646					
Sun reduction	0.17		0.22					
Oper. time red.	1.00		1.00					
Wind dir. red.	0.63		0.60					
Total reduction	0.11		0.13					
Total, real	84		86					

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: AC - H29  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	July	August	September	October	November	December
1	05:07	05:48	06:44	07:38	07:37	15:31 (15) 08:33 14:36 (16)
	22:15	21:39	20:31	19:16	17:04	37 16:08 (15) 16:19 29 15:05 (16)
2	05:08	05:50	06:45	07:40	07:39	15:31 (15) 08:35 14:36 (16)
	22:15	21:37	20:28	19:14	17:02	37 16:08 (15) 16:18 29 15:05 (16)
3	05:09	05:52	06:47	07:42	07:41	15:31 (15) 08:36 14:36 (16)
	22:14	21:35	20:26	19:11	17:00	38 16:09 (15) 16:17 30 15:06 (16)
4	05:10	05:53	06:49	07:44	07:43	15:31 (15) 08:38 14:37 (16)
	22:14	21:33	20:24	19:09	16:58	38 16:09 (15) 16:17 30 15:07 (16)
5	05:11	05:55	06:51	07:45	07:45	15:31 (15) 08:39 14:36 (16)
	22:13	21:31	20:21	19:06	16:56	38 16:09 (15) 16:16 31 15:07 (16)
6	05:11	05:57	06:53	07:47	07:47	15:31 (15) 08:41 14:37 (16)
	22:12	21:29	20:19	19:04	16:54	38 16:09 (15) 16:16 31 15:08 (16)
7	05:12	05:59	06:54	07:49	07:49	15:31 (15) 08:42 14:37 (16)
	22:12	21:27	20:16	19:01	16:53	37 16:08 (15) 16:15 31 15:08 (16)
8	05:13	06:00	06:56	07:51	07:51	15:32 (15) 08:43 14:38 (16)
	22:11	21:25	20:14	18:59	16:51	36 16:08 (15) 16:15 31 15:09 (16)
9	05:15	06:02	06:58	07:53	07:53	15:33 (15) 08:45 14:38 (16)
	22:10	21:23	20:11	18:56	16:49	36 16:09 (15) 16:14 31 15:09 (16)
10	05:16	06:04	07:00	07:55	07:55	15:33 (15) 08:46 14:38 (16)
	22:09	21:21	20:09	18:54	16:47	35 16:08 (15) 16:14 32 15:10 (16)
11	05:17	06:06	07:02	07:57	07:57	15:34 (15) 08:47 14:39 (16)
	22:08	21:19	20:06	18:51	16:45	33 16:07 (15) 16:14 32 15:11 (16)
12	05:18	06:07	07:03	07:59	07:59	15:35 (15) 08:48 14:39 (16)
	22:07	21:17	20:04	18:49	16:44	32 16:07 (15) 16:13 32 15:11 (16)
13	05:19	06:09	07:05	08:00	08:01	15:35 (15) 08:49 14:40 (16)
	22:06	21:15	20:01	18:47	16:42	31 16:06 (15) 16:13 32 15:12 (16)
14	05:21	06:11	07:07	08:02	08:03	15:36 (15) 08:50 14:40 (16)
	22:05	21:13	19:59	18:44	16:40	29 16:05 (15) 16:13 32 15:12 (16)
15	05:22	06:13	07:09	08:04	08:05	15:37 (15) 08:51 14:40 (16)
	22:04	21:10	19:56	18:42	16:39	27 16:04 (15) 16:13 32 15:12 (16)
16	05:23	06:15	07:11	08:06	08:07	15:39 (15) 08:52 14:41 (16)
	22:03	21:08	19:54	18:40	16:37	25 16:04 (15) 16:13 32 15:13 (16)
17	05:25	06:16	07:12	08:08	08:09	15:41 (15) 08:53 14:42 (16)
	22:02	21:06	19:51	18:37	16:36	21 16:02 (15) 16:14 32 15:14 (16)
18	05:26	06:18	07:14	08:10	08:11	15:43 (15) 08:54 14:41 (16)
	22:01	21:04	19:49	18:35	16:34	17 16:00 (15) 16:14 32 15:13 (16)
19	05:27	06:20	07:16	08:12	08:13	15:45 (15) 08:55 14:42 (16)
	21:59	21:01	19:46	18:33	16:33	13 15:58 (15) 16:14 32 15:14 (16)
20	05:29	06:22	07:18	08:14	08:14	15:48 (15) 08:55 14:43 (16)
	21:58	20:59	19:44	18:30	16:31	8 15:56 (15) 16:14 32 15:15 (16)
21	05:30	06:24	07:20	08:16	08:16	14:43 (16) 08:56 14:43 (16)
	21:57	20:57	19:41	18:28	16:30	10 14:53 (16) 16:15 32 15:15 (16)
22	05:32	06:25	07:21	08:18	08:18	14:41 (16) 08:56 14:44 (16)
	21:55	20:55	19:39	18:26	14 16:58 (15) 16:29 14 14:55 (16) 16:15 32 15:16 (16)	
23	05:33	06:27	07:23	08:20	08:20	16:41 (15) 08:20 14:39 (16) 08:57 14:44 (16)
	21:54	20:52	19:36	18:24	20 17:01 (15) 16:27 18 14:57 (16) 16:16 32 15:16 (16)	
24	05:35	06:29	07:25	08:22	08:22	16:39 (15) 08:22 14:38 (16) 08:57 14:44 (16)
	21:52	20:50	19:34	18:21	23 17:02 (15) 16:26 21 14:59 (16) 16:16 32 15:16 (16)	
25	05:37	06:31	07:27	08:24	08:23	15:37 (15) 08:23 14:38 (16) 08:58 14:45 (16)
	21:51	20:48	19:31	17:19	27 16:04 (15) 16:25 22 15:00 (16) 16:17 32 15:17 (16)	
26	05:38	06:33	07:29	08:26	08:25	15:35 (15) 08:25 14:37 (16) 08:58 14:45 (16)
	21:49	20:45	19:28	17:17	30 16:05 (15) 16:24 24 15:01 (16) 16:18 32 15:17 (16)	
27	05:40	06:35	07:31	08:28	08:27	15:34 (15) 08:27 14:37 (16) 08:58 14:46 (16)
	21:47	20:43	19:26	17:15	32 16:06 (15) 16:23 25 15:02 (16) 16:18 32 15:18 (16)	
28	05:41	06:36	07:32	08:29	08:29	15:34 (15) 08:29 14:36 (16) 08:58 14:46 (16)
	21:46	20:40	19:23	17:13	33 16:07 (15) 16:22 26 15:02 (16) 16:19 32 15:18 (16)	
29	05:43	06:38	07:34	08:31	08:30	15:33 (15) 08:30 14:36 (16) 08:58 14:47 (16)
	21:44	20:38	19:21	17:11	35 16:08 (15) 16:21 27 15:03 (16) 16:20 32 15:19 (16)	
30	05:45	06:40	07:36	08:33	08:32	15:32 (15) 08:32 14:36 (16) 08:59 14:47 (16)
	21:42	20:36	19:18	17:08	36 16:08 (15) 16:20 28 15:04 (16) 16:21 32 15:19 (16)	
31	05:46	06:42	07:35	08:35	08:35	15:32 (15) 08:35 14:36 (16) 08:59 14:48 (16)
	21:40	20:33	17:06	36 16:08 (15) 16:22 32 15:20 (16)		
Potential sun hours	515	461	383	327	257	230
Total, worst case				286	821	977
Sun reduction				0.23	0.20	0.12
Oper. time red.				1.00	1.00	1.00
Wind dir. red.				0.60	0.61	0.64
Total reduction				0.14	0.12	0.08
Total, real				40	100	74

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: AD - H30  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June	July	August	September	October	November	December		
1	08:58 16:24	08:27 17:16	07:29 18:13	07:13 20:12	19:00 (5) 19:07 (5)	06:02 21:09	05:12 22:00	05:08 22:15	05:48 21:39	06:44 20:31	07:38 19:16	18:38 (6) 18:48 (6)	07:37 17:04	08:33 16:19
2	08:58 16:25	08:25 17:18	07:26 18:15	07:10 20:14	18:05 (6) 18:05 (6)	06:00 21:11	05:11 22:01	05:08 22:14	05:50 21:37	06:46 20:28	07:40 19:14	18:39 (6) 18:45 (6)	07:39 17:02	08:35 16:18
3	08:58 16:26	08:24 17:20	07:24 18:17	07:08 20:16	18:05 (6) 18:05 (6)	05:58 21:13	05:10 22:02	05:52 22:14	06:47 21:35	06:47 20:26	07:42 19:11	18:39 (6) 18:42 (6)	07:41 17:00	08:36 16:18
4	08:58 16:27	08:22 17:22	07:22 18:19	07:05 20:18	18:05 (6) 18:05 (6)	05:56 21:14	05:09 22:03	05:10 22:13	05:54 21:33	06:49 20:24	07:44 19:09	18:39 (6) 18:42 (6)	07:43 16:59	08:38 16:17
5	08:57 16:29	08:20 17:24	07:19 18:21	07:03 20:20	18:05 (6) 18:05 (6)	05:54 21:16	05:08 22:05	05:11 22:13	05:55 21:31	06:51 20:21	07:45 19:06	18:39 (6) 18:42 (6)	07:45 16:57	08:39 16:16
6	08:57 16:30	08:18 17:26	07:17 18:23	07:00 20:22	18:05 (6) 18:05 (6)	05:52 21:18	05:07 22:06	05:12 22:12	05:57 21:29	06:53 20:19	07:47 19:04	18:39 (6) 18:42 (6)	07:47 16:55	08:41 16:16
7	08:56 16:31	08:16 17:28	07:14 18:25	06:58 20:24	18:05 (6) 18:05 (6)	05:50 21:20	05:07 22:07	05:13 22:12	05:59 21:27	06:55 20:16	07:49 19:01	18:39 (6) 18:42 (6)	07:49 16:53	08:42 16:15
8	08:56 16:33	08:14 17:30	07:12 18:27	06:55 20:26	18:05 (6) 18:05 (6)	05:48 21:22	05:06 22:08	05:14 22:11	06:01 21:25	06:56 20:14	07:51 18:59	18:39 (6) 18:42 (6)	07:51 16:51	08:43 16:15
9	08:55 16:34	08:12 17:32	07:10 18:29	06:53 20:27	18:05 (6) 18:05 (6)	05:46 21:23	05:06 22:09	05:15 22:10	06:02 21:23	06:58 20:11	07:53 18:56	18:39 (6) 18:42 (6)	07:53 16:49	08:45 16:15
10	08:55 16:36	08:10 17:34	07:07 18:30	06:50 20:29	18:05 (6) 18:05 (6)	05:44 21:25	05:05 22:09	05:16 22:09	06:04 21:21	07:00 20:09	07:55 18:54	18:39 (6) 18:42 (6)	07:55 16:47	08:46 16:14
11	08:54 16:37	08:08 17:36	07:05 18:32	06:48 20:31	18:05 (6) 18:05 (6)	05:42 21:27	05:05 22:10	05:17 22:08	06:06 21:19	07:02 20:06	07:57 18:54 (5)	18:39 (6) 18:42 (6)	07:57 16:46	08:47 16:14
12	08:53 16:39	08:06 17:39	07:02 18:34	06:46 20:33	18:05 (6) 18:05 (6)	05:41 21:29	05:04 22:11	05:18 22:07	06:08 21:17	07:04 20:04	07:59 18:49	18:39 (6) 18:42 (6)	07:59 16:44	08:48 16:14
13	08:52 16:41	08:04 17:41	07:00 18:36	06:43 20:35	18:05 (6) 18:05 (6)	05:39 21:31	05:04 22:12	05:20 22:06	06:09 21:15	07:05 20:01	07:59 19:05 (5)	18:39 (6) 18:42 (6)	08:00 16:42	08:49 16:14
14	08:51 16:42	08:02 17:43	06:57 18:38	06:41 20:37	18:05 (6) 18:05 (6)	05:37 21:32	05:04 22:12	05:21 22:05	06:11 21:13	07:07 19:59	07:59 19:07 (5)	18:39 (6) 18:42 (6)	08:02 16:41	08:50 16:14
15	08:50 16:44	08:00 17:45	06:55 18:40	06:38 20:39	18:05 (6) 18:05 (6)	05:35 21:34	05:03 22:13	05:22 22:04	06:13 21:10	07:09 19:56	07:59 19:08 (5)	18:39 (6) 18:42 (6)	08:04 16:39	08:51 16:14
16	08:49 16:46	07:58 17:47	06:52 18:42	06:36 20:41	18:05 (6) 18:05 (6)	05:33 21:36	05:03 22:14	05:23 22:03	06:15 21:08	07:11 19:54	07:59 19:09 (5)	18:39 (6) 18:42 (6)	08:06 16:37	08:52 16:14
17	08:48 16:47	07:56 17:49	06:50 18:44	06:34 20:43	18:05 (6) 18:05 (6)	05:32 21:37	05:03 22:14	05:25 22:02	06:17 21:06	07:13 19:51	07:59 19:09 (5)	18:39 (6) 18:42 (6)	08:08 16:36	08:53 16:14
18	08:47 16:49	07:54 17:51	06:47 18:46	06:31 20:44	18:05 (6) 18:05 (6)	05:30 21:39	05:03 22:14	05:26 22:01	06:18 21:04	07:14 19:49	07:59 19:09 (5)	18:39 (6) 18:42 (6)	08:10 16:34	08:54 16:14
19	08:46 16:51	07:51 17:53	06:45 18:48	06:29 20:46	18:05 (6) 18:05 (6)	05:29 21:41	05:03 22:15	05:28 21:59	06:20 21:01	07:16 19:46	07:59 19:10 (5)	18:39 (6) 18:42 (6)	08:12 16:33	08:55 16:14
20	08:45 16:53	07:49 17:55	06:42 18:50	06:27 20:48	18:05 (6) 18:05 (6)	05:27 21:42	05:03 22:15	05:29 21:58	06:22 20:59	07:18 19:44	07:59 19:10 (5)	18:39 (6) 18:42 (6)	08:14 16:31	08:55 16:15
21	08:44 16:55	07:47 17:57	06:40 18:52	06:24 20:50	18:05 (6) 18:05 (6)	05:26 21:44	05:03 22:15	05:31 21:56	06:24 20:57	07:20 19:41	07:59 19:09 (5)	18:39 (6) 18:42 (6)	08:16 16:30	08:56 16:15
22	08:42 16:57	07:45 17:59	06:37 18:53	06:22 20:52	18:05 (6) 18:05 (6)	05:24 21:46	05:03 22:16	05:32 21:55	06:26 20:55	07:22 19:39	07:59 19:09 (5)	18:39 (6) 18:42 (6)	08:18 16:29	08:56 16:16
23	08:41 16:58	07:43 18:01	06:35 18:55	06:20 20:54	18:05 (6) 18:05 (6)	05:23 21:47	05:04 22:16	05:34 21:54	06:27 20:52	07:23 19:36	07:59 19:08 (5)	18:39 (6) 18:42 (6)	08:20 16:28	08:57 16:16
24	08:40 17:00	07:40 18:03	06:32 18:57	06:18 20:56	18:05 (6) 18:05 (6)	05:21 21:49	05:04 22:16	05:35 21:52	06:29 20:50	07:25 19:34	07:59 19:05 (5)	18:39 (6) 18:42 (6)	08:22 16:26	08:57 16:17
25	08:38 17:02	07:38 18:05	06:30 18:59	06:15 20:58	18:05 (6) 18:05 (6)	05:20 21:50	05:04 22:16	05:37 21:51	06:31 20:48	07:27 19:31	07:59 19:03 (6)	18:39 (6) 18:42 (6)	08:23 16:25	08:58 16:17
26	08:37 17:04	07:36 18:07	06:27 19:01	06:13 20:59	18:05 (6) 18:05 (6)	05:19 21:52	05:05 22:16	05:38 21:49	06:33 20:45	07:29 19:29	07:59 19:00 (6)	18:39 (6) 18:42 (6)	08:25 16:24	08:58 16:18
27	08:35 17:06	07:33 18:09	06:25 19:03	06:11 21:01	18:05 (6) 18:05 (6)	05:17 21:53	05:05 22:16	05:40 21:47	06:35 20:43	07:31 19:26	07:59 18:57 (6)	18:39 (6) 18:42 (6)	08:27 16:23	08:58 16:19
28	08:34 17:08	07:31 18:11	06:22 19:05	06:09 21:03	18:05 (6) 18:05 (6)	05:16 21:55	05:06 22:16	05:42 21:46	06:37 20:41	07:33 19:24	07:59 18:55 (6)	18:39 (6) 18:42 (6)	08:28 16:22	08:58 16:20
29	08:32 17:10	07:29 18:17	06:20 19:17	06:07 21:05	18:05 (6) 18:05 (6)	05:15 21:56	05:06 22:15	05:43 21:44	06:38 20:38	07:34 19:21	07:59 18:53 (6)	18:39 (6) 18:42 (6)	08:30 16:21	08:58 16:21
30	08:31 17:12	07:28 18:20	06:19 19:24	06:04 21:07	18:05 (6) 18:05 (6)	05:14 21:57	05:07 22:15	05:45 21:42	06:40 20:36	07:36 19:19	07:59 18:50 (6)	18:39 (6) 18:42 (6)	08:32 16:20	08:58 16:22
31	08:29 17:14	07:25 18:20	06:18 19:12	06:03 21:01	18:05 (6) 18:05 (6)	05:13 21:59	05:07 22:15	05:47 21:40	06:42 20:33	07:35 17:07	07:59 18:50 (6)	18:39 (6) 18:42 (6)	08:33 16:20	08:58 16:23
Potential sun hours	248	272	367	421	496	513	515	461	382	328	257	231		
Total, worst case			496	7					494		19			
Sun reduction			0.22	0.34					0.29		0.23			
Oper. time red.			1.00	1.00					1.00		1.00			
Wind dir. red.			0.58	0.58					0.58		0.57			
Total reduction			0.13	0.20					0.17		0.13			
Total, real			64	1					83		3			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: AE - H31  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June	July	August	September	October	November	December	
1	08:58 16:24	08:27 17:16	07:29 18:13	07:12 20:12	06:02 21:09	05:12 22:00	05:08 22:15	05:48 21:39	06:44 20:31	07:38 19:16	18:42 (5) 6 18:48 (5)	07:37 17:04	08:33 16:19
2	08:58 16:25	08:25 17:18	07:26 18:15	07:10 20:14	06:00 21:11	05:11 22:01	05:08 22:14	05:50 21:37	06:46 20:28	07:40 19:14	18:42 (5) 2 18:44 (5)	07:39 17:02	08:35 16:18
3	08:58 16:26	08:24 17:20	07:24 18:17	07:08 20:16	05:58 21:12	05:10 22:02	05:09 22:14	05:52 21:35	06:47 20:26	07:42 19:11	18:44 (5)	07:41 17:00	08:36 16:18
4	08:58 16:27	08:22 17:22	07:22 18:19	07:05 20:18	05:56 21:14	05:09 22:03	05:10 22:13	05:53 21:33	06:49 20:24	07:44 19:09	18:44 (5)	07:43 16:58	08:38 16:17
5	08:57 16:29	08:20 17:24	07:19 18:21	07:03 20:20	05:54 21:16	05:08 22:04	05:11 22:13	05:55 21:31	06:51 20:21	07:45 19:06	18:44 (5)	07:45 16:57	08:39 16:16
6	08:57 16:30	08:18 17:26	07:17 18:23	07:00 20:22	05:52 21:18	05:07 22:06	05:12 22:12	05:57 21:29	06:53 20:19	07:47 19:04	18:44 (5)	07:47 16:55	08:41 16:16
7	08:56 16:31	08:16 17:28	07:14 18:25	06:58 20:24	05:50 21:20	05:07 22:07	05:13 22:12	05:59 21:27	06:55 20:16	07:49 19:01	18:44 (5)	07:49 16:53	08:42 16:15
8	08:56 16:33	08:14 17:30	07:12 18:27	06:55 20:26	05:48 21:22	05:06 22:08	05:14 22:11	06:00 21:25	06:56 20:14	07:51 18:59	18:44 (5)	07:51 16:51	08:43 16:15
9	08:55 16:34	08:12 17:32	07:09 18:28	06:53 20:27	05:46 21:23	05:06 22:08	05:15 22:10	06:02 21:23	06:58 20:11	07:53 18:56	18:44 (5)	07:53 16:49	08:45 16:15
10	08:55 16:36	08:10 17:34	07:07 18:30	06:50 20:29	05:44 21:25	05:05 22:09	05:16 22:09	06:04 21:21	07:00 20:09	07:55 18:54	18:44 (5)	07:55 16:47	08:46 16:14
11	08:54 16:37	08:08 17:36	07:05 18:32	06:48 20:31	05:42 21:27	05:05 22:10	05:17 22:08	06:06 21:19	07:02 20:06	07:57 18:52	18:44 (5)	07:57 16:46	08:47 16:14
12	08:53 16:39	08:06 17:38	07:02 18:34	18:03 (5) 06:46	18:07 (5) 20:33	05:40 21:29	05:04 22:11	06:08 22:07	07:04 20:04	07:59 18:49	18:44 (5)	07:59 16:44	08:48 16:14
13	08:52 16:41	08:04 17:41	07:00 18:36	18:02 (5) 06:43	18:09 (5) 20:35	05:39 21:31	05:04 22:12	06:09 22:06	07:05 20:01	08:00 18:47	18:44 (5)	08:01 16:42	08:49 16:14
14	08:51 16:42	08:02 17:43	06:57 18:38	18:01 (5) 06:41	18:11 (5) 20:37	05:37 21:32	05:04 22:12	06:11 22:05	07:07 19:59	08:02 18:44	18:44 (5)	08:03 16:40	08:50 16:14
15	08:50 16:44	08:00 17:45	06:55 18:40	18:01 (5) 06:38	18:13 (5) 20:39	05:35 21:34	05:03 22:13	06:13 22:04	07:09 19:56	08:04 18:42	18:44 (5)	08:05 16:39	08:51 16:14
16	08:49 16:46	07:58 17:47	06:52 18:42	18:00 (5) 06:36	18:15 (5) 20:41	05:33 21:36	05:03 22:13	06:15 22:03	07:11 19:54	08:06 18:40	18:44 (5)	08:07 16:37	08:52 16:14
17	08:48 16:47	07:56 17:51	06:50 18:44	18:01 (5) 06:34	18:17 (5) 20:43	05:32 21:37	05:03 22:14	06:17 22:02	07:13 19:51	08:08 18:37	18:44 (5)	08:09 16:36	08:53 16:14
18	08:47 16:49	07:54 17:51	06:47 18:46	18:01 (5) 06:31	18:17 (5) 20:44	05:30 21:39	05:03 22:14	06:18 22:04	07:14 19:49	08:10 18:35	18:44 (5)	08:11 16:34	08:54 16:14
19	08:46 16:51	07:51 17:53	06:45 18:48	18:02 (5) 06:29	18:16 (5) 20:46	05:29 21:41	05:03 22:15	06:20 21:59	07:16 19:46	08:12 18:33	18:44 (5)	08:12 16:33	08:54 16:14
20	08:45 16:53	07:49 17:55	06:42 18:50	18:03 (5) 06:27	18:14 (5) 20:48	05:27 21:42	05:03 22:15	06:22 21:58	07:18 19:44	08:14 18:30	18:44 (5)	08:14 16:31	08:55 16:15
21	08:44 16:55	07:47 17:57	06:40 18:52	18:07 (5) 06:24	18:14 (5) 20:48	05:25 21:42	05:03 22:15	06:24 21:56	07:20 19:41	08:16 18:28	18:44 (5)	08:16 16:30	08:56 16:15
22	08:42 16:56	07:45 17:59	06:37 18:53	18:10 (5) 06:22	18:10 (5) 20:50	05:24 21:44	05:03 22:15	06:26 21:56	07:22 19:39	08:18 18:26	18:44 (5)	08:18 16:29	08:56 16:16
23	08:41 16:58	07:43 18:01	06:35 18:55	06:20 20:52	05:23 21:46	05:04 22:16	05:34 22:16	06:27 21:54	07:23 19:36	08:20 18:58 (5)	18:49 (5)	08:20 16:27	08:57 16:16
24	08:40 17:00	07:40 18:03	06:32 18:57	06:18 20:56	05:21 21:49	05:04 22:16	05:35 22:16	06:29 21:52	07:25 19:34	08:22 18:59 (5)	18:46 (5)	08:22 16:26	08:57 16:17
25	08:38 17:02	07:38 18:05	06:30 18:59	06:15 20:58	05:20 21:50	05:04 22:16	05:37 22:16	06:31 20:48	07:27 19:31	08:45 (5) 13 19:01 (5)	18:45 (5)	07:24 16:25	08:58 16:17
26	08:37 17:04	07:36 18:07	06:27 19:01	06:13 20:59	05:19 21:52	05:05 22:16	05:38 22:16	06:33 20:45	07:29 19:29	18:43 (5) 16 19:01 (5)	18:42 (5)	07:26 16:25	08:58 16:17
27	08:35 17:06	07:33 18:09	06:25 19:03	06:11 21:01	05:17 21:53	05:05 22:16	05:40 22:16	06:35 20:43	07:31 19:26	18:42 (5) 15 18:57 (5)	18:42 (5)	07:27 16:23	08:58 16:19
28	08:34 17:08	07:31 18:11	06:22 19:05	06:09 21:03	05:16 21:54	05:06 22:16	05:42 22:16	06:36 20:40	07:33 19:24	18:42 (5) 13 18:55 (5)	18:42 (5)	07:29 16:22	08:58 16:20
29	08:32 17:10	07:29 18:07	06:20 19:05	06:06 21:05	05:15 21:56	05:06 22:15	05:43 22:15	06:38 20:38	07:34 19:21	18:42 (5) 11 18:53 (5)	18:42 (5)	07:31 16:21	08:58 16:21
30	08:30 17:12	07:27 18:09	06:17 19:02	06:04 21:07	05:14 21:57	05:07 22:15	05:45 22:15	06:40 20:36	07:36 19:19	18:42 (5) 8 18:50 (5)	18:42 (5)	07:33 17:09	08:58 16:20
31	08:29 17:14	07:15 18:00	06:15 19:00	05:13 21:59	05:13 21:59	05:13 21:59	05:47 21:40	06:42 20:33	07:35 17:07	07:35 17:07	18:44 (5)	07:35 16:22	08:58 16:22
Potential sun hours	248	272	367	421	496	513	515	461	382	328	257	231	
Total, worst case			108						102				
Sun reduction			0.22						0.29		0.23		
Oper. time red.			1.00						1.00		1.00		
Wind dir. red.			0.57						0.57		0.57		
Total reduction			0.13						0.17		0.13		
Total, real			14						17		1		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)



### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: AF - H32  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January	February	March	April	May	June
1	08:58 16:24	08:27 17:16	15:37 (16) 18:13	07:29 17:19 (15)	16:44 (15) 20:12	06:02 21:09
2	08:58 16:25	08:25 17:18	15:38 (16) 18:15	07:26 17:17 (15)	16:43 (15) 20:14	06:00 21:11
3	08:58 16:26	08:24 17:20	15:39 (16) 18:17	07:24 17:17 (15)	16:44 (15) 20:16	05:58 21:13
4	08:58 16:27	15:40 (16) 17:22	15:41 (16) 18:19	07:21 17:15 (15)	16:45 (15) 20:18	05:56 21:14
5	08:57 16:28	4 15:44 (16) 17:22	22 16:03 (16) 18:19	30 15:42 (16) 17:19	16:46 (15) 17:14 (15)	05:54 20:20
6	08:57 16:30	9 15:47 (16) 17:24	20 16:02 (16) 18:21	28 15:44 (16) 17:17	16:47 (15) 17:12 (15)	05:52 21:18
7	08:56 16:31	12 15:49 (16) 17:26	16 16:00 (16) 18:23	25 15:48 (16) 17:14 (15)	16:49 (15) 17:11 (15)	05:50 21:20
8	08:56 16:33	14 15:50 (16) 17:28	10 15:58 (16) 18:24	22 17:04 (15) 18:28	17:04 (15) 16:51 (15)	21:20 06:55
9	08:55 16:34	16 15:51 (16) 17:30	17 18:26 17:09	17 17:08 (15) 16:55 (15)	20:26 06:53	21:22 05:46
10	08:55 16:36	19 15:54 (16) 17:32	9 17:04 (15) 18:28	9 17:04 (15) 18:28	20:27 16:50	21:23 05:44
11	08:55 16:37	20 15:55 (16) 17:34	18:30 07:07	20:29 18:30	21:25 18:30	22:09 05:44
12	08:54 16:37	22 15:56 (16) 17:36	18:32 07:05	20:31 06:48	21:27 05:42	22:10 05:04
13	08:53 16:39	23 15:57 (16) 17:38	18:34 07:02	20:33 06:45	21:29 05:40	22:11 05:04
14	08:52 16:40	24 15:58 (16) 17:40	18:36 07:00	20:35 16:44 (15)	21:31 06:41	22:12 05:37
15	08:51 16:42	25 15:59 (16) 17:42	13 17:09 (15) 18:38	20:37 16:45 (15)	21:32 06:38	22:12 05:35
16	08:51 16:44	26 15:59 (16) 17:44	19 17:11 (15) 18:40	20:39 17:11 (15)	21:34 18:40	22:13 05:33
17	08:50 16:45	28 16:01 (16) 17:46	23 17:13 (15) 18:42	20:41 16:48 (15)	21:36 06:36	22:14 05:33
18	08:48 16:47	29 16:02 (16) 17:49	26 17:15 (15) 18:44	20:42 16:48 (15)	21:37 06:31	22:14 05:30
19	08:47 16:49	30 16:03 (16) 17:51	28 17:16 (15) 18:46	20:44 16:46 (15)	21:39 06:29	22:15 05:28
20	08:46 16:51	31 16:03 (16) 17:53	31 17:17 (15) 18:48	20:46 16:46 (15)	21:41 06:26	22:15 05:27
21	08:45 16:53	31 16:04 (16) 17:55	32 17:18 (15) 18:50	20:48 16:45 (15)	21:42 06:24	22:15 05:25
22	08:44 16:54	32 16:04 (16) 17:57	34 17:19 (15) 18:51	20:50 16:44 (15)	21:44 06:22	22:16 05:24
23	08:42 16:56	32 16:05 (16) 17:59	35 17:19 (15) 18:53	20:52 16:44 (15)	21:46 06:20	22:16 05:22
24	08:41 16:58	32 16:05 (16) 18:01	35 17:19 (15) 18:55	20:54 16:44 (15)	21:47 06:17	22:16 05:21
25	08:40 17:00	33 16:06 (16) 18:03	36 17:20 (15) 18:57	20:56 16:43 (15)	21:49 06:15	22:16 05:20
26	08:38 17:02	33 16:06 (16) 18:05	36 17:19 (15) 18:59	20:58 16:43 (15)	21:50 06:13	22:16 05:18
27	08:37 17:04	33 16:06 (16) 18:07	36 17:19 (15) 19:01	20:59 16:42 (15)	21:52 06:11	22:16 05:17
28	08:35 17:06	32 16:06 (16) 18:09	37 17:19 (15) 19:03	21:01 16:43 (15)	21:53 06:08	22:16 05:16
29	08:34 17:08	32 16:06 (16) 18:11	36 17:19 (15) 19:05	21:03 16:43 (15)	21:55 06:06	22:16 05:15
30	08:32 17:10	31 16:06 (16) 18:11	36 17:19 (15) 19:05	21:03 16:43 (15)	21:55 06:04	22:16 05:14
31	08:29 17:12	31 16:06 (16) 18:11	36 17:19 (15) 19:05	21:03 16:43 (15)	21:55 06:04	22:16 05:14
Potential sun hours	248	272	367	421	496	513
Total, worst case	713	606	233			
Sun reduction	0.17	0.22	0.22			
Oper. time red.	1.00	1.00	1.00			
Wind dir. red.	0.62	0.59	0.58			
Total reduction	0.11	0.13	0.13			
Total, real	76	80	30			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: AF - H32

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	July	August	September	October	November	December
1	05:07	05:48	06:44	07:38	07:37	08:33
	22:15	21:39	20:31	19:16	17:04	16:19
2	05:08	05:50	06:45	07:40	07:39	08:35
	22:14	21:37	20:28	19:14	17:02	16:18
3	05:09	05:52	06:47	07:42	07:41	08:36
	22:14	21:35	20:26	19:11	17:00	16:17
4	05:10	05:53	06:49	07:44	07:43	08:38
	22:14	21:33	20:24	19:09	16:58	16:17
5	05:11	05:55	06:51	07:45	17:29 (15)	07:45
	22:13	21:31	20:21	19:06	14 17:43 (15)	16:56
6	05:11	05:57	06:53	07:47	17:26 (15)	07:47
	22:12	21:29	20:19	19:04	20 17:46 (15)	16:54
7	05:12	05:59	06:54	07:49	17:24 (15)	07:49
	22:12	21:27	20:16	19:01	24 17:48 (15)	16:53
8	05:14	06:00	06:56	07:51	17:22 (15)	07:51
	22:11	21:25	20:14	18:59	27 17:49 (15)	16:51
9	05:15	06:02	06:58	07:53	17:20 (15)	07:53
	22:10	21:23	20:11	18:56	30 17:50 (15)	16:49
10	05:16	06:04	07:00	07:55	17:19 (15)	07:55
	22:09	21:21	20:09	18:54	32 17:51 (15)	16:47
11	05:17	06:06	07:02	07:57	17:18 (15)	07:57
	22:08	21:19	20:06	18:51	33 17:51 (15)	16:45
12	05:18	06:07	07:03	07:58	17:17 (15)	07:59
	22:07	21:17	20:04	18:49	35 17:52 (15)	16:44
13	05:19	06:09	07:05	08:00	17:16 (15)	08:01
	22:06	21:15	20:01	18:47	36 17:52 (15)	16:42
14	05:21	06:11	07:07	08:02	17:16 (15)	08:03
	22:05	21:13	19:59	18:44	36 17:52 (15)	16:40
15	05:22	06:13	07:09	08:04	17:15 (15)	08:05
	22:04	21:10	19:56	18:42	37 17:52 (15)	16:39
16	05:23	06:15	07:11	08:06	17:15 (15)	08:07
	22:03	21:08	19:54	18:40	37 17:52 (15)	16:37
17	05:25	06:16	07:12	08:08	17:15 (15)	08:09
	22:02	21:06	19:51	18:37	36 17:51 (15)	16:36
18	05:26	06:18	07:14	08:10	17:15 (15)	08:11
	22:01	21:04	19:49	18:35	36 17:51 (15)	16:34
19	05:27	06:20	07:16	08:12	17:15 (15)	08:12
	21:59	21:01	19:46	18:33	35 17:50 (15)	16:33
20	05:29	06:22	07:18	08:14	17:15 (15)	08:14
	21:58	20:59	19:44	18:30	35 17:50 (15)	16:31
21	05:30	06:24	07:20	08:16	17:16 (15)	08:16
	21:57	20:57	19:41	18:28	33 17:49 (15)	16:30
22	05:32	06:25	07:21	08:18	17:16 (15)	08:18
	21:55	20:55	19:39	18:26	32 17:48 (15)	16:29
23	05:33	06:27	07:23	08:20	17:17 (15)	08:20
	21:54	20:52	19:36	18:24	30 17:47 (15)	16:27
24	05:35	06:29	07:25	08:22	17:18 (15)	08:22
	21:52	20:50	19:33	18:21	28 17:46 (15)	16:26
25	05:37	06:31	07:27	07:24	16:19 (15)	08:23
	21:51	20:48	19:31	17:19	25 16:44 (15)	16:25
26	05:38	06:33	07:29	07:26	16:20 (15)	08:25
	21:49	20:45	19:28	17:17	22 16:42 (15)	16:24
27	05:40	06:35	07:31	07:27	16:22 (15)	08:27
	21:47	20:43	19:26	17:15	18 16:40 (15)	16:23
28	05:41	06:36	07:32	07:29	16:26 (15)	08:29
	21:46	20:40	19:23	17:13	11 16:37 (15)	16:22
29	05:43	06:38	07:34	07:31	08:30	15:14 (16)
	21:44	20:38	19:21	17:11	16:21	24 15:38 (16)
30	05:45	06:40	07:36	07:33	08:32	15:15 (16)
	21:42	20:36	19:18	17:08	16:20	23 15:38 (16)
31	05:46	06:42		07:35		08:59
	21:40	20:33		17:06		16:22
Potential sun hours	515	461	383	327	257	230
Total, worst case				702	749	120
Sun reduction				0.23	0.20	0.12
Oper. time red.				1.00	1.00	1.00
Wind dir. red.				0.58	0.62	0.62
Total reduction				0.14	0.12	0.07
Total, real				96	93	9

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: AG - H33  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June	July	August	September	October	November	December	
1	08:58 16:24	08:27 17:16	07:29 18:13	07:13 20:12	18:53 (5) 21:09	06:02 22:00	05:12 22:15	05:08 21:39	05:48 20:31	06:44 20:31	07:38 19:16	18:37 (6) 17:05	07:37 16:19
2	08:58 16:25	08:25 17:18	07:26 18:15	07:10 20:14	18:55 (5) 21:11	06:00 22:01	05:11 22:14	05:08 21:37	05:50 20:28	06:46 20:28	07:40 19:14	18:38 (6) 17:02	07:39 16:18
3	08:58 16:26	08:24 17:20	07:24 18:17	07:08 20:16	19:01 (5) 21:13	05:58 22:02	05:10 22:14	05:09 21:35	05:52 20:26	06:47 20:26	07:42 19:11	18:38 (6) 17:41	07:41 16:18
4	08:58 16:27	08:22 17:22	07:22 18:19	07:05 20:18	19:05 (5) 21:14	05:56 22:03	05:10 22:13	05:10 21:33	05:54 20:24	06:49 20:24	07:44 19:09	18:42 (6) 17:00	07:43 16:17
5	08:57 16:29	08:20 17:24	07:19 18:21	07:03 20:20		05:54 22:05	05:08 22:13	05:11 21:31	05:55 20:21	06:51 20:21	07:45 19:06		07:45 16:16
6	08:57 16:30	08:18 17:26	07:17 18:23	07:00 20:22		05:52 22:06	05:07 22:12	05:12 21:29	05:57 20:19	06:53 20:19	07:47 19:04		07:47 16:16
7	08:56 16:31	08:16 17:28	07:14 18:25	06:58 20:24		05:50 22:07	05:07 22:12	05:13 21:27	05:59 20:16	06:55 20:16	07:49 19:01		07:49 16:15
8	08:56 16:33	08:14 17:30	07:12 18:27	06:55 20:26		05:48 22:08	05:06 22:11	05:14 21:25	06:01 20:14	06:56 20:14	07:51 18:59		07:51 16:15
9	08:55 16:34	08:12 17:32	07:10 18:29	06:53 20:27		05:46 22:09	05:06 22:10	05:15 21:23	06:02 20:11	06:58 20:11	07:53 18:56		07:53 16:15
10	08:55 16:36	08:10 17:34	07:07 18:30	18:01 (6) 20:29	06:50 20:29	05:44 22:09	05:05 22:09	05:16 21:21	06:04 20:09	07:00 20:09	18:49 (5) 19:03 (5)	07:55 18:54	07:55 16:14
11	08:54 16:37	08:08 17:36	07:05 18:32	17:59 (6) 20:31	06:48 20:31	05:42 21:27	05:05 22:10	05:17 22:08	06:06 21:19	07:02 20:06	18:46 (5) 19:06 (5)	07:57 18:52	07:57 16:14
12	08:53 16:39	08:06 17:39	07:02 18:34	17:57 (6) 20:33	06:46 20:33	05:41 21:29	05:04 22:11	05:18 22:07	06:08 21:17	07:04 20:04	18:43 (5) 19:07 (5)	07:59 18:49	07:59 16:14
13	08:52 16:41	08:04 17:41	07:00 18:36	17:56 (6) 20:35	06:43 20:35	05:39 21:31	05:04 22:12	05:20 22:06	06:09 21:15	07:05 20:01	18:41 (5) 19:08 (5)	08:00 18:47	08:01 16:14
14	08:51 16:42	08:02 17:43	06:57 18:38	17:55 (6) 20:37	06:41 20:37	05:37 21:32	05:04 22:12	05:21 22:05	06:11 21:13	07:07 20:19	18:40 (5) 19:09 (5)	08:02 18:44	08:03 16:14
15	08:50 16:44	08:00 17:45	06:55 18:40	17:54 (6) 20:39	06:38 20:39	05:35 21:34	05:03 22:13	05:22 22:04	06:13 21:10	07:09 19:56	18:39 (5) 19:10 (5)	08:04 18:42	08:05 16:39
16	08:49 16:46	07:58 17:47	06:52 18:42	17:53 (6) 20:41	06:36 20:41	05:34 21:36	05:03 22:14	05:23 22:03	06:15 21:08	07:11 19:54	18:38 (5) 19:11 (5)	08:06 18:40	08:07 16:14
17	08:48 16:47	07:56 17:49	06:50 18:44	17:52 (5) 20:43	06:34 20:43	05:32 21:37	05:03 22:14	05:25 22:02	06:17 21:06	07:13 19:51	18:36 (5) 19:10 (5)	08:08 18:37	08:09 16:36
18	08:47 16:49	07:54 17:51	06:47 18:46	17:50 (5) 20:44	06:31 20:44	05:30 21:39	05:03 22:14	05:26 22:01	06:18 21:04	07:14 19:49	18:35 (5) 19:10 (5)	08:10 18:35	08:11 16:34
19	08:46 16:51	07:51 17:53	06:45 18:48	17:50 (5) 20:46	06:29 20:46	05:29 21:41	05:03 22:15	05:28 21:59	06:20 21:01	07:16 19:46	18:35 (5) 19:10 (5)	08:12 18:33	08:12 16:33
20	08:45 16:53	07:49 17:55	06:42 18:50	17:49 (5) 20:48	06:27 20:48	05:27 21:42	05:03 22:15	05:29 21:58	06:22 20:59	07:18 19:44	18:34 (5) 19:10 (5)	08:14 18:31	08:14 16:31
21	08:44 16:55	07:47 17:57	06:40 18:52	17:49 (5) 20:50	06:24 20:50	05:26 21:44	05:03 22:15	05:31 21:56	06:24 20:57	07:20 19:41	18:33 (5) 19:09 (5)	08:16 18:28	08:16 16:30
22	08:42 16:57	07:45 17:59	06:37 18:53	17:48 (5) 20:52	06:22 20:52	05:24 21:46	05:03 22:16	05:32 21:55	06:26 20:55	07:22 19:39	18:33 (5) 19:09 (5)	08:18 18:26	08:18 16:29
23	08:41 16:58	07:43 18:01	06:35 18:55	17:48 (5) 20:54	06:20 20:54	05:23 21:47	05:04 22:16	05:34 21:54	06:27 20:52	07:23 19:36	18:33 (5) 19:08 (5)	08:20 18:24	08:20 16:28
24	08:40 17:00	07:40 18:03	06:32 18:57	17:47 (5) 20:56	06:18 20:56	05:21 21:49	05:04 22:16	05:35 21:52	06:29 20:50	07:25 19:34	18:33 (5) 19:05 (5)	08:22 18:22	08:22 16:26
25	08:38 17:02	07:38 18:05	06:30 18:59	17:48 (5) 20:58	06:15 20:58	05:20 21:50	05:04 22:16	05:37 21:51	06:31 20:48	07:27 19:31	18:34 (5) 19:03 (6)	08:24 17:19	08:23 16:25
26	08:37 17:04	07:36 18:07	06:27 19:01	17:47 (5) 20:59	06:13 20:59	05:19 21:52	05:05 22:16	05:38 21:49	06:33 20:45	07:29 19:29	18:33 (5) 19:00 (6)	07:26 17:17	08:25 16:24
27	08:35 17:06	07:33 18:09	06:25 19:03	17:48 (5) 21:01	06:11 21:01	05:17 21:53	05:05 22:16	05:40 21:47	06:35 20:43	07:31 19:26	18:34 (5) 18:57 (6)	07:28 17:15	08:27 16:23
28	08:34 17:08	07:31 18:11	06:22 19:05	17:48 (5) 21:03	06:09 21:03	05:16 21:55	05:06 22:16	05:42 21:46	06:37 20:41	07:33 19:24	18:35 (6) 18:55 (6)	07:30 17:13	08:28 16:22
29	08:32 17:10	07:29 18:07	06:20 19:00	18:49 (5) 21:05	06:07 21:05	05:15 21:56	05:06 22:15	05:43 21:44	06:38 20:38	07:34 19:21	18:35 (6) 18:53 (6)	07:31 17:11	08:30 16:21
30	08:31 17:12	07:27 18:09	06:17 19:01	18:50 (5) 21:06	06:04 21:06	05:14 21:57	05:07 22:15	05:45 21:42	06:40 20:36	07:36 19:19	18:36 (6) 18:50 (6)	07:33 17:09	08:32 16:22
31	08:29 17:14	07:25 18:10	06:15 19:03	18:51 (5) 21:07	06:03 21:07	05:13 21:59	05:07 22:14	05:47 21:40	06:42 20:33	07:35 19:07	18:50 (6) 17:07	07:35 17:07	08:58 16:23
Potential sun hours	248	272	367	421	496	513	515	461	382	328	257	231	
Total, worst case				566	39				588		22		
Sun reduction				0.22	0.34				0.29		0.23		
Oper. time red.				1.00	1.00				1.00		1.00		
Wind dir. red.				0.58	0.58				0.58		0.57		
Total reduction				0.13	0.20				0.17		0.13		
Total, real				73	8				99		3		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)



## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: AH - H34  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June
1	08:58 16:24	08:27 17:16	07:29 18:13	07:12 20:12	06:02 21:09	19:15 (16) 22:00
2	08:58 16:25	08:25 17:18	07:26 18:15	07:10 20:14	06:00 21:11	23 19:38 (16) 22:01
3	08:58 16:26	08:24 17:20	07:24 18:17	07:07 20:16	05:58 21:12	21 19:37 (16) 22:02
4	08:58 16:27	08:22 17:22	07:21 18:19	07:05 20:18	05:56 21:14	17 19:35 (16) 22:03
5	08:57 16:28	08:20 17:24	07:19 18:21	07:02 20:20	05:54 21:16	11 19:32 (16) 22:05
6	08:57 16:30	08:18 17:26	07:17 18:23	07:00 20:22	05:52 21:18	30 20:50 (15) 22:06
7	08:56 16:31	08:16 17:28	07:14 18:24	06:58 20:24	05:50 21:20	29 20:51 (15) 22:07
8	08:56 16:33	08:14 17:30	07:12 18:26	06:55 20:25	05:48 21:22	29 20:51 (15) 22:08
9	08:55 16:34	08:12 17:32	07:09 18:28	06:53 20:27	10 19:26 (16) 19:36 (16)	28 20:51 (15) 21:23
10	08:55 16:36	08:10 17:34	07:07 18:30	06:50 20:29	10 19:22 (16) 19:39 (16)	28 20:51 (15) 21:25
11	08:54 16:37	08:08 17:36	07:05 18:32	06:48 20:31	22 19:19 (16) 19:41 (16)	14 20:27 (15) 21:27
12	08:53 16:39	08:06 17:38	07:02 18:34	06:45 20:33	25 19:18 (16) 19:43 (16)	19 20:24 (15) 21:29
13	08:52 16:40	08:04 17:40	07:00 18:36	06:43 20:35	28 19:16 (16) 19:44 (16)	21 20:23 (15) 21:31
14	08:51 16:42	08:02 17:42	06:57 18:38	06:41 20:37	30 19:15 (16) 19:45 (16)	24 20:22 (15) 21:32
15	08:50 16:44	08:00 17:44	06:55 18:40	06:38 20:39	32 19:14 (16) 19:46 (16)	25 20:21 (15) 21:34
16	08:49 16:45	07:58 17:46	06:52 18:42	06:36 20:41	33 19:12 (16) 19:45 (16)	26 20:21 (15) 21:36
17	08:48 16:47	07:56 17:49	06:50 18:44	06:33 20:42	34 19:12 (16) 19:46 (16)	27 20:20 (15) 21:37
18	08:47 16:49	07:54 17:51	06:47 18:46	06:31 20:44	35 19:11 (16) 19:46 (16)	28 20:20 (15) 21:39
19	08:46 16:51	07:51 17:53	06:45 18:48	06:29 20:46	36 19:11 (16) 19:47 (16)	29 20:19 (15) 21:41
20	08:45 16:53	07:49 17:55	06:42 18:50	06:26 20:48	36 19:10 (16) 19:46 (16)	30 20:19 (15) 21:42
21	08:44 16:54	07:47 17:57	06:40 18:51	06:24 20:50	36 19:10 (16) 19:46 (16)	31 20:19 (15) 21:44
22	08:42 16:56	07:45 17:59	06:37 18:53	06:22 20:52	36 19:10 (16) 19:46 (16)	31 20:18 (15) 21:46
23	08:41 16:58	07:42 18:01	06:35 18:55	06:20 20:54	36 19:10 (16) 19:46 (16)	32 20:18 (15) 21:47
24	08:40 17:00	07:40 18:03	06:32 18:57	06:17 20:56	35 19:10 (16) 19:45 (16)	32 20:18 (15) 21:49
25	08:38 17:02	07:38 18:05	06:30 18:59	06:15 20:58	34 19:10 (16) 19:44 (16)	32 20:19 (15) 21:50
26	08:37 17:04	07:36 18:07	06:27 19:01	06:13 20:59	33 19:10 (16) 19:43 (16)	32 20:19 (15) 21:52
27	08:35 17:06	07:33 18:09	06:25 19:03	06:11 21:01	32 19:11 (16) 19:43 (16)	32 20:18 (15) 21:53
28	08:34 17:08	07:31 18:11	06:22 19:05	06:08 21:03	30 19:12 (16) 19:42 (16)	32 20:18 (15) 21:55
29	08:32 17:10		07:20 20:07	06:06 21:05	29 19:12 (16) 19:41 (16)	32 20:18 (15) 21:56
30	08:30 17:12		07:17 20:08	06:04 21:07	27 19:13 (16) 19:40 (16)	31 20:19 (15) 21:57
31	08:29 17:14		07:15 20:10		31 05:12 21:59	20:20 (15) 20:51 (15)
Potential sun hours	248	272	367	421	496	513
Total, worst case				666	673	813
Sun reduction				0.34	0.36	0.26
Oper. time red.				1.00	1.00	1.00
Wind dir. red.				0.59	0.62	0.62
Total reduction				0.20	0.22	0.16
Total, real				135	151	130

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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# SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: AH - H34  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLETT]  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	July	August	September	October	November	December						
1	05:07	20:28 (15)	05:48	20:35 (15)	06:44	19:18 (16)	07:38	07:37	08:33			
	22:15	27	20:55 (15)	21:39	18	20:53 (15)	20:31	22	19:40 (16)	19:16	17:04	16:19
2	05:08	20:28 (15)	05:50	20:38 (15)	06:45	19:21 (16)	07:40	07:39	08:35			
	22:14	27	20:55 (15)	21:37	13	20:51 (15)	20:28	17	19:38 (16)	19:14	17:02	16:18
3	05:09	20:28 (15)	05:52	20:40 (15)	06:47	19:24 (16)	07:42	07:41	08:36			
	22:14	28	20:56 (15)	21:35	7	20:47 (15)	20:26	10	19:34 (16)	19:11	17:00	16:17
4	05:10	20:27 (15)	05:53		06:49		07:43	07:43	08:38			
	22:13	29	20:56 (15)	21:33		20:23		19:09	16:58	16:17		
5	05:11	20:27 (15)	05:55		06:51		07:45	07:45	08:39			
	22:13	29	20:56 (15)	21:31		20:21		19:06	16:56	16:16		
6	05:12	20:27 (15)	05:57		06:53		07:47	07:47	08:41			
	22:12	30	20:57 (15)	21:29		20:19		19:04	16:54	16:16		
7	05:13	20:28 (15)	05:59		06:54		07:49	07:49	08:42			
	22:12	29	20:57 (15)	21:27		20:16		19:01	16:53	16:15		
8	05:14	20:28 (15)	06:00	19:33 (16)	06:56		07:51	07:51	08:43			
	22:11	30	20:58 (15)	21:25	4	19:37 (16)	20:14		18:59	16:51	16:15	
9	05:15	20:28 (15)	06:02	19:29 (16)	06:58		07:53	07:53	08:45			
	22:10	30	20:58 (15)	21:23	13	19:42 (16)	20:11		18:56	16:49	16:14	
10	05:16	20:27 (15)	06:04	19:27 (16)	07:00		07:55	07:55	08:46			
	22:09	31	20:58 (15)	21:21	18	19:45 (16)	20:09		18:54	16:47	16:14	
11	05:17	20:27 (15)	06:06	19:24 (16)	07:02		07:57	07:57	08:47			
	22:08	31	20:58 (15)	21:19	22	19:46 (16)	20:06		18:51	16:45	16:14	
12	05:18	20:27 (15)	06:07	19:23 (16)	07:03		07:58	07:59	08:48			
	22:07	32	20:59 (15)	21:17	24	19:47 (16)	20:04		18:49	16:44	16:14	
13	05:19	20:27 (15)	06:09	19:22 (16)	07:05		08:00	08:01	08:49			
	22:06	32	20:59 (15)	21:15	27	19:49 (16)	20:01		18:47	16:42	16:13	
14	05:21	20:28 (15)	06:11	19:20 (16)	07:07		08:02	08:03	08:50			
	22:05	32	21:00 (15)	21:12	29	19:49 (16)	19:59		18:44	16:40	16:13	
15	05:22	20:28 (15)	06:13	19:19 (16)	07:09		08:04	08:05	08:51			
	22:04	32	21:00 (15)	21:10	31	19:50 (16)	19:56		18:42	16:39	16:13	
16	05:23	20:28 (15)	06:15	19:18 (16)	07:11		08:06	08:07	08:52			
	22:03	32	21:00 (15)	21:08	32	19:50 (16)	19:54		18:40	16:37	16:13	
17	05:25	20:27 (15)	06:16	19:18 (16)	07:12		08:08	08:09	08:53			
	22:02	32	20:59 (15)	21:06	33	19:51 (16)	19:51		18:37	16:36	16:14	
18	05:26	20:28 (15)	06:18	19:16 (16)	07:14		08:10	08:11	08:54			
	22:01	32	21:00 (15)	21:04	35	19:51 (16)	19:49		18:35	16:34	16:14	
19	05:27	20:28 (15)	06:20	19:16 (16)	07:16		08:12	08:12	08:55			
	21:59	32	21:00 (15)	21:01	35	19:51 (16)	19:46		18:33	16:33	16:14	
20	05:29	20:28 (15)	06:22	19:16 (16)	07:18		08:14	08:14	08:55			
	21:58	32	21:00 (15)	20:59	35	19:51 (16)	19:44		18:30	16:31	16:14	
21	05:30	20:29 (15)	06:24	19:15 (16)	07:20		08:16	08:16	08:56			
	21:56	31	21:00 (15)	20:57	36	19:51 (16)	19:41		18:28	16:30	16:15	
22	05:32	20:29 (15)	06:25	19:15 (16)	07:21		08:18	08:18	08:56			
	21:55	31	21:00 (15)	20:55	36	19:51 (16)	19:39		18:26	16:29	16:15	
23	05:33	20:28 (15)	06:27	19:15 (16)	07:23		08:20	08:20	08:57			
	21:54	31	20:59 (15)	20:52	36	19:51 (16)	19:36		18:24	16:27	16:16	
24	05:35	20:29 (15)	06:29	19:14 (16)	07:25		08:22	08:22	08:57			
	21:52	30	20:59 (15)	20:50	35	19:49 (16)	19:33		18:21	16:26	16:16	
25	05:37	20:29 (15)	06:31	19:14 (16)	07:27		07:24	08:23	08:58			
	21:51	29	20:58 (15)	20:48	35	19:49 (16)	19:31		17:19	16:25	16:17	
26	05:38	20:30 (15)	06:33	19:14 (16)	07:29		07:25	08:25	08:58			
	21:49	29	20:59 (15)	20:45	35	19:49 (16)	19:28		17:17	16:24	16:18	
27	05:40	20:30 (15)	06:35	19:15 (16)	07:31		07:27	08:27	08:58			
	21:47	28	20:58 (15)	20:43	33	19:48 (16)	19:26		17:15	16:23	16:19	
28	05:41	20:31 (15)	06:36	19:15 (16)	07:32		07:29	08:28	08:58			
	21:46	26	20:57 (15)	20:40	31	19:46 (16)	19:23		17:13	16:22	16:19	
29	05:43	20:32 (15)	06:38	19:15 (16)	07:34		07:31	08:30	08:58			
	21:44	24	20:56 (15)	20:38	31	19:46 (16)	19:21		17:11	16:21	16:20	
30	05:45	20:33 (15)	06:40	19:17 (16)	07:36		07:33	08:32	08:58			
	21:42	22	20:55 (15)	20:36	27	19:44 (16)	19:18		17:08	16:20	16:21	
31	05:46	20:35 (15)	06:42	19:17 (16)			07:35		08:58			
	21:40	20	20:55 (15)	20:33	25	19:42 (16)	17:06		17:06		16:22	
Potential sun hours	515		461		383		327		257		230	
Total, worst case	910		736		49							
Sun reduction	0.27		0.27		0.29							
Oper. time red.	1.00		1.00		1.00							
Wind dir. red.	0.62		0.59		0.59							
Total reduction	0.17		0.16		0.17							
Total, real	151		119		8							

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)



SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: AI - H35 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET] Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

Table with columns for months (January-December) and rows for each day (1-31) showing time ranges and shadow reduction percentages. Includes a summary section for 'Potential sun hours'.

Table layout: For each day in each month the following matrix apply

Day in month Sun rise (hh:mm) Sun set (hh:mm) Minutes with flicker First time (hh:mm) with flicker Last time (hh:mm) with flicker (WTG causing flicker first time) (WTG causing flicker last time)





### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: AJ - H36  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June
1	08:58 16:24	08:27 17:16	07:29 18:13	07:12 20:12	06:02 19:55 (16)	05:11 19:54 (16)
2	08:58 16:25	08:25 17:18	07:26 18:15	07:10 20:14	06:00 21:11	19 23
3	08:58 16:26	08:24 17:20	07:24 18:17	07:07 20:16	05:58 21:12	19:52 (16) 20:17 (16)
4	08:58 16:27	08:22 17:22	07:21 18:19	07:05 20:18	05:56 21:14	19:50 (16) 22:03
5	08:57 16:28	08:20 17:24	07:19 18:21	07:02 20:20	05:54 21:16	19:49 (16) 22:05
6	08:57 16:30	08:18 17:26	07:17 18:23	07:00 20:22	05:52 21:18	19:49 (16) 22:06
7	08:56 16:31	08:16 17:28	07:14 18:24	06:58 20:24	05:50 21:20	19:48 (16) 22:07
8	08:56 16:33	08:14 17:30	07:12 18:26	06:55 20:25	05:48 21:22	19:47 (16) 22:08
9	08:55 16:34	08:12 17:32	07:09 18:28	06:53 20:27	05:46 21:23	19:47 (16) 22:09
10	08:55 16:36	08:10 17:34	07:07 18:30	06:50 20:29	05:44 21:25	19:46 (16) 22:09
11	08:54 16:37	08:08 17:36	07:05 18:32	06:48 20:31	05:42 21:27	19:46 (16) 22:10
12	08:53 16:39	08:06 17:38	07:02 18:34	06:45 20:33	05:40 21:29	19:46 (16) 22:11
13	08:52 16:40	08:04 17:40	07:00 18:36	06:43 20:35	05:38 21:31	19:45 (16) 22:12
14	08:51 16:42	08:02 17:42	06:57 18:38	06:41 20:37	05:37 21:32	19:46 (16) 22:12
15	08:50 16:44	08:00 17:44	06:55 18:40	06:38 20:39	05:35 21:34	19:45 (16) 22:13
16	08:49 16:45	07:58 17:46	06:52 18:42	06:36 20:41	05:33 21:36	19:46 (16) 22:14
17	08:48 16:47	07:56 17:49	06:50 18:44	06:33 20:42	05:32 21:37	19:46 (16) 22:14
18	08:47 16:49	07:54 17:51	06:47 18:46	06:31 20:44	05:30 21:39	19:46 (16) 22:14
19	08:46 16:51	07:51 17:53	06:45 18:48	06:29 20:46	05:28 21:41	19:46 (16) 22:15
20	08:45 16:53	07:49 17:55	06:42 18:50	06:26 20:48	05:27 21:42	19:47 (16) 22:15
21	08:44 16:54	07:47 17:57	06:40 18:51	06:24 20:50	05:25 21:44	19:47 (16) 22:15
22	08:42 16:56	07:45 17:59	06:37 18:53	06:22 20:52	05:24 21:46	19:47 (16) 22:16
23	08:41 16:58	07:42 18:01	06:35 18:55	06:20 20:54	05:22 21:47	19:48 (16) 22:16
24	08:40 17:00	07:40 18:03	06:32 18:57	06:17 20:56	05:21 21:49	19:48 (16) 22:16
25	08:38 17:02	07:38 18:05	06:30 18:59	06:15 20:58	05:20 21:50	19:49 (16) 22:16
26	08:37 17:04	07:36 18:07	06:27 19:01	06:13 20:59	05:18 21:52	19:50 (16) 22:16
27	08:35 17:06	07:33 18:09	06:25 19:03	06:11 21:01	05:17 21:53	19:50 (16) 22:16
28	08:34 17:08	07:31 18:11	06:22 19:05	06:08 21:03	05:16 21:55	19:50 (16) 22:16
29	08:32 17:10		07:20 20:07	06:06 21:05	05:15 21:56	19:51 (16) 20:19 (16)
30	08:30 17:12		07:17 20:08	06:04 21:07	05:14 21:57	19:52 (16) 20:18 (16)
31	08:29 17:14		07:15 20:10		05:12 21:59	19:53 (16) 20:19 (16)
Potential sun hours	248	272	367	421	496	513
Total, worst case				20	997	688
Sun reduction				0.34	0.36	0.26
Oper. time red.				1.00	1.00	1.00
Wind dir. red.				0.61	0.61	0.62
Total reduction				0.21	0.22	0.16
Total, real				4	219	110

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: AJ - H36

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	July	August	September	October	November	December				
1	05:07	20:11 (16)	05:48	19:56 (16)	06:44	07:38	07:37	08:33		
	22:15	21	21:24 (15)	21:39	37	20:33 (16)	20:31	19:16	17:04	16:19
2	05:08	20:09 (16)	05:50	19:57 (16)	06:45	07:40	07:39	08:35		
	22:14	25	21:24 (15)	21:37	36	20:33 (16)	20:28	19:14	17:02	16:18
3	05:09	20:08 (16)	05:52	19:56 (16)	06:47	07:42	07:41	08:36		
	22:14	27	21:24 (15)	21:35	36	20:32 (16)	20:26	19:11	17:00	16:17
4	05:10	20:06 (16)	05:53	19:57 (16)	06:49	07:43	07:43	08:38		
	22:13	28	21:23 (15)	21:33	35	20:32 (16)	20:23	19:09	16:58	16:17
5	05:11	20:06 (16)	05:55	19:58 (16)	06:51	07:45	07:45	08:39		
	22:13	28	21:22 (15)	21:31	34	20:32 (16)	20:21	19:06	16:56	16:16
6	05:12	20:05 (16)	05:57	19:58 (16)	06:53	07:47	07:47	08:41		
	22:12	29	21:22 (15)	21:29	32	20:30 (16)	20:19	19:04	16:54	16:16
7	05:13	20:04 (16)	05:59	19:59 (16)	06:54	07:49	07:49	08:42		
	22:12	29	21:21 (15)	21:27	31	20:30 (16)	20:16	19:01	16:53	16:15
8	05:14	20:04 (16)	06:00	19:59 (16)	06:56	07:51	07:51	08:43		
	22:11	27	21:20 (15)	21:25	29	20:28 (16)	20:14	18:59	16:51	16:15
9	05:15	20:03 (16)	06:02	20:00 (16)	06:58	07:53	07:53	08:45		
	22:10	21	20:24 (16)	21:23	27	20:27 (16)	20:11	18:56	16:49	16:14
10	05:16	20:03 (16)	06:04	20:01 (16)	07:00	07:55	07:55	08:46		
	22:09	22	20:25 (16)	21:21	25	20:26 (16)	20:09	18:54	16:47	16:14
11	05:17	20:02 (16)	06:06	20:02 (16)	07:02	07:57	07:57	08:47		
	22:08	23	20:25 (16)	21:19	22	20:24 (16)	20:06	18:51	16:45	16:14
12	05:18	20:01 (16)	06:07	20:04 (16)	07:03	07:58	07:59	08:48		
	22:07	25	20:26 (16)	21:17	18	20:22 (16)	20:04	18:49	16:44	16:14
13	05:19	20:01 (16)	06:09	20:07 (16)	07:05	08:00	08:01	08:49		
	22:06	26	20:27 (16)	21:15	13	20:20 (16)	20:01	18:47	16:42	16:13
14	05:21	20:01 (16)	06:11	20:07 (16)	07:07	08:02	08:03	08:50		
	22:05	27	20:28 (16)	21:12		19:59	18:44	16:40	16:13	
15	05:22	20:00 (16)	06:13	20:09 (16)	07:09	08:04	08:05	08:51		
	22:04	29	20:29 (16)	21:10		19:56	18:42	16:39	16:13	
16	05:23	19:59 (16)	06:15	20:11 (16)	07:11	08:06	08:07	08:52		
	22:03	30	20:29 (16)	21:08		19:54	18:40	16:37	16:13	
17	05:25	19:59 (16)	06:16	20:12 (16)	07:12	08:08	08:09	08:53		
	22:02	30	20:29 (16)	21:06		19:51	18:37	16:36	16:14	
18	05:26	19:59 (16)	06:18	20:14 (16)	07:14	08:10	08:11	08:54		
	22:01	32	20:31 (16)	21:04		19:49	18:35	16:34	16:14	
19	05:27	19:58 (16)	06:20	20:16 (16)	07:16	08:12	08:12	08:55		
	21:59	33	20:31 (16)	21:01		19:46	18:33	16:33	16:14	
20	05:29	19:58 (16)	06:22	20:18 (16)	07:18	08:14	08:14	08:55		
	21:58	33	20:31 (16)	20:59		19:44	18:30	16:31	16:14	
21	05:30	19:58 (16)	06:24	20:20 (16)	07:20	08:16	08:16	08:56		
	21:56	34	20:32 (16)	20:57		19:41	18:28	16:30	16:15	
22	05:32	19:57 (16)	06:25	20:21 (16)	07:21	08:18	08:18	08:56		
	21:55	35	20:32 (16)	20:55		19:39	18:26	16:29	16:15	
23	05:33	19:57 (16)	06:27	20:22 (16)	07:23	08:20	08:20	08:57		
	21:54	35	20:32 (16)	20:52		19:36	18:24	16:27	16:16	
24	05:35	19:57 (16)	06:29	20:23 (16)	07:25	08:22	08:22	08:57		
	21:52	36	20:33 (16)	20:50		19:33	18:21	16:26	16:16	
25	05:37	19:56 (16)	06:31	20:24 (16)	07:27	08:24	08:23	08:58		
	21:51	36	20:32 (16)	20:48		19:31	17:19	16:25	16:17	
26	05:38	19:57 (16)	06:33	20:25 (16)	07:29	08:25	08:25	08:58		
	21:49	36	20:33 (16)	20:45		19:28	17:17	16:24	16:18	
27	05:40	19:56 (16)	06:35	20:26 (16)	07:31	08:27	08:27	08:58		
	21:47	37	20:33 (16)	20:43		19:26	17:15	16:23	16:19	
28	05:41	19:56 (16)	06:36	20:27 (16)	07:32	08:29	08:28	08:58		
	21:46	37	20:33 (16)	20:40		19:23	17:13	16:22	16:19	
29	05:43	19:56 (16)	06:38	20:28 (16)	07:34	08:31	08:30	08:58		
	21:44	37	20:33 (16)	20:38		19:21	17:11	16:21	16:20	
30	05:45	19:56 (16)	06:40	20:29 (16)	07:36	08:33	08:32	08:58		
	21:42	37	20:33 (16)	20:36		19:18	17:08	16:20	16:21	
31	05:46	19:57 (16)	06:42	20:30 (16)		07:35		08:58		
	21:40	37	20:34 (16)	20:33		17:06		16:22		
Potential sun hours	515		461		383	327	257	230		
Total, worst case	942		375							
Sun reduction	0.27		0.27							
Oper. time red.	1.00		1.00							
Wind dir. red.	0.61		0.61							
Total reduction	0.16		0.17							
Total, real	153		62							

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: AK - H37

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January		February		March		April		May		June	
1	08:58	09:44 (3)	08:27	09:04 (4)	07:29	07:13			06:02	05:12		
	16:24	17	10:01 (3)	17:16	23	09:27 (4)	18:13	20:12	21:09	22:00		
2	08:58	09:45 (3)	08:25	09:04 (4)	07:26	07:10			06:00	05:11		
	16:25	16	10:01 (3)	17:18	22	09:26 (4)	18:15	20:14	21:11	22:01		
3	08:58	09:46 (3)	08:24	09:06 (4)	07:24	07:08			05:58	05:10		
	16:26	15	10:01 (3)	17:20	19	09:25 (4)	18:17	20:16	21:13	22:02		
4	08:58	09:47 (3)	08:22	09:07 (4)	07:22	07:05			05:56	05:09		
	16:28	14	10:01 (3)	17:22	16	09:23 (4)	18:19	20:18	21:14	22:03		
5	08:57	09:48 (3)	08:20	09:10 (4)	07:19	07:03			05:54	05:08		
	16:29	12	10:00 (3)	17:24	11	09:21 (4)	18:21	20:20	2	07:29 (1)	21:16	22:05
6	08:57	09:50 (3)	08:18	07:17	07:00	07:17	07:00		07:24 (1)	05:52	05:08	
	16:30	10	10:00 (3)	17:26		18:23	20:22	4	07:28 (1)	21:18	22:06	
7	08:56	09:51 (3)	08:16	07:14	06:58	07:22 (1)	05:50		07:22 (1)	05:50	05:07	
	16:32	8	09:59 (3)	17:28		18:25	20:24	5	07:27 (1)	21:20	22:07	
8	08:56	09:54 (3)	08:14	07:12	06:55	07:20 (1)	05:48		07:20 (1)	05:48	05:06	
	16:33	3	09:57 (3)	17:30		18:27	20:26	6	07:26 (1)	21:22	22:08	
9	08:55		08:12	07:10	06:53	07:17 (1)	05:46		07:17 (1)	05:46	05:06	
	16:34		17:32	18:29	20:28	6	07:23 (1)	21:24	22:09			
10	08:55		08:10	07:07	06:51		05:44			05:44	05:05	
	16:36		17:35	18:31	20:29		21:25	22:09				
11	08:54		08:08	07:05	06:48		05:42			05:42	05:05	
	16:38		17:37	18:33	20:31		21:27	22:10				
12	08:53		08:06	07:02	06:46		05:41			05:41	05:04	
	16:39		17:39	18:34	20:33		21:29	22:11				
13	08:52		08:04	07:00	06:43		05:39			05:39	05:04	
	16:41		17:41	18:36	20:35		21:31	22:12				
14	08:51		08:02	06:57	06:41		05:37			05:37	05:04	
	16:42		17:43	18:38	20:37		21:32	22:12				
15	08:51		08:00	06:55	06:39		05:35			05:35	05:03	
	16:44		17:45	18:40	20:39		21:34	22:13				
16	08:50	09:21 (4)	07:58	06:52	06:36		05:34			05:34	05:03	
	16:46	1	09:22 (4)	17:47	18:42	20:41	21:36	22:14				
17	08:48		07:56	06:50	06:34		05:32			05:32	05:03	
	16:48	3	09:23 (4)	17:49	18:44	20:43	21:37	22:14				
18	08:47	09:19 (4)	07:54	06:47	06:31		05:30			05:30	05:03	
	16:49	5	09:24 (4)	17:51	18:46	20:44	21:39	22:14				
19	08:46	09:17 (4)	07:52	06:45	06:29		05:29			05:29	05:03	
	16:51	8	09:25 (4)	17:53	18:48	20:46	21:41	22:15				
20	08:45	09:16 (4)	07:49	06:42	06:27		05:27			05:27	05:03	
	16:53	10	09:26 (4)	17:55	18:50	20:48	21:42	22:15				
21	08:44	09:14 (4)	07:47	06:40	06:24		05:26			05:26	05:03	
	16:55	12	09:26 (4)	17:57	18:52	20:50	21:44	22:15				
22	08:42	09:13 (4)	07:45	06:37	06:22		05:24			05:24	05:04	
	16:57	14	09:27 (4)	17:59	18:54	20:52	21:46	22:16				
23	08:41	09:11 (4)	07:43	06:35	06:20		05:23			05:23	05:04	
	16:59	16	09:27 (4)	18:01	18:55	20:54	21:47	22:16				
24	08:40	09:10 (4)	07:40	06:32	06:18		05:21			05:21	05:04	
	17:00	18	09:28 (4)	18:03	18:57	20:56	21:49	22:16				
25	08:38	09:08 (4)	07:38	06:30	06:15		05:20			05:20	05:04	
	17:02	20	09:28 (4)	18:05	18:59	20:58	21:50	22:16				
26	08:37	09:06 (4)	07:36	06:28	06:13		05:19			05:19	05:05	
	17:04	21	09:27 (4)	18:07	19:01	21:00	21:52	22:16				
27	08:35	09:05 (4)	07:33	06:25	06:11		05:17			05:17	05:05	
	17:06	23	09:28 (4)	18:09	19:03	21:01	21:53	22:16				
28	08:34	09:03 (4)	07:31	06:23	06:09		05:16			05:16	05:06	
	17:08	25	09:28 (4)	18:11	19:05	21:03	21:55	22:16				
29	08:32	09:01 (4)		07:20	06:07		05:15			05:15	05:06	
	17:10	27	09:28 (4)		20:07	21:05	21:56	22:15				
30	08:31	09:01 (4)		07:18	06:04		05:14			05:14	05:07	
	17:12	26	09:27 (4)		20:09	21:07	21:57	22:15				
31	08:29	09:02 (4)		07:15			05:13			05:13		
	17:14	25	09:27 (4)		20:11		21:59			21:59		
Potential sun hours	248		272	367	421		496	513				
Total, worst case	349		91			23						
Sun reduction	0.17		0.22			0.34						
Oper. time red.	1.00		1.00			1.00						
Wind dir. red.	0.65		0.65			0.58						
Total reduction	0.11		0.14			0.20						
Total, real	39		13			5						

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: AK - H37  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	July	August	September	October	November	December
1	05:08	05:48	06:44	07:38	07:37	08:33
	22:15	21:39	20:31	19:16	17:05	16:19
2	05:08	05:50	06:46	07:40	07:39	08:35
	22:14	21:37	20:29	19:14	17:03	16:19
3	05:09	05:52	06:47	07:42	07:41	08:36
	22:14	21:35	20:26	19:11	17:01	16:18
4	05:10	05:54	06:49	07:44	07:43	08:38
	22:13	21:33	20:24	19:09	16:59	16:17
5	05:11	05:55	06:51	07:46	07:45	08:43 (4)
	22:13	21:31	20:21	19:06	16:57	16:17
6	05:12	05:57	06:53	07:20 (1)	07:47	08:39 (4)
	22:12	21:29	20:19	19:04	16:55	16:16
7	05:13	05:59	06:55	07:22 (1)	07:49	08:37 (4)
	22:12	21:27	20:16	19:01	16:53	16:15
8	05:14	06:01	06:56	07:51	07:51	08:35 (4)
	22:11	21:25	20:14	18:59	16:51	16:15
9	05:15	06:02	06:58	07:53	07:53	08:35 (4)
	22:10	21:23	20:11	18:57	16:49	16:15
10	05:16	06:04	07:00	07:55	07:55	08:34 (4)
	22:09	21:21	20:09	18:54	16:47	16:14
11	05:17	06:06	07:02	07:57	07:57	08:34 (4)
	22:08	21:19	20:06	18:52	16:46	16:14
12	05:18	06:08	07:04	07:59	07:59	08:33 (4)
	22:07	21:17	20:04	18:49	16:44	16:14
13	05:20	06:10	07:05	08:01	08:01	08:33 (4)
	22:06	21:15	20:01	18:47	16:42	16:14
14	05:21	06:11	07:07	08:02	08:03	08:35 (4)
	22:05	21:13	19:59	18:45	16:41	16:14
15	05:22	06:13	07:09	08:04	08:05	08:37 (4)
	22:04	21:10	19:56	18:42	16:39	16:14
16	05:24	06:15	07:11	08:06	08:07	08:39 (4)
	22:03	21:08	19:54	18:40	16:37	16:14
17	05:25	06:17	07:13	08:08	08:09	08:42 (4)
	22:02	21:06	19:51	18:38	16:36	16:14
18	05:26	06:19	07:14	08:10	08:11	08:44 (4)
	22:01	21:04	19:49	18:35	16:34	16:14
19	05:28	06:20	07:16	08:12	08:13	08:46 (4)
	21:59	21:02	19:46	18:33	16:33	16:14
20	05:29	06:22	07:18	08:14	08:14	08:48 (4)
	21:58	20:59	19:44	18:31	16:32	16:15
21	05:31	06:24	07:20	08:16	08:16	08:50 (4)
	21:57	20:57	19:41	18:28	16:30	16:15
22	05:32	06:26	07:22	08:18	08:18	08:52 (4)
	21:55	20:55	19:39	18:26	16:29	16:16
23	05:34	06:28	07:24	08:20	08:20	08:54 (4)
	21:54	20:52	19:36	18:24	16:28	16:16
24	05:35	06:29	07:25	08:22	08:22	08:56 (4)
	21:52	20:50	19:34	18:22	16:26	16:17
25	05:37	06:31	07:27	07:24	08:23	08:58 (4)
	21:51	20:48	19:31	17:19	16:25	16:17
26	05:39	06:33	07:29	07:26	08:25	09:00 (4)
	21:49	20:45	19:29	17:17	16:24	16:18
27	05:40	06:35	07:31	07:28	08:27	08:58
	21:47	20:43	19:26	17:15	16:23	16:19
28	05:42	06:37	07:33	07:30	08:29	08:58
	21:46	20:41	19:24	17:13	16:22	16:20
29	05:43	06:38	07:34	07:32	08:30	08:58
	21:44	20:38	19:21	17:11	16:21	16:21
30	05:45	06:40	07:36	07:34	08:32	08:58
	21:42	20:36	19:19	17:09	16:20	16:22
31	05:47	06:42		07:35		08:58
	21:40	20:33		17:07		16:23
Potential sun hours	515	461	382	328	257	231
Total, worst case			23		353	483
Sun reduction			0.29		0.20	0.12
Oper. time red.			1.00		1.00	1.00
Wind dir. red.			0.58		0.65	0.66
Total reduction			0.17		0.13	0.08
Total, real			4		46	38

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: AL - H38  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June
1	08:58 16:24	08:27 17:16	07:29 18:13	07:12 20:12	06:02 21:09	19:21 (16) 05:11 20:29 (15)
2	08:58 16:25	08:25 17:18	07:26 18:15	07:10 20:14	06:00 21:11	34 19:55 (16) 22:00 31 21:00 (15)
3	08:58 16:26	08:24 17:20	07:24 18:17	07:07 20:16	05:58 21:12	32 19:55 (16) 22:01 31 21:00 (15)
4	08:58 16:27	08:22 17:22	07:21 18:19	07:05 20:18	05:56 21:14	30 19:53 (16) 22:03 31 21:00 (15)
5	08:57 16:28	08:20 17:24	07:19 18:21	07:02 20:20	05:54 21:16	29 19:52 (16) 22:05 31 21:00 (15)
6	08:57 16:30	08:18 17:26	07:17 18:23	07:00 20:22	05:52 21:18	27 19:52 (16) 22:06 31 21:00 (15)
7	08:56 16:31	08:16 17:28	07:14 18:24	06:58 20:24	05:50 21:20	25 19:51 (16) 22:07 31 21:01 (15)
8	08:56 16:33	08:14 17:30	07:12 18:26	06:55 20:25	05:48 21:22	23 19:50 (16) 22:08 31 21:01 (15)
9	08:55 16:34	08:12 17:32	07:09 18:28	06:53 20:27	05:46 21:23	20 19:48 (16) 22:09 31 21:01 (15)
10	08:55 16:36	08:10 17:34	07:07 18:30	06:50 20:29	05:44 21:25	16 19:46 (16) 22:09 31 21:01 (15)
11	08:54 16:37	08:08 17:36	07:05 18:32	06:48 20:31	05:42 21:27	11 19:44 (16) 22:10 30 21:01 (15)
12	08:53 16:39	08:06 17:38	07:02 18:34	06:45 20:33	05:40 21:29	22:11 31 21:02 (15)
13	08:52 16:40	08:04 17:40	07:00 18:36	06:43 20:35	05:38 21:31	22:12 30 21:01 (15)
14	08:51 16:42	08:02 17:42	06:57 18:38	06:41 20:37	05:37 21:32	22:12 30 21:01 (15)
15	08:50 16:44	08:00 17:44	06:55 18:40	06:38 20:39	11 19:36 (16) 21:34	7 20:39 (15) 05:03 20:32 (15)
16	08:49 16:45	07:58 17:46	06:52 18:42	06:36 20:41	18 19:50 (16) 21:36	12 20:49 (15) 22:14 30 21:02 (15)
17	08:48 16:47	07:56 17:49	06:50 18:44	06:33 20:42	22 19:52 (16) 21:37	17 20:51 (15) 22:14 30 21:02 (15)
18	08:47 16:49	07:54 17:51	06:47 18:46	06:31 20:44	25 19:53 (16) 21:39	18 20:52 (15) 22:14 30 21:02 (15)
19	08:46 16:51	07:51 17:53	06:45 18:48	06:29 20:46	28 19:55 (16) 21:41	21 20:53 (15) 22:15 29 21:02 (15)
20	08:45 16:53	07:49 17:55	06:42 18:50	06:26 20:48	30 19:55 (16) 21:42	22 20:54 (15) 22:15 29 21:02 (15)
21	08:44 16:54	07:47 17:57	06:40 18:51	06:24 20:50	32 19:56 (16) 21:44	25 20:56 (15) 22:15 29 21:02 (15)
22	08:42 16:56	07:45 17:59	06:37 18:53	06:22 20:52	32 19:56 (16) 21:46	26 20:56 (15) 22:16 29 21:03 (15)
23	08:41 16:58	07:42 18:01	06:35 18:55	06:20 20:54	34 19:57 (16) 21:47	26 20:56 (15) 22:16 29 21:03 (15)
24	08:40 17:00	07:40 18:03	06:32 18:57	06:17 20:56	34 19:57 (16) 21:49	27 20:57 (15) 22:16 29 21:03 (15)
25	08:38 17:02	07:38 18:05	06:30 18:59	06:15 20:58	35 19:56 (16) 21:50	29 20:58 (15) 22:16 30 21:04 (15)
26	08:37 17:04	07:36 18:07	06:27 19:01	06:13 20:59	36 19:57 (16) 21:52	29 20:58 (15) 22:16 30 21:04 (15)
27	08:35 17:06	07:33 18:09	06:25 19:03	06:11 21:01	35 19:56 (16) 21:53	30 20:58 (15) 22:16 30 21:05 (15)
28	08:34 17:08	07:31 18:11	06:22 19:05	06:08 21:03	35 19:56 (16) 21:55	30 20:58 (15) 22:16 30 21:04 (15)
29	08:32 17:10	07:29 18:10	06:20 19:07	06:06 21:05	35 19:56 (16) 21:56	30 20:58 (15) 22:15 30 21:05 (15)
30	08:30 17:12	07:27 18:08	06:17 19:04	06:04 21:07	35 19:56 (16) 21:57	31 20:59 (15) 22:15 31 21:05 (15)
31	08:29 17:14	07:25 18:10	06:15 19:05	06:03 21:08	31 19:56 (16) 21:58	31 21:00 (15)
Potential sun hours	248	272	367	421	496	513
Total, worst case				477	691	906
Sun reduction				0.34	0.36	0.26
Oper. time red.				1.00	1.00	1.00
Wind dir. red.				0.59	0.61	0.63
Total reduction				0.20	0.22	0.16
Total, real				97	153	146

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: AL - H38

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	July	August	September	October	November	December					
1	05:07	20:35 (15)	05:48	19:46 (16)	06:44	07:38	07:37	08:33			
	22:15	30	21:05 (15)	21:39	5	19:51 (16)	20:31	19:16	17:04	16:19	
2	05:08	20:35 (15)	05:50	19:42 (16)	06:45	07:40	07:39	08:35			
	22:14	31	21:06 (15)	21:37	13	19:55 (16)	20:28	19:14	17:02	16:18	
3	05:09	20:36 (15)	05:52	19:39 (16)	06:47	07:42	07:41	08:36			
	22:14	30	21:06 (15)	21:35	18	19:57 (16)	20:26	19:11	17:00	16:17	
4	05:10	20:35 (15)	05:53	19:38 (16)	06:49	07:43	07:43	08:38			
	22:13	31	21:06 (15)	21:33	21	19:59 (16)	20:23	19:09	16:58	16:17	
5	05:11	20:35 (15)	05:55	19:37 (16)	06:51	07:45	07:45	08:39			
	22:13	31	21:06 (15)	21:31	23	20:00 (16)	20:21	19:06	16:56	16:16	
6	05:12	20:36 (15)	05:57	19:35 (16)	06:53	07:47	07:47	08:41			
	22:12	31	21:07 (15)	21:29	26	20:01 (16)	20:19	19:04	16:54	16:16	
7	05:13	20:36 (15)	05:59	19:34 (16)	06:54	07:49	07:49	08:42			
	22:12	31	21:07 (15)	21:27	28	20:02 (16)	20:16	19:01	16:53	16:15	
8	05:14	20:36 (15)	06:00	19:32 (16)	06:56	07:51	07:51	08:43			
	22:11	31	21:07 (15)	21:25	30	20:02 (16)	20:14	18:59	16:51	16:15	
9	05:15	20:36 (15)	06:02	19:32 (16)	06:58	07:53	07:53	08:45			
	22:10	31	21:07 (15)	21:23	31	20:03 (16)	20:11	18:56	16:49	16:14	
10	05:16	20:36 (15)	06:04	19:31 (16)	07:00	07:55	07:55	08:46			
	22:09	31	21:07 (15)	21:21	33	20:04 (16)	20:09	18:54	16:47	16:14	
11	05:17	20:36 (15)	06:06	19:30 (16)	07:02	07:57	07:57	08:47			
	22:08	31	21:07 (15)	21:19	33	20:03 (16)	20:06	18:51	16:45	16:14	
12	05:18	20:36 (15)	06:07	19:30 (16)	07:03	07:58	07:59	08:48			
	22:07	31	21:07 (15)	21:17	34	20:04 (16)	20:04	18:49	16:44	16:14	
13	05:19	20:36 (15)	06:09	19:30 (16)	07:05	08:00	08:01	08:49			
	22:06	31	21:07 (15)	21:15	34	20:04 (16)	20:01	18:47	16:42	16:13	
14	05:21	20:38 (15)	06:11	19:29 (16)	07:07	08:02	08:03	08:50			
	22:05	30	21:08 (15)	21:12	35	20:04 (16)	19:59	18:44	16:40	16:13	
15	05:22	20:38 (15)	06:13	19:29 (16)	07:09	08:04	08:05	08:51			
	22:04	30	21:08 (15)	21:10	35	20:04 (16)	19:56	18:42	16:39	16:13	
16	05:23	20:38 (15)	06:15	19:29 (16)	07:11	08:06	08:07	08:52			
	22:03	29	21:07 (15)	21:08	35	20:04 (16)	19:54	18:40	16:37	16:13	
17	05:25	20:38 (15)	06:16	19:29 (16)	07:12	08:08	08:09	08:53			
	22:02	29	21:07 (15)	21:06	35	20:04 (16)	19:51	18:37	16:36	16:14	
18	05:26	20:39 (15)	06:18	19:28 (16)	07:14	08:10	08:11	08:54			
	22:01	29	21:08 (15)	21:04	35	20:03 (16)	19:49	18:35	16:34	16:14	
19	05:27	20:39 (15)	06:20	19:28 (16)	07:16	08:12	08:12	08:55			
	21:59	28	21:07 (15)	21:01	35	20:03 (16)	19:46	18:33	16:33	16:14	
20	05:29	20:39 (15)	06:22	19:29 (16)	07:18	08:14	08:14	08:55			
	21:58	27	21:06 (15)	20:59	33	20:02 (16)	19:44	18:30	16:31	16:14	
21	05:30	20:40 (15)	06:24	19:28 (16)	07:20	08:16	08:16	08:56			
	21:56	27	21:07 (15)	20:57	33	20:01 (16)	19:41	18:28	16:30	16:15	
22	05:32	20:41 (15)	06:25	19:29 (16)	07:21	08:18	08:18	08:56			
	21:55	25	21:06 (15)	20:55	31	20:00 (16)	19:39	18:26	16:29	16:15	
23	05:33	20:41 (15)	06:27	19:30 (16)	07:23	08:20	08:20	08:57			
	21:54	24	21:05 (15)	20:52	29	19:59 (16)	19:36	18:24	16:27	16:16	
24	05:35	20:42 (15)	06:29	19:30 (16)	07:25	08:22	08:22	08:57			
	21:52	22	21:04 (15)	20:50	27	19:57 (16)	19:33	18:21	16:26	16:16	
25	05:37	20:43 (15)	06:31	19:31 (16)	07:27	07:24	08:23	08:58			
	21:51	20	21:03 (15)	20:48	25	19:56 (16)	19:31	17:19	16:25	16:17	
26	05:38	20:44 (15)	06:33	19:33 (16)	07:29	07:25	08:25	08:58			
	21:49	18	21:02 (15)	20:45	21	19:54 (16)	19:28	17:17	16:24	16:18	
27	05:40	20:46 (15)	06:35	19:35 (16)	07:31	07:27	08:27	08:58			
	21:47	14	21:00 (15)	20:43	17	19:52 (16)	19:26	17:15	16:23	16:19	
28	05:41	20:48 (15)	06:36	19:37 (16)	07:32	07:29	08:28	08:58			
	21:46	10	20:58 (15)	20:40	11	19:48 (16)	19:23	17:13	16:22	16:19	
29	05:43		06:38			07:34	07:31	08:30	08:58		
	21:44		20:38			19:21	17:11	16:21	16:20		
30	05:45		06:40			07:36	07:33	08:32	08:58		
	21:42		20:36			19:18	17:08	16:20	16:21		
31	05:46		06:42				07:35		08:58		
	21:40		20:33				17:06		16:22		
Potential sun hours	515		461		383		327		257		230
Total, worst case		763		766							
Sun reduction		0.27		0.27							
Oper. time red.		1.00		1.00							
Wind dir. red.		0.63		0.59							
Total reduction		0.17		0.16							
Total, real		127		123							

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)



### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: AM - H39  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January	February	March	April	May	June
1	08:58 16:24	08:27 17:16	07:29 18:13	07:12 20:12	18:56 (16) 06:02	19:59 (15) 05:11
2	08:58 16:25	08:25 17:18	07:26 18:15	07:10 20:14	18:55 (16) 06:00	19:58 (15) 05:11
3	08:58 16:26	08:24 17:20	07:24 18:17	07:07 20:16	18:54 (16) 05:58	19:57 (15) 05:10
4	08:58 16:27	08:22 17:22	07:21 18:19	07:05 20:18	18:53 (16) 05:56	19:56 (15) 05:09
5	08:57 16:28	08:20 17:24	07:19 18:21	07:02 20:20	18:53 (16) 05:54	19:55 (15) 05:08
6	08:57 16:30	08:18 17:26	07:17 18:23	07:00 20:22	18:52 (16) 05:52	19:54 (15) 05:07
7	08:56 16:31	08:16 17:28	07:14 18:24	06:58 20:24	18:52 (16) 05:50	19:55 (15) 05:06
8	08:56 16:33	08:14 17:30	07:12 18:26	06:55 20:25	18:51 (16) 05:48	19:55 (15) 05:06
9	08:55 16:34	08:12 17:32	07:09 18:28	06:53 20:27	18:51 (16) 05:46	19:55 (15) 05:05
10	08:55 16:36	08:10 17:34	07:07 18:30	06:50 20:29	18:50 (16) 05:44	19:54 (15) 05:05
11	08:54 16:37	08:08 17:36	07:05 18:32	06:48 20:31	18:51 (16) 05:42	19:55 (15) 05:04
12	08:53 16:39	08:06 17:38	07:02 18:34	06:45 20:33	18:52 (16) 05:40	19:55 (15) 05:04
13	08:52 16:40	08:04 17:40	07:00 18:36	06:43 20:35	18:52 (16) 05:38	19:55 (15) 05:04
14	08:51 16:42	08:02 17:42	06:57 18:38	06:41 20:37	18:53 (16) 05:37	19:56 (15) 05:03
15	08:50 16:44	08:00 17:44	06:55 18:40	06:38 20:39	18:54 (16) 05:35	19:56 (15) 05:03
16	08:49 16:45	07:58 17:46	06:52 18:42	06:36 20:41	18:54 (16) 05:33	19:57 (15) 05:03
17	08:48 16:47	07:56 17:49	06:50 18:44	06:33 20:42	18:56 (16) 05:32	19:57 (15) 05:03
18	08:47 16:49	07:54 17:51	06:47 18:46	06:31 20:44	18:59 (16) 05:30	19:59 (15) 05:03
19	08:46 16:51	07:51 17:53	06:45 18:48	06:29 20:46	19:04 (16) 05:28	19:59 (15) 05:03
20	08:45 16:53	07:49 17:55	06:42 18:50	06:26 20:48	19:09 (16) 05:27	20:22 (15) 05:03
21	08:44 16:54	07:47 17:57	06:40 18:51	06:24 20:50	21:41 05:25	20:02 (15) 05:03
22	08:42 16:56	07:45 17:59	06:37 18:53	06:22 20:52	21:44 05:24	20:21 (15) 05:03
23	08:41 16:58	07:42 18:01	06:35 18:55	06:20 20:54	21:46 05:22	20:02 (15) 05:03
24	08:40 17:00	07:40 18:03	06:32 18:57	06:17 20:56	21:47 05:21	20:18 (15) 05:04
25	08:38 17:02	07:38 18:05	06:30 18:59	06:15 20:58	21:49 05:20	20:17 (15) 05:04
26	08:37 17:04	07:36 18:07	06:27 19:01	06:13 20:59	21:50 05:18	20:09 (15) 05:04
27	08:35 17:06	07:33 18:09	06:25 19:03	06:11 21:01	20:05 (15) 20:18 (15)	05:17 21:53
28	08:34 17:08	07:31 18:11	06:22 19:05	06:08 18:06 (16) 21:03	20:03 (15) 20:20 (15)	05:16 21:55
29	08:32 17:10	07:29 18:13	06:20 19:07	06:06 18:17 (16) 21:05	20:01 (15) 20:22 (15)	05:15 21:56
30	08:31 17:12	07:27 18:15	06:17 19:09	06:04 19:20 (16) 21:07	20:00 (15) 20:23 (15)	05:14 21:57
31	08:29 17:14	07:25 18:17	06:15 19:11	06:02 18:58 (16) 19:23 (16)	05:12 21:59	22:15 21:59
Potential sun hours	248	272	367	421	496	513
Total, worst case			75	608	635	
Sun reduction			0.22	0.34	0.36	
Oper. time red.			1.00	1.00	1.00	
Wind dir. red.			0.59	0.59	0.61	
Total reduction			0.13	0.20	0.22	
Total, real			10	123	140	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: AM - H39

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	July	August	September	October	November	December
1	05:07 22:15	05:48 21:39	20:05 (15) 20:36 (15)	06:44 20:31	18:50 (16) 19:23 (16)	07:38 17:04
2	05:08 22:14	05:50 21:37	20:06 (15) 20:37 (15)	06:45 20:28	18:49 (16) 19:23 (16)	07:40 17:02
3	05:09 22:14	05:52 21:35	20:05 (15) 20:36 (15)	06:47 20:26	18:49 (16) 19:23 (16)	07:42 17:00
4	05:10 22:13	05:53 21:33	20:05 (15) 20:37 (15)	06:49 20:23	18:48 (16) 19:22 (16)	07:43 16:58
5	05:11 22:13	05:55 21:31	20:04 (15) 20:36 (15)	06:51 20:21	18:48 (16) 19:22 (16)	07:45 16:56
6	05:12 22:12	05:57 21:29	20:05 (15) 20:36 (15)	06:53 20:19	18:48 (16) 19:22 (16)	07:47 16:54
7	05:12 22:12	05:59 21:27	20:05 (15) 20:36 (15)	06:54 20:16	18:48 (16) 19:21 (16)	07:49 16:53
8	05:14 22:11	06:00 21:25	20:05 (15) 20:35 (15)	06:56 20:14	18:47 (16) 19:20 (16)	07:51 16:51
9	05:15 22:10	06:02 21:23	20:06 (15) 20:35 (15)	06:58 20:11	18:48 (16) 19:19 (16)	07:53 16:49
10	05:16 22:09	06:04 21:21	20:06 (15) 20:34 (15)	07:00 20:09	18:48 (16) 19:18 (16)	07:55 16:47
11	05:17 22:08	06:06 21:19	20:06 (15) 20:33 (15)	07:02 20:06	18:49 (16) 19:17 (16)	07:57 16:45
12	05:18 22:07	06:07 21:17	20:07 (15) 20:32 (15)	07:03 20:04	18:49 (16) 19:15 (16)	07:58 16:44
13	05:19 22:06	06:09 21:15	20:09 (15) 20:31 (15)	07:05 20:01	18:51 (16) 19:13 (16)	08:00 16:42
14	05:21 22:05	06:11 21:12	20:09 (15) 20:29 (15)	07:07 19:59	18:52 (16) 19:11 (16)	08:02 16:40
15	05:22 22:04	06:13 21:10	20:11 (15) 20:27 (15)	07:09 19:56	18:55 (16) 19:08 (16)	08:05 16:39
16	05:23 22:03	06:15 21:08	20:14 (15) 20:25 (15)	07:11 19:54	18:56 (16) 18:40	08:07 16:37
17	05:25 22:02	06:16 21:06	07:12 19:51	18:40 18:37	16:36 16:34	08:53 16:14
18	05:26 22:01	06:18 21:04	07:14 19:49	18:35 18:33	16:33 16:31	08:54 16:14
19	05:27 21:59	20:17 (15) 20:25 (15)	06:20 21:01	07:16 19:46	08:12 18:33	08:55 16:14
20	05:29 21:58	20:14 (15) 20:27 (15)	06:22 20:59	07:18 19:44	08:14 18:30	08:55 16:14
21	05:30 21:56	13 20:27 (15) 20:14 (15)	20:57 06:24	19:44 07:20	18:30 08:16	16:14 08:56
22	05:32 21:55	15 20:29 (15) 20:12 (15)	20:57 06:25	19:41 07:21	18:28 08:18	16:15 08:56
23	05:33 21:54	18 20:30 (15) 20:10 (15)	20:55 06:27	19:39 07:23	18:26 08:20	16:15 08:57
24	05:35 21:52	21 20:31 (15) 20:32 (15)	20:52 20:50	19:36 19:12 (16)	18:24 18:21	16:16 16:16
25	05:37 21:51	22 20:09 (15) 20:33 (15)	06:31 20:48	19:01 (16) 19:31	07:24 17:19	08:58 16:17
26	05:38 21:49	24 20:09 (15) 20:34 (15)	06:33 20:45	18:59 (16) 19:29	07:25 17:17	08:58 16:18
27	05:40 21:47	25 20:34 (15) 20:07 (15)	20:45 06:35	19:19 (16) 18:57 (16)	17:17 07:27	16:24 08:58
28	05:41 21:46	27 20:34 (15) 20:35 (15)	20:43 20:40	19:20 (16) 19:23	17:15 17:13	16:23 16:19
29	05:43 21:44	28 20:35 (15) 20:06 (15)	20:40 06:38	19:20 (16) 18:53 (16)	17:13 07:31	16:22 08:58
30	05:45 21:42	29 20:35 (15) 20:36 (15)	20:38 06:40	19:22 (16) 18:52 (16)	17:11 07:33	16:20 08:58
31	05:46 21:40	30 20:36 (15) 20:05 (15)	20:36 06:42	19:18 18:51 (16)	17:08 07:35	16:21 08:58
Potential sun hours	515	461	383	327	257	230
Total, worst case	291	607	438			
Sun reduction	0.27	0.27	0.29			
Oper. time red.	1.00	1.00	1.00			
Wind dir. red.	0.61	0.60	0.59			
Total reduction	0.16	0.16	0.17			
Total, real	47	100	75			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: AN - H40  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June
1	08:58 16:24	08:27 17:16	16:08 (16) 18:13	07:29 16	17:22 (15) 17:38 (15)	07:12 20:12
2	08:58 16:25	08:25 17:18	16:07 (16) 18:15	07:26 21	17:19 (15) 17:40 (15)	07:10 20:14
3	08:58 16:26	08:24 17:20	16:06 (16) 18:17	07:24 25	17:17 (15) 17:42 (15)	07:07 20:16
4	08:58 16:27	08:22 17:22	16:06 (16) 18:19	07:21 27	17:15 (15) 17:42 (15)	07:05 20:18
5	08:57 16:28	08:20 17:24	16:06 (16) 18:21	07:19 30	17:14 (15) 17:44 (15)	07:02 20:20
6	08:57 16:30	08:18 17:26	16:05 (16) 18:23	07:17 31	17:13 (15) 17:44 (15)	07:00 20:22
7	08:56 16:31	08:16 17:28	16:05 (16) 18:24	07:14 33	17:12 (15) 17:45 (15)	06:58 20:24
8	08:56 16:33	08:14 17:30	16:05 (16) 18:26	07:12 34	17:11 (15) 17:45 (15)	06:55 20:25
9	08:55 16:34	08:12 17:32	16:05 (16) 18:28	07:09 34	17:11 (15) 17:45 (15)	06:53 20:27
10	08:55 16:36	08:10 17:34	16:05 (16) 18:30	07:07 34	17:10 (15) 17:44 (15)	06:50 20:29
11	08:54 16:37	08:08 17:36	16:05 (16) 18:32	07:05 35	17:10 (15) 17:45 (15)	06:48 20:31
12	08:53 16:39	08:06 17:38	16:06 (16) 18:34	07:02 34	17:10 (15) 17:44 (15)	06:45 20:33
13	08:52 16:40	08:04 17:40	16:07 (16) 18:36	07:00 34	17:10 (15) 17:44 (15)	06:43 20:35
14	08:51 16:42	08:02 17:42	16:07 (16) 18:38	06:57 33	17:10 (15) 17:43 (15)	06:41 20:37
15	08:51 16:44	08:00 17:44	16:08 (16) 18:40	06:55 31	17:11 (15) 17:42 (15)	06:38 20:39
16	08:50 16:45	07:58 17:46	16:09 (16) 18:42	06:52 30	17:11 (15) 17:41 (15)	06:36 20:41
17	08:48 16:47	07:56 17:49	16:11 (16) 18:44	06:50 28	17:12 (15) 17:40 (15)	06:33 20:42
18	08:47 16:49	07:54 17:51	16:13 (16) 18:46	06:47 25	17:13 (15) 17:38 (15)	06:31 20:44
19	08:46 16:51	07:51 17:53	16:15 (16) 18:48	06:45 21	17:15 (15) 17:36 (15)	06:29 20:46
20	08:45 16:53	07:49 17:55	16:17 (16) 18:50	06:42 16	17:17 (15) 17:33 (15)	06:26 20:48
21	08:44 16:54	07:47 17:57	16:19 (16) 18:51	06:40 9	17:21 (15) 17:30 (15)	06:24 20:50
22	08:42 16:56	07:45 17:59	16:21 (16) 18:53	06:37 18:51	06:22 20:52	05:24 21:46
23	08:41 16:58	07:42 18:01	16:23 (16) 18:55	06:35 18:55	06:20 20:54	05:22 21:47
24	08:40 17:00	07:40 18:03	16:25 (16) 18:57	06:32 18:57	06:17 20:56	05:21 21:49
25	08:38 17:02	07:38 18:05	16:27 (16) 18:59	06:30 18:59	06:15 20:58	05:20 21:50
26	08:37 17:04	07:36 18:07	16:29 (16) 19:01	06:27 19:01	06:13 20:59	05:18 21:52
27	08:35 17:06	16:15 (16) 18:09	07:33 19:03	06:25 19:03	06:11 21:01	05:17 21:53
28	08:34 17:08	16:12 (16) 18:11	07:31 17:25 (15) 17:34 (15)	06:22 19:05	06:08 21:03	05:16 21:55
29	08:32 17:10	16:10 (16) 16:28 (16)	07:20 20:07	07:20 20:07	06:06 21:05	05:15 21:56
30	08:31 17:12	18 16:28 (16)	07:17 20:08	07:17 20:08	06:04 21:07	05:14 21:57
31	08:29 17:14	16:08 (16) 16:31 (16)	07:15 20:10	07:15 20:10	05:12 21:59	05:12 21:59
Potential sun hours	248	272	367	421	496	513
Total, worst case	85	530	581			
Sun reduction	0.17	0.22	0.22			
Oper. time red.	1.00	1.00	1.00			
Wind dir. red.	0.60	0.60	0.58			
Total reduction	0.10	0.13	0.13			
Total, real	9	70	75			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: AN - H40  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	July	August	September	October	November	December
1	05:07 22:15	05:48 21:39	06:44 20:31	07:38 19:16	17:50 (15) 18:24 (15)	08:33 16:19
2	05:08 22:14	05:50 21:37	06:45 20:28	07:40 19:14	17:48 (15) 18:23 (15)	08:35 16:18
3	05:09 22:14	05:52 21:35	06:47 20:26	07:42 19:11	17:48 (15) 18:22 (15)	08:36 16:17
4	05:10 22:14	05:53 21:33	06:49 20:23	07:43 19:09	17:48 (15) 18:22 (15)	08:38 16:17
5	05:11 22:13	05:55 21:31	06:51 20:21	07:45 19:06	17:48 (15) 18:22 (15)	08:39 16:16
6	05:11 22:12	05:57 21:29	06:53 20:19	07:47 19:04	17:48 (15) 18:21 (15)	08:41 16:16
7	05:12 22:12	05:59 21:27	06:54 20:16	07:49 19:01	17:49 (15) 18:20 (15)	08:42 16:15
8	05:14 22:11	06:00 21:25	06:56 20:14	07:51 18:59	17:49 (15) 18:19 (15)	08:43 16:15
9	05:15 22:10	06:02 21:23	06:58 20:11	07:53 18:56	17:50 (15) 18:18 (15)	08:45 16:14
10	05:16 22:09	06:04 21:21	07:00 20:09	07:55 18:54	17:51 (15) 18:17 (15)	08:46 16:14
11	05:17 22:08	06:06 21:19	07:02 20:06	07:57 18:51	17:52 (15) 18:15 (15)	08:47 16:14
12	05:18 22:07	06:07 21:17	07:03 20:04	07:58 18:49	17:54 (15) 18:13 (15)	08:48 16:13
13	05:19 22:06	06:09 21:15	07:05 20:01	08:00 18:47	17:56 (15) 18:10 (15)	08:49 16:13
14	05:21 22:05	06:11 21:13	07:07 19:59	08:02 18:44	18:02 (15) 18:04 (15)	08:50 16:13
15	05:22 22:04	06:13 21:10	07:09 19:56	08:04 18:42	08:05 16:39	08:51 16:13
16	05:23 22:03	06:15 21:08	07:11 19:54	08:06 18:40	08:07 16:37	08:52 16:13
17	05:25 22:02	06:16 21:06	07:12 19:51	08:08 18:37	08:09 16:36	08:53 16:14
18	05:26 22:01	06:18 21:04	07:14 19:49	08:10 18:35	08:11 16:34	08:54 16:14
19	05:27 21:59	06:20 21:01	07:16 19:46	08:12 18:33	08:12 16:33	08:55 16:14
20	05:29 21:58	06:22 20:59	07:18 19:44	08:14 18:30	08:14 16:31	08:55 16:14
21	05:30 21:57	06:24 20:57	07:20 19:41	08:16 18:28	08:16 16:30	08:56 16:15
22	05:32 21:55	06:25 20:55	07:21 19:39	18:07 (15) 18:13 (15)	08:18 16:55 (16)	08:18 16:29
23	05:33 21:54	06:27 20:52	07:23 19:36	18:02 (15) 18:17 (15)	08:20 16:44 (16)	08:20 16:27
24	05:35 21:52	06:29 20:50	07:25 19:33	17:59 (15) 18:19 (15)	08:22 16:42 (16)	08:22 16:26
25	05:37 21:51	06:31 20:48	07:27 19:31	17:56 (15) 18:20 (15)	07:24 17:19	08:23 16:25
26	05:38 21:49	06:33 20:45	07:29 19:28	17:55 (15) 18:21 (15)	07:26 17:17	08:25 16:24
27	05:40 21:47	06:35 20:43	07:31 19:26	17:53 (15) 18:22 (15)	07:27 17:15	08:27 16:23
28	05:41 21:46	06:36 20:40	07:32 19:23	17:52 (15) 18:23 (15)	07:29 17:13	08:29 16:22
29	05:43 21:44	06:38 20:38	07:34 19:21	17:51 (15) 18:23 (15)	07:31 17:11	08:30 16:21
30	05:45 21:42	06:40 20:36	07:36 19:18	17:50 (15) 18:24 (15)	07:33 17:08	08:32 16:20
31	05:46 21:40	06:42 20:33		07:35 17:06	15:35 (16) 16:06 (16)	08:58 16:22
Potential sun hours	515	461	383	327	257	230
Total, worst case			217	612	385	
Sun reduction			0.29	0.23	0.20	
Oper. time red.			1.00	1.00	1.00	
Wind dir. red.			0.58	0.59	0.60	
Total reduction			0.17	0.14	0.12	
Total, real			37	84	46	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: AO - H41  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June
1	08:58 16:24	08:27 17:16	07:29 18:13	07:12 20:12	19:16 (16) 7 19:23 (16)	06:02 11 20:14 (15) 05:11 7 20:17 (15) 20:24 (15)
2	08:58 16:25	08:25 17:18	07:26 18:15	07:10 20:14	19:12 (16) 15 19:27 (16)	06:00 16 20:27 (15) 22:01
3	08:58 16:26	08:24 17:20	07:24 18:17	07:07 20:16	19:09 (16) 20 19:29 (16)	05:58 20 20:29 (15) 22:02
4	08:58 16:27	08:22 17:22	07:21 18:19	07:05 20:18	19:07 (16) 24 19:31 (16)	05:56 22 20:30 (15) 22:03
5	08:57 16:28	08:20 17:24	07:19 18:21	07:02 20:20	19:06 (16) 26 19:32 (16)	05:54 24 20:31 (15) 22:05
6	08:57 16:30	08:18 17:26	07:17 18:23	07:00 20:22	19:04 (16) 29 19:33 (16)	05:52 27 20:33 (15) 22:06
7	08:56 16:31	08:16 17:28	07:14 18:24	06:58 20:24	19:03 (16) 31 19:34 (16)	05:50 27 20:33 (15) 22:07
8	08:56 16:33	08:14 17:30	07:12 18:26	06:55 20:25	19:01 (16) 32 19:33 (16)	05:48 28 20:33 (15) 22:08
9	08:55 16:34	08:12 17:32	07:09 18:28	06:53 20:27	19:01 (16) 33 19:34 (16)	05:46 29 20:33 (15) 22:09
10	08:55 16:36	08:10 17:34	07:07 18:30	06:50 20:29	19:00 (16) 34 19:34 (16)	05:44 30 20:33 (15) 22:09
11	08:54 16:37	08:08 17:36	07:05 18:32	06:48 20:31	19:00 (16) 34 19:34 (16)	05:42 30 20:34 (15) 22:10
12	08:53 16:39	08:06 17:38	07:02 18:34	06:45 20:33	19:00 (16) 34 19:34 (16)	05:40 31 20:34 (15) 22:11
13	08:52 16:40	08:04 17:40	07:00 18:36	06:43 20:35	18:59 (16) 34 19:33 (16)	05:38 31 20:34 (15) 22:12
14	08:51 16:42	08:02 17:42	06:57 18:38	06:41 20:37	18:59 (16) 34 19:33 (16)	05:37 31 20:34 (15) 22:12
15	08:50 16:44	08:00 17:44	06:55 18:40	06:38 20:39	19:00 (16) 33 19:33 (16)	05:35 31 20:34 (15) 22:13
16	08:49 16:45	07:58 17:46	06:52 18:42	06:36 20:41	18:59 (16) 32 19:31 (16)	05:33 30 20:34 (15) 22:14
17	08:48 16:47	07:56 17:49	06:50 18:44	06:33 20:42	19:00 (16) 31 19:31 (16)	05:32 31 20:34 (15) 22:14
18	08:47 16:49	07:54 17:51	06:47 18:46	06:31 20:44	19:01 (16) 29 19:30 (16)	05:30 30 20:34 (15) 22:15
19	08:46 16:51	07:51 17:53	06:45 18:48	06:29 20:46	19:02 (16) 27 19:29 (16)	05:28 29 20:33 (15) 22:15
20	08:45 16:53	07:49 17:55	06:42 18:50	06:26 20:48	19:02 (16) 25 19:27 (16)	05:27 28 20:33 (15) 22:15
21	08:44 16:54	07:47 17:57	06:40 18:51	06:24 20:50	19:03 (16) 23 19:26 (16)	05:25 27 20:33 (15) 22:15
22	08:42 16:56	07:45 17:59	06:37 18:53	06:22 20:52	19:05 (16) 19 19:24 (16)	05:24 27 20:32 (15) 22:16
23	08:41 16:58	07:42 18:01	06:35 18:55	06:20 20:54	19:08 (16) 13 19:21 (16)	05:22 26 20:32 (15) 22:16
24	08:40 17:00	07:40 18:03	06:32 18:57	06:17 20:56	19:13 (16) 4 19:17 (16)	05:21 25 20:32 (15) 22:16
25	08:38 17:02	07:38 18:05	06:30 18:59	06:15 20:58	05:20 23 21:50	05:04 23 20:31 (15) 22:16
26	08:37 17:04	07:36 18:07	06:27 19:01	06:13 20:59	05:18 22 21:52	05:04 22 20:31 (15) 22:16
27	08:35 17:06	07:33 18:09	06:25 19:03	06:11 21:01	05:17 20 21:53	05:05 20 20:29 (15) 22:16
28	08:34 17:08	07:31 18:11	06:22 19:05	06:08 21:03	05:16 18 21:55	05:05 18 20:28 (15) 22:16
29	08:32 17:10	07:29 18:11	06:20 19:07	06:06 21:05	05:15 16 21:56	05:06 16 20:28 (15) 22:15
30	08:30 17:12	07:27 18:08	06:17 19:04	06:04 21:07	05:14 14 21:57	05:07 14 20:27 (15) 22:15
31	08:29 17:14	07:25 18:05	06:15 19:01	06:02 21:09	05:12 11 21:59	05:04 11 20:26 (15) 22:15
Potential sun hours	248	272	367	421	496	513
Total, worst case				623	765	7
Sun reduction				0.34	0.36	0.26
Oper. time red.				1.00	1.00	1.00
Wind dir. red.				0.59	0.61	0.61
Total reduction				0.20	0.22	0.16
Total, real				126	170	1

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: AO - H41  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	July	August	September	October	November	December				
1	05:07	05:48	20:14 (15)	06:44	18:59 (16)	07:38	07:37	08:33		
	22:15	21:39	30	20:44 (15)	20:31	34	19:33 (16)	19:16	17:04	16:19
2	05:08	05:50	20:14 (15)	06:45	18:59 (16)	07:40	07:39	08:35		
	22:14	21:37	31	20:45 (15)	20:28	34	19:33 (16)	19:14	17:02	16:18
3	05:09	05:52	20:14 (15)	06:47	18:59 (16)	07:42	07:41	08:36		
	22:14	21:35	30	20:44 (15)	20:26	33	19:32 (16)	19:11	17:00	16:17
4	05:10	05:53	20:14 (15)	06:49	18:58 (16)	07:43	07:43	08:38		
	22:13	21:33	30	20:44 (15)	20:23	33	19:31 (16)	19:09	16:58	16:17
5	05:11	05:55	20:14 (15)	06:51	18:59 (16)	07:45	07:45	08:39		
	22:13	21:31	28	20:42 (15)	20:21	31	19:30 (16)	19:06	16:56	16:16
6	05:12	05:57	20:15 (15)	06:53	19:00 (16)	07:47	07:47	08:41		
	22:12	21:29	27	20:42 (15)	20:19	29	19:29 (16)	19:04	16:54	16:16
7	05:12	05:59	20:16 (15)	06:54	19:01 (16)	07:49	07:49	08:42		
	22:12	21:27	26	20:42 (15)	20:16	27	19:28 (16)	19:01	16:53	16:15
8	05:14	06:00	20:16 (15)	06:56	19:01 (16)	07:51	07:51	08:43		
	22:11	21:25	24	20:40 (15)	20:14	24	19:25 (16)	18:59	16:51	16:15
9	05:15	06:02	20:18 (15)	06:58	19:03 (16)	07:53	07:53	08:45		
	22:10	21:23	21	20:39 (15)	20:11	20	19:23 (16)	18:56	16:49	16:14
10	05:16	06:04	20:19 (15)	07:00	19:05 (16)	07:55	07:55	08:46		
	22:09	21:21	19	20:38 (15)	20:09	16	19:21 (16)	18:54	16:47	16:14
11	05:17	20:26 (15)	06:06	20:20 (15)	07:02	8	19:09 (16)	07:57	07:57	08:47
	22:08	20:30 (15)	21:19	20:35 (15)	20:06	8	19:17 (16)	18:51	16:45	16:14
12	05:18	20:24 (15)	06:07	20:23 (15)	07:03		07:58	07:59	08:48	
	22:07	9	20:33 (15)	21:17	10	20:33 (15)	20:04	18:49	16:44	16:14
13	05:19	20:22 (15)	06:09	07:05			08:00	08:01	08:49	
	22:06	12	20:34 (15)	21:15			20:01	18:47	16:42	16:13
14	05:21	20:22 (15)	06:11	07:07			08:02	08:03	08:50	
	22:05	15	20:37 (15)	21:12			19:59	18:44	16:40	16:13
15	05:22	20:20 (15)	06:13	07:09			08:04	08:05	08:51	
	22:04	18	20:38 (15)	21:10			19:56	18:42	16:39	16:13
16	05:23	20:19 (15)	06:15	07:11			08:06	08:07	08:52	
	22:03	19	20:38 (15)	21:08			19:54	18:40	16:37	16:13
17	05:25	20:18 (15)	06:16	07:12			08:08	08:09	08:53	
	22:02	21	20:39 (15)	21:06			19:51	18:37	16:36	16:14
18	05:26	20:18 (15)	06:18	07:14			08:10	08:11	08:54	
	22:01	22	20:40 (15)	21:04			19:49	18:35	16:34	16:14
19	05:27	20:17 (15)	06:20	19:17 (16)	07:16		08:12	08:12	08:55	
	21:59	24	20:41 (15)	21:01	7	19:24 (16)	19:46	18:33	16:33	16:14
20	05:29	20:16 (15)	06:22	19:13 (16)	07:18		08:14	08:14	08:55	
	21:58	25	20:41 (15)	20:59	15	19:28 (16)	19:44	18:30	16:31	16:14
21	05:30	20:16 (15)	06:24	19:10 (16)	07:20		08:16	08:16	08:56	
	21:56	26	20:42 (15)	20:57	19	19:29 (16)	19:41	18:28	16:30	16:15
22	05:32	20:16 (15)	06:25	19:08 (16)	07:21		08:18	08:18	08:56	
	21:55	27	20:43 (15)	20:55	23	19:31 (16)	19:39	18:26	16:29	16:15
23	05:33	20:15 (15)	06:27	19:06 (16)	07:23		08:20	08:20	08:57	
	21:54	28	20:43 (15)	20:52	26	19:32 (16)	19:36	18:24	16:27	16:16
24	05:35	20:15 (15)	06:29	19:04 (16)	07:25		08:22	08:22	08:57	
	21:52	29	20:44 (15)	20:50	28	19:32 (16)	19:33	18:21	16:26	16:16
25	05:37	20:14 (15)	06:31	19:03 (16)	07:27		07:24	08:23	08:58	
	21:51	30	20:44 (15)	20:48	30	19:33 (16)	19:31	17:19	16:25	16:17
26	05:38	20:14 (15)	06:33	19:03 (16)	07:29		07:25	08:25	08:58	
	21:49	30	20:44 (15)	20:45	31	19:34 (16)	19:28	17:17	16:24	16:18
27	05:40	20:14 (15)	06:35	19:02 (16)	07:31		07:27	08:27	08:58	
	21:47	30	20:44 (15)	20:43	32	19:34 (16)	19:26	17:15	16:23	16:19
28	05:41	20:14 (15)	06:36	19:00 (16)	07:32		07:29	08:28	08:58	
	21:46	31	20:45 (15)	20:40	34	19:34 (16)	19:23	17:13	16:22	16:19
29	05:43	20:13 (15)	06:38	19:00 (16)	07:34		07:31	08:30	08:58	
	21:44	31	20:44 (15)	20:38	34	19:34 (16)	19:21	17:11	16:21	16:20
30	05:45	20:14 (15)	06:40	19:00 (16)	07:36		07:33	08:32	08:58	
	21:42	31	20:45 (15)	20:36	34	19:34 (16)	19:18	17:08	16:20	16:21
31	05:46	20:13 (15)	06:42	18:59 (16)			07:35		08:58	
	21:40	31	20:44 (15)	20:33	34	19:33 (16)	17:06		16:22	
Potential sun hours	515	461	383	327	257	230				
Total, worst case	493	638	289							
Sun reduction	0.27	0.27	0.29							
Oper. time red.	1.00	1.00	1.00							
Wind dir. red.	0.61	0.60	0.59							
Total reduction	0.16	0.16	0.17							
Total, real	81	105	50							

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)





### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: AP - H42

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June
1	08:58	08:27	07:29	07:12	06:02	19:19 (16) 05:11 20:19 (15)
	16:24	17:16	18:13	20:12	21:09	15 19:34 (16) 22:00 27 20:46 (15)
2	08:58	08:25	07:26	07:10	06:00	19:22 (16) 05:11 20:19 (15)
	16:25	17:18	18:15	20:14	21:11	9 19:31 (16) 22:01 27 20:46 (15)
3	08:58	08:24	07:24	07:07	05:58	05:10 20:19 (15)
	16:26	17:20	18:17	20:16	21:12	22:02 27 20:46 (15)
4	08:58	08:22	07:21	07:05	05:56	05:09 20:19 (15)
	16:27	17:22	18:19	20:18	21:14	22:03 26 20:45 (15)
5	08:57	08:20	07:19	07:02	05:54	05:08 20:21 (15)
	16:28	17:24	18:21	20:20	21:16	22:05 25 20:46 (15)
6	08:57	08:18	07:17	07:00	05:52	05:07 20:21 (15)
	16:30	17:26	18:23	20:22	21:18	22:06 24 20:45 (15)
7	08:56	08:16	07:14	06:58	05:50	05:06 20:22 (15)
	16:31	17:28	18:24	20:24	21:20	22:07 23 20:45 (15)
8	08:56	08:14	07:12	06:55	19:28 (16) 05:48	20:26 (15) 05:06 20:22 (15)
	16:33	17:30	18:26	20:25	6 19:34 (16) 21:22	10 20:36 (15) 22:08 23 20:45 (15)
9	08:55	08:12	07:09	06:53	19:23 (16) 05:46	20:23 (15) 05:05 20:23 (15)
	16:34	17:32	18:28	20:27	16 19:39 (16) 21:23	15 20:38 (15) 22:09 22 20:45 (15)
10	08:55	08:10	07:07	06:50	19:20 (16) 05:44	20:21 (15) 05:05 20:23 (15)
	16:36	17:34	18:30	20:29	20 19:40 (16) 21:25	19 20:40 (15) 22:09 21 20:44 (15)
11	08:54	08:08	07:04	06:48	19:18 (16) 05:42	20:21 (15) 05:04 20:24 (15)
	16:37	17:36	18:32	20:31	24 19:42 (16) 21:27	21 20:42 (15) 22:10 21 20:45 (15)
12	08:53	08:06	07:02	06:45	19:17 (16) 05:40	20:19 (15) 05:04 20:25 (15)
	16:39	17:38	18:34	20:33	27 19:44 (16) 21:29	23 20:42 (15) 22:11 20 20:45 (15)
13	08:52	08:04	07:00	06:43	19:15 (16) 05:38	20:18 (15) 05:04 20:24 (15)
	16:40	17:40	18:36	20:35	29 19:44 (16) 21:31	25 20:43 (15) 22:12 20 20:44 (15)
14	08:51	08:02	06:57	06:41	19:14 (16) 05:37	20:18 (15) 05:03 20:25 (15)
	16:42	17:42	18:38	20:37	31 19:45 (16) 21:32	26 20:44 (15) 22:12 19 20:44 (15)
15	08:50	08:00	06:55	06:38	19:14 (16) 05:35	20:17 (15) 05:03 20:26 (15)
	16:44	17:44	18:40	20:39	32 19:46 (16) 21:34	27 20:44 (15) 22:13 18 20:44 (15)
16	08:49	07:58	06:52	06:36	19:12 (16) 05:33	20:17 (15) 05:03 20:26 (15)
	16:45	17:46	18:42	20:41	33 19:45 (16) 21:36	28 20:45 (15) 22:14 18 20:44 (15)
17	08:48	07:56	06:50	06:33	19:12 (16) 05:32	20:16 (15) 05:03 20:27 (15)
	16:47	17:49	18:44	20:42	34 19:46 (16) 21:37	29 20:45 (15) 22:14 17 20:44 (15)
18	08:47	07:54	06:47	06:31	19:12 (16) 05:30	20:16 (15) 05:03 20:27 (15)
	16:49	17:51	18:46	20:44	34 19:46 (16) 21:39	30 20:46 (15) 22:14 17 20:44 (15)
19	08:46	07:51	06:45	06:29	19:12 (16) 05:28	20:16 (15) 05:03 20:27 (15)
	16:51	17:53	18:48	20:46	34 19:46 (16) 21:41	30 20:46 (15) 22:15 17 20:44 (15)
20	08:45	07:49	06:42	06:26	19:11 (16) 05:27	20:16 (15) 05:03 20:27 (15)
	16:53	17:55	18:50	20:48	34 19:45 (16) 21:42	30 20:46 (15) 22:15 17 20:44 (15)
21	08:44	07:47	06:40	06:24	19:11 (16) 05:25	20:16 (15) 05:03 20:27 (15)
	16:54	17:57	18:51	20:50	34 19:45 (16) 21:44	31 20:47 (15) 22:15 17 20:44 (15)
22	08:42	07:45	06:37	06:22	19:11 (16) 05:24	20:15 (15) 05:03 20:28 (15)
	16:56	17:59	18:53	20:52	34 19:45 (16) 21:46	31 20:46 (15) 22:16 17 20:45 (15)
23	08:41	07:42	06:35	06:20	19:11 (16) 05:22	20:16 (15) 05:03 20:28 (15)
	16:58	18:01	18:55	20:54	33 19:44 (16) 21:47	31 20:47 (15) 22:16 17 20:45 (15)
24	08:40	07:40	06:32	06:17	19:12 (16) 05:21	20:16 (15) 05:04 20:28 (15)
	17:00	18:03	18:57	20:56	32 19:44 (16) 21:49	31 20:47 (15) 22:16 17 20:45 (15)
25	08:38	07:38	06:30	06:15	19:11 (16) 05:20	20:16 (15) 05:04 20:29 (15)
	17:02	18:05	18:59	20:58	31 19:42 (16) 21:50	31 20:47 (15) 22:16 17 20:46 (15)
26	08:37	07:36	06:27	06:13	19:12 (16) 05:18	20:17 (15) 05:04 20:28 (15)
	17:04	18:07	19:01	20:59	29 19:41 (16) 21:52	30 20:47 (15) 22:16 18 20:46 (15)
27	08:35	07:33	06:25	06:11	19:13 (16) 05:17	20:16 (15) 05:05 20:29 (15)
	17:06	18:09	19:03	21:01	27 19:40 (16) 21:53	30 20:46 (15) 22:16 18 20:47 (15)
28	08:34	07:31	06:22	06:08	19:14 (16) 05:16	20:16 (15) 05:05 20:28 (15)
	17:08	18:11	19:05	21:03	25 19:39 (16) 21:55	30 20:46 (15) 22:16 19 20:47 (15)
29	08:32		07:20	06:06	19:15 (16) 05:15	20:17 (15) 05:06 20:29 (15)
	17:10		20:07	21:05	23 19:38 (16) 21:56	29 20:46 (15) 22:15 19 20:48 (15)
30	08:30		07:17	06:04	19:17 (16) 05:14	20:17 (15) 05:07 20:28 (15)
	17:12		20:08	21:07	19 19:36 (16) 21:57	29 20:46 (15) 22:15 20 20:48 (15)
31	08:29		07:15		05:12	20:18 (15)
	17:14		20:10		21:59	29 20:47 (15)
Potential sun hours	248	272	367	421	496	513
Total, worst case				641	669	608
Sun reduction				0.34	0.36	0.26
Oper. time red.				1.00	1.00	1.00
Wind dir. red.				0.59	0.62	0.62
Total reduction				0.20	0.22	0.16
Total, real				130	150	97

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: AP - H42

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	July		August		September		October		November		December	
1	05:07	20:28 (15)	05:48	20:30 (15)	06:44	19:17 (16)	07:38	07:37	08:33			
	22:15	21	20:49 (15)	21:39	22	20:52 (15)	20:31	24	19:41 (16)	19:16	17:04	16:19
2	05:08	20:28 (15)	05:50	20:31 (15)	06:45	19:19 (16)	07:40	07:39	08:35			
	22:14	21	20:49 (15)	21:37	21	20:52 (15)	20:28	20	19:39 (16)	19:14	17:02	16:18
3	05:09	20:28 (15)	05:52	20:32 (15)	06:47	19:21 (16)	07:42	07:41	08:36			
	22:14	22	20:50 (15)	21:35	18	20:50 (15)	20:26	16	19:37 (16)	19:11	17:00	16:17
4	05:10	20:27 (15)	05:53	20:34 (15)	06:49	19:25 (16)	07:43	07:43	08:38			
	22:13	23	20:50 (15)	21:33	14	20:48 (15)	20:23	6	19:31 (16)	19:09	16:58	16:17
5	05:11	20:27 (15)	05:55	20:37 (15)	06:51	19:27 (16)	07:45	07:45	08:39			
	22:13	24	20:51 (15)	21:31	8	20:45 (15)	20:21		19:06	16:56	16:16	16:16
6	05:12	20:27 (15)	05:57	20:38 (15)	06:53	19:29 (16)	07:47	07:47	08:41			
	22:12	24	20:51 (15)	21:29		20:19	19:04	16:54	16:16			
7	05:12	20:27 (15)	05:59	20:39 (15)	06:54	19:31 (16)	07:49	07:49	08:42			
	22:12	25	20:52 (15)	21:27		20:16	19:01	16:53	16:15			
8	05:14	20:27 (15)	06:00	20:40 (15)	06:56	19:33 (16)	07:51	07:51	08:43			
	22:11	25	20:52 (15)	21:25		20:14	18:59	16:51	16:15			
9	05:15	20:27 (15)	06:02	20:41 (15)	06:58	19:35 (16)	07:53	07:53	08:45			
	22:10	26	20:53 (15)	21:23		20:11	18:56	16:49	16:14			
10	05:16	20:27 (15)	06:04	20:42 (15)	07:00	19:37 (16)	07:55	07:55	08:46			
	22:09	26	20:53 (15)	21:21		20:09	18:54	16:47	16:14			
11	05:17	20:26 (15)	06:06	19:29 (16)	07:02	19:41 (16)	07:57	07:57	08:47			
	22:08	28	20:54 (15)	21:19	12	19:41 (16)	20:06	18:51	16:45	16:14		
12	05:18	20:26 (15)	06:07	19:27 (16)	07:03	19:43 (16)	07:58	07:58	08:48			
	22:07	28	20:54 (15)	21:17	16	19:43 (16)	20:04	18:49	16:44	16:14		
13	05:19	20:26 (15)	06:09	19:25 (16)	07:05	19:45 (16)	08:00	08:01	08:49			
	22:06	28	20:54 (15)	21:15	20	19:45 (16)	20:01	18:47	16:42	16:13		
14	05:21	20:26 (15)	06:11	19:22 (16)	07:07	19:46 (16)	08:02	08:02	08:50			
	22:05	29	20:55 (15)	21:12	24	19:46 (16)	19:59	18:44	16:40	16:13		
15	05:22	20:26 (15)	06:13	19:21 (16)	07:09	19:47 (16)	08:04	08:05	08:51			
	22:04	30	20:56 (15)	21:10	26	19:47 (16)	19:56	18:42	16:39	16:13		
16	05:23	20:26 (15)	06:15	19:20 (16)	07:11	19:48 (16)	08:06	08:07	08:52			
	22:03	30	20:56 (15)	21:08	28	19:48 (16)	19:54	18:40	16:37	16:13		
17	05:25	20:25 (15)	06:16	19:19 (16)	07:12	19:49 (16)	08:08	08:09	08:53			
	22:02	31	20:56 (15)	21:06	30	19:49 (16)	19:51	18:37	16:36	16:14		
18	05:26	20:26 (15)	06:18	19:18 (16)	07:14	19:50 (16)	08:10	08:11	08:54			
	22:01	31	20:57 (15)	21:04	31	19:49 (16)	19:49	18:35	16:34	16:14		
19	05:27	20:26 (15)	06:20	19:17 (16)	07:16	19:50 (16)	08:12	08:12	08:55			
	21:59	30	20:56 (15)	21:01	33	19:50 (16)	19:46	18:33	16:33	16:14		
20	05:29	20:25 (15)	06:22	19:17 (16)	07:18	19:51 (16)	08:14	08:14	08:55			
	21:58	31	20:56 (15)	20:59	33	19:50 (16)	19:44	18:30	16:31	16:14		
21	05:30	20:26 (15)	06:24	19:16 (16)	07:20	19:51 (16)	08:16	08:16	08:56			
	21:56	31	20:57 (15)	20:57	33	19:49 (16)	19:41	18:28	16:30	16:15		
22	05:32	20:26 (15)	06:25	19:15 (16)	07:21	19:52 (16)	08:18	08:18	08:56			
	21:55	31	20:57 (15)	20:55	35	19:50 (16)	19:39	18:26	16:29	16:15		
23	05:33	20:25 (15)	06:27	19:15 (16)	07:23	19:51 (16)	08:20	08:20	08:57			
	21:54	31	20:56 (15)	20:52	35	19:50 (16)	19:36	18:24	16:27	16:16		
24	05:35	20:26 (15)	06:29	19:14 (16)	07:25	19:51 (16)	08:22	08:22	08:57			
	21:52	31	20:57 (15)	20:50	35	19:49 (16)	19:33	18:21	16:26	16:16		
25	05:37	20:26 (15)	06:31	19:14 (16)	07:27	19:52 (16)	08:24	08:23	08:58			
	21:51	30	20:56 (15)	20:48	35	19:49 (16)	19:31	17:19	16:25	16:17		
26	05:38	20:27 (15)	06:33	19:15 (16)	07:29	19:52 (16)	08:25	08:25	08:58			
	21:49	29	20:56 (15)	20:45	33	19:48 (16)	19:28	17:17	16:24	16:18		
27	05:40	20:27 (15)	06:35	19:15 (16)	07:31	19:53 (16)	08:27	08:27	08:58			
	21:47	28	20:55 (15)	20:43	33	19:48 (16)	19:26	17:15	16:23	16:19		
28	05:41	20:27 (15)	06:36	19:15 (16)	07:32	19:54 (16)	08:29	08:28	08:58			
	21:46	28	20:55 (15)	20:40	31	19:46 (16)	19:23	17:13	16:22	16:19		
29	05:43	20:27 (15)	06:38	19:15 (16)	07:34	19:54 (16)	08:30	08:30	08:58			
	21:44	27	20:54 (15)	20:38	31	19:46 (16)	19:21	17:11	16:21	16:20		
30	05:45	20:29 (15)	06:40	19:16 (16)	07:36	19:55 (16)	08:32	08:32	08:58			
	21:42	25	20:54 (15)	20:36	29	19:45 (16)	19:18	17:08	16:20	16:21		
31	05:46	20:29 (15)	06:42	19:16 (16)		19:56 (16)	08:35	08:35	08:58			
	21:40	24	20:53 (15)	20:33	27	19:43 (16)	17:06	17:06	16:22	16:22		
Potential sun hours	515		461	383		327	257	230				
Total, worst case	848		693	66								
Sun reduction	0.27		0.27	0.29								
Oper. time red.	1.00		1.00	1.00								
Wind dir. red.	0.62		0.59	0.59								
Total reduction	0.17		0.16	0.17								
Total, real	140		113	11								

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: AQ - H43  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January	February	March	April	May	June
1	08:58 16:24	08:27 17:16	07:29 18:13	07:12 20:12	19:05 (16) 06:02	20:06 (15) 05:11
2	08:58 16:25	08:25 17:18	07:26 18:15	07:10 20:14	19:04 (16) 06:00	20:04 (15) 05:11
3	08:58 16:26	08:24 17:20	07:24 18:17	07:07 20:16	19:01 (16) 05:58	20:03 (15) 05:10
4	08:58 16:27	08:22 17:22	07:21 18:19	07:05 20:18	19:00 (16) 05:56	20:02 (15) 05:09
5	08:57 16:28	08:20 17:24	07:19 18:21	07:02 20:20	19:00 (16) 05:54	20:01 (15) 05:08
6	08:57 16:30	08:18 17:26	07:17 18:23	07:00 20:22	18:58 (16) 05:52	20:01 (15) 05:07
7	08:56 16:31	08:16 17:28	07:14 18:24	06:58 20:24	18:58 (16) 05:50	20:01 (15) 05:06
8	08:56 16:33	08:14 17:30	07:12 18:26	06:55 20:25	18:57 (16) 05:48	20:00 (15) 05:06
9	08:55 16:34	08:12 17:32	07:09 18:28	06:53 20:27	18:56 (16) 05:46	20:00 (15) 05:05
10	08:55 16:36	08:10 17:34	07:07 18:30	06:50 20:29	18:55 (16) 05:44	19:59 (15) 05:05
11	08:54 16:37	08:08 17:36	07:05 18:32	06:48 20:31	18:56 (16) 05:42	20:00 (15) 05:04
12	08:53 16:39	08:06 17:38	07:02 18:34	06:45 20:33	18:56 (16) 05:40	19:59 (15) 05:04
13	08:52 16:40	08:04 17:40	07:00 18:36	06:43 20:35	18:55 (16) 05:38	19:59 (15) 05:04
14	08:51 16:42	08:02 17:42	06:57 18:38	06:41 20:37	18:56 (16) 05:37	20:00 (15) 05:03
15	08:50 16:44	08:00 17:44	06:55 18:40	06:38 20:39	18:57 (16) 05:35	20:00 (15) 05:03
16	08:49 16:45	07:58 17:46	06:52 18:42	06:36 20:41	18:57 (16) 05:33	20:01 (15) 05:03
17	08:48 16:47	07:56 17:49	06:50 18:44	06:33 20:42	18:58 (16) 05:32	20:00 (15) 05:03
18	08:47 16:49	07:54 17:51	06:47 18:46	06:31 20:44	18:59 (16) 05:30	20:01 (15) 05:03
19	08:46 16:51	07:51 17:53	06:45 18:48	06:29 20:46	19:01 (16) 05:28	20:01 (15) 05:03
20	08:45 16:53	07:49 17:55	06:42 18:50	06:26 20:48	19:22 (16) 05:27	20:28 (15) 05:03
21	08:44 16:54	07:47 17:57	06:40 18:51	06:24 20:50	19:02 (16) 05:27	20:02 (15) 05:03
22	08:42 16:56	07:45 17:59	06:37 18:53	06:22 20:52	19:19 (16) 05:25	20:28 (15) 05:03
23	08:41 16:58	07:42 18:01	06:35 18:55	06:20 20:54	19:05 (16) 05:25	20:03 (15) 05:03
24	08:40 17:00	07:40 18:03	06:32 18:57	06:17 20:56	19:16 (16) 05:24	20:28 (15) 05:03
25	08:38 17:02	07:38 18:05	06:30 18:59	06:15 20:58	05:22 21:47	23 20:27 (15) 22:16
26	08:37 17:04	07:36 18:07	06:27 19:01	06:13 20:59	21 20:26 (15) 21:50	22:16
27	08:35 17:06	07:33 18:09	06:25 19:03	06:11 21:01	18 20:25 (15) 05:18	05:04
28	08:34 17:08	07:31 18:11	06:22 19:05	06:08 21:03	15 20:24 (15) 05:17	22:16
29	08:32 17:10	07:29 20:07	06:20 19:07	06:06 21:05	8 20:20 (15) 05:16	05:05
30	08:30 17:12	07:27 20:08	06:17 19:09	06:04 21:07	11 20:21 (15) 21:56	05:06
31	08:29 17:14	07:25 20:10	06:15 19:24 (16)	06:03 21:09	16 20:24 (15) 21:57	22:15
Potential sun hours	248	272	367	421	496	513
Total, worst case			21	616	706	
Sun reduction			0.22	0.34	0.36	
Oper. time red.			1.00	1.00	1.00	
Wind dir. red.			0.59	0.59	0.61	
Total reduction			0.13	0.20	0.22	
Total, real			3	125	156	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: AQ - H43  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	July	August	September	October	November	December
1	05:07 22:15	05:48 21:39	20:10 (15) 20:41 (15)	06:44 20:31	18:55 (16) 19:29 (16)	07:37 17:04
2	05:08 22:14	05:50 21:37	20:10 (15) 20:41 (15)	06:45 20:28	18:54 (16) 19:29 (16)	07:39 17:02
3	05:09 22:14	05:52 21:35	20:10 (15) 20:40 (15)	06:47 20:26	18:54 (16) 19:28 (16)	07:41 17:00
4	05:10 22:13	05:53 21:33	20:10 (15) 20:41 (15)	06:49 20:23	18:54 (16) 19:27 (16)	07:43 16:58
5	05:11 22:13	05:55 21:31	20:10 (15) 20:40 (15)	06:51 20:21	18:54 (16) 19:27 (16)	07:45 16:56
6	05:12 22:12	05:57 21:29	20:10 (15) 20:40 (15)	06:53 20:19	18:54 (16) 19:26 (16)	07:47 16:54
7	05:12 22:12	05:59 21:27	20:11 (15) 20:39 (15)	06:54 20:16	18:55 (16) 19:25 (16)	07:49 16:53
8	05:14 22:11	06:00 21:25	20:11 (15) 20:38 (15)	06:56 20:14	18:55 (16) 19:23 (16)	07:51 16:51
9	05:15 22:10	06:02 21:23	20:12 (15) 20:37 (15)	06:58 20:11	18:55 (16) 19:22 (16)	07:53 16:49
10	05:16 22:09	06:04 21:21	20:13 (15) 20:37 (15)	07:00 20:09	18:57 (16) 19:21 (16)	07:55 16:47
11	05:17 22:08	06:06 21:19	20:13 (15) 20:35 (15)	07:02 20:06	18:58 (16) 19:19 (16)	07:57 16:45
12	05:18 22:07	06:07 21:17	20:15 (15) 20:33 (15)	07:03 20:04	19:00 (16) 19:15 (16)	07:59 16:44
13	05:19 22:06	06:09 21:15	20:17 (15) 20:32 (15)	07:05 20:01	19:03 (16) 19:11 (16)	08:00 16:42
14	05:21 22:05	06:11 21:12	20:19 (15) 20:28 (15)	07:07 19:59	08:02 18:44	08:03 16:40
15	05:22 22:04	20:23 (15) 20:28 (15)	06:13 21:10	07:09 19:56	08:04 18:42	08:05 16:39
16	05:23 22:03	20:20 (15) 20:30 (15)	06:15 21:08	07:11 19:54	08:06 18:40	08:07 16:37
17	05:25 22:02	20:18 (15) 20:32 (15)	06:16 21:06	07:12 19:51	08:08 18:37	08:09 16:36
18	05:26 22:01	20:18 (15) 20:34 (15)	06:18 21:04	07:14 19:49	08:10 18:35	08:11 16:34
19	05:27 21:59	20:16 (15) 20:35 (15)	06:20 21:01	07:16 19:46	08:12 18:33	08:12 16:33
20	05:29 21:58	20:15 (15) 20:35 (15)	06:22 20:59	07:18 19:44	08:14 18:30	08:14 16:31
21	05:30 21:56	20:15 (15) 20:37 (15)	06:24 20:57	07:20 19:41	08:16 18:28	08:16 16:30
22	05:32 21:55	20:14 (15) 20:37 (15)	06:25 20:55	19:09 (16) 19:39	08:18 18:26	08:18 16:29
23	05:33 21:54	20:12 (15) 20:38 (15)	06:27 20:52	19:06 (16) 19:36	08:20 18:24	08:20 16:27
24	05:35 21:52	20:12 (15) 20:39 (15)	06:29 20:50	19:03 (16) 19:25 (16)	08:22 18:21	08:22 16:26
25	05:37 21:51	20:11 (15) 20:39 (15)	06:31 20:48	19:02 (16) 19:31	07:24 17:19	08:23 16:25
26	05:38 21:49	20:12 (15) 20:40 (15)	06:33 20:45	19:00 (16) 19:28 (16)	07:25 17:17	08:25 16:24
27	05:40 21:47	20:11 (15) 20:40 (15)	06:35 20:43	18:59 (16) 19:26 (16)	07:27 17:15	08:27 16:23
28	05:41 21:46	20:11 (15) 20:41 (15)	06:36 20:40	18:58 (16) 19:28 (16)	07:29 17:13	08:28 16:22
29	05:43 21:44	20:10 (15) 20:40 (15)	06:38 20:38	18:57 (16) 19:29 (16)	07:31 17:11	08:30 16:21
30	05:45 21:42	20:10 (15) 20:41 (15)	06:40 20:36	18:56 (16) 19:29 (16)	07:33 17:08	08:32 16:20
31	05:46 21:40	20:09 (15) 20:40 (15)	06:42 20:33	18:55 (16) 19:28 (16)	07:35 17:06	08:58 16:22
Potential sun hours	515	461	383	327	257	230
Total, worst case	389	613	354			
Sun reduction	0.27	0.27	0.29			
Oper. time red.	1.00	1.00	1.00			
Wind dir. red.	0.61	0.60	0.59			
Total reduction	0.16	0.16	0.17			
Total, real	63	101	61			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: AR - H44  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June
1	08:58 16:24	08:27 17:16	07:29 18:13	07:12 20:12	06:02 21:09	19:37 (16) 22:00
2	08:58 16:25	08:25 17:18	07:26 18:15	07:10 20:14	06:00 21:11	33 20:10 (16) 22:01
3	08:58 16:26	08:24 17:20	07:24 18:17	07:07 20:16	05:58 21:12	34 20:11 (16) 22:02
4	08:58 16:27	08:22 17:22	07:21 18:19	07:05 20:18	05:56 21:14	35 20:11 (16) 22:03
5	08:57 16:28	08:20 17:24	07:19 18:21	07:02 20:20	05:54 21:16	35 19:35 (16) 22:05
6	08:57 16:30	08:18 17:26	07:17 18:23	07:00 20:22	05:52 21:18	36 20:11 (16) 22:06
7	08:56 16:31	08:16 17:28	07:14 18:24	06:58 20:24	05:50 21:20	35 19:36 (16) 22:07
8	08:56 16:33	08:14 17:30	07:12 18:26	06:55 20:25	05:48 21:22	35 20:11 (16) 22:08
9	08:55 16:34	08:12 17:32	07:09 18:28	06:53 20:27	05:46 21:23	34 20:10 (16) 22:09
10	08:55 16:36	08:10 17:34	07:07 18:30	06:50 20:29	05:44 21:25	34 20:10 (16) 22:09
11	08:54 16:37	08:08 17:36	07:05 18:32	06:48 20:31	05:42 21:27	33 20:10 (16) 22:10
12	08:53 16:39	08:06 17:38	07:02 18:34	06:45 20:33	05:40 21:29	32 20:09 (16) 22:11
13	08:52 16:40	08:04 17:40	07:00 18:36	06:43 20:35	05:38 21:31	31 20:08 (16) 22:12
14	08:51 16:42	08:02 17:42	06:57 18:38	06:41 20:37	05:37 21:32	30 20:08 (16) 22:12
15	08:50 16:44	08:00 17:44	06:55 18:40	06:38 20:39	05:35 21:34	28 20:07 (16) 22:13
16	08:49 16:45	07:58 17:46	06:52 18:42	06:36 20:41	05:33 21:36	27 20:07 (16) 22:14
17	08:48 16:47	07:56 17:49	06:50 18:44	06:33 20:42	05:32 21:37	26 20:06 (16) 22:14
18	08:47 16:49	07:54 17:51	06:47 18:46	06:31 20:44	05:30 21:39	24 20:06 (16) 22:14
19	08:46 16:51	07:51 17:53	06:45 18:48	06:29 20:46	05:28 21:41	22 20:04 (16) 22:15
20	08:45 16:53	07:49 17:55	06:42 18:50	06:26 20:48	05:27 21:42	19 20:03 (16) 22:15
21	08:44 16:54	07:47 17:57	06:40 18:51	06:24 20:50	05:25 21:44	16 20:02 (16) 22:15
22	08:42 16:56	07:45 17:59	06:37 18:53	06:22 20:52	05:24 21:46	13 20:00 (16) 22:16
23	08:41 16:58	07:42 18:01	06:35 18:55	06:20 20:54	11 19:50 (16) 21:47	7 19:50 (16) 22:16
24	08:40 17:00	07:40 18:03	06:32 18:57	06:17 20:56	17 19:47 (16) 21:49	8 21:00 (15) 22:16
25	08:38 17:02	07:38 18:05	06:30 18:59	06:15 20:58	21 19:44 (16) 21:50	12 21:02 (15) 22:16
26	08:37 17:04	07:36 18:07	06:27 19:01	06:13 20:59	24 19:42 (16) 21:52	15 20:49 (15) 22:16
27	08:35 17:06	07:33 18:09	06:25 19:03	06:11 21:01	27 19:41 (16) 21:53	17 21:04 (15) 22:16
28	08:34 17:08	07:31 18:11	06:22 19:05	06:08 21:03	29 19:40 (16) 21:55	19 20:46 (15) 22:16
29	08:32 17:10		07:20 20:07	06:06 21:05	30 19:39 (16) 21:56	21 21:06 (15) 22:15
30	08:30 17:12		07:17 20:08	06:04 21:07	32 19:38 (16) 21:57	22 20:45 (15) 22:15
31	08:29 17:14		07:15 20:10			
Potential sun hours	248	272	367	421	496	513
Total, worst case				191	792	863
Sun reduction				0.34	0.36	0.26
Oper. time red.				1.00	1.00	1.00
Wind dir. red.				0.60	0.60	0.63
Total reduction				0.21	0.22	0.16
Total, real				39	173	140

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: AR - H44

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	July	August	September	October	November	December				
1	05:07	20:48 (15)	05:48	19:47 (16)	06:44	07:38	07:37	08:33		
	22:15	29	21:17 (15)	21:39	33	20:20 (16)	20:31	19:16	17:04	16:19
2	05:08	20:49 (15)	05:50	19:47 (16)	06:45	07:40	07:39	08:35		
	22:14	29	21:18 (15)	21:37	34	20:21 (16)	20:28	19:14	17:02	16:18
3	05:09	20:49 (15)	05:52	19:46 (16)	06:47	07:42	07:41	08:36		
	22:14	29	21:18 (15)	21:35	34	20:20 (16)	20:26	19:11	17:00	16:17
4	05:10	20:49 (15)	05:53	19:46 (16)	06:49	07:43	07:43	08:38		
	22:13	28	21:17 (15)	21:33	35	20:21 (16)	20:23	19:09	16:58	16:17
5	05:11	20:49 (15)	05:55	19:46 (16)	06:51	07:45	07:45	08:39		
	22:13	28	21:17 (15)	21:31	35	20:21 (16)	20:21	19:06	16:56	16:16
6	05:12	20:50 (15)	05:57	19:45 (16)	06:53	07:47	07:47	08:41		
	22:12	27	21:17 (15)	21:29	36	20:21 (16)	20:19	19:04	16:54	16:16
7	05:13	20:50 (15)	05:59	19:46 (16)	06:54	07:49	07:49	08:42		
	22:12	27	21:17 (15)	21:27	35	20:21 (16)	20:16	19:01	16:53	16:15
8	05:14	20:51 (15)	06:00	19:45 (16)	06:56	07:51	07:51	08:43		
	22:11	26	21:17 (15)	21:25	35	20:20 (16)	20:14	18:59	16:51	16:15
9	05:15	20:51 (15)	06:02	19:45 (16)	06:58	07:53	07:53	08:45		
	22:10	26	21:17 (15)	21:23	35	20:20 (16)	20:11	18:56	16:49	16:14
10	05:16	20:52 (15)	06:04	19:46 (16)	07:00	07:55	07:55	08:46		
	22:09	25	21:17 (15)	21:21	34	20:20 (16)	20:09	18:54	16:47	16:14
11	05:17	20:52 (15)	06:06	19:45 (16)	07:02	07:57	07:57	08:47		
	22:08	25	21:17 (15)	21:19	34	20:19 (16)	20:06	18:51	16:45	16:14
12	05:18	20:53 (15)	06:07	19:46 (16)	07:03	07:58	07:59	08:48		
	22:07	23	21:16 (15)	21:17	33	20:19 (16)	20:04	18:49	16:44	16:14
13	05:19	20:53 (15)	06:09	19:47 (16)	07:05	08:00	08:01	08:49		
	22:06	23	21:16 (15)	21:15	31	20:18 (16)	20:01	18:47	16:42	16:13
14	05:21	20:55 (15)	06:11	19:46 (16)	07:07	08:02	08:03	08:50		
	22:05	21	21:16 (15)	21:12	31	20:17 (16)	19:59	18:44	16:40	16:13
15	05:22	20:55 (15)	06:13	19:47 (16)	07:09	08:04	08:05	08:51		
	22:04	20	21:15 (15)	21:10	29	20:16 (16)	19:56	18:42	16:39	16:13
16	05:23	20:56 (15)	06:15	19:49 (16)	07:11	08:06	08:07	08:52		
	22:03	18	21:14 (15)	21:08	26	20:15 (16)	19:54	18:40	16:37	16:13
17	05:25	20:57 (15)	06:16	19:50 (16)	07:12	08:08	08:09	08:53		
	22:02	16	21:13 (15)	21:06	24	20:14 (16)	19:51	18:37	16:36	16:14
18	05:26	20:59 (15)	06:18	19:51 (16)	07:14	08:10	08:11	08:54		
	22:01	14	21:13 (15)	21:04	20	20:11 (16)	19:49	18:35	16:34	16:14
19	05:27	21:00 (15)	06:20	19:53 (16)	07:16	08:12	08:12	08:55		
	21:59	11	21:11 (15)	21:01	16	20:09 (16)	19:46	18:33	16:33	16:14
20	05:29	21:03 (15)	06:22	19:56 (16)	07:18	08:14	08:14	08:55		
	21:58	5	21:08 (15)	20:59	10	20:06 (16)	19:44	18:30	16:31	16:14
21	05:30	19:59 (16)	06:24	07:20	08:16	08:16	08:56			
	21:56	10	20:09 (16)	20:57	19:41	18:28	16:30	16:15		
22	05:32	19:57 (16)	06:25	07:21	08:18	08:18	08:56			
	21:55	14	20:11 (16)	20:55	19:39	18:26	16:29	16:15		
23	05:33	19:55 (16)	06:27	07:23	08:20	08:20	08:57			
	21:54	17	20:12 (16)	20:52	19:36	18:24	16:27	16:16		
24	05:35	19:54 (16)	06:29	07:25	08:22	08:22	08:57			
	21:52	20	20:14 (16)	20:50	19:33	18:21	16:26	16:16		
25	05:37	19:52 (16)	06:31	07:27	08:24	08:23	08:58			
	21:51	23	20:15 (16)	20:48	19:31	17:19	16:25	16:17		
26	05:38	19:52 (16)	06:33	07:29	08:25	08:25	08:58			
	21:49	24	20:16 (16)	20:45	19:28	17:17	16:24	16:18		
27	05:40	19:50 (16)	06:35	07:31	08:27	08:27	08:58			
	21:47	27	20:17 (16)	20:43	19:26	17:15	16:23	16:19		
28	05:41	19:50 (16)	06:36	07:32	08:29	08:28	08:58			
	21:46	28	20:18 (16)	20:40	19:23	17:13	16:22	16:19		
29	05:43	19:49 (16)	06:38	07:34	08:30	08:30	08:58			
	21:44	29	20:18 (16)	20:38	19:21	17:11	16:21	16:20		
30	05:45	19:48 (16)	06:40	07:36	08:32	08:32	08:58			
	21:42	31	20:19 (16)	20:36	19:18	17:08	16:20	16:21		
31	05:46	19:48 (16)	06:42	07:35	08:33	08:33	08:58			
	21:40	32	20:20 (16)	20:33	19:16	17:06	16:22	16:22		
Potential sun hours	515		461	383	327	257	230			
Total, worst case	705		600							
Sun reduction	0.27		0.27							
Oper. time red.	1.00		1.00							
Wind dir. red.	0.62		0.60							
Total reduction	0.16		0.16							
Total, real	116		98							

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: AS - H45

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January	February	March	April	May	June			
1	08:58 16:24	08:27 17:16	16:21 (2) 16:43 (2)	07:29 18:13	17:13 (3) 25	07:12 17:38 (3)	19:04 (4) 20:12	06:02 21:09	05:12 22:00
2	08:58 16:25	08:25 17:18	16:22 (2) 16:46 (2)	07:26 18:15	17:13 (3) 24	07:10 17:37 (3)	19:06 (4) 20:14	06:00 21:11	05:11 22:01
3	08:58 16:26	08:24 17:20	16:22 (2) 16:48 (2)	07:24 18:17	17:14 (3) 22	07:08 17:36 (3)	19:09 (4) 20:16	05:58 21:12	05:10 22:02
4	08:58 16:28	08:22 17:22	16:22 (2) 16:48 (2)	07:22 18:19	17:14 (3) 20	07:05 17:34 (3)	19:18 (4) 20:18	05:56 21:14	05:09 22:03
5	08:57 16:29	08:20 17:24	16:22 (2) 16:48 (2)	07:19 18:21	17:16 (3) 17	07:03 17:33 (3)	19:18 (4) 20:20	05:54 21:16	05:08 22:04
6	08:57 16:30	08:18 17:26	16:23 (2) 16:48 (2)	07:17 18:23	17:17 (3) 14	07:00 17:31 (3)	19:18 (4) 20:22	05:52 21:18	05:08 22:05
7	08:56 16:31	08:16 17:28	16:23 (2) 16:48 (2)	07:14 18:25	17:21 (3) 6	06:58 17:27 (3)	19:18 (4) 20:24	05:50 21:20	05:07 22:07
8	08:56 16:33	08:14 17:30	16:23 (2) 16:46 (2)	07:12 18:27		06:55 20:26	19:18 (4) 21:22	05:48 22:07	05:06 22:07
9	08:55 16:34	08:12 17:32	16:24 (2) 16:46 (2)	07:09 18:29		06:53 20:27	19:18 (4) 21:23	05:46 22:08	05:06 22:08
10	08:55 16:36	08:10 17:34	16:25 (2) 16:45 (2)	07:07 18:30		06:50 20:29	19:18 (4) 21:25	05:44 22:09	05:05 22:09
11	08:54 16:37	08:08 17:36	16:26 (2) 16:44 (2)	07:05 18:32		06:48 20:31	19:18 (4) 21:27	05:42 22:10	05:05 22:10
12	08:53 16:39	08:06 17:39	16:28 (2) 16:42 (2)	07:02 18:34		06:46 20:33	19:18 (4) 21:29	05:41 22:11	05:04 22:11
13	08:52 16:41	08:04 17:41	16:31 (2) 16:40 (2)	07:00 18:36		06:43 20:35	19:18 (4) 21:30	05:39 22:12	05:04 22:12
14	08:51 16:42	08:02 17:43	06:57 18:38			06:41 20:37	19:18 (4) 21:32	05:37 22:12	05:04 22:12
15	08:50 16:44	08:00 17:45	06:55 18:40			06:38 20:39	19:18 (4) 21:34	05:35 22:13	05:03 22:13
16	08:49 16:46	07:58 17:47	06:52 18:42			06:36 20:41	19:18 (4) 21:36	05:34 22:13	05:03 22:13
17	08:48 16:47	07:56 17:49	06:50 18:44		18:16 (4)	06:34 20:42	19:18 (4) 21:37	05:32 22:14	05:03 22:14
18	08:47 16:49	07:54 17:51	06:47 18:46		18:17 (4)	06:31 20:44	19:18 (4) 21:39	05:30 22:14	05:03 22:14
19	08:46 16:51	07:51 17:53	17:22 (3) 18:48		18:09 (4)	06:29 20:46	19:18 (4) 21:41	05:29 22:15	05:03 22:15
20	08:45 16:53	07:49 17:55	17:19 (3) 17:26 (3)	06:42 18:50		18:07 (4) 18:22 (4)	20:48 21:42	05:27 22:15	05:03 22:15
21	08:44 16:55	07:47 17:57	17:18 (3) 17:29 (3)	06:40 18:52		18:06 (4) 18:25 (4)	20:48 21:44	05:26 22:15	05:03 22:15
22	08:42 16:57	07:45 17:59	17:16 (3) 17:30 (3)	06:37 18:53		18:04 (4) 18:26 (4)	20:48 21:45	05:24 22:16	05:03 22:16
23	08:41 16:58	07:42 18:01	17:15 (3) 17:33 (3)	06:35 18:55		18:04 (4) 18:29 (4)	20:50 21:47	05:23 22:16	05:04 22:16
24	08:40 17:00	07:40 18:03	17:14 (3) 17:35 (3)	06:32 18:57		18:02 (4) 18:30 (4)	20:50 21:49	05:21 22:16	05:04 22:16
25	08:38 17:02	16:26 (2) 18:05	07:38 17:13 (3)	06:30 18:59		18:02 (4) 18:30 (4)	20:50 21:50	05:20 22:16	05:04 22:16
26	08:37 17:04	16:25 (2) 16:30 (2)	07:36 18:07	06:27 19:01		18:02 (4) 18:29 (4)	20:50 21:52	05:19 22:16	05:05 22:16
27	08:35 17:06	16:25 (2) 16:33 (2)	07:33 18:09	06:25 19:03		18:02 (4) 18:29 (4)	21:01 21:53	05:17 22:16	05:05 22:16
28	08:34 17:08	16:24 (2) 16:35 (2)	07:31 18:11	06:22 19:05		18:01 (4) 18:28 (4)	21:01 21:54	05:16 22:16	05:06 22:16
29	08:32 17:10	16:23 (2) 16:37 (2)		07:20 20:07		19:02 (4) 19:28 (4)	21:03 21:56	05:15 22:15	05:06 22:15
30	08:30 17:12	16:22 (2) 16:39 (2)		07:17 20:09		19:02 (4) 19:26 (4)	21:04 21:57	05:14 22:15	05:07 22:15
31	08:29 17:14	16:22 (2) 16:41 (2)		07:15 20:10		19:03 (4) 19:25 (4)	21:07 21:58	05:13 22:15	05:07 22:15
Potential sun hours	248	272	367	421	496	513			
Total, worst case	76	453	439	43					
Sun reduction	0.17	0.22	0.22	0.34					
Oper. time red.	1.00	1.00	1.00	1.00					
Wind dir. red.	0.59	0.59	0.58	0.58					
Total reduction	0.10	0.13	0.13	0.20					
Total, real	8	59	57	9					

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: AS - H45

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	July	August	September	October	November	December
1	05:08	05:48	06:44	07:38	07:37	15:54 (2)   08:33
	22:15	21:39	20:31	19:16	17:05	21 16:15 (2)   16:19
2	05:08	05:50	06:46	07:40	07:39	15:53 (2)   08:35
	22:14	21:37	20:28	19:14	17:02	22 16:15 (2)   16:18
3	05:09	05:52	06:47	07:42	07:41	15:52 (2)   08:36
	22:14	21:35	20:26	19:11	17:00	24 16:16 (2)   16:18
4	05:10	05:54	06:49	07:44	07:43	15:53 (2)   08:38
	22:13	21:33	20:24	19:09	16:59	24 16:17 (2)   16:17
5	05:11	05:55	06:51	07:45	07:45	15:52 (2)   08:39
	22:13	21:31	20:21	19:06	16:57	26 16:18 (2)   16:16
6	05:12	05:57	06:53	07:47	07:47	15:52 (2)   08:41
	22:12	21:29	20:19	19:04	16:55	26 16:18 (2)   16:16
7	05:13	05:59	06:55	07:49	17:55 (3)   07:49	15:52 (2)   08:42
	22:11	21:27	20:16	19:01	18:05 (3)   16:53	26 16:18 (2)   16:15
8	05:14	06:01	06:56	07:51	17:52 (3)   07:51	15:52 (2)   08:43
	22:11	21:25	20:14	18:59	16 18:08 (3)   16:51	26 16:18 (2)   16:15
9	05:15	06:02	06:58	19:03 (4)   07:53	17:50 (3)   07:53	15:52 (2)   08:45
	22:10	21:23	20:11	19:11 (4)   18:56	19 18:09 (3)   16:49	24 16:16 (2)   16:15
10	05:16	06:04	07:00	19:00 (4)   07:55	17:49 (3)   07:55	15:53 (2)   08:46
	22:09	21:21	20:09	14 19:14 (4)   18:54	21 18:10 (3)   16:47	22 16:15 (2)   16:14
11	05:17	06:06	07:02	18:57 (4)   07:57	17:48 (3)   07:57	15:54 (2)   08:47
	22:08	21:19	20:06	19 19:16 (4)   18:52	23 18:11 (3)   16:46	19 16:13 (2)   16:14
12	05:18	06:08	07:04	18:55 (4)   07:59	17:47 (3)   07:59	15:54 (2)   08:48
	22:07	21:17	20:04	21 19:16 (4)   18:49	24 18:11 (3)   16:44	17 16:11 (2)   16:14
13	05:20	06:09	07:05	18:54 (4)   08:00	17:46 (3)   08:01	15:55 (2)   08:49
	22:06	21:15	20:01	23 19:17 (4)   18:47	25 18:11 (3)   16:42	14 16:09 (2)   16:14
14	05:21	06:11	07:07	18:53 (4)   08:02	17:46 (3)   08:03	15:56 (2)   08:50
	22:05	21:12	19:59	25 19:18 (4)   18:44	25 18:11 (3)   16:41	11 16:07 (2)   16:14
15	05:22	06:13	07:09	18:52 (4)   08:04	17:45 (3)   08:05	15:57 (2)   08:51
	22:04	21:10	19:56	26 19:18 (4)   18:42	26 18:11 (3)   16:39	8 16:05 (2)   16:14
16	05:24	06:15	07:11	18:50 (4)   08:06	17:45 (3)   08:07	15:58 (2)   08:52
	22:03	21:08	19:54	28 19:18 (4)   18:40	25 18:10 (3)   16:37	5 16:03 (2)   16:14
17	05:25	06:17	07:13	18:50 (4)   08:08	17:46 (3)   08:09	15:59 (2)   08:53
	22:02	21:06	19:51	28 19:18 (4)   18:37	22 18:08 (3)   16:36	2 16:01 (2)   16:14
18	05:26	06:18	07:14	18:50 (4)   08:10	17:46 (3)   08:11	08:54
	22:00	21:04	19:49	27 19:17 (4)   18:35	19 18:05 (3)   16:34	16:14
19	05:28	06:20	07:16	18:50 (4)   08:12	17:47 (3)   08:12	08:54
	21:59	21:01	19:46	27 19:17 (4)   18:33	16 18:03 (3)   16:33	16:14
20	05:29	06:22	07:18	18:50 (4)   08:14	17:47 (3)   08:14	08:55
	21:58	20:59	19:44	26 19:16 (4)   18:31	14 18:01 (3)   16:31	16:15
21	05:31	06:24	07:20	18:49 (4)   08:16	17:49 (3)   08:16	08:56
	21:56	20:57	19:41	23 19:12 (4)   18:28	9 17:58 (3)   16:30	16:15
22	05:32	06:26	07:22	18:50 (4)   08:18	17:50 (3)   08:18	08:56
	21:55	20:55	19:39	20 19:10 (4)   18:26	6 17:56 (3)   16:29	16:16
23	05:34	06:27	07:23	18:51 (4)   08:20	08:20	08:57
	21:53	20:52	19:36	17 19:08 (4)   18:24	16:28	16:16
24	05:35	06:29	07:25	18:52 (4)   08:22	08:22	08:57
	21:52	20:50	19:34	13 19:05 (4)   18:22	16:26	16:17
25	05:37	06:31	07:27	18:54 (4)   07:24	08:23	08:58
	21:50	20:48	19:31	9 19:03 (4)   17:19	16:25	16:17
26	05:38	06:33	07:29	18:56 (4)   07:26	08:25	08:58
	21:49	20:45	19:29	4 19:00 (4)   17:17	16:24	16:18
27	05:40	06:35	07:31	07:27	08:27	08:58
	21:47	20:43	19:26	17:15	16:23	16:19
28	05:42	06:37	07:33	07:29	08:28	08:58
	21:46	20:40	19:24	17:13	16:22	16:20
29	05:43	06:38	07:34	07:31	16:00 (2)   08:30	08:58
	21:44	20:38	19:21	17:11	10 16:10 (2)   16:21	16:21
30	05:45	06:40	07:36	07:33	15:58 (2)   08:32	08:58
	21:42	20:36	19:19	17:09	14 16:12 (2)   16:20	16:22
31	05:47	06:42	07:35	07:35	15:56 (2)   08:58	08:58
	21:40	20:33	17:07	18 16:14 (2)   16:23	16:23	16:23
Potential sun hours	515	461	382	328	257	231
Total, worst case			358	342	317	
Sun reduction			0.29	0.23	0.20	
Oper. time red.			1.00	1.00	1.00	
Wind dir. red.			0.58	0.58	0.59	
Total reduction			0.17	0.14	0.12	
Total, real			61	47	37	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: AT - H46  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June
1	08:58	15:21 (7) 08:27	16:09 (8) 07:29	07:12	06:02	05:12
	16:24	22 15:43 (7) 17:16	29 16:38 (8) 18:13	20:12	21:09	18 20:49 (10)
2	08:58	15:21 (7) 08:25	16:09 (8) 07:26	07:10	06:00	05:11
	16:25	23 15:44 (7) 17:18	30 16:39 (8) 18:15	20:14	21:11	16 20:48 (10)
3	08:58	15:22 (7) 08:24	16:08 (8) 07:24	07:07	05:58	05:10
	16:26	23 15:45 (7) 17:20	32 16:40 (8) 18:17	20:16	21:13	15 20:47 (10)
4	08:58	15:21 (7) 08:22	16:08 (8) 07:22	07:05	05:56	05:09
	16:27	24 15:45 (7) 17:22	33 16:41 (8) 18:19	20:18	21:14	13 20:47 (10)
5	08:57	15:21 (7) 08:20	16:07 (8) 07:19	07:03	05:54	20:37 (10) 05:08
	16:29	25 15:46 (7) 17:24	34 16:41 (8) 18:21	20:20	21:16	4 20:41 (10) 22:05
6	08:57	15:22 (7) 08:18	16:07 (8) 07:17	07:00	05:52	11 20:46 (10)
	16:30	25 15:47 (7) 17:26	35 16:42 (8) 18:23	20:22	21:18	12 20:45 (10) 22:06
7	08:56	15:22 (7) 08:16	16:07 (8) 07:14	06:58	05:50	20:31 (10) 05:07
	16:31	25 15:47 (7) 17:28	35 16:42 (8) 18:25	20:24	21:20	16 20:47 (10) 22:07
8	08:56	15:22 (7) 08:14	16:07 (8) 07:12	06:55	19:49 (9) 05:48	20:29 (10) 05:06
	16:33	26 15:48 (7) 17:30	35 16:42 (8) 18:27	20:26	3 19:52 (9) 21:22	19 20:48 (10) 22:08
9	08:55	15:23 (7) 08:12	16:06 (8) 07:09	06:53	19:44 (9) 05:46	20:28 (10) 05:05
	16:34	26 15:49 (7) 17:32	35 16:41 (8) 18:28	20:27	13 19:57 (9) 21:23	21 20:49 (10) 22:09
10	08:55	15:23 (7) 08:10	16:07 (8) 07:07	06:50	19:42 (9) 05:44	20:27 (10) 05:05
	16:36	27 15:50 (7) 17:34	35 16:42 (8) 18:30	20:29	17 19:59 (9) 21:25	23 20:50 (10) 22:09
11	08:54	15:23 (7) 08:08	16:07 (8) 07:05	06:48	19:40 (9) 05:42	20:26 (10) 05:04
	16:37	27 15:50 (7) 17:36	35 16:42 (8) 18:32	20:31	20 20:00 (9) 21:27	25 20:51 (10) 22:10
12	08:53	15:23 (7) 08:06	16:07 (8) 07:02	06:45	19:38 (9) 05:40	20:25 (10) 05:04
	16:39	28 15:51 (7) 17:38	34 16:41 (8) 18:34	20:33	23 20:01 (9) 21:29	26 20:51 (10) 22:11
13	08:52	15:23 (7) 08:04	16:08 (8) 07:00	06:43	19:37 (9) 05:39	20:25 (10) 05:04
	16:40	28 15:51 (7) 17:40	33 16:41 (8) 18:36	20:35	24 20:01 (9) 21:31	26 20:51 (10) 22:12
14	08:51	15:24 (7) 08:02	16:09 (8) 06:57	06:41	19:36 (9) 05:37	20:25 (10) 05:03
	16:42	28 15:52 (7) 17:42	32 16:41 (8) 18:38	20:37	26 20:02 (9) 21:32	27 20:52 (10) 22:12
15	08:50	15:23 (7) 08:00	16:09 (8) 06:55	06:38	19:36 (9) 05:35	20:24 (10) 05:03
	16:44	29 15:52 (7) 17:45	30 16:39 (8) 18:40	20:39	27 20:03 (9) 21:34	28 20:52 (10) 22:13
16	08:49	15:24 (7) 07:58	16:10 (8) 06:52	06:36	19:35 (9) 05:33	20:25 (10) 05:03
	16:46	28 15:52 (7) 17:47	29 16:39 (8) 18:42	20:41	28 20:03 (9) 21:36	27 20:52 (10) 22:14
17	08:48	15:24 (7) 07:56	16:11 (8) 06:50	06:34	19:34 (9) 05:32	20:24 (10) 05:03
	16:47	29 15:53 (7) 17:49	27 16:38 (8) 18:44	20:43	28 20:02 (9) 21:37	28 20:52 (10) 22:14
18	08:47	15:25 (7) 07:54	16:13 (8) 06:47	06:31	19:34 (9) 05:30	20:24 (10) 05:03
	16:49	28 15:53 (7) 17:51	24 16:37 (8) 18:46	20:44	28 20:02 (9) 21:39	29 20:53 (10) 22:14
19	08:46	15:25 (7) 07:51	16:14 (8) 06:45	06:29	19:34 (9) 05:28	20:24 (10) 05:03
	16:51	28 15:53 (7) 17:53	20 16:34 (8) 18:48	20:46	28 20:02 (9) 21:41	28 20:52 (10) 22:15
20	08:45	15:26 (7) 07:49	16:17 (8) 06:42	06:27	19:34 (9) 05:27	20:24 (10) 05:03
	16:53	27 15:53 (7) 17:55	15 16:32 (8) 18:50	20:48	27 20:01 (9) 21:42	28 20:52 (10) 22:15
21	08:44	15:26 (7) 07:47	16:22 (8) 06:40	06:24	19:34 (9) 05:25	20:25 (10) 05:03
	16:54	27 15:53 (7) 17:57	6 16:28 (8) 18:52	20:50	26 20:00 (9) 21:44	28 20:53 (10) 22:15
22	08:42	15:27 (7) 07:45	06:37	06:22	19:35 (9) 05:24	20:24 (10) 05:03
	16:56	26 15:53 (7) 17:59	18:53	20:52	24 19:59 (9) 21:46	28 20:52 (10) 22:16
23	08:41	15:27 (7) 07:43	06:35	06:20	19:36 (9) 05:22	20:25 (10) 05:03
	16:58	26 15:53 (7) 18:01	18:55	20:54	23 19:59 (9) 21:47	27 20:52 (10) 22:16
24	08:40	15:28 (7) 07:40	06:32	06:17	19:37 (9) 05:21	20:26 (10) 05:04
	17:00	25 15:53 (7) 18:03	18:57	20:56	20 19:57 (9) 21:49	26 20:52 (10) 22:16
25	08:38	15:29 (7) 07:38	06:30	06:15	19:38 (9) 05:20	20:26 (10) 05:04
	17:02	23 15:52 (7) 18:05	18:59	20:58	18 19:56 (9) 21:50	26 20:52 (10) 22:16
26	08:37	15:30 (7) 07:36	06:27	06:13	19:39 (9) 05:18	20:27 (10) 05:05
	17:04	33 16:27 (8) 18:07	19:01	20:59	14 19:53 (9) 21:52	25 20:52 (10) 22:16
27	08:35	15:32 (7) 07:33	06:25	06:11	19:42 (9) 05:17	20:28 (10) 05:05
	17:06	37 16:31 (8) 18:09	19:03	21:01	8 19:50 (9) 21:53	23 20:51 (10) 22:16
28	08:34	15:33 (7) 07:31	06:22	06:09	05:16	20:28 (10) 05:06
	17:08	37 16:33 (8) 18:11	19:05	21:03	23 20:51 (10) 22:16	12 21:39 (11)
29	08:32	15:35 (7) 07:29	07:20	06:06	05:15	20:29 (10) 05:06
	17:10	36 16:34 (8) 18:07	20:07	21:05	22 20:51 (10) 22:15	11 21:39 (11)
30	08:31	15:38 (7) 07:27	07:17	06:04	05:14	20:29 (10) 05:07
	17:12	33 16:35 (8) 18:04	20:09	21:07	21:57	21 20:50 (10) 22:15
31	08:29	16:09 (8) 07:15	07:15	06:03	05:13	20:30 (10)
	17:14	27 16:36 (8) 18:05	20:10	21:09	20 21:59	20 20:50 (10)
Potential sun hours	248	272	367	421	496	513
Total, worst case	856	618	425	425	636	360
Sun reduction	0.17	0.22	0.34	0.36	0.36	0.26
Oper. time red.	1.00	1.00	1.00	1.00	1.00	1.00
Wind dir. red.	0.62	0.59	0.59	0.62	0.62	0.64
Total reduction	0.11	0.13	0.20	0.23	0.23	0.16
Total, real	91	82	86	143	143	59

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: AT - H46
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

Operational time

Table with 17 columns: N, NNE, NE, ENE, E, ESE, SE, SSE, S, SSW, SW, WSW, W, WNW, NW, NNW, Sum. Values range from 263 to 8,760.

Main data table showing shadow calculations for July through December. Columns include month, day, sun rise/set times, and minutes with flicker. Includes summary rows for 'Potential sun hours' and 'Total, real'.

Table layout: For each day in each month the following matrix apply

Matrix defining day in month, sun rise/set times, minutes with flicker, and first/last times with flicker (WTG causing flicker).

## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: AU - H47  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June
1	08:58 16:24	08:27 17:16	07:29 18:13	07:12 20:12	18:30 (16) 06:02	19:31 (15) 05:11
2	08:58 16:25	08:25 17:18	07:26 18:15	07:10 20:14	20 18:50 (16) 21:09	24 19:55 (15) 22:00
3	08:58 16:26	08:24 17:20	07:24 18:17	07:07 20:16	15 18:48 (16) 21:11	22 19:54 (15) 22:01
4	08:58 16:27	08:22 17:22	07:21 18:19	07:05 20:18	6 18:42 (16) 05:58	19 19:52 (15) 22:02
5	08:57 16:28	08:20 17:24	07:19 18:21	07:02 20:20	15 19:50 (15) 22:03	05:08
6	08:57 16:30	08:18 17:26	07:17 18:23	07:00 20:22	9 19:47 (15) 22:05	05:07
7	08:56 16:31	08:16 17:28	07:14 18:24	06:58 20:24	21:18 22:06	05:06
8	08:56 16:33	08:14 17:30	07:12 18:26	06:55 20:25	05:48 21:22	05:06
9	08:55 16:34	08:12 17:32	07:09 18:28	06:53 20:27	05:46 21:23	22:07
10	08:55 16:36	08:10 17:34	07:07 18:30	06:50 20:29	05:44 21:25	22:09
11	08:54 16:37	08:08 17:36	07:05 18:32	06:48 20:31	05:42 21:27	22:10
12	08:53 16:39	08:06 17:38	07:02 18:34	06:45 20:33	19:44 (15) 05:40	05:04
13	08:52 16:40	08:04 17:40	07:00 18:36	6 17:43 (16) 06:43	6 19:50 (15) 21:29	22:11
14	08:51 16:42	08:02 17:42	06:57 18:38	15 17:49 (16) 20:35	14 19:53 (15) 21:31	22:12
15	08:50 16:44	08:00 17:44	06:55 18:40	20 17:55 (16) 20:39	19 19:56 (15) 21:32	22:12
16	08:49 16:45	07:58 17:46	06:52 18:42	24 17:52 (16) 20:37	19 19:56 (15) 21:32	22:12
17	08:48 16:47	07:56 17:49	06:50 18:44	27 17:55 (16) 20:39	23 19:58 (15) 21:34	22:13
18	08:47 16:49	07:54 17:51	06:47 18:46	29 17:58 (16) 20:44	29 20:00 (15) 21:39	22:15
19	08:46 16:51	07:51 17:53	06:45 18:48	30 17:59 (16) 20:46	30 20:01 (15) 21:41	22:15
20	08:45 16:53	07:49 17:55	06:42 18:50	32 17:59 (16) 20:48	31 20:00 (15) 21:42	22:15
21	08:44 16:54	07:47 17:57	06:40 18:51	33 18:00 (16) 20:50	31 20:00 (15) 21:44	22:15
22	08:42 16:56	07:45 17:59	06:37 18:53	33 17:59 (16) 20:52	31 20:00 (15) 21:46	22:16
23	08:41 16:58	07:42 18:01	06:35 18:55	34 17:26 (16) 06:20	33 19:28 (15) 05:22	05:03
24	08:40 17:00	07:40 18:03	06:32 18:57	34 18:00 (16) 20:54	33 20:01 (15) 21:47	22:16
25	08:38 17:02	07:38 18:05	06:30 18:59	33 17:25 (16) 06:17	32 19:28 (15) 05:21	05:04
26	08:37 17:04	07:36 18:07	06:27 19:01	34 17:59 (16) 20:56	32 20:00 (15) 21:49	22:16
27	08:35 17:06	07:33 18:09	06:25 19:03	33 17:26 (16) 06:15	31 19:28 (15) 05:20	05:04
28	08:34 17:08	07:31 18:11	06:22 19:05	33 17:59 (16) 20:58	31 19:59 (15) 21:50	22:16
29	08:32 17:10	07:29 18:13	06:20 19:07	33 17:25 (16) 06:13	31 19:28 (15) 05:18	05:04
30	08:31 17:12	07:27 18:15	06:18 19:09	33 17:58 (16) 20:59	31 19:59 (15) 21:52	22:16
31	08:29 17:14	07:25 18:17	06:16 19:11	32 17:26 (16) 06:11	30 19:28 (15) 05:17	05:05
				32 17:58 (16) 21:01	30 19:58 (15) 21:53	22:16
				30 17:26 (16) 06:08	29 19:29 (15) 05:16	05:05
				30 17:56 (16) 21:03	29 19:58 (15) 21:55	22:16
				29 18:27 (16) 06:06	29 19:29 (15) 05:15	05:06
				28 18:55 (16) 21:05	28 19:57 (15) 21:56	22:15
				28 18:27 (16) 06:04	28 19:30 (15) 05:14	05:07
				26 18:53 (16) 21:07	26 19:56 (15) 21:57	22:15
				23 18:29 (16) 21:09	23 21:59	22:15
Potential sun hours	248	272	367	421	496	513
Total, worst case			522	547	89	
Sun reduction			0.22	0.34	0.36	
Oper. time red.			1.00	1.00	1.00	
Wind dir. red.			0.57	0.59	0.59	
Total reduction			0.13	0.20	0.21	
Total, real			66	110	19	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: AU - H47

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	July	August	September	October	November	December
1	05:07	05:48	06:44	07:38	07:37	08:33
	22:15	21:39	20:31	19:16	17:04	16:19
2	05:08	05:50	06:45	07:40	07:39	08:35
	22:14	21:37	20:28	19:14	17:02	16:18
3	05:09	05:52	06:47	07:42	07:41	08:36
	22:14	21:35	20:26	19:11	17:00	16:17
4	05:10	05:53	06:49	07:43	07:43	08:38
	22:13	21:33	20:23	19:09	16:58	16:17
5	05:11	05:55	06:51	07:45	07:45	08:39
	22:13	21:31	20:21	19:06	16:56	16:16
6	05:12	05:57	06:53	07:47	07:47	08:41
	22:12	21:29	20:19	19:04	16:54	16:16
7	05:12	05:59	06:54	07:49	07:49	08:42
	22:12	21:27	20:16	19:01	16:53	16:15
8	05:14	06:00	19:46 (15) 06:56	07:51	07:51	08:43
	22:11	21:25	12 19:58 (15) 20:14	18:59	16:51	16:15
9	05:15	06:02	19:44 (15) 06:58	18:32 (16) 07:53	07:53	08:45
	22:10	21:23	16 20:00 (15) 20:11	3 18:35 (16) 18:56	16:49	16:14
10	05:16	06:04	19:42 (15) 07:00	18:26 (16) 07:55	07:55	08:46
	22:09	21:21	20 20:02 (15) 20:09	14 18:40 (16) 18:54	16:47	16:14
11	05:17	06:06	19:40 (15) 07:02	18:23 (16) 07:57	07:57	08:47
	22:08	21:19	23 20:03 (15) 20:06	20 18:43 (16) 18:51	16:45	16:14
12	05:18	06:07	19:39 (15) 07:03	18:20 (16) 07:58	07:59	08:48
	22:07	21:17	25 20:04 (15) 20:04	23 18:43 (16) 18:49	16:44	16:14
13	05:19	06:09	19:38 (15) 07:05	18:19 (16) 08:00	08:01	08:49
	22:06	21:15	27 20:05 (15) 20:01	26 18:45 (16) 18:47	16:42	16:13
14	05:21	06:11	19:37 (15) 07:07	18:17 (16) 08:02	08:03	08:50
	22:05	21:12	28 20:05 (15) 19:59	29 18:46 (16) 18:44	16:40	16:13
15	05:22	06:13	19:36 (15) 07:09	18:16 (16) 08:04	08:05	08:51
	22:04	21:10	29 20:05 (15) 19:56	30 18:46 (16) 18:42	16:39	16:13
16	05:23	06:15	19:36 (15) 07:11	18:14 (16) 08:06	08:07	08:52
	22:03	21:08	30 20:06 (15) 19:54	32 18:46 (16) 18:40	16:37	16:13
17	05:25	06:16	19:35 (15) 07:12	18:14 (16) 08:08	08:09	08:53
	22:02	21:06	32 20:07 (15) 19:51	32 18:46 (16) 18:37	16:36	16:14
18	05:26	06:18	19:34 (15) 07:14	18:13 (16) 08:10	08:11	08:54
	22:01	21:04	32 20:06 (15) 19:49	33 18:46 (16) 18:35	16:34	16:14
19	05:27	06:20	19:34 (15) 07:16	18:13 (16) 08:12	08:12	08:55
	21:59	21:01	32 20:06 (15) 19:46	33 18:46 (16) 18:33	16:33	16:14
20	05:29	06:22	19:34 (15) 07:18	18:12 (16) 08:14	08:14	08:55
	21:58	20:59	32 20:06 (15) 19:44	33 18:45 (16) 18:30	16:31	16:14
21	05:30	06:24	19:33 (15) 07:20	18:12 (16) 08:16	08:16	08:56
	21:57	20:57	32 20:05 (15) 19:41	33 18:45 (16) 18:28	16:30	16:15
22	05:32	06:25	19:33 (15) 07:21	18:12 (16) 08:18	08:18	08:56
	21:55	20:55	32 20:05 (15) 19:39	33 18:45 (16) 18:26	16:29	16:15
23	05:33	06:27	19:34 (15) 07:23	18:12 (16) 08:20	08:20	08:57
	21:54	20:52	31 20:05 (15) 19:36	32 18:44 (16) 18:24	16:27	16:16
24	05:35	06:29	19:33 (15) 07:25	18:12 (16) 08:22	08:22	08:57
	21:52	20:50	30 20:03 (15) 19:33	31 18:43 (16) 18:21	16:26	16:16
25	05:37	06:31	19:34 (15) 07:27	18:12 (16) 07:24	08:23	08:58
	21:51	20:48	29 20:03 (15) 19:31	29 18:41 (16) 17:19	16:25	16:17
26	05:38	06:33	19:35 (15) 07:29	18:13 (16) 07:26	08:25	08:58
	21:49	20:45	27 20:02 (15) 19:28	27 18:40 (16) 17:17	16:24	16:18
27	05:40	06:35	19:36 (15) 07:31	18:14 (16) 07:27	08:27	08:58
	21:47	20:43	25 20:01 (15) 19:26	25 18:39 (16) 17:15	16:23	16:19
28	05:41	06:36	19:36 (15) 07:32	18:15 (16) 07:29	08:28	08:58
	21:46	20:40	22 19:58 (15) 19:23	22 18:37 (16) 17:13	16:22	16:19
29	05:43	06:38	19:38 (15) 07:34	18:17 (16) 07:31	08:30	08:58
	21:44	20:38	18 19:56 (15) 19:21	17 18:34 (16) 17:11	16:21	16:20
30	05:45	06:40	19:40 (15) 07:36	18:20 (16) 07:33	08:32	08:58
	21:42	20:36	14 19:54 (15) 19:18	11 18:31 (16) 17:08	16:20	16:21
31	05:46	06:42	19:44 (15)	07:35	08:58	
	21:40	20:33	4 19:48 (15)	17:06	16:22	
Potential sun hours	515	461	383	327	257	230
Total, worst case		602	568			
Sun reduction		0.27	0.29			
Oper. time red.		1.00	1.00			
Wind dir. red.		0.59	0.57			
Total reduction		0.16	0.17			
Total, real		97	94			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)



## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: AV - H48  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January	February	March	April	May	June
1	08:58 16:24	08:27 17:16	07:29 18:13	07:12 20:12	19:02 (7) 06:02	20:03 (8) 05:12
2	08:58 16:25	08:25 17:18	07:26 18:15	07:10 20:14	19:02 (7) 06:00	20:02 (8) 05:11
3	08:58 16:26	08:24 17:20	07:24 18:17	07:07 20:16	19:00 (7) 05:58	20:01 (8) 05:10
4	08:58 16:27	08:22 17:22	07:21 18:19	07:05 20:18	19:00 (7) 05:56	20:01 (8) 05:09
5	08:57 16:29	08:20 17:24	07:19 18:21	07:03 20:20	19:01 (7) 05:54	20:01 (8) 05:08
6	08:57 16:30	08:18 17:26	07:17 18:23	07:00 20:22	19:00 (7) 05:52	20:01 (8) 05:07
7	08:56 16:31	08:16 17:28	07:14 18:25	06:58 20:24	19:00 (7) 05:50	20:00 (8) 05:07
8	08:56 16:33	08:14 17:30	07:12 18:26	06:55 20:26	19:00 (7) 05:48	20:00 (8) 05:06
9	08:55 16:34	08:12 17:32	07:09 18:28	06:53 20:27	19:01 (7) 05:46	20:00 (8) 05:05
10	08:55 16:36	08:10 17:34	07:07 18:30	06:50 20:29	19:02 (7) 05:44	20:01 (8) 05:05
11	08:54 16:37	08:08 17:36	07:05 18:32	06:48 20:31	19:02 (7) 05:42	20:01 (8) 05:04
12	08:53 16:39	08:06 17:38	07:02 18:34	06:45 20:33	19:03 (7) 05:40	20:01 (8) 05:04
13	08:52 16:40	08:04 17:40	07:00 18:36	06:43 20:35	19:04 (7) 05:39	20:01 (8) 05:04
14	08:51 16:42	08:02 17:43	06:57 18:38	06:41 20:37	19:06 (7) 05:37	20:01 (8) 05:03
15	08:50 16:44	08:00 17:45	06:55 18:40	06:38 20:39	19:09 (7) 05:35	20:02 (8) 05:03
16	08:49 16:46	07:58 17:47	06:52 18:42	06:36 20:41	19:21 (7) 05:33	20:32 (8) 05:03
17	08:48 16:47	07:56 17:49	06:50 18:44	06:34 20:42	20:32 (8) 05:32	22:14 05:03
18	08:47 16:49	07:54 17:51	06:47 18:46	06:31 20:44	20:31 (8) 05:30	22:14 05:03
19	08:46 16:51	07:51 17:53	06:45 18:48	06:29 20:46	20:31 (8) 05:28	05:03 21:35 (9)
20	08:45 16:53	07:49 17:55	06:42 18:50	06:27 20:48	20:30 (8) 05:27	22:15 05:03
21	08:44 16:55	07:47 17:57	06:40 18:51	06:24 20:50	20:29 (8) 05:25	22:15 05:03
22	08:42 16:56	07:45 17:59	06:37 18:53	06:22 20:52	20:28 (8) 05:24	05:03 21:36 (9)
23	08:41 16:58	07:42 18:01	06:35 18:55	06:20 20:54	20:27 (8) 05:22	05:03 21:36 (9)
24	08:40 17:00	07:40 18:03	06:32 18:57	06:17 20:56	20:26 (8) 05:21	22:16 05:04
25	08:38 17:02	07:38 18:05	06:30 18:59	06:15 18:25 (7)	20:13 (8) 05:20	22:16 05:05
26	08:37 17:04	07:36 18:07	06:27 19:01	06:13 18:12 (7)	20:09 (8) 05:18	05:05 21:37 (9)
27	08:35 17:06	07:33 18:09	06:25 19:03	06:11 18:09 (7)	20:08 (8) 05:17	05:05 22:16
28	08:34 17:08	07:31 18:11	06:22 19:05	06:09 18:32 (7)	20:07 (8) 05:16	05:06 22:16
29	08:32 17:10	07:29 18:13	06:20 19:07	06:06 19:06 (7)	20:06 (8) 05:15	05:06 22:15
30	08:30 17:12	07:27 18:15	06:17 19:09	06:04 19:33 (7)	20:04 (8) 05:14	05:07 22:15
31	08:29 17:14	07:25 18:17	06:15 19:11	06:03 19:03 (7)	20:03 (8) 05:13	05:07 22:15
Potential sun hours	248	272	367	421	496	513
Total, worst case			159	556	709	28
Sun reduction			0.22	0.34	0.36	0.26
Oper. time red.			1.00	1.00	1.00	1.00
Wind dir. red.			0.59	0.59	0.61	0.64
Total reduction			0.13	0.20	0.22	0.17
Total, real			21	113	157	5

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: AV - H48

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	July	August	September	October	November	December	
1	05:07 22:15	05:48 21:39	20:11 (8) 20:44 (8)	06:44 20:31	19:01 (7) 19:28 (7)	07:37 17:04	08:33 16:19
2	05:08 22:14	05:50 21:37	20:11 (8) 20:45 (8)	06:45 20:28	19:00 (7) 19:29 (7)	07:40 17:02	08:35 16:18
3	05:09 22:14	05:52 21:35	20:10 (8) 20:44 (8)	06:47 20:26	18:59 (7) 19:29 (7)	07:41 17:00	08:36 16:18
4	05:10 22:13	05:53 21:33	20:10 (8) 20:45 (8)	06:49 20:24	18:57 (7) 19:29 (7)	07:44 16:58	08:38 16:17
5	05:11 22:13	05:55 21:31	20:11 (8) 20:45 (8)	06:51 20:21	18:56 (7) 19:29 (7)	07:45 19:06	08:39 16:16
6	05:12 22:12	05:57 21:29	20:10 (8) 20:44 (8)	06:53 20:19	18:56 (7) 19:29 (7)	07:47 19:04	08:41 16:16
7	05:13 22:12	05:59 21:27	20:10 (8) 20:44 (8)	06:54 20:16	18:56 (7) 19:30 (7)	07:49 19:01	08:42 16:15
8	05:14 22:11	06:00 21:25	20:11 (8) 20:44 (8)	06:56 20:14	18:55 (7) 19:28 (7)	07:51 18:59	08:43 16:15
9	05:15 22:10	06:02 21:23	20:10 (8) 20:43 (8)	06:58 20:11	18:55 (7) 19:28 (7)	07:53 18:56	08:45 16:14
10	05:16 22:09	06:04 21:21	20:11 (8) 20:43 (8)	07:00 20:09	18:55 (7) 19:28 (7)	07:55 18:54	08:46 16:14
11	05:17 22:08	06:06 21:19	20:12 (8) 20:43 (8)	07:02 20:06	18:55 (7) 19:27 (7)	07:57 18:52	08:47 16:14
12	05:18 22:07	06:08 21:17	20:11 (8) 20:41 (8)	07:04 20:04	18:55 (7) 19:26 (7)	07:59 18:49	08:48 16:14
13	05:19 22:06	06:09 21:15	20:12 (8) 20:41 (8)	07:05 20:01	18:55 (7) 19:25 (7)	08:00 18:47	08:49 16:14
14	05:21 22:05	06:11 21:12	20:14 (8) 20:40 (8)	07:07 19:59	18:56 (7) 19:24 (7)	08:02 18:44	08:50 16:14
15	05:22 22:04	06:13 21:10	20:14 (8) 20:38 (8)	07:09 19:56	18:57 (7) 19:22 (7)	08:04 18:42	08:51 16:14
16	05:23 22:03	06:15 21:08	20:15 (8) 20:36 (8)	07:11 19:54	18:58 (7) 19:19 (7)	08:06 18:40	08:52 16:14
17	05:25 22:02	06:17 21:06	20:17 (8) 20:34 (8)	07:13 19:51	18:59 (7) 19:17 (7)	08:08 18:37	08:53 16:14
18	05:26 22:00	20:24 (8) 20:31 (8)	06:18 21:04	07:14 20:31 (8)	19:02 (7) 19:49	08:10 18:35	08:54 16:14
19	05:28 21:59	20:22 (8) 20:34 (8)	06:20 21:01	07:16 19:46	08:12 18:33	08:12 16:33	08:54 16:14
20	05:29 21:58	20:20 (8) 20:35 (8)	06:22 20:59	07:18 19:44	08:14 18:30	08:14 16:31	08:55 16:15
21	05:31 21:56	15 20:19 (8) 18 20:37 (8)	20:59 20:57	19:44 19:41	18:30 18:28	16:31 16:30	16:15 16:15
22	05:32 21:55	20:17 (8) 21 20:38 (8)	06:26 20:55	07:22 19:39	08:18 18:26	08:18 16:29	08:56 16:15
23	05:34 21:54	20:17 (8) 23 20:40 (8)	06:27 20:52	07:23 19:36	08:20 18:24	08:20 16:27	08:57 16:16
24	05:35 21:52	20:16 (8) 24 20:40 (8)	06:29 20:50	07:25 19:34	08:22 18:21	08:22 16:26	08:57 16:17
25	05:37 21:50	20:14 (8) 27 20:41 (8)	06:31 20:48	07:27 19:31	07:24 17:19	08:23 16:25	08:58 16:17
26	05:38 21:49	20:14 (8) 28 20:42 (8)	06:33 20:45	07:29 19:29	07:26 17:17	08:25 16:24	08:58 16:18
27	05:40 21:47	20:13 (8) 29 20:42 (8)	06:35 20:43	07:31 19:26	07:27 17:15	08:27 16:23	08:58 16:19
28	05:42 21:46	20:13 (8) 30 20:43 (8)	06:36 20:40	19:10 (7) 07:32	07:29 17:13	08:28 16:22	08:58 16:20
29	05:43 21:44	20:13 (8) 31 20:44 (8)	06:38 20:38	19:07 (7) 19:24 (7)	07:34 19:21	07:31 17:11	08:58 16:20
30	05:45 21:42	20:12 (8) 32 20:44 (8)	06:40 20:36	19:05 (7) 19:19	07:36 17:09	07:33 16:20	08:58 16:21
31	05:47 21:40	20:12 (8) 33 20:45 (8)	06:42 20:33	19:03 (7) 19:28 (7)	07:35 17:06	08:58 16:22	08:58 16:22
Potential sun hours	515	461	382	328	257	231	
Total, worst case	330	601	514				
Sun reduction	0.27	0.27	0.29				
Oper. time red.	1.00	1.00	1.00				
Wind dir. red.	0.61	0.61	0.59				
Total reduction	0.16	0.17	0.17				
Total, real	54	100	88				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: AW - H49  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January	February	March	April	May	June
1	08:58 16:24	08:27 17:16	15:41 (16) 16:08 (16)	07:29 18:13	16:44 (15) 17:14 (15)	07:12 20:12
2	08:58 16:25	08:25 17:18	15:42 (16) 16:07 (16)	07:26 18:15	16:44 (15) 17:13 (15)	07:10 20:14
3	08:58 16:26	08:24 17:20	15:43 (16) 16:06 (16)	07:24 18:17	16:46 (15) 17:12 (15)	07:07 20:16
4	08:58 16:27	08:22 17:22	15:44 (16) 16:05 (16)	07:21 18:19	16:46 (15) 17:10 (15)	07:05 20:18
5	08:57 16:28	08:20 17:24	15:46 (16) 16:04 (16)	07:19 18:21	16:49 (15) 17:09 (15)	07:02 20:20
6	08:57 16:30	08:18 17:26	15:48 (16) 16:02 (16)	07:17 18:23	16:50 (15) 17:05 (15)	07:00 20:22
7	08:56 16:31	08:16 17:28	15:52 (16) 15:59 (16)	07:14 18:24	16:55 (15) 17:01 (15)	06:58 20:24
8	08:56 16:33	15:42 (16) 15:50 (16)	08:14 17:30	07:12 18:26	06:55 20:25	05:48 21:22
9	08:55 16:34	15:42 (16) 15:53 (16)	08:12 17:32	07:09 18:28	06:53 20:27	05:46 21:23
10	08:55 16:36	15:41 (16) 15:55 (16)	08:10 17:34	07:07 18:30	06:50 20:29	05:44 21:25
11	08:54 16:37	15:40 (16) 15:56 (16)	08:08 17:36	07:05 18:32	06:48 20:31	05:42 21:27
12	08:53 16:39	15:39 (16) 15:58 (16)	08:06 17:38	07:02 18:34	06:45 20:33	05:40 21:29
13	08:52 16:40	15:39 (16) 15:59 (16)	08:04 17:40	07:00 18:36	06:43 20:35	05:38 21:31
14	08:51 16:42	15:38 (16) 16:00 (16)	08:02 17:42	06:57 17:08 (15)	06:41 20:37	05:37 21:32
15	08:51 16:44	15:37 (16) 16:00 (16)	08:00 17:44	06:55 16:49 (15)	06:38 20:39	05:35 21:34
16	08:50 16:45	15:37 (16) 16:02 (16)	07:58 17:46	06:52 17:12 (15)	06:36 20:41	05:33 21:36
17	08:48 16:47	15:37 (16) 16:03 (16)	07:56 17:49	06:50 17:13 (15)	06:33 20:42	05:32 21:37
18	08:47 16:49	15:37 (16) 16:04 (16)	07:54 17:51	06:47 17:15 (15)	06:31 20:44	05:30 21:39
19	08:46 16:51	15:37 (16) 16:04 (16)	07:51 17:53	06:45 17:15 (15)	06:29 20:46	05:28 21:41
20	08:45 16:53	15:37 (16) 16:05 (16)	07:49 17:55	06:42 17:16 (15)	06:26 20:48	05:27 21:42
21	08:44 16:54	15:36 (16) 16:05 (16)	07:47 17:57	06:40 17:16 (15)	06:24 20:50	05:25 21:44
22	08:42 16:56	15:37 (16) 16:07 (16)	07:45 17:59	06:37 17:16 (15)	06:22 20:52	05:24 21:46
23	08:41 16:58	15:37 (16) 16:07 (16)	07:42 18:01	06:35 17:17 (15)	06:20 20:54	05:22 21:47
24	08:40 17:00	15:37 (16) 16:08 (16)	07:40 18:03	06:32 17:17 (15)	06:17 20:56	05:21 21:49
25	08:38 17:02	15:37 (16) 16:08 (16)	07:38 18:05	06:30 17:16 (15)	06:15 20:58	05:20 21:50
26	08:37 17:04	15:37 (16) 16:08 (16)	07:36 18:07	06:27 17:16 (15)	06:13 20:59	05:18 21:52
27	08:35 17:06	15:38 (16) 16:08 (16)	07:33 18:09	06:25 17:15 (15)	06:11 21:01	05:17 21:53
28	08:34 17:08	15:38 (16) 16:08 (16)	07:31 18:11	06:22 17:15 (15)	06:08 21:03	05:16 21:55
29	08:32 17:10	15:38 (16) 16:08 (16)	07:20 18:03	07:20 20:07	06:06 21:05	05:15 21:57
30	08:31 17:12	15:39 (16) 16:08 (16)	07:17 18:05	07:17 20:08	06:04 21:07	05:14 21:59
31	08:29 17:14	15:39 (16) 16:07 (16)	07:15 18:07	07:15 20:10	06:04 21:07	05:14 21:59
Potential sun hours	248	272	367	421	496	513
Total, worst case	595	588	510	510	510	510
Sun reduction	0.17	0.22	0.22	0.22	0.22	0.22
Oper. time red.	1.00	1.00	1.00	1.00	1.00	1.00
Wind dir. red.	0.62	0.59	0.58	0.58	0.58	0.58
Total reduction	0.11	0.13	0.13	0.13	0.13	0.13
Total, real	63	77	20	20	20	20

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)



### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: AW - H49  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	July	August	September	October	November	December
1	05:07	05:48	06:44	07:38	07:37	08:33
	22:15	21:39	20:31	19:16	17:04	16:19
2	05:08	05:50	06:45	07:40	07:39	08:35
	22:14	21:37	20:28	19:14	17:02	16:18
3	05:09	05:52	06:47	07:42	07:41	08:36
	22:14	21:35	20:26	19:11	17:00	16:17
4	05:10	05:53	06:49	07:44	07:43	08:38
	22:14	21:33	20:24	19:09	16:58	16:17
5	05:11	05:55	06:51	07:45	07:45	08:39
	22:13	21:31	20:21	19:06	16:56	16:16
6	05:11	05:57	06:53	07:47	07:47	08:41
	22:12	21:29	20:19	19:04	16:54	16:16
7	05:12	05:59	06:54	07:49	17:28 (15)	08:42
	22:12	21:27	20:16	19:01	17:40 (15)	16:15
8	05:13	06:00	06:56	07:51	17:25 (15)	08:43
	22:11	21:25	20:14	18:59	17:43 (15)	16:15
9	05:15	06:02	06:58	07:53	17:22 (15)	08:45
	22:10	21:23	20:11	18:56	17:44 (15)	16:14
10	05:16	06:04	07:00	07:55	17:21 (15)	08:46
	22:09	21:21	20:09	18:54	17:46 (15)	16:14
11	05:17	06:06	07:02	07:57	17:19 (15)	08:47
	22:08	21:19	20:06	18:51	17:47 (15)	16:14
12	05:18	06:07	07:03	07:58	17:18 (15)	08:48
	22:07	21:17	20:04	18:49	17:47 (15)	16:13
13	05:19	06:09	07:05	08:00	17:17 (15)	08:49
	22:06	21:15	20:01	18:47	17:48 (15)	16:13
14	05:21	06:11	07:07	08:02	17:16 (15)	08:50
	22:05	21:13	19:59	18:44	17:48 (15)	16:13
15	05:22	06:13	07:09	08:04	17:15 (15)	08:51
	22:04	21:10	19:56	18:42	17:48 (15)	16:13
16	05:23	06:15	07:11	08:06	17:15 (15)	08:52
	22:03	21:08	19:54	18:40	17:48 (15)	16:13
17	05:25	06:16	07:12	08:08	17:14 (15)	08:53
	22:02	21:06	19:51	18:37	17:48 (15)	16:14
18	05:26	06:18	07:14	08:10	17:14 (15)	08:54
	22:01	21:04	19:49	18:35	17:48 (15)	16:14
19	05:27	06:20	07:16	08:12	17:14 (15)	08:55
	21:59	21:01	19:46	18:33	17:48 (15)	16:14
20	05:29	06:22	07:18	08:14	17:14 (15)	08:55
	21:58	20:59	19:44	18:30	17:47 (15)	16:14
21	05:30	06:24	07:20	08:16	17:14 (15)	08:56
	21:57	20:57	19:41	18:28	17:47 (15)	16:15
22	05:32	06:25	07:21	08:18	17:15 (15)	08:56
	21:55	20:55	19:39	18:26	17:46 (15)	16:15
23	05:33	06:27	07:23	08:20	17:15 (15)	08:57
	21:54	20:52	19:36	18:24	17:45 (15)	16:16
24	05:35	06:29	07:25	08:22	17:16 (15)	08:57
	21:52	20:50	19:33	18:21	17:44 (15)	16:16
25	05:37	06:31	07:27	07:24	16:17 (15)	08:58
	21:51	20:48	19:31	17:19	16:42 (15)	16:17
26	05:38	06:33	07:29	07:26	16:18 (15)	08:58
	21:49	20:45	19:28	17:17	16:41 (15)	16:18
27	05:40	06:35	07:31	07:27	16:19 (15)	08:58
	21:47	20:43	19:26	17:15	16:39 (15)	16:18
28	05:41	06:36	07:32	07:29	16:22 (15)	08:58
	21:46	20:40	19:23	17:13	16:37 (15)	16:19
29	05:43	06:38	07:34	07:31	16:26 (15)	08:58
	21:44	20:38	19:21	17:10	16:33 (15)	16:20
30	05:45	06:40	07:36	07:33	08:32	08:59
	21:42	20:36	19:18	17:08	16:20	16:21
31	05:46	06:42		07:35		08:59
	21:40	20:33		17:06		16:22
Potential sun hours	515	461	383	327	257	230
Total, worst case				610	681	51
Sun reduction				0.23	0.20	0.12
Oper. time red.				1.00	1.00	1.00
Wind dir. red.				0.58	0.62	0.62
Total reduction				0.14	0.12	0.07
Total, real				83	84	4

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)



### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: AX - H50  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:58 16:24	08:27 17:16	07:29 18:13	07:12 20:12	06:02 21:09	05:11 22:00	05:07 22:15	05:48 21:39	06:44 20:31	07:38 19:16	07:37 17:04	08:33 16:19
2	08:58 16:25	08:25 17:18	07:26 18:15	07:10 20:14	06:00 21:11	05:11 22:01	05:08 22:14	05:50 21:37	06:45 20:28	07:40 19:14	07:39 17:02	08:35 16:18
3	08:58 16:26	08:24 17:20	07:24 18:17	07:07 20:16	05:58 21:12	05:10 22:02	05:09 22:14	05:52 21:35	06:47 20:26	07:42 19:11	07:41 17:00	08:36 16:17
4	08:58 16:27	08:22 17:22	07:21 18:19	07:05 20:18	05:56 21:14	05:09 22:03	05:10 22:13	05:53 21:33	06:49 20:23	07:43 19:09	07:43 16:58	08:38 16:17
5	08:57 16:28	08:20 17:24	07:19 18:21	07:02 20:20	05:54 21:16	05:08 22:05	05:11 22:13	05:55 21:31	06:51 20:21	07:45 19:06	07:45 16:56	08:39 16:16
6	08:57 16:30	08:18 17:26	07:17 18:23	07:00 20:22	05:52 21:18	05:07 22:06	05:12 22:12	05:57 21:29	06:53 20:19	07:47 19:04	07:47 16:54	08:41 16:16
7	08:56 16:31	08:16 17:28	07:14 18:24	06:58 20:24	05:50 21:20	05:07 22:07	05:13 22:12	05:59 21:27	06:54 20:16	07:49 19:01	07:49 16:53	08:42 16:15
8	08:56 16:33	08:14 17:30	07:12 18:26	06:55 20:25	05:48 21:22	05:06 22:08	05:14 22:11	06:00 21:25	06:56 20:14	07:51 18:59	07:51 16:51	08:43 16:15
9	08:55 16:34	08:12 17:32	07:09 18:28	06:53 20:27	05:46 21:23	05:05 22:09	05:15 22:10	06:02 21:23	06:58 20:11	07:53 18:56	07:53 16:49	08:45 16:14
10	08:55 16:36	08:10 17:34	07:07 18:30	06:50 20:29	05:44 21:25	05:05 22:09	05:16 22:09	06:04 21:21	07:00 20:09	07:55 18:54	07:55 16:47	08:46 16:14
11	08:54 16:37	08:08 17:36	07:05 18:32	06:48 20:31	05:42 21:27	05:04 22:10	05:17 22:08	06:06 21:19	07:02 20:06	07:57 18:51	07:57 16:45	08:47 16:14
12	08:53 16:39	08:06 17:38	07:02 18:34	06:45 20:33	05:40 21:29	05:04 22:11	05:18 22:07	06:07 21:17	07:03 20:04	07:58 18:49	07:59 16:44	08:48 16:14
13	08:52 16:40	08:04 17:40	07:00 18:36	06:43 20:35	05:38 21:31	05:04 22:12	05:19 22:06	06:09 21:15	07:05 20:01	08:00 18:47	08:01 16:42	08:49 16:13
14	08:51 16:42	08:02 17:42	06:57 18:38	06:41 20:37	05:37 21:32	05:03 22:12	05:21 22:05	06:11 21:12	07:07 19:59	08:02 18:44	08:03 16:40	08:50 16:13
15	08:50 16:44	08:00 17:44	06:55 18:40	06:38 20:39	05:35 21:34	05:03 22:13	05:22 22:04	06:13 21:10	07:09 19:56	08:04 18:42	08:05 16:39	08:51 16:13
16	08:49 16:45	07:58 17:46	06:52 18:42	06:36 20:41	05:33 21:36	05:03 22:14	05:23 22:03	06:15 21:08	07:11 19:54	08:06 18:40	08:07 16:37	08:52 16:13
17	08:48 16:47	07:56 17:49	06:50 18:44	06:34 20:42	05:32 21:37	05:03 22:14	05:25 22:02	06:16 21:06	07:12 19:51	08:08 18:37	08:09 16:36	08:53 16:14
18	08:47 16:49	07:54 17:51	06:47 18:46	06:31 20:44	05:30 21:39	05:03 22:14	05:26 22:01	06:18 21:04	07:14 19:49	08:10 18:35	08:11 16:34	08:54 16:14
19	08:46 16:51	07:51 17:53	06:45 18:48	06:29 20:46	05:28 21:41	05:03 22:15	05:27 21:59	06:20 21:01	07:16 19:46	08:12 18:33	08:12 16:33	08:55 16:14
20	08:45 16:53	07:49 17:55	06:42 18:50	06:26 20:48	05:27 21:42	05:03 22:15	05:29 21:58	06:22 20:59	07:18 19:44	08:14 18:30	08:14 16:31	08:55 16:14
21	08:44 16:54	07:47 17:57	06:40 18:51	06:24 20:50	05:25 21:44	05:03 22:15	05:30 21:56	06:24 20:57	07:20 19:41	08:16 18:28	08:16 16:30	08:56 16:15
22	08:42 16:56	07:45 17:59	06:37 18:53	06:22 20:52	05:24 21:46	05:03 22:16	05:32 21:55	06:25 20:55	07:21 19:39	08:18 18:26	08:18 16:29	08:56 16:15
23	08:41 16:58	07:42 18:01	06:35 18:55	06:20 20:54	05:22 21:47	05:03 22:16	05:33 21:54	06:27 20:52	07:23 19:36	08:20 18:24	08:20 16:27	08:57 16:16
24	08:40 17:00	07:40 18:03	06:32 18:57	06:17 20:56	05:21 21:49	05:04 22:16	05:35 21:52	06:29 20:50	07:25 19:33	08:22 18:21	08:22 16:26	08:57 16:16
25	08:38 17:02	07:38 18:05	06:30 18:59	06:15 20:58	05:20 21:50	05:04 22:16	05:37 21:50	06:31 20:48	07:27 19:31	07:24 17:19	08:23 16:25	08:58 16:17
26	08:37 17:04	07:36 18:07	06:27 19:01	06:13 20:59	05:18 21:52	05:04 22:16	05:38 21:49	06:33 20:45	07:29 19:28	07:25 17:17	08:25 16:24	08:58 16:18
27	08:35 17:06	07:33 18:09	06:25 19:03	06:11 21:01	05:17 21:53	05:05 22:16	05:40 21:47	06:35 20:43	07:31 19:26	07:27 17:15	08:27 16:23	08:58 16:19
28	08:34 17:08	07:31 18:11	06:22 19:05	06:08 21:03	05:16 21:55	05:05 22:16	05:41 21:46	06:36 20:40	07:32 19:23	07:29 17:13	08:28 16:22	08:58 16:19
29	08:32 17:10	07:29 18:11	06:20 19:05	06:06 21:05	05:15 21:56	05:06 22:15	05:43 21:44	06:38 20:38	07:34 19:21	07:31 17:11	08:30 16:21	08:58 16:20
30	08:30 17:12	07:27 18:08	06:17 19:00	06:04 21:07	05:14 21:57	05:07 22:15	05:45 21:42	06:40 20:36	07:36 19:18	07:33 17:08	08:32 16:20	08:58 16:21
31	08:29 17:14	07:25 18:10	06:15 19:05	06:03 21:07	05:13 21:59	05:07 22:15	05:46 21:40	06:42 20:33	07:35 17:06	07:35 16:22	08:58 16:22	
Potential sun hours	248	272	367	421	496	513	515	461	383	327	257	231
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)



### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: AY - H51

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:58 16:24	08:27 17:16	07:29 18:13	07:12 20:12	06:02 21:09	05:11 22:00	20:03 (16) 20:33 (16)	05:48 22:15	20:12 (16) 20:42 (16)	06:44 20:31	07:38 19:16	07:37 16:19
2	08:58 16:25	08:25 17:18	07:26 18:15	07:10 20:14	06:00 21:11	05:11 22:01	20:04 (16) 20:33 (16)	05:08 22:14	20:13 (16) 21:37	05:50 20:28	06:45 19:14	07:39 17:02
3	08:58 16:26	08:24 17:20	07:24 18:17	07:07 20:16	05:58 21:12	05:10 22:02	20:04 (16) 20:32 (16)	05:09 22:14	20:13 (16) 21:35	05:52 20:26	06:47 19:11	07:42 17:00
4	08:58 16:27	08:22 17:22	07:21 18:19	07:05 20:18	05:56 21:14	05:09 22:03	20:04 (16) 20:32 (16)	05:10 22:13	20:12 (16) 21:33	05:53 20:23	06:49 19:09	07:43 16:58
5	08:57 16:28	08:20 17:24	07:19 18:21	07:02 20:20	05:54 21:16	05:08 22:05	20:05 (16) 20:32 (16)	05:11 22:13	20:12 (16) 21:31	05:55 20:21	06:51 19:06	07:45 16:56
6	08:57 16:30	08:18 17:26	07:17 18:23	07:00 20:22	05:52 21:18	05:07 22:06	20:05 (16) 20:32 (16)	05:12 22:12	20:12 (16) 21:29	05:57 20:19	06:53 19:04	07:47 16:54
7	08:56 16:31	08:16 17:28	07:14 18:24	06:58 20:24	05:50 21:20	05:07 22:07	20:07 (16) 20:32 (16)	05:13 22:12	20:12 (16) 21:27	05:59 20:39	06:54 19:16	07:49 16:53
8	08:56 16:33	08:14 17:30	07:12 18:26	06:55 20:25	05:48 21:22	05:06 22:08	20:07 (16) 20:32 (16)	05:14 22:11	20:12 (16) 21:25	06:00 20:30	06:56 19:14	07:51 16:51
9	08:55 16:34	08:12 17:32	07:09 18:28	06:53 20:27	05:46 21:23	05:05 22:09	20:08 (16) 20:29 (16)	05:15 22:10	20:11 (16) 21:23	06:02 20:11	06:58 18:56	07:53 16:49
10	08:55 16:36	08:10 17:34	07:07 18:30	06:50 20:29	05:44 21:25	05:05 22:09	20:08 (16) 21:17 (15)	05:16 22:09	20:11 (16) 21:21	06:04 20:09	07:00 18:54	07:55 16:47
11	08:54 16:37	08:08 17:36	07:04 18:32	06:48 20:31	05:42 21:27	05:04 22:10	20:09 (16) 20:31 (16)	05:17 22:08	20:11 (16) 21:19	06:06 20:06	07:02 18:51	07:57 16:45
12	08:53 16:39	08:06 17:38	07:02 18:34	06:45 20:33	05:40 21:29	05:04 22:11	20:09 (16) 20:32 (16)	05:18 22:07	20:10 (16) 21:17	06:07 20:04	07:03 18:49	07:58 16:44
13	08:52 16:40	08:04 17:40	07:00 18:36	06:43 20:35	05:38 21:31	05:04 22:12	20:09 (16) 20:32 (16)	05:19 22:06	20:10 (16) 21:15	06:09 20:01	07:05 18:47	08:01 16:42
14	08:51 16:42	08:02 17:42	06:57 18:38	06:41 20:37	05:37 21:32	05:03 22:12	20:10 (16) 20:33 (16)	05:25 22:05	20:11 (16) 21:22	06:11 20:42	07:07 18:44	08:03 16:40
15	08:50 16:44	08:00 17:44	06:55 18:40	06:38 20:39	05:35 21:34	05:03 22:13	20:11 (16) 20:33 (16)	05:22 22:04	20:10 (16) 21:10	06:13 20:43	07:09 19:56	08:05 16:39
16	08:49 16:45	07:58 17:46	06:52 18:42	06:36 20:41	05:33 21:36	05:03 22:14	20:11 (16) 20:33 (16)	05:23 22:03	20:10 (16) 21:08	06:15 20:43	07:11 19:54	08:07 16:37
17	08:48 16:47	07:56 17:49	06:50 18:44	06:33 20:42	05:32 21:37	05:03 22:14	20:11 (16) 20:33 (16)	05:25 22:02	20:10 (16) 21:06	06:16 20:43	07:12 19:51	08:09 16:36
18	08:47 16:49	07:54 17:51	06:47 18:46	06:31 20:44	05:30 21:39	05:03 22:14	20:10 (16) 20:34 (16)	05:26 22:01	20:10 (16) 21:04	06:18 20:44	07:14 19:49	08:11 16:34
19	08:46 16:51	07:51 17:53	06:45 18:48	06:29 20:46	05:28 21:41	05:03 22:15	20:12 (16) 20:33 (16)	05:27 21:59	20:10 (16) 21:01	06:20 20:44	07:16 19:46	08:12 16:33
20	08:45 16:53	07:49 17:55	06:42 18:50	06:26 20:48	05:27 21:42	05:03 22:15	20:12 (16) 20:34 (16)	05:29 21:58	20:09 (16) 20:59	06:22 20:59	07:18 19:44	08:14 16:31
21	08:44 16:54	07:47 17:57	06:40 18:51	06:24 20:50	05:25 21:44	05:03 22:15	20:12 (16) 20:34 (16)	05:30 21:56	20:10 (16) 20:57	06:24 20:44	07:20 19:41	08:16 16:30
22	08:42 16:56	07:45 17:59	06:37 18:53	06:22 20:52	05:24 21:46	05:03 22:16	20:13 (16) 20:34 (16)	05:32 21:55	20:09 (16) 20:55	06:25 20:44	07:21 19:39	08:18 16:29
23	08:41 16:58	07:42 18:01	06:35 18:55	06:20 20:54	05:22 21:47	05:03 22:16	20:13 (16) 20:34 (16)	05:33 21:54	20:09 (16) 20:52	06:27 20:44	07:23 19:36	08:20 16:27
24	08:40 17:00	07:40 18:03	06:32 18:57	06:17 20:56	05:21 21:49	05:04 22:16	20:13 (16) 20:34 (16)	05:35 21:52	20:10 (16) 20:50	06:29 20:44	07:25 19:33	08:22 16:26
25	08:38 17:02	07:38 18:05	06:30 18:59	06:15 20:58	05:20 21:50	05:04 22:16	20:14 (16) 20:34 (16)	05:37 21:51	20:09 (16) 20:48	06:31 20:44	07:27 19:31	08:23 16:25
26	08:37 17:04	07:36 18:07	06:27 19:01	06:13 20:59	05:18 21:52	05:04 22:16	20:13 (16) 20:34 (16)	05:38 21:49	20:10 (16) 20:45	06:33 20:44	07:29 19:28	08:25 16:24
27	08:35 17:06	07:33 18:09	06:25 19:03	06:11 21:01	05:17 21:53	05:05 22:16	20:14 (16) 20:33 (16)	05:40 21:47	20:10 (16) 20:43	06:35 20:43	07:31 19:26	08:27 16:23
28	08:34 17:08	07:31 18:11	06:22 19:05	06:08 21:03	05:16 21:55	05:05 22:16	20:13 (16) 20:33 (16)	05:41 21:46	20:10 (16) 20:40	06:36 20:44	07:32 19:23	08:28 16:22
29	08:32 17:10	07:29 18:07	06:20 19:02	06:06 21:05	05:15 21:56	05:06 22:15	20:14 (16) 20:33 (16)	05:43 21:44	20:10 (16) 20:38	06:38 20:43	07:34 19:21	08:30 16:21
30	08:30 17:12	07:27 18:08	06:17 19:07	06:04 21:07	05:14 21:57	05:07 22:15	20:13 (16) 20:33 (16)	05:45 21:42	20:11 (16) 20:36	06:40 20:43	07:36 19:18	08:32 16:20
31	08:29 17:14	07:25 18:10	06:15 19:05	06:02 21:07	05:12 21:59	05:07 22:15	20:13 (16) 20:34 (16)	05:46 21:40	20:12 (16) 20:33	06:42 20:33	07:35 17:06	08:58 16:22
Potential sun hours	248	272	367	421	496	513	515	461	383	327	257	230
Total, worst case					815	920		965	175			
Sun reduction					0.36	0.26		0.27	0.27			
Oper. time red.					1.00	1.00		1.00	1.00			
Wind dir. red.					0.62	0.62		0.62	0.62			
Total reduction					0.22	0.16		0.16	0.17			
Total, real					181	147		158	29			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)





### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: BA - H53  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January	February	March	April	May	June										
1	08:58 16:24	08:27 17:16	15:56 (7) 16:22 (7)	07:29 18:13	16:45 (8) 20:12	07:12 21:09	06:02 22:00									20:38 (10)
2	08:58 16:25	08:25 17:18	15:56 (7) 16:21 (7)	07:26 18:15	16:49 (8) 20:14	07:10 21:11	06:00 22:01									20:40 (10)
3	08:58 16:26	08:24 17:20	15:57 (7) 16:21 (7)	07:24 18:17	16:54 (8) 20:16	07:07 21:12	05:58 22:02									21:24 (11)
4	08:58 16:27	08:22 17:22	15:58 (7) 16:20 (7)	07:21 18:19		20:18	05:56 22:03									21:23 (11)
5	08:57 16:29	08:20 17:24	15:59 (7) 16:20 (7)	07:19 18:21		20:20	05:54 22:05									21:22 (11)
6	08:57 16:30	08:18 17:26	16:00 (7) 16:19 (7)	07:17 18:23		20:22	05:52 22:06									21:21 (11)
7	08:56 16:31	08:16 17:28	16:02 (7) 16:17 (7)	07:14 18:25		20:24	05:50 22:07									21:21 (11)
8	08:56 16:33	08:14 17:30	16:05 (7) 16:55 (8)	07:12 18:26		20:26	05:48 22:08									21:20 (11)
9	08:55 16:34	08:12 17:32	16:45 (8) 16:59 (8)	07:09 18:28		20:27	05:46 22:09									21:21 (11)
10	08:55 16:36	08:10 17:34	16:43 (8) 17:01 (8)	07:07 18:30		20:29	05:44 22:10									21:20 (11)
11	08:54 16:37	08:08 17:36	16:42 (8) 17:03 (8)	07:05 18:32		20:31	05:42 22:11									21:20 (11)
12	08:53 16:39	08:06 17:38	16:41 (8) 17:05 (8)	07:02 18:34		20:33	05:40 22:12									21:20 (11)
13	08:52 16:40	08:04 17:40	16:40 (8) 17:06 (8)	07:00 18:36		20:35	05:39 22:13									21:21 (11)
14	08:51 16:42	08:02 17:42	16:39 (8) 17:07 (8)	06:57 18:38		20:37	05:37 22:14									21:20 (11)
15	08:50 16:44	16:01 (7) 17:45	08:00 17:47	06:55 18:40		20:39	05:35 22:15									21:20 (11)
16	08:49 16:46	16:06 (7) 17:47	07:58 17:49	06:52 18:42		20:41	05:33 22:16									21:20 (11)
17	08:48 16:47	16:09 (7) 17:49	07:56 17:51	06:50 18:44		20:43	05:32 22:17									21:20 (11)
18	08:47 16:49	16:11 (7) 17:51	17:49 17:51	18:44 18:46		20:45	05:30 22:18									21:21 (11)
19	08:46 16:51	16:13 (7) 17:53	17:51 17:53	18:46 18:48		20:47	05:28 22:19									21:21 (11)
20	08:45 16:53	16:14 (7) 17:55	17:53 17:55	18:48 18:50		20:49	05:27 22:20									21:21 (11)
21	08:44 16:54	16:16 (7) 17:57	17:55 17:57	18:50 18:51		20:51	05:26 22:21									21:22 (11)
22	08:44 16:56	16:17 (7) 17:59	17:57 17:59	18:51 18:53		20:53	05:25 22:22									21:22 (11)
23	08:41 16:58	16:18 (7) 18:01	17:59 18:01	18:53 18:55		20:55	05:24 22:23									21:23 (11)
24	08:40 17:00	16:19 (7) 18:03	18:01 18:03	18:55 18:57		20:57	05:23 22:24									21:23 (11)
25	08:38 17:02	16:20 (7) 18:05	18:03 18:05	18:57 18:59		20:59	05:22 22:25									21:23 (11)
26	08:37 17:04	16:21 (7) 18:07	18:05 18:07	18:59 19:01		21:01	05:21 22:26									21:23 (11)
27	08:35 17:06	16:22 (7) 18:09	18:07 18:09	19:01 19:03		21:03	05:20 22:27									21:23 (11)
28	08:34 17:08	16:23 (7) 18:11	18:09 18:11	19:03 19:05		21:05	05:19 22:28									21:23 (11)
29	08:32 17:10	16:24 (7) 18:13	18:11 18:13	19:05 19:07		21:07	05:18 22:29									21:24 (11)
30	08:31 17:12	16:25 (7) 18:15	18:13 18:15	19:07 19:09		21:09	05:17 22:30									21:24 (11)
31	08:29 17:14	16:26 (7) 18:17	18:15 18:17	19:09 19:11		21:11	05:16 22:31									21:24 (11)
Potential sun hours	248	272	367	421	496	513										
Total, worst case	363	704	19	343	526	407										
Sun reduction	0.17	0.22	0.22	0.34	0.36	0.26										
Oper. time red.	1.00	1.00	1.00	1.00	1.00	1.00										
Wind dir. red.	0.61	0.59	0.58	0.59	0.62	0.64										
Total reduction	0.10	0.13	0.13	0.20	0.23	0.16										
Total, real	38	92	2	69	119	67										

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: BA - H53  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

July		August		September		October		November		December																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
1	05:07	21:24 (11)	05:48	20:40 (10)	06:44	07:38		07:37	16:13 (8)	08:33			22:15	14	21:38 (11)	21:39	22	21:02 (10)	20:31	19:16	17:04	17	16:30 (8)	16:19	2	05:08	21:25 (11)	05:50	20:41 (10)	06:45	07:40		07:39	15:38 (7)	08:35			22:14	13	21:38 (11)	21:37	21	21:02 (10)	20:28	19:14	17:02	14	16:28 (8)	16:18	3	05:09	21:26 (11)	05:52	20:41 (10)	06:47	07:42		07:41	15:33 (7)	08:36			22:14	12	21:38 (11)	21:35	19	21:00 (10)	20:26	19:11	17:00	11	15:44 (7)	16:18	4	05:10	21:25 (11)	05:53	20:42 (10)	06:49	07:44		07:43	15:31 (7)	08:38			22:13	12	21:37 (11)	21:33	18	21:00 (10)	20:24	19:09	16:58	16	15:47 (7)	16:17	5	05:11	21:26 (11)	05:55	20:43 (10)	06:51	07:45		07:45	15:30 (7)	08:39			22:13	11	21:37 (11)	21:31	16	20:59 (10)	20:21	19:06	16:56	19	15:49 (7)	16:16	6	05:12	21:27 (11)	05:57	20:44 (10)	06:53	07:47		07:47	15:28 (7)	08:41			22:12	9	21:36 (11)	21:29	12	20:56 (10)	20:19	19:04	16:55	22	15:50 (7)	16:16	7	05:13	21:28 (11)	05:59	20:48 (10)	06:54	07:49		07:49	15:27 (7)	08:42			22:12	8	21:36 (11)	21:27	6	20:54 (10)	20:16	19:01	16:53	23	15:50 (7)	16:15	8	05:14	21:29 (11)	06:00		06:56	07:51		07:51	15:26 (7)	08:43			22:11	6	21:35 (11)	21:25		20:14	18:59	16:51	25	15:51 (7)	16:15	9	05:15	21:30 (11)	06:02		06:58	07:53		07:53	15:26 (7)	08:45			22:10	4	21:34 (11)	21:23		20:11	18:56	16:49	25	15:51 (7)	16:14	10	05:16		06:04		07:00	07:55		07:55	15:26 (7)	08:46			22:09		21:21		20:09	18:54		16:47	27	15:53 (7)	16:14	11	05:17		06:06		07:02	07:57		07:57	15:26 (7)	08:47			22:08	7	20:53 (10)	21:19	20:06	18:52		16:45	27	15:53 (7)	16:14	12	05:18		06:08		07:03	07:59		17:20 (8)	07:59	15:26 (7)	08:48		22:07	10	20:55 (10)	21:17	20:04	18:49	11	17:31 (8)	16:44	27	15:53 (7)	16:14	13	05:19		06:09		07:05	08:00		17:17 (8)	08:01	15:26 (7)	08:49		22:06	13	20:56 (10)	21:15	20:01	18:47	17	17:34 (8)	16:42	27	15:53 (7)	16:14	14	05:21		06:11		20:00 (9)	07:07		08:02	17:14 (8)	08:03	15:26 (7)	08:50		22:05	15	20:58 (10)	21:13	5	20:05 (9)	19:59	18:44	21	17:35 (8)	16:40	27	15:53 (7)	16:13	15	05:22		06:13		19:56 (9)	07:09		08:04	17:12 (8)	08:05	15:26 (7)	08:51		22:04	17	20:59 (10)	21:10	12	20:08 (9)	19:56	18:42	24	17:36 (8)	16:39	27	15:53 (7)	16:13	16	05:23		06:15		19:54 (9)	07:11		08:06	17:11 (8)	08:07	15:26 (7)	08:52		22:03	17	20:59 (10)	21:08	16	20:10 (9)	19:54	18:40	26	17:37 (8)	16:37	27	15:53 (7)	16:14	17	05:25		06:17		19:53 (9)	07:13		08:08	17:10 (8)	08:09	15:28 (7)	08:53		22:02	19	21:00 (10)	21:06	18	20:11 (9)	19:51	18:37	28	17:38 (8)	16:36	26	15:54 (7)	16:14	18	05:26		06:18		19:51 (9)	07:14		08:10	17:09 (8)	08:11	15:28 (7)	08:54		22:01	20	21:01 (10)	21:04	20	20:11 (9)	19:49	18:35	30	17:39 (8)	16:34	25	15:53 (7)	16:14	19	05:28		06:20		19:50 (9)	07:16		08:12	17:08 (8)	08:12	15:29 (7)	08:55		21:59	21	21:01 (10)	21:01	22	20:12 (9)	19:46	18:33	31	17:39 (8)	16:33	24	15:53 (7)	16:14	20	05:29		06:22		19:49 (9)	07:18		08:14	17:07 (8)	08:14	15:30 (7)	08:55		21:58	23	21:02 (10)	20:59	24	20:13 (9)	19:44	18:30	32	17:39 (8)	16:31	23	15:53 (7)	16:15	21	05:30		06:24		19:48 (9)	07:20		08:16	17:07 (8)	08:16	15:31 (7)	08:56		21:56	23	21:03 (10)	20:57	24	20:12 (9)	19:41	18:28	32	17:39 (8)	16:30	21	15:52 (7)	16:15	22	05:32		06:26		19:48 (9)	07:22		08:18	17:07 (8)	08:18	15:32 (7)	08:56		21:55	24	21:03 (10)	20:55	24	20:12 (9)	19:39	18:26	32	17:39 (8)	16:29	20	15:52 (7)	16:15	23	05:34		06:27		19:48 (9)	07:23		08:20	17:06 (8)	08:20	15:33 (7)	08:57		21:54	25	21:04 (10)	20:52	24	20:12 (9)	19:36	18:24	33	17:39 (8)	16:27	18	15:51 (7)	16:16	24	05:35		06:29		19:48 (9)	07:25		08:22	17:06 (8)	08:22	15:34 (7)	08:57		21:52	24	21:03 (10)	20:50	24	20:12 (9)	19:34	18:21	32	17:38 (8)	16:26	16	15:50 (7)	16:17	25	05:37		06:31		19:47 (9)	07:27		07:24	16:07 (8)	08:23	15:36 (7)	08:58		21:51	25	21:03 (10)	20:48	24	20:11 (9)	19:31	17:19	31	16:38 (8)	16:25	13	15:49 (7)	16:17	26	05:38		06:33		19:47 (9)	07:29		07:26	16:07 (8)	08:25	15:38 (7)	08:58		21:49	25	21:04 (10)	20:45	24	20:11 (9)	19:29	17:17	30	16:37 (8)	16:24	10	15:48 (7)	16:18	27	05:40		06:35		19:48 (9)	07:31		07:27	16:07 (8)	08:27	15:41 (7)	08:58		21:47	25	21:03 (10)	20:43	22	20:10 (9)	19:26	17:15	29	16:36 (8)	16:23	5	15:46 (7)	16:19	28	05:42		06:36		19:48 (9)	07:32		07:29	16:09 (8)	08:28		08:58		21:46	25	21:04 (10)	20:40	20	20:08 (9)	19:24	17:13	27	16:36 (8)	16:22		16:19	29	05:43		06:38		19:49 (9)	07:34		07:31	16:09 (8)	08:30		08:58		21:44	25	21:03 (10)	20:38	18	20:07 (9)	19:21	17:11	26	16:35 (8)	16:21		16:20	30	05:45		06:40		19:50 (9)	07:36		07:33	16:10 (8)	08:32		08:58		21:42	24	21:03 (10)	20:36	16	20:06 (9)	19:19	17:09	24	16:34 (8)	16:20		16:21	31	05:47		06:42		19:53 (9)			07:35					08:58		21:40	23	21:03 (10)	20:33	10	20:03 (9)		17:06	20	16:32 (8)			16:22	Potential sun hours	515		461		382		328		257		231		Total, worst case	519		461		536		562		Sun reduction	0.27		0.27		0.23		0.20		Oper. time red.	1.00		1.00		1.00		1.00		Wind dir. red.	0.63		0.60		0.58		0.61		Total reduction	0.17		0.16		0.14		0.12		Total, real	86		75		73		68	
	22:15	14	21:38 (11)	21:39	22	21:02 (10)	20:31	19:16	17:04	17	16:30 (8)	16:19	2	05:08	21:25 (11)	05:50	20:41 (10)	06:45	07:40		07:39	15:38 (7)	08:35			22:14	13	21:38 (11)	21:37	21	21:02 (10)	20:28	19:14	17:02	14	16:28 (8)	16:18	3	05:09	21:26 (11)	05:52	20:41 (10)	06:47	07:42		07:41	15:33 (7)	08:36			22:14	12	21:38 (11)	21:35	19	21:00 (10)	20:26	19:11	17:00	11	15:44 (7)	16:18	4	05:10	21:25 (11)	05:53	20:42 (10)	06:49	07:44		07:43	15:31 (7)	08:38			22:13	12	21:37 (11)	21:33	18	21:00 (10)	20:24	19:09	16:58	16	15:47 (7)	16:17	5	05:11	21:26 (11)	05:55	20:43 (10)	06:51	07:45		07:45	15:30 (7)	08:39			22:13	11	21:37 (11)	21:31	16	20:59 (10)	20:21	19:06	16:56	19	15:49 (7)	16:16	6	05:12	21:27 (11)	05:57	20:44 (10)	06:53	07:47		07:47	15:28 (7)	08:41			22:12	9	21:36 (11)	21:29	12	20:56 (10)	20:19	19:04	16:55	22	15:50 (7)	16:16	7	05:13	21:28 (11)	05:59	20:48 (10)	06:54	07:49		07:49	15:27 (7)	08:42			22:12	8	21:36 (11)	21:27	6	20:54 (10)	20:16	19:01	16:53	23	15:50 (7)	16:15	8	05:14	21:29 (11)	06:00		06:56	07:51		07:51	15:26 (7)	08:43			22:11	6	21:35 (11)	21:25		20:14	18:59	16:51	25	15:51 (7)	16:15	9	05:15	21:30 (11)	06:02		06:58	07:53		07:53	15:26 (7)	08:45			22:10	4	21:34 (11)	21:23		20:11	18:56	16:49	25	15:51 (7)	16:14	10	05:16		06:04		07:00	07:55		07:55	15:26 (7)	08:46			22:09		21:21		20:09	18:54		16:47	27	15:53 (7)	16:14	11	05:17		06:06		07:02	07:57		07:57	15:26 (7)	08:47			22:08	7	20:53 (10)	21:19	20:06	18:52		16:45	27	15:53 (7)	16:14	12	05:18		06:08		07:03	07:59		17:20 (8)	07:59	15:26 (7)	08:48		22:07	10	20:55 (10)	21:17	20:04	18:49	11	17:31 (8)	16:44	27	15:53 (7)	16:14	13	05:19		06:09		07:05	08:00		17:17 (8)	08:01	15:26 (7)	08:49		22:06	13	20:56 (10)	21:15	20:01	18:47	17	17:34 (8)	16:42	27	15:53 (7)	16:14	14	05:21		06:11		20:00 (9)	07:07		08:02	17:14 (8)	08:03	15:26 (7)	08:50		22:05	15	20:58 (10)	21:13	5	20:05 (9)	19:59	18:44	21	17:35 (8)	16:40	27	15:53 (7)	16:13	15	05:22		06:13		19:56 (9)	07:09		08:04	17:12 (8)	08:05	15:26 (7)	08:51		22:04	17	20:59 (10)	21:10	12	20:08 (9)	19:56	18:42	24	17:36 (8)	16:39	27	15:53 (7)	16:13	16	05:23		06:15		19:54 (9)	07:11		08:06	17:11 (8)	08:07	15:26 (7)	08:52		22:03	17	20:59 (10)	21:08	16	20:10 (9)	19:54	18:40	26	17:37 (8)	16:37	27	15:53 (7)	16:14	17	05:25		06:17		19:53 (9)	07:13		08:08	17:10 (8)	08:09	15:28 (7)	08:53		22:02	19	21:00 (10)	21:06	18	20:11 (9)	19:51	18:37	28	17:38 (8)	16:36	26	15:54 (7)	16:14	18	05:26		06:18		19:51 (9)	07:14		08:10	17:09 (8)	08:11	15:28 (7)	08:54		22:01	20	21:01 (10)	21:04	20	20:11 (9)	19:49	18:35	30	17:39 (8)	16:34	25	15:53 (7)	16:14	19	05:28		06:20		19:50 (9)	07:16		08:12	17:08 (8)	08:12	15:29 (7)	08:55		21:59	21	21:01 (10)	21:01	22	20:12 (9)	19:46	18:33	31	17:39 (8)	16:33	24	15:53 (7)	16:14	20	05:29		06:22		19:49 (9)	07:18		08:14	17:07 (8)	08:14	15:30 (7)	08:55		21:58	23	21:02 (10)	20:59	24	20:13 (9)	19:44	18:30	32	17:39 (8)	16:31	23	15:53 (7)	16:15	21	05:30		06:24		19:48 (9)	07:20		08:16	17:07 (8)	08:16	15:31 (7)	08:56		21:56	23	21:03 (10)	20:57	24	20:12 (9)	19:41	18:28	32	17:39 (8)	16:30	21	15:52 (7)	16:15	22	05:32		06:26		19:48 (9)	07:22		08:18	17:07 (8)	08:18	15:32 (7)	08:56		21:55	24	21:03 (10)	20:55	24	20:12 (9)	19:39	18:26	32	17:39 (8)	16:29	20	15:52 (7)	16:15	23	05:34		06:27		19:48 (9)	07:23		08:20	17:06 (8)	08:20	15:33 (7)	08:57		21:54	25	21:04 (10)	20:52	24	20:12 (9)	19:36	18:24	33	17:39 (8)	16:27	18	15:51 (7)	16:16	24	05:35		06:29		19:48 (9)	07:25		08:22	17:06 (8)	08:22	15:34 (7)	08:57		21:52	24	21:03 (10)	20:50	24	20:12 (9)	19:34	18:21	32	17:38 (8)	16:26	16	15:50 (7)	16:17	25	05:37		06:31		19:47 (9)	07:27		07:24	16:07 (8)	08:23	15:36 (7)	08:58		21:51	25	21:03 (10)	20:48	24	20:11 (9)	19:31	17:19	31	16:38 (8)	16:25	13	15:49 (7)	16:17	26	05:38		06:33		19:47 (9)	07:29		07:26	16:07 (8)	08:25	15:38 (7)	08:58		21:49	25	21:04 (10)	20:45	24	20:11 (9)	19:29	17:17	30	16:37 (8)	16:24	10	15:48 (7)	16:18	27	05:40		06:35		19:48 (9)	07:31		07:27	16:07 (8)	08:27	15:41 (7)	08:58		21:47	25	21:03 (10)	20:43	22	20:10 (9)	19:26	17:15	29	16:36 (8)	16:23	5	15:46 (7)	16:19	28	05:42		06:36		19:48 (9)	07:32		07:29	16:09 (8)	08:28		08:58		21:46	25	21:04 (10)	20:40	20	20:08 (9)	19:24	17:13	27	16:36 (8)	16:22		16:19	29	05:43		06:38		19:49 (9)	07:34		07:31	16:09 (8)	08:30		08:58		21:44	25	21:03 (10)	20:38	18	20:07 (9)	19:21	17:11	26	16:35 (8)	16:21		16:20	30	05:45		06:40		19:50 (9)	07:36		07:33	16:10 (8)	08:32		08:58		21:42	24	21:03 (10)	20:36	16	20:06 (9)	19:19	17:09	24	16:34 (8)	16:20		16:21	31	05:47		06:42		19:53 (9)			07:35					08:58		21:40	23	21:03 (10)	20:33	10	20:03 (9)		17:06	20	16:32 (8)			16:22	Potential sun hours	515		461		382		328		257		231		Total, worst case	519		461		536		562		Sun reduction	0.27		0.27		0.23		0.20		Oper. time red.	1.00		1.00		1.00		1.00		Wind dir. red.	0.63		0.60		0.58		0.61		Total reduction	0.17		0.16		0.14		0.12		Total, real	86		75		73		68													
2	05:08	21:25 (11)	05:50	20:41 (10)	06:45	07:40		07:39	15:38 (7)	08:35			22:14	13	21:38 (11)	21:37	21	21:02 (10)	20:28	19:14	17:02	14	16:28 (8)	16:18	3	05:09	21:26 (11)	05:52	20:41 (10)	06:47	07:42		07:41	15:33 (7)	08:36			22:14	12	21:38 (11)	21:35	19	21:00 (10)	20:26	19:11	17:00	11	15:44 (7)	16:18	4	05:10	21:25 (11)	05:53	20:42 (10)	06:49	07:44		07:43	15:31 (7)	08:38			22:13	12	21:37 (11)	21:33	18	21:00 (10)	20:24	19:09	16:58	16	15:47 (7)	16:17	5	05:11	21:26 (11)	05:55	20:43 (10)	06:51	07:45		07:45	15:30 (7)	08:39			22:13	11	21:37 (11)	21:31	16	20:59 (10)	20:21	19:06	16:56	19	15:49 (7)	16:16	6	05:12	21:27 (11)	05:57	20:44 (10)	06:53	07:47		07:47	15:28 (7)	08:41			22:12	9	21:36 (11)	21:29	12	20:56 (10)	20:19	19:04	16:55	22	15:50 (7)	16:16	7	05:13	21:28 (11)	05:59	20:48 (10)	06:54	07:49		07:49	15:27 (7)	08:42			22:12	8	21:36 (11)	21:27	6	20:54 (10)	20:16	19:01	16:53	23	15:50 (7)	16:15	8	05:14	21:29 (11)	06:00		06:56	07:51		07:51	15:26 (7)	08:43			22:11	6	21:35 (11)	21:25		20:14	18:59	16:51	25	15:51 (7)	16:15	9	05:15	21:30 (11)	06:02		06:58	07:53		07:53	15:26 (7)	08:45			22:10	4	21:34 (11)	21:23		20:11	18:56	16:49	25	15:51 (7)	16:14	10	05:16		06:04		07:00	07:55		07:55	15:26 (7)	08:46			22:09		21:21		20:09	18:54		16:47	27	15:53 (7)	16:14	11	05:17		06:06		07:02	07:57		07:57	15:26 (7)	08:47			22:08	7	20:53 (10)	21:19	20:06	18:52		16:45	27	15:53 (7)	16:14	12	05:18		06:08		07:03	07:59		17:20 (8)	07:59	15:26 (7)	08:48		22:07	10	20:55 (10)	21:17	20:04	18:49	11	17:31 (8)	16:44	27	15:53 (7)	16:14	13	05:19		06:09		07:05	08:00		17:17 (8)	08:01	15:26 (7)	08:49		22:06	13	20:56 (10)	21:15	20:01	18:47	17	17:34 (8)	16:42	27	15:53 (7)	16:14	14	05:21		06:11		20:00 (9)	07:07		08:02	17:14 (8)	08:03	15:26 (7)	08:50		22:05	15	20:58 (10)	21:13	5	20:05 (9)	19:59	18:44	21	17:35 (8)	16:40	27	15:53 (7)	16:13	15	05:22		06:13		19:56 (9)	07:09		08:04	17:12 (8)	08:05	15:26 (7)	08:51		22:04	17	20:59 (10)	21:10	12	20:08 (9)	19:56	18:42	24	17:36 (8)	16:39	27	15:53 (7)	16:13	16	05:23		06:15		19:54 (9)	07:11		08:06	17:11 (8)	08:07	15:26 (7)	08:52		22:03	17	20:59 (10)	21:08	16	20:10 (9)	19:54	18:40	26	17:37 (8)	16:37	27	15:53 (7)	16:14	17	05:25		06:17		19:53 (9)	07:13		08:08	17:10 (8)	08:09	15:28 (7)	08:53		22:02	19	21:00 (10)	21:06	18	20:11 (9)	19:51	18:37	28	17:38 (8)	16:36	26	15:54 (7)	16:14	18	05:26		06:18		19:51 (9)	07:14		08:10	17:09 (8)	08:11	15:28 (7)	08:54		22:01	20	21:01 (10)	21:04	20	20:11 (9)	19:49	18:35	30	17:39 (8)	16:34	25	15:53 (7)	16:14	19	05:28		06:20		19:50 (9)	07:16		08:12	17:08 (8)	08:12	15:29 (7)	08:55		21:59	21	21:01 (10)	21:01	22	20:12 (9)	19:46	18:33	31	17:39 (8)	16:33	24	15:53 (7)	16:14	20	05:29		06:22		19:49 (9)	07:18		08:14	17:07 (8)	08:14	15:30 (7)	08:55		21:58	23	21:02 (10)	20:59	24	20:13 (9)	19:44	18:30	32	17:39 (8)	16:31	23	15:53 (7)	16:15	21	05:30		06:24		19:48 (9)	07:20		08:16	17:07 (8)	08:16	15:31 (7)	08:56		21:56	23	21:03 (10)	20:57	24	20:12 (9)	19:41	18:28	32	17:39 (8)	16:30	21	15:52 (7)	16:15	22	05:32		06:26		19:48 (9)	07:22		08:18	17:07 (8)	08:18	15:32 (7)	08:56		21:55	24	21:03 (10)	20:55	24	20:12 (9)	19:39	18:26	32	17:39 (8)	16:29	20	15:52 (7)	16:15	23	05:34		06:27		19:48 (9)	07:23		08:20	17:06 (8)	08:20	15:33 (7)	08:57		21:54	25	21:04 (10)	20:52	24	20:12 (9)	19:36	18:24	33	17:39 (8)	16:27	18	15:51 (7)	16:16	24	05:35		06:29		19:48 (9)	07:25		08:22	17:06 (8)	08:22	15:34 (7)	08:57		21:52	24	21:03 (10)	20:50	24	20:12 (9)	19:34	18:21	32	17:38 (8)	16:26	16	15:50 (7)	16:17	25	05:37		06:31		19:47 (9)	07:27		07:24	16:07 (8)	08:23	15:36 (7)	08:58		21:51	25	21:03 (10)	20:48	24	20:11 (9)	19:31	17:19	31	16:38 (8)	16:25	13	15:49 (7)	16:17	26	05:38		06:33		19:47 (9)	07:29		07:26	16:07 (8)	08:25	15:38 (7)	08:58		21:49	25	21:04 (10)	20:45	24	20:11 (9)	19:29	17:17	30	16:37 (8)	16:24	10	15:48 (7)	16:18	27	05:40		06:35		19:48 (9)	07:31		07:27	16:07 (8)	08:27	15:41 (7)	08:58		21:47	25	21:03 (10)	20:43	22	20:10 (9)	19:26	17:15	29	16:36 (8)	16:23	5	15:46 (7)	16:19	28	05:42		06:36		19:48 (9)	07:32		07:29	16:09 (8)	08:28		08:58		21:46	25	21:04 (10)	20:40	20	20:08 (9)	19:24	17:13	27	16:36 (8)	16:22		16:19	29	05:43		06:38		19:49 (9)	07:34		07:31	16:09 (8)	08:30		08:58		21:44	25	21:03 (10)	20:38	18	20:07 (9)	19:21	17:11	26	16:35 (8)	16:21		16:20	30	05:45		06:40		19:50 (9)	07:36		07:33	16:10 (8)	08:32		08:58		21:42	24	21:03 (10)	20:36	16	20:06 (9)	19:19	17:09	24	16:34 (8)	16:20		16:21	31	05:47		06:42		19:53 (9)			07:35					08:58		21:40	23	21:03 (10)	20:33	10	20:03 (9)		17:06	20	16:32 (8)			16:22	Potential sun hours	515		461		382		328		257		231		Total, worst case	519		461		536		562		Sun reduction	0.27		0.27		0.23		0.20		Oper. time red.	1.00		1.00		1.00		1.00		Wind dir. red.	0.63		0.60		0.58		0.61		Total reduction	0.17		0.16		0.14		0.12		Total, real	86		75		73		68																										
	22:14	13	21:38 (11)	21:37	21	21:02 (10)	20:28	19:14	17:02	14	16:28 (8)	16:18	3	05:09	21:26 (11)	05:52	20:41 (10)	06:47	07:42		07:41	15:33 (7)	08:36			22:14	12	21:38 (11)	21:35	19	21:00 (10)	20:26	19:11	17:00	11	15:44 (7)	16:18	4	05:10	21:25 (11)	05:53	20:42 (10)	06:49	07:44		07:43	15:31 (7)	08:38			22:13	12	21:37 (11)	21:33	18	21:00 (10)	20:24	19:09	16:58	16	15:47 (7)	16:17	5	05:11	21:26 (11)	05:55	20:43 (10)	06:51	07:45		07:45	15:30 (7)	08:39			22:13	11	21:37 (11)	21:31	16	20:59 (10)	20:21	19:06	16:56	19	15:49 (7)	16:16	6	05:12	21:27 (11)	05:57	20:44 (10)	06:53	07:47		07:47	15:28 (7)	08:41			22:12	9	21:36 (11)	21:29	12	20:56 (10)	20:19	19:04	16:55	22	15:50 (7)	16:16	7	05:13	21:28 (11)	05:59	20:48 (10)	06:54	07:49		07:49	15:27 (7)	08:42			22:12	8	21:36 (11)	21:27	6	20:54 (10)	20:16	19:01	16:53	23	15:50 (7)	16:15	8	05:14	21:29 (11)	06:00		06:56	07:51		07:51	15:26 (7)	08:43			22:11	6	21:35 (11)	21:25		20:14	18:59	16:51	25	15:51 (7)	16:15	9	05:15	21:30 (11)	06:02		06:58	07:53		07:53	15:26 (7)	08:45			22:10	4	21:34 (11)	21:23		20:11	18:56	16:49	25	15:51 (7)	16:14	10	05:16		06:04		07:00	07:55		07:55	15:26 (7)	08:46			22:09		21:21		20:09	18:54		16:47	27	15:53 (7)	16:14	11	05:17		06:06		07:02	07:57		07:57	15:26 (7)	08:47			22:08	7	20:53 (10)	21:19	20:06	18:52		16:45	27	15:53 (7)	16:14	12	05:18		06:08		07:03	07:59		17:20 (8)	07:59	15:26 (7)	08:48		22:07	10	20:55 (10)	21:17	20:04	18:49	11	17:31 (8)	16:44	27	15:53 (7)	16:14	13	05:19		06:09		07:05	08:00		17:17 (8)	08:01	15:26 (7)	08:49		22:06	13	20:56 (10)	21:15	20:01	18:47	17	17:34 (8)	16:42	27	15:53 (7)	16:14	14	05:21		06:11		20:00 (9)	07:07		08:02	17:14 (8)	08:03	15:26 (7)	08:50		22:05	15	20:58 (10)	21:13	5	20:05 (9)	19:59	18:44	21	17:35 (8)	16:40	27	15:53 (7)	16:13	15	05:22		06:13		19:56 (9)	07:09		08:04	17:12 (8)	08:05	15:26 (7)	08:51		22:04	17	20:59 (10)	21:10	12	20:08 (9)	19:56	18:42	24	17:36 (8)	16:39	27	15:53 (7)	16:13	16	05:23		06:15		19:54 (9)	07:11		08:06	17:11 (8)	08:07	15:26 (7)	08:52		22:03	17	20:59 (10)	21:08	16	20:10 (9)	19:54	18:40	26	17:37 (8)	16:37	27	15:53 (7)	16:14	17	05:25		06:17		19:53 (9)	07:13		08:08	17:10 (8)	08:09	15:28 (7)	08:53		22:02	19	21:00 (10)	21:06	18	20:11 (9)	19:51	18:37	28	17:38 (8)	16:36	26	15:54 (7)	16:14	18	05:26		06:18		19:51 (9)	07:14		08:10	17:09 (8)	08:11	15:28 (7)	08:54		22:01	20	21:01 (10)	21:04	20	20:11 (9)	19:49	18:35	30	17:39 (8)	16:34	25	15:53 (7)	16:14	19	05:28		06:20		19:50 (9)	07:16		08:12	17:08 (8)	08:12	15:29 (7)	08:55		21:59	21	21:01 (10)	21:01	22	20:12 (9)	19:46	18:33	31	17:39 (8)	16:33	24	15:53 (7)	16:14	20	05:29		06:22		19:49 (9)	07:18		08:14	17:07 (8)	08:14	15:30 (7)	08:55		21:58	23	21:02 (10)	20:59	24	20:13 (9)	19:44	18:30	32	17:39 (8)	16:31	23	15:53 (7)	16:15	21	05:30		06:24		19:48 (9)	07:20		08:16	17:07 (8)	08:16	15:31 (7)	08:56		21:56	23	21:03 (10)	20:57	24	20:12 (9)	19:41	18:28	32	17:39 (8)	16:30	21	15:52 (7)	16:15	22	05:32		06:26		19:48 (9)	07:22		08:18	17:07 (8)	08:18	15:32 (7)	08:56		21:55	24	21:03 (10)	20:55	24	20:12 (9)	19:39	18:26	32	17:39 (8)	16:29	20	15:52 (7)	16:15	23	05:34		06:27		19:48 (9)	07:23		08:20	17:06 (8)	08:20	15:33 (7)	08:57		21:54	25	21:04 (10)	20:52	24	20:12 (9)	19:36	18:24	33	17:39 (8)	16:27	18	15:51 (7)	16:16	24	05:35		06:29		19:48 (9)	07:25		08:22	17:06 (8)	08:22	15:34 (7)	08:57		21:52	24	21:03 (10)	20:50	24	20:12 (9)	19:34	18:21	32	17:38 (8)	16:26	16	15:50 (7)	16:17	25	05:37		06:31		19:47 (9)	07:27		07:24	16:07 (8)	08:23	15:36 (7)	08:58		21:51	25	21:03 (10)	20:48	24	20:11 (9)	19:31	17:19	31	16:38 (8)	16:25	13	15:49 (7)	16:17	26	05:38		06:33		19:47 (9)	07:29		07:26	16:07 (8)	08:25	15:38 (7)	08:58		21:49	25	21:04 (10)	20:45	24	20:11 (9)	19:29	17:17	30	16:37 (8)	16:24	10	15:48 (7)	16:18	27	05:40		06:35		19:48 (9)	07:31		07:27	16:07 (8)	08:27	15:41 (7)	08:58		21:47	25	21:03 (10)	20:43	22	20:10 (9)	19:26	17:15	29	16:36 (8)	16:23	5	15:46 (7)	16:19	28	05:42		06:36		19:48 (9)	07:32		07:29	16:09 (8)	08:28		08:58		21:46	25	21:04 (10)	20:40	20	20:08 (9)	19:24	17:13	27	16:36 (8)	16:22		16:19	29	05:43		06:38		19:49 (9)	07:34		07:31	16:09 (8)	08:30		08:58		21:44	25	21:03 (10)	20:38	18	20:07 (9)	19:21	17:11	26	16:35 (8)	16:21		16:20	30	05:45		06:40		19:50 (9)	07:36		07:33	16:10 (8)	08:32		08:58		21:42	24	21:03 (10)	20:36	16	20:06 (9)	19:19	17:09	24	16:34 (8)	16:20		16:21	31	05:47		06:42		19:53 (9)			07:35					08:58		21:40	23	21:03 (10)	20:33	10	20:03 (9)		17:06	20	16:32 (8)			16:22	Potential sun hours	515		461		382		328		257		231		Total, worst case	519		461		536		562		Sun reduction	0.27		0.27		0.23		0.20		Oper. time red.	1.00		1.00		1.00		1.00		Wind dir. red.	0.63		0.60		0.58		0.61		Total reduction	0.17		0.16		0.14		0.12		Total, real	86		75		73		68																																						
3	05:09	21:26 (11)	05:52	20:41 (10)	06:47	07:42		07:41	15:33 (7)	08:36			22:14	12	21:38 (11)	21:35	19	21:00 (10)	20:26	19:11	17:00	11	15:44 (7)	16:18	4	05:10	21:25 (11)	05:53	20:42 (10)	06:49	07:44		07:43	15:31 (7)	08:38			22:13	12	21:37 (11)	21:33	18	21:00 (10)	20:24	19:09	16:58	16	15:47 (7)	16:17	5	05:11	21:26 (11)	05:55	20:43 (10)	06:51	07:45		07:45	15:30 (7)	08:39			22:13	11	21:37 (11)	21:31	16	20:59 (10)	20:21	19:06	16:56	19	15:49 (7)	16:16	6	05:12	21:27 (11)	05:57	20:44 (10)	06:53	07:47		07:47	15:28 (7)	08:41			22:12	9	21:36 (11)	21:29	12	20:56 (10)	20:19	19:04	16:55	22	15:50 (7)	16:16	7	05:13	21:28 (11)	05:59	20:48 (10)	06:54	07:49		07:49	15:27 (7)	08:42			22:12	8	21:36 (11)	21:27	6	20:54 (10)	20:16	19:01	16:53	23	15:50 (7)	16:15	8	05:14	21:29 (11)	06:00		06:56	07:51		07:51	15:26 (7)	08:43			22:11	6	21:35 (11)	21:25		20:14	18:59	16:51	25	15:51 (7)	16:15	9	05:15	21:30 (11)	06:02		06:58	07:53		07:53	15:26 (7)	08:45			22:10	4	21:34 (11)	21:23		20:11	18:56	16:49	25	15:51 (7)	16:14	10	05:16		06:04		07:00	07:55		07:55	15:26 (7)	08:46			22:09		21:21		20:09	18:54		16:47	27	15:53 (7)	16:14	11	05:17		06:06		07:02	07:57		07:57	15:26 (7)	08:47			22:08	7	20:53 (10)	21:19	20:06	18:52		16:45	27	15:53 (7)	16:14	12	05:18		06:08		07:03	07:59		17:20 (8)	07:59	15:26 (7)	08:48		22:07	10	20:55 (10)	21:17	20:04	18:49	11	17:31 (8)	16:44	27	15:53 (7)	16:14	13	05:19		06:09		07:05	08:00		17:17 (8)	08:01	15:26 (7)	08:49		22:06	13	20:56 (10)	21:15	20:01	18:47	17	17:34 (8)	16:42	27	15:53 (7)	16:14	14	05:21		06:11		20:00 (9)	07:07		08:02	17:14 (8)	08:03	15:26 (7)	08:50		22:05	15	20:58 (10)	21:13	5	20:05 (9)	19:59	18:44	21	17:35 (8)	16:40	27	15:53 (7)	16:13	15	05:22		06:13		19:56 (9)	07:09		08:04	17:12 (8)	08:05	15:26 (7)	08:51		22:04	17	20:59 (10)	21:10	12	20:08 (9)	19:56	18:42	24	17:36 (8)	16:39	27	15:53 (7)	16:13	16	05:23		06:15		19:54 (9)	07:11		08:06	17:11 (8)	08:07	15:26 (7)	08:52		22:03	17	20:59 (10)	21:08	16	20:10 (9)	19:54	18:40	26	17:37 (8)	16:37	27	15:53 (7)	16:14	17	05:25		06:17		19:53 (9)	07:13		08:08	17:10 (8)	08:09	15:28 (7)	08:53		22:02	19	21:00 (10)	21:06	18	20:11 (9)	19:51	18:37	28	17:38 (8)	16:36	26	15:54 (7)	16:14	18	05:26		06:18		19:51 (9)	07:14		08:10	17:09 (8)	08:11	15:28 (7)	08:54		22:01	20	21:01 (10)	21:04	20	20:11 (9)	19:49	18:35	30	17:39 (8)	16:34	25	15:53 (7)	16:14	19	05:28		06:20		19:50 (9)	07:16		08:12	17:08 (8)	08:12	15:29 (7)	08:55		21:59	21	21:01 (10)	21:01	22	20:12 (9)	19:46	18:33	31	17:39 (8)	16:33	24	15:53 (7)	16:14	20	05:29		06:22		19:49 (9)	07:18		08:14	17:07 (8)	08:14	15:30 (7)	08:55		21:58	23	21:02 (10)	20:59	24	20:13 (9)	19:44	18:30	32	17:39 (8)	16:31	23	15:53 (7)	16:15	21	05:30		06:24		19:48 (9)	07:20		08:16	17:07 (8)	08:16	15:31 (7)	08:56		21:56	23	21:03 (10)	20:57	24	20:12 (9)	19:41	18:28	32	17:39 (8)	16:30	21	15:52 (7)	16:15	22	05:32		06:26		19:48 (9)	07:22		08:18	17:07 (8)	08:18	15:32 (7)	08:56		21:55	24	21:03 (10)	20:55	24	20:12 (9)	19:39	18:26	32	17:39 (8)	16:29	20	15:52 (7)	16:15	23	05:34		06:27		19:48 (9)	07:23		08:20	17:06 (8)	08:20	15:33 (7)	08:57		21:54	25	21:04 (10)	20:52	24	20:12 (9)	19:36	18:24	33	17:39 (8)	16:27	18	15:51 (7)	16:16	24	05:35		06:29		19:48 (9)	07:25		08:22	17:06 (8)	08:22	15:34 (7)	08:57		21:52	24	21:03 (10)	20:50	24	20:12 (9)	19:34	18:21	32	17:38 (8)	16:26	16	15:50 (7)	16:17	25	05:37		06:31		19:47 (9)	07:27		07:24	16:07 (8)	08:23	15:36 (7)	08:58		21:51	25	21:03 (10)	20:48	24	20:11 (9)	19:31	17:19	31	16:38 (8)	16:25	13	15:49 (7)	16:17	26	05:38		06:33		19:47 (9)	07:29		07:26	16:07 (8)	08:25	15:38 (7)	08:58		21:49	25	21:04 (10)	20:45	24	20:11 (9)	19:29	17:17	30	16:37 (8)	16:24	10	15:48 (7)	16:18	27	05:40		06:35		19:48 (9)	07:31		07:27	16:07 (8)	08:27	15:41 (7)	08:58		21:47	25	21:03 (10)	20:43	22	20:10 (9)	19:26	17:15	29	16:36 (8)	16:23	5	15:46 (7)	16:19	28	05:42		06:36		19:48 (9)	07:32		07:29	16:09 (8)	08:28		08:58		21:46	25	21:04 (10)	20:40	20	20:08 (9)	19:24	17:13	27	16:36 (8)	16:22		16:19	29	05:43		06:38		19:49 (9)	07:34		07:31	16:09 (8)	08:30		08:58		21:44	25	21:03 (10)	20:38	18	20:07 (9)	19:21	17:11	26	16:35 (8)	16:21		16:20	30	05:45		06:40		19:50 (9)	07:36		07:33	16:10 (8)	08:32		08:58		21:42	24	21:03 (10)	20:36	16	20:06 (9)	19:19	17:09	24	16:34 (8)	16:20		16:21	31	05:47		06:42		19:53 (9)			07:35					08:58		21:40	23	21:03 (10)	20:33	10	20:03 (9)		17:06	20	16:32 (8)			16:22	Potential sun hours	515		461		382		328		257		231		Total, worst case	519		461		536		562		Sun reduction	0.27		0.27		0.23		0.20		Oper. time red.	1.00		1.00		1.00		1.00		Wind dir. red.	0.63		0.60		0.58		0.61		Total reduction	0.17		0.16		0.14		0.12		Total, real	86		75		73		68																																																			
	22:14	12	21:38 (11)	21:35	19	21:00 (10)	20:26	19:11	17:00	11	15:44 (7)	16:18	4	05:10	21:25 (11)	05:53	20:42 (10)	06:49	07:44		07:43	15:31 (7)	08:38			22:13	12	21:37 (11)	21:33	18	21:00 (10)	20:24	19:09	16:58	16	15:47 (7)	16:17	5	05:11	21:26 (11)	05:55	20:43 (10)	06:51	07:45		07:45	15:30 (7)	08:39			22:13	11	21:37 (11)	21:31	16	20:59 (10)	20:21	19:06	16:56	19	15:49 (7)	16:16	6	05:12	21:27 (11)	05:57	20:44 (10)	06:53	07:47		07:47	15:28 (7)	08:41			22:12	9	21:36 (11)	21:29	12	20:56 (10)	20:19	19:04	16:55	22	15:50 (7)	16:16	7	05:13	21:28 (11)	05:59	20:48 (10)	06:54	07:49		07:49	15:27 (7)	08:42			22:12	8	21:36 (11)	21:27	6	20:54 (10)	20:16	19:01	16:53	23	15:50 (7)	16:15	8	05:14	21:29 (11)	06:00		06:56	07:51		07:51	15:26 (7)	08:43			22:11	6	21:35 (11)	21:25		20:14	18:59	16:51	25	15:51 (7)	16:15	9	05:15	21:30 (11)	06:02		06:58	07:53		07:53	15:26 (7)	08:45			22:10	4	21:34 (11)	21:23		20:11	18:56	16:49	25	15:51 (7)	16:14	10	05:16		06:04		07:00	07:55		07:55	15:26 (7)	08:46			22:09		21:21		20:09	18:54		16:47	27	15:53 (7)	16:14	11	05:17		06:06		07:02	07:57		07:57	15:26 (7)	08:47			22:08	7	20:53 (10)	21:19	20:06	18:52		16:45	27	15:53 (7)	16:14	12	05:18		06:08		07:03	07:59		17:20 (8)	07:59	15:26 (7)	08:48		22:07	10	20:55 (10)	21:17	20:04	18:49	11	17:31 (8)	16:44	27	15:53 (7)	16:14	13	05:19		06:09		07:05	08:00		17:17 (8)	08:01	15:26 (7)	08:49		22:06	13	20:56 (10)	21:15	20:01	18:47	17	17:34 (8)	16:42	27	15:53 (7)	16:14	14	05:21		06:11		20:00 (9)	07:07		08:02	17:14 (8)	08:03	15:26 (7)	08:50		22:05	15	20:58 (10)	21:13	5	20:05 (9)	19:59	18:44	21	17:35 (8)	16:40	27	15:53 (7)	16:13	15	05:22		06:13		19:56 (9)	07:09		08:04	17:12 (8)	08:05	15:26 (7)	08:51		22:04	17	20:59 (10)	21:10	12	20:08 (9)	19:56	18:42	24	17:36 (8)	16:39	27	15:53 (7)	16:13	16	05:23		06:15		19:54 (9)	07:11		08:06	17:11 (8)	08:07	15:26 (7)	08:52		22:03	17	20:59 (10)	21:08	16	20:10 (9)	19:54	18:40	26	17:37 (8)	16:37	27	15:53 (7)	16:14	17	05:25		06:17		19:53 (9)	07:13		08:08	17:10 (8)	08:09	15:28 (7)	08:53		22:02	19	21:00 (10)	21:06	18	20:11 (9)	19:51	18:37	28	17:38 (8)	16:36	26	15:54 (7)	16:14	18	05:26		06:18		19:51 (9)	07:14		08:10	17:09 (8)	08:11	15:28 (7)	08:54		22:01	20	21:01 (10)	21:04	20	20:11 (9)	19:49	18:35	30	17:39 (8)	16:34	25	15:53 (7)	16:14	19	05:28		06:20		19:50 (9)	07:16		08:12	17:08 (8)	08:12	15:29 (7)	08:55		21:59	21	21:01 (10)	21:01	22	20:12 (9)	19:46	18:33	31	17:39 (8)	16:33	24	15:53 (7)	16:14	20	05:29		06:22		19:49 (9)	07:18		08:14	17:07 (8)	08:14	15:30 (7)	08:55		21:58	23	21:02 (10)	20:59	24	20:13 (9)	19:44	18:30	32	17:39 (8)	16:31	23	15:53 (7)	16:15	21	05:30		06:24		19:48 (9)	07:20		08:16	17:07 (8)	08:16	15:31 (7)	08:56		21:56	23	21:03 (10)	20:57	24	20:12 (9)	19:41	18:28	32	17:39 (8)	16:30	21	15:52 (7)	16:15	22	05:32		06:26		19:48 (9)	07:22		08:18	17:07 (8)	08:18	15:32 (7)	08:56		21:55	24	21:03 (10)	20:55	24	20:12 (9)	19:39	18:26	32	17:39 (8)	16:29	20	15:52 (7)	16:15	23	05:34		06:27		19:48 (9)	07:23		08:20	17:06 (8)	08:20	15:33 (7)	08:57		21:54	25	21:04 (10)	20:52	24	20:12 (9)	19:36	18:24	33	17:39 (8)	16:27	18	15:51 (7)	16:16	24	05:35		06:29		19:48 (9)	07:25		08:22	17:06 (8)	08:22	15:34 (7)	08:57		21:52	24	21:03 (10)	20:50	24	20:12 (9)	19:34	18:21	32	17:38 (8)	16:26	16	15:50 (7)	16:17	25	05:37		06:31		19:47 (9)	07:27		07:24	16:07 (8)	08:23	15:36 (7)	08:58		21:51	25	21:03 (10)	20:48	24	20:11 (9)	19:31	17:19	31	16:38 (8)	16:25	13	15:49 (7)	16:17	26	05:38		06:33		19:47 (9)	07:29		07:26	16:07 (8)	08:25	15:38 (7)	08:58		21:49	25	21:04 (10)	20:45	24	20:11 (9)	19:29	17:17	30	16:37 (8)	16:24	10	15:48 (7)	16:18	27	05:40		06:35		19:48 (9)	07:31		07:27	16:07 (8)	08:27	15:41 (7)	08:58		21:47	25	21:03 (10)	20:43	22	20:10 (9)	19:26	17:15	29	16:36 (8)	16:23	5	15:46 (7)	16:19	28	05:42		06:36		19:48 (9)	07:32		07:29	16:09 (8)	08:28		08:58		21:46	25	21:04 (10)	20:40	20	20:08 (9)	19:24	17:13	27	16:36 (8)	16:22		16:19	29	05:43		06:38		19:49 (9)	07:34		07:31	16:09 (8)	08:30		08:58		21:44	25	21:03 (10)	20:38	18	20:07 (9)	19:21	17:11	26	16:35 (8)	16:21		16:20	30	05:45		06:40		19:50 (9)	07:36		07:33	16:10 (8)	08:32		08:58		21:42	24	21:03 (10)	20:36	16	20:06 (9)	19:19	17:09	24	16:34 (8)	16:20		16:21	31	05:47		06:42		19:53 (9)			07:35					08:58		21:40	23	21:03 (10)	20:33	10	20:03 (9)		17:06	20	16:32 (8)			16:22	Potential sun hours	515		461		382		328		257		231		Total, worst case	519		461		536		562		Sun reduction	0.27		0.27		0.23		0.20		Oper. time red.	1.00		1.00		1.00		1.00		Wind dir. red.	0.63		0.60		0.58		0.61		Total reduction	0.17		0.16		0.14		0.12		Total, real	86		75		73		68																																																															
4	05:10	21:25 (11)	05:53	20:42 (10)	06:49	07:44		07:43	15:31 (7)	08:38			22:13	12	21:37 (11)	21:33	18	21:00 (10)	20:24	19:09	16:58	16	15:47 (7)	16:17	5	05:11	21:26 (11)	05:55	20:43 (10)	06:51	07:45		07:45	15:30 (7)	08:39			22:13	11	21:37 (11)	21:31	16	20:59 (10)	20:21	19:06	16:56	19	15:49 (7)	16:16	6	05:12	21:27 (11)	05:57	20:44 (10)	06:53	07:47		07:47	15:28 (7)	08:41			22:12	9	21:36 (11)	21:29	12	20:56 (10)	20:19	19:04	16:55	22	15:50 (7)	16:16	7	05:13	21:28 (11)	05:59	20:48 (10)	06:54	07:49		07:49	15:27 (7)	08:42			22:12	8	21:36 (11)	21:27	6	20:54 (10)	20:16	19:01	16:53	23	15:50 (7)	16:15	8	05:14	21:29 (11)	06:00		06:56	07:51		07:51	15:26 (7)	08:43			22:11	6	21:35 (11)	21:25		20:14	18:59	16:51	25	15:51 (7)	16:15	9	05:15	21:30 (11)	06:02		06:58	07:53		07:53	15:26 (7)	08:45			22:10	4	21:34 (11)	21:23		20:11	18:56	16:49	25	15:51 (7)	16:14	10	05:16		06:04		07:00	07:55		07:55	15:26 (7)	08:46			22:09		21:21		20:09	18:54		16:47	27	15:53 (7)	16:14	11	05:17		06:06		07:02	07:57		07:57	15:26 (7)	08:47			22:08	7	20:53 (10)	21:19	20:06	18:52		16:45	27	15:53 (7)	16:14	12	05:18		06:08		07:03	07:59		17:20 (8)	07:59	15:26 (7)	08:48		22:07	10	20:55 (10)	21:17	20:04	18:49	11	17:31 (8)	16:44	27	15:53 (7)	16:14	13	05:19		06:09		07:05	08:00		17:17 (8)	08:01	15:26 (7)	08:49		22:06	13	20:56 (10)	21:15	20:01	18:47	17	17:34 (8)	16:42	27	15:53 (7)	16:14	14	05:21		06:11		20:00 (9)	07:07		08:02	17:14 (8)	08:03	15:26 (7)	08:50		22:05	15	20:58 (10)	21:13	5	20:05 (9)	19:59	18:44	21	17:35 (8)	16:40	27	15:53 (7)	16:13	15	05:22		06:13		19:56 (9)	07:09		08:04	17:12 (8)	08:05	15:26 (7)	08:51		22:04	17	20:59 (10)	21:10	12	20:08 (9)	19:56	18:42	24	17:36 (8)	16:39	27	15:53 (7)	16:13	16	05:23		06:15		19:54 (9)	07:11		08:06	17:11 (8)	08:07	15:26 (7)	08:52		22:03	17	20:59 (10)	21:08	16	20:10 (9)	19:54	18:40	26	17:37 (8)	16:37	27	15:53 (7)	16:14	17	05:25		06:17		19:53 (9)	07:13		08:08	17:10 (8)	08:09	15:28 (7)	08:53		22:02	19	21:00 (10)	21:06	18	20:11 (9)	19:51	18:37	28	17:38 (8)	16:36	26	15:54 (7)	16:14	18	05:26		06:18		19:51 (9)	07:14		08:10	17:09 (8)	08:11	15:28 (7)	08:54		22:01	20	21:01 (10)	21:04	20	20:11 (9)	19:49	18:35	30	17:39 (8)	16:34	25	15:53 (7)	16:14	19	05:28		06:20		19:50 (9)	07:16		08:12	17:08 (8)	08:12	15:29 (7)	08:55		21:59	21	21:01 (10)	21:01	22	20:12 (9)	19:46	18:33	31	17:39 (8)	16:33	24	15:53 (7)	16:14	20	05:29		06:22		19:49 (9)	07:18		08:14	17:07 (8)	08:14	15:30 (7)	08:55		21:58	23	21:02 (10)	20:59	24	20:13 (9)	19:44	18:30	32	17:39 (8)	16:31	23	15:53 (7)	16:15	21	05:30		06:24		19:48 (9)	07:20		08:16	17:07 (8)	08:16	15:31 (7)	08:56		21:56	23	21:03 (10)	20:57	24	20:12 (9)	19:41	18:28	32	17:39 (8)	16:30	21	15:52 (7)	16:15	22	05:32		06:26		19:48 (9)	07:22		08:18	17:07 (8)	08:18	15:32 (7)	08:56		21:55	24	21:03 (10)	20:55	24	20:12 (9)	19:39	18:26	32	17:39 (8)	16:29	20	15:52 (7)	16:15	23	05:34		06:27		19:48 (9)	07:23		08:20	17:06 (8)	08:20	15:33 (7)	08:57		21:54	25	21:04 (10)	20:52	24	20:12 (9)	19:36	18:24	33	17:39 (8)	16:27	18	15:51 (7)	16:16	24	05:35		06:29		19:48 (9)	07:25		08:22	17:06 (8)	08:22	15:34 (7)	08:57		21:52	24	21:03 (10)	20:50	24	20:12 (9)	19:34	18:21	32	17:38 (8)	16:26	16	15:50 (7)	16:17	25	05:37		06:31		19:47 (9)	07:27		07:24	16:07 (8)	08:23	15:36 (7)	08:58		21:51	25	21:03 (10)	20:48	24	20:11 (9)	19:31	17:19	31	16:38 (8)	16:25	13	15:49 (7)	16:17	26	05:38		06:33		19:47 (9)	07:29		07:26	16:07 (8)	08:25	15:38 (7)	08:58		21:49	25	21:04 (10)	20:45	24	20:11 (9)	19:29	17:17	30	16:37 (8)	16:24	10	15:48 (7)	16:18	27	05:40		06:35		19:48 (9)	07:31		07:27	16:07 (8)	08:27	15:41 (7)	08:58		21:47	25	21:03 (10)	20:43	22	20:10 (9)	19:26	17:15	29	16:36 (8)	16:23	5	15:46 (7)	16:19	28	05:42		06:36		19:48 (9)	07:32		07:29	16:09 (8)	08:28		08:58		21:46	25	21:04 (10)	20:40	20	20:08 (9)	19:24	17:13	27	16:36 (8)	16:22		16:19	29	05:43		06:38		19:49 (9)	07:34		07:31	16:09 (8)	08:30		08:58		21:44	25	21:03 (10)	20:38	18	20:07 (9)	19:21	17:11	26	16:35 (8)	16:21		16:20	30	05:45		06:40		19:50 (9)	07:36		07:33	16:10 (8)	08:32		08:58		21:42	24	21:03 (10)	20:36	16	20:06 (9)	19:19	17:09	24	16:34 (8)	16:20		16:21	31	05:47		06:42		19:53 (9)			07:35					08:58		21:40	23	21:03 (10)	20:33	10	20:03 (9)		17:06	20	16:32 (8)			16:22	Potential sun hours	515		461		382		328		257		231		Total, worst case	519		461		536		562		Sun reduction	0.27		0.27		0.23		0.20		Oper. time red.	1.00		1.00		1.00		1.00		Wind dir. red.	0.63		0.60		0.58		0.61		Total reduction	0.17		0.16		0.14		0.12		Total, real	86		75		73		68																																																																												
	22:13	12	21:37 (11)	21:33	18	21:00 (10)	20:24	19:09	16:58	16	15:47 (7)	16:17	5	05:11	21:26 (11)	05:55	20:43 (10)	06:51	07:45		07:45	15:30 (7)	08:39			22:13	11	21:37 (11)	21:31	16	20:59 (10)	20:21	19:06	16:56	19	15:49 (7)	16:16	6	05:12	21:27 (11)	05:57	20:44 (10)	06:53	07:47		07:47	15:28 (7)	08:41			22:12	9	21:36 (11)	21:29	12	20:56 (10)	20:19	19:04	16:55	22	15:50 (7)	16:16	7	05:13	21:28 (11)	05:59	20:48 (10)	06:54	07:49		07:49	15:27 (7)	08:42			22:12	8	21:36 (11)	21:27	6	20:54 (10)	20:16	19:01	16:53	23	15:50 (7)	16:15	8	05:14	21:29 (11)	06:00		06:56	07:51		07:51	15:26 (7)	08:43			22:11	6	21:35 (11)	21:25		20:14	18:59	16:51	25	15:51 (7)	16:15	9	05:15	21:30 (11)	06:02		06:58	07:53		07:53	15:26 (7)	08:45			22:10	4	21:34 (11)	21:23		20:11	18:56	16:49	25	15:51 (7)	16:14	10	05:16		06:04		07:00	07:55		07:55	15:26 (7)	08:46			22:09		21:21		20:09	18:54		16:47	27	15:53 (7)	16:14	11	05:17		06:06		07:02	07:57		07:57	15:26 (7)	08:47			22:08	7	20:53 (10)	21:19	20:06	18:52		16:45	27	15:53 (7)	16:14	12	05:18		06:08		07:03	07:59		17:20 (8)	07:59	15:26 (7)	08:48		22:07	10	20:55 (10)	21:17	20:04	18:49	11	17:31 (8)	16:44	27	15:53 (7)	16:14	13	05:19		06:09		07:05	08:00		17:17 (8)	08:01	15:26 (7)	08:49		22:06	13	20:56 (10)	21:15	20:01	18:47	17	17:34 (8)	16:42	27	15:53 (7)	16:14	14	05:21		06:11		20:00 (9)	07:07		08:02	17:14 (8)	08:03	15:26 (7)	08:50		22:05	15	20:58 (10)	21:13	5	20:05 (9)	19:59	18:44	21	17:35 (8)	16:40	27	15:53 (7)	16:13	15	05:22		06:13		19:56 (9)	07:09		08:04	17:12 (8)	08:05	15:26 (7)	08:51		22:04	17	20:59 (10)	21:10	12	20:08 (9)	19:56	18:42	24	17:36 (8)	16:39	27	15:53 (7)	16:13	16	05:23		06:15		19:54 (9)	07:11		08:06	17:11 (8)	08:07	15:26 (7)	08:52		22:03	17	20:59 (10)	21:08	16	20:10 (9)	19:54	18:40	26	17:37 (8)	16:37	27	15:53 (7)	16:14	17	05:25		06:17		19:53 (9)	07:13		08:08	17:10 (8)	08:09	15:28 (7)	08:53		22:02	19	21:00 (10)	21:06	18	20:11 (9)	19:51	18:37	28	17:38 (8)	16:36	26	15:54 (7)	16:14	18	05:26		06:18		19:51 (9)	07:14		08:10	17:09 (8)	08:11	15:28 (7)	08:54		22:01	20	21:01 (10)	21:04	20	20:11 (9)	19:49	18:35	30	17:39 (8)	16:34	25	15:53 (7)	16:14	19	05:28		06:20		19:50 (9)	07:16		08:12	17:08 (8)	08:12	15:29 (7)	08:55		21:59	21	21:01 (10)	21:01	22	20:12 (9)	19:46	18:33	31	17:39 (8)	16:33	24	15:53 (7)	16:14	20	05:29		06:22		19:49 (9)	07:18		08:14	17:07 (8)	08:14	15:30 (7)	08:55		21:58	23	21:02 (10)	20:59	24	20:13 (9)	19:44	18:30	32	17:39 (8)	16:31	23	15:53 (7)	16:15	21	05:30		06:24		19:48 (9)	07:20		08:16	17:07 (8)	08:16	15:31 (7)	08:56		21:56	23	21:03 (10)	20:57	24	20:12 (9)	19:41	18:28	32	17:39 (8)	16:30	21	15:52 (7)	16:15	22	05:32		06:26		19:48 (9)	07:22		08:18	17:07 (8)	08:18	15:32 (7)	08:56		21:55	24	21:03 (10)	20:55	24	20:12 (9)	19:39	18:26	32	17:39 (8)	16:29	20	15:52 (7)	16:15	23	05:34		06:27		19:48 (9)	07:23		08:20	17:06 (8)	08:20	15:33 (7)	08:57		21:54	25	21:04 (10)	20:52	24	20:12 (9)	19:36	18:24	33	17:39 (8)	16:27	18	15:51 (7)	16:16	24	05:35		06:29		19:48 (9)	07:25		08:22	17:06 (8)	08:22	15:34 (7)	08:57		21:52	24	21:03 (10)	20:50	24	20:12 (9)	19:34	18:21	32	17:38 (8)	16:26	16	15:50 (7)	16:17	25	05:37		06:31		19:47 (9)	07:27		07:24	16:07 (8)	08:23	15:36 (7)	08:58		21:51	25	21:03 (10)	20:48	24	20:11 (9)	19:31	17:19	31	16:38 (8)	16:25	13	15:49 (7)	16:17	26	05:38		06:33		19:47 (9)	07:29		07:26	16:07 (8)	08:25	15:38 (7)	08:58		21:49	25	21:04 (10)	20:45	24	20:11 (9)	19:29	17:17	30	16:37 (8)	16:24	10	15:48 (7)	16:18	27	05:40		06:35		19:48 (9)	07:31		07:27	16:07 (8)	08:27	15:41 (7)	08:58		21:47	25	21:03 (10)	20:43	22	20:10 (9)	19:26	17:15	29	16:36 (8)	16:23	5	15:46 (7)	16:19	28	05:42		06:36		19:48 (9)	07:32		07:29	16:09 (8)	08:28		08:58		21:46	25	21:04 (10)	20:40	20	20:08 (9)	19:24	17:13	27	16:36 (8)	16:22		16:19	29	05:43		06:38		19:49 (9)	07:34		07:31	16:09 (8)	08:30		08:58		21:44	25	21:03 (10)	20:38	18	20:07 (9)	19:21	17:11	26	16:35 (8)	16:21		16:20	30	05:45		06:40		19:50 (9)	07:36		07:33	16:10 (8)	08:32		08:58		21:42	24	21:03 (10)	20:36	16	20:06 (9)	19:19	17:09	24	16:34 (8)	16:20		16:21	31	05:47		06:42		19:53 (9)			07:35					08:58		21:40	23	21:03 (10)	20:33	10	20:03 (9)		17:06	20	16:32 (8)			16:22	Potential sun hours	515		461		382		328		257		231		Total, worst case	519		461		536		562		Sun reduction	0.27		0.27		0.23		0.20		Oper. time red.	1.00		1.00		1.00		1.00		Wind dir. red.	0.63		0.60		0.58		0.61		Total reduction	0.17		0.16		0.14		0.12		Total, real	86		75		73		68																																																																																								
5	05:11	21:26 (11)	05:55	20:43 (10)	06:51	07:45		07:45	15:30 (7)	08:39			22:13	11	21:37 (11)	21:31	16	20:59 (10)	20:21	19:06	16:56	19	15:49 (7)	16:16	6	05:12	21:27 (11)	05:57	20:44 (10)	06:53	07:47		07:47	15:28 (7)	08:41			22:12	9	21:36 (11)	21:29	12	20:56 (10)	20:19	19:04	16:55	22	15:50 (7)	16:16	7	05:13	21:28 (11)	05:59	20:48 (10)	06:54	07:49		07:49	15:27 (7)	08:42			22:12	8	21:36 (11)	21:27	6	20:54 (10)	20:16	19:01	16:53	23	15:50 (7)	16:15	8	05:14	21:29 (11)	06:00		06:56	07:51		07:51	15:26 (7)	08:43			22:11	6	21:35 (11)	21:25		20:14	18:59	16:51	25	15:51 (7)	16:15	9	05:15	21:30 (11)	06:02		06:58	07:53		07:53	15:26 (7)	08:45			22:10	4	21:34 (11)	21:23		20:11	18:56	16:49	25	15:51 (7)	16:14	10	05:16		06:04		07:00	07:55		07:55	15:26 (7)	08:46			22:09		21:21		20:09	18:54		16:47	27	15:53 (7)	16:14	11	05:17		06:06		07:02	07:57		07:57	15:26 (7)	08:47			22:08	7	20:53 (10)	21:19	20:06	18:52		16:45	27	15:53 (7)	16:14	12	05:18		06:08		07:03	07:59		17:20 (8)	07:59	15:26 (7)	08:48		22:07	10	20:55 (10)	21:17	20:04	18:49	11	17:31 (8)	16:44	27	15:53 (7)	16:14	13	05:19		06:09		07:05	08:00		17:17 (8)	08:01	15:26 (7)	08:49		22:06	13	20:56 (10)	21:15	20:01	18:47	17	17:34 (8)	16:42	27	15:53 (7)	16:14	14	05:21		06:11		20:00 (9)	07:07		08:02	17:14 (8)	08:03	15:26 (7)	08:50		22:05	15	20:58 (10)	21:13	5	20:05 (9)	19:59	18:44	21	17:35 (8)	16:40	27	15:53 (7)	16:13	15	05:22		06:13		19:56 (9)	07:09		08:04	17:12 (8)	08:05	15:26 (7)	08:51		22:04	17	20:59 (10)	21:10	12	20:08 (9)	19:56	18:42	24	17:36 (8)	16:39	27	15:53 (7)	16:13	16	05:23		06:15		19:54 (9)	07:11		08:06	17:11 (8)	08:07	15:26 (7)	08:52		22:03	17	20:59 (10)	21:08	16	20:10 (9)	19:54	18:40	26	17:37 (8)	16:37	27	15:53 (7)	16:14	17	05:25		06:17		19:53 (9)	07:13		08:08	17:10 (8)	08:09	15:28 (7)	08:53		22:02	19	21:00 (10)	21:06	18	20:11 (9)	19:51	18:37	28	17:38 (8)	16:36	26	15:54 (7)	16:14	18	05:26		06:18		19:51 (9)	07:14		08:10	17:09 (8)	08:11	15:28 (7)	08:54		22:01	20	21:01 (10)	21:04	20	20:11 (9)	19:49	18:35	30	17:39 (8)	16:34	25	15:53 (7)	16:14	19	05:28		06:20		19:50 (9)	07:16		08:12	17:08 (8)	08:12	15:29 (7)	08:55		21:59	21	21:01 (10)	21:01	22	20:12 (9)	19:46	18:33	31	17:39 (8)	16:33	24	15:53 (7)	16:14	20	05:29		06:22		19:49 (9)	07:18		08:14	17:07 (8)	08:14	15:30 (7)	08:55		21:58	23	21:02 (10)	20:59	24	20:13 (9)	19:44	18:30	32	17:39 (8)	16:31	23	15:53 (7)	16:15	21	05:30		06:24		19:48 (9)	07:20		08:16	17:07 (8)	08:16	15:31 (7)	08:56		21:56	23	21:03 (10)	20:57	24	20:12 (9)	19:41	18:28	32	17:39 (8)	16:30	21	15:52 (7)	16:15	22	05:32		06:26		19:48 (9)	07:22		08:18	17:07 (8)	08:18	15:32 (7)	08:56		21:55	24	21:03 (10)	20:55	24	20:12 (9)	19:39	18:26	32	17:39 (8)	16:29	20	15:52 (7)	16:15	23	05:34		06:27		19:48 (9)	07:23		08:20	17:06 (8)	08:20	15:33 (7)	08:57		21:54	25	21:04 (10)	20:52	24	20:12 (9)	19:36	18:24	33	17:39 (8)	16:27	18	15:51 (7)	16:16	24	05:35		06:29		19:48 (9)	07:25		08:22	17:06 (8)	08:22	15:34 (7)	08:57		21:52	24	21:03 (10)	20:50	24	20:12 (9)	19:34	18:21	32	17:38 (8)	16:26	16	15:50 (7)	16:17	25	05:37		06:31		19:47 (9)	07:27		07:24	16:07 (8)	08:23	15:36 (7)	08:58		21:51	25	21:03 (10)	20:48	24	20:11 (9)	19:31	17:19	31	16:38 (8)	16:25	13	15:49 (7)	16:17	26	05:38		06:33		19:47 (9)	07:29		07:26	16:07 (8)	08:25	15:38 (7)	08:58		21:49	25	21:04 (10)	20:45	24	20:11 (9)	19:29	17:17	30	16:37 (8)	16:24	10	15:48 (7)	16:18	27	05:40		06:35		19:48 (9)	07:31		07:27	16:07 (8)	08:27	15:41 (7)	08:58		21:47	25	21:03 (10)	20:43	22	20:10 (9)	19:26	17:15	29	16:36 (8)	16:23	5	15:46 (7)	16:19	28	05:42		06:36		19:48 (9)	07:32		07:29	16:09 (8)	08:28		08:58		21:46	25	21:04 (10)	20:40	20	20:08 (9)	19:24	17:13	27	16:36 (8)	16:22		16:19	29	05:43		06:38		19:49 (9)	07:34		07:31	16:09 (8)	08:30		08:58		21:44	25	21:03 (10)	20:38	18	20:07 (9)	19:21	17:11	26	16:35 (8)	16:21		16:20	30	05:45		06:40		19:50 (9)	07:36		07:33	16:10 (8)	08:32		08:58		21:42	24	21:03 (10)	20:36	16	20:06 (9)	19:19	17:09	24	16:34 (8)	16:20		16:21	31	05:47		06:42		19:53 (9)			07:35					08:58		21:40	23	21:03 (10)	20:33	10	20:03 (9)		17:06	20	16:32 (8)			16:22	Potential sun hours	515		461		382		328		257		231		Total, worst case	519		461		536		562		Sun reduction	0.27		0.27		0.23		0.20		Oper. time red.	1.00		1.00		1.00		1.00		Wind dir. red.	0.63		0.60		0.58		0.61		Total reduction	0.17		0.16		0.14		0.12		Total, real	86		75		73		68																																																																																																					
	22:13	11	21:37 (11)	21:31	16	20:59 (10)	20:21	19:06	16:56	19	15:49 (7)	16:16	6	05:12	21:27 (11)	05:57	20:44 (10)	06:53	07:47		07:47	15:28 (7)	08:41			22:12	9	21:36 (11)	21:29	12	20:56 (10)	20:19	19:04	16:55	22	15:50 (7)	16:16	7	05:13	21:28 (11)	05:59	20:48 (10)	06:54	07:49		07:49	15:27 (7)	08:42			22:12	8	21:36 (11)	21:27	6	20:54 (10)	20:16	19:01	16:53	23	15:50 (7)	16:15	8	05:14	21:29 (11)	06:00		06:56	07:51		07:51	15:26 (7)	08:43			22:11	6	21:35 (11)	21:25		20:14	18:59	16:51	25	15:51 (7)	16:15	9	05:15	21:30 (11)	06:02		06:58	07:53		07:53	15:26 (7)	08:45			22:10	4	21:34 (11)	21:23		20:11	18:56	16:49	25	15:51 (7)	16:14	10	05:16		06:04		07:00	07:55		07:55	15:26 (7)	08:46			22:09		21:21		20:09	18:54		16:47	27	15:53 (7)	16:14	11	05:17		06:06		07:02	07:57		07:57	15:26 (7)	08:47			22:08	7	20:53 (10)	21:19	20:06	18:52		16:45	27	15:53 (7)	16:14	12	05:18		06:08		07:03	07:59		17:20 (8)	07:59	15:26 (7)	08:48		22:07	10	20:55 (10)	21:17	20:04	18:49	11	17:31 (8)	16:44	27	15:53 (7)	16:14	13	05:19		06:09		07:05	08:00		17:17 (8)	08:01	15:26 (7)	08:49		22:06	13	20:56 (10)	21:15	20:01	18:47	17	17:34 (8)	16:42	27	15:53 (7)	16:14	14	05:21		06:11		20:00 (9)	07:07		08:02	17:14 (8)	08:03	15:26 (7)	08:50		22:05	15	20:58 (10)	21:13	5	20:05 (9)	19:59	18:44	21	17:35 (8)	16:40	27	15:53 (7)	16:13	15	05:22		06:13		19:56 (9)	07:09		08:04	17:12 (8)	08:05	15:26 (7)	08:51		22:04	17	20:59 (10)	21:10	12	20:08 (9)	19:56	18:42	24	17:36 (8)	16:39	27	15:53 (7)	16:13	16	05:23		06:15		19:54 (9)	07:11		08:06	17:11 (8)	08:07	15:26 (7)	08:52		22:03	17	20:59 (10)	21:08	16	20:10 (9)	19:54	18:40	26	17:37 (8)	16:37	27	15:53 (7)	16:14	17	05:25		06:17		19:53 (9)	07:13		08:08	17:10 (8)	08:09	15:28 (7)	08:53		22:02	19	21:00 (10)	21:06	18	20:11 (9)	19:51	18:37	28	17:38 (8)	16:36	26	15:54 (7)	16:14	18	05:26		06:18		19:51 (9)	07:14		08:10	17:09 (8)	08:11	15:28 (7)	08:54		22:01	20	21:01 (10)	21:04	20	20:11 (9)	19:49	18:35	30	17:39 (8)	16:34	25	15:53 (7)	16:14	19	05:28		06:20		19:50 (9)	07:16		08:12	17:08 (8)	08:12	15:29 (7)	08:55		21:59	21	21:01 (10)	21:01	22	20:12 (9)	19:46	18:33	31	17:39 (8)	16:33	24	15:53 (7)	16:14	20	05:29		06:22		19:49 (9)	07:18		08:14	17:07 (8)	08:14	15:30 (7)	08:55		21:58	23	21:02 (10)	20:59	24	20:13 (9)	19:44	18:30	32	17:39 (8)	16:31	23	15:53 (7)	16:15	21	05:30		06:24		19:48 (9)	07:20		08:16	17:07 (8)	08:16	15:31 (7)	08:56		21:56	23	21:03 (10)	20:57	24	20:12 (9)	19:41	18:28	32	17:39 (8)	16:30	21	15:52 (7)	16:15	22	05:32		06:26		19:48 (9)	07:22		08:18	17:07 (8)	08:18	15:32 (7)	08:56		21:55	24	21:03 (10)	20:55	24	20:12 (9)	19:39	18:26	32	17:39 (8)	16:29	20	15:52 (7)	16:15	23	05:34		06:27		19:48 (9)	07:23		08:20	17:06 (8)	08:20	15:33 (7)	08:57		21:54	25	21:04 (10)	20:52	24	20:12 (9)	19:36	18:24	33	17:39 (8)	16:27	18	15:51 (7)	16:16	24	05:35		06:29		19:48 (9)	07:25		08:22	17:06 (8)	08:22	15:34 (7)	08:57		21:52	24	21:03 (10)	20:50	24	20:12 (9)	19:34	18:21	32	17:38 (8)	16:26	16	15:50 (7)	16:17	25	05:37		06:31		19:47 (9)	07:27		07:24	16:07 (8)	08:23	15:36 (7)	08:58		21:51	25	21:03 (10)	20:48	24	20:11 (9)	19:31	17:19	31	16:38 (8)	16:25	13	15:49 (7)	16:17	26	05:38		06:33		19:47 (9)	07:29		07:26	16:07 (8)	08:25	15:38 (7)	08:58		21:49	25	21:04 (10)	20:45	24	20:11 (9)	19:29	17:17	30	16:37 (8)	16:24	10	15:48 (7)	16:18	27	05:40		06:35		19:48 (9)	07:31		07:27	16:07 (8)	08:27	15:41 (7)	08:58		21:47	25	21:03 (10)	20:43	22	20:10 (9)	19:26	17:15	29	16:36 (8)	16:23	5	15:46 (7)	16:19	28	05:42		06:36		19:48 (9)	07:32		07:29	16:09 (8)	08:28		08:58		21:46	25	21:04 (10)	20:40	20	20:08 (9)	19:24	17:13	27	16:36 (8)	16:22		16:19	29	05:43		06:38		19:49 (9)	07:34		07:31	16:09 (8)	08:30		08:58		21:44	25	21:03 (10)	20:38	18	20:07 (9)	19:21	17:11	26	16:35 (8)	16:21		16:20	30	05:45		06:40		19:50 (9)	07:36		07:33	16:10 (8)	08:32		08:58		21:42	24	21:03 (10)	20:36	16	20:06 (9)	19:19	17:09	24	16:34 (8)	16:20		16:21	31	05:47		06:42		19:53 (9)			07:35					08:58		21:40	23	21:03 (10)	20:33	10	20:03 (9)		17:06	20	16:32 (8)			16:22	Potential sun hours	515		461		382		328		257		231		Total, worst case	519		461		536		562		Sun reduction	0.27		0.27		0.23		0.20		Oper. time red.	1.00		1.00		1.00		1.00		Wind dir. red.	0.63		0.60		0.58		0.61		Total reduction	0.17		0.16		0.14		0.12		Total, real	86		75		73		68																																																																																																																	
6	05:12	21:27 (11)	05:57	20:44 (10)	06:53	07:47		07:47	15:28 (7)	08:41			22:12	9	21:36 (11)	21:29	12	20:56 (10)	20:19	19:04	16:55	22	15:50 (7)	16:16	7	05:13	21:28 (11)	05:59	20:48 (10)	06:54	07:49		07:49	15:27 (7)	08:42			22:12	8	21:36 (11)	21:27	6	20:54 (10)	20:16	19:01	16:53	23	15:50 (7)	16:15	8	05:14	21:29 (11)	06:00		06:56	07:51		07:51	15:26 (7)	08:43			22:11	6	21:35 (11)	21:25		20:14	18:59	16:51	25	15:51 (7)	16:15	9	05:15	21:30 (11)	06:02		06:58	07:53		07:53	15:26 (7)	08:45			22:10	4	21:34 (11)	21:23		20:11	18:56	16:49	25	15:51 (7)	16:14	10	05:16		06:04		07:00	07:55		07:55	15:26 (7)	08:46			22:09		21:21		20:09	18:54		16:47	27	15:53 (7)	16:14	11	05:17		06:06		07:02	07:57		07:57	15:26 (7)	08:47			22:08	7	20:53 (10)	21:19	20:06	18:52		16:45	27	15:53 (7)	16:14	12	05:18		06:08		07:03	07:59		17:20 (8)	07:59	15:26 (7)	08:48		22:07	10	20:55 (10)	21:17	20:04	18:49	11	17:31 (8)	16:44	27	15:53 (7)	16:14	13	05:19		06:09		07:05	08:00		17:17 (8)	08:01	15:26 (7)	08:49		22:06	13	20:56 (10)	21:15	20:01	18:47	17	17:34 (8)	16:42	27	15:53 (7)	16:14	14	05:21		06:11		20:00 (9)	07:07		08:02	17:14 (8)	08:03	15:26 (7)	08:50		22:05	15	20:58 (10)	21:13	5	20:05 (9)	19:59	18:44	21	17:35 (8)	16:40	27	15:53 (7)	16:13	15	05:22		06:13		19:56 (9)	07:09		08:04	17:12 (8)	08:05	15:26 (7)	08:51		22:04	17	20:59 (10)	21:10	12	20:08 (9)	19:56	18:42	24	17:36 (8)	16:39	27	15:53 (7)	16:13	16	05:23		06:15		19:54 (9)	07:11		08:06	17:11 (8)	08:07	15:26 (7)	08:52		22:03	17	20:59 (10)	21:08	16	20:10 (9)	19:54	18:40	26	17:37 (8)	16:37	27	15:53 (7)	16:14	17	05:25		06:17		19:53 (9)	07:13		08:08	17:10 (8)	08:09	15:28 (7)	08:53		22:02	19	21:00 (10)	21:06	18	20:11 (9)	19:51	18:37	28	17:38 (8)	16:36	26	15:54 (7)	16:14	18	05:26		06:18		19:51 (9)	07:14		08:10	17:09 (8)	08:11	15:28 (7)	08:54		22:01	20	21:01 (10)	21:04	20	20:11 (9)	19:49	18:35	30	17:39 (8)	16:34	25	15:53 (7)	16:14	19	05:28		06:20		19:50 (9)	07:16		08:12	17:08 (8)	08:12	15:29 (7)	08:55		21:59	21	21:01 (10)	21:01	22	20:12 (9)	19:46	18:33	31	17:39 (8)	16:33	24	15:53 (7)	16:14	20	05:29		06:22		19:49 (9)	07:18		08:14	17:07 (8)	08:14	15:30 (7)	08:55		21:58	23	21:02 (10)	20:59	24	20:13 (9)	19:44	18:30	32	17:39 (8)	16:31	23	15:53 (7)	16:15	21	05:30		06:24		19:48 (9)	07:20		08:16	17:07 (8)	08:16	15:31 (7)	08:56		21:56	23	21:03 (10)	20:57	24	20:12 (9)	19:41	18:28	32	17:39 (8)	16:30	21	15:52 (7)	16:15	22	05:32		06:26		19:48 (9)	07:22		08:18	17:07 (8)	08:18	15:32 (7)	08:56		21:55	24	21:03 (10)	20:55	24	20:12 (9)	19:39	18:26	32	17:39 (8)	16:29	20	15:52 (7)	16:15	23	05:34		06:27		19:48 (9)	07:23		08:20	17:06 (8)	08:20	15:33 (7)	08:57		21:54	25	21:04 (10)	20:52	24	20:12 (9)	19:36	18:24	33	17:39 (8)	16:27	18	15:51 (7)	16:16	24	05:35		06:29		19:48 (9)	07:25		08:22	17:06 (8)	08:22	15:34 (7)	08:57		21:52	24	21:03 (10)	20:50	24	20:12 (9)	19:34	18:21	32	17:38 (8)	16:26	16	15:50 (7)	16:17	25	05:37		06:31		19:47 (9)	07:27		07:24	16:07 (8)	08:23	15:36 (7)	08:58		21:51	25	21:03 (10)	20:48	24	20:11 (9)	19:31	17:19	31	16:38 (8)	16:25	13	15:49 (7)	16:17	26	05:38		06:33		19:47 (9)	07:29		07:26	16:07 (8)	08:25	15:38 (7)	08:58		21:49	25	21:04 (10)	20:45	24	20:11 (9)	19:29	17:17	30	16:37 (8)	16:24	10	15:48 (7)	16:18	27	05:40		06:35		19:48 (9)	07:31		07:27	16:07 (8)	08:27	15:41 (7)	08:58		21:47	25	21:03 (10)	20:43	22	20:10 (9)	19:26	17:15	29	16:36 (8)	16:23	5	15:46 (7)	16:19	28	05:42		06:36		19:48 (9)	07:32		07:29	16:09 (8)	08:28		08:58		21:46	25	21:04 (10)	20:40	20	20:08 (9)	19:24	17:13	27	16:36 (8)	16:22		16:19	29	05:43		06:38		19:49 (9)	07:34		07:31	16:09 (8)	08:30		08:58		21:44	25	21:03 (10)	20:38	18	20:07 (9)	19:21	17:11	26	16:35 (8)	16:21		16:20	30	05:45		06:40		19:50 (9)	07:36		07:33	16:10 (8)	08:32		08:58		21:42	24	21:03 (10)	20:36	16	20:06 (9)	19:19	17:09	24	16:34 (8)	16:20		16:21	31	05:47		06:42		19:53 (9)			07:35					08:58		21:40	23	21:03 (10)	20:33	10	20:03 (9)		17:06	20	16:32 (8)			16:22	Potential sun hours	515		461		382		328		257		231		Total, worst case	519		461		536		562		Sun reduction	0.27		0.27		0.23		0.20		Oper. time red.	1.00		1.00		1.00		1.00		Wind dir. red.	0.63		0.60		0.58		0.61		Total reduction	0.17		0.16		0.14		0.12		Total, real	86		75		73		68																																																																																																																														
	22:12	9	21:36 (11)	21:29	12	20:56 (10)	20:19	19:04	16:55	22	15:50 (7)	16:16	7	05:13	21:28 (11)	05:59	20:48 (10)	06:54	07:49		07:49	15:27 (7)	08:42			22:12	8	21:36 (11)	21:27	6	20:54 (10)	20:16	19:01	16:53	23	15:50 (7)	16:15	8	05:14	21:29 (11)	06:00		06:56	07:51		07:51	15:26 (7)	08:43			22:11	6	21:35 (11)	21:25		20:14	18:59	16:51	25	15:51 (7)	16:15	9	05:15	21:30 (11)	06:02		06:58	07:53		07:53	15:26 (7)	08:45			22:10	4	21:34 (11)	21:23		20:11	18:56	16:49	25	15:51 (7)	16:14	10	05:16		06:04		07:00	07:55		07:55	15:26 (7)	08:46			22:09		21:21		20:09	18:54		16:47	27	15:53 (7)	16:14	11	05:17		06:06		07:02	07:57		07:57	15:26 (7)	08:47			22:08	7	20:53 (10)	21:19	20:06	18:52		16:45	27	15:53 (7)	16:14	12	05:18		06:08		07:03	07:59		17:20 (8)	07:59	15:26 (7)	08:48		22:07	10	20:55 (10)	21:17	20:04	18:49	11	17:31 (8)	16:44	27	15:53 (7)	16:14	13	05:19		06:09		07:05	08:00		17:17 (8)	08:01	15:26 (7)	08:49		22:06	13	20:56 (10)	21:15	20:01	18:47	17	17:34 (8)	16:42	27	15:53 (7)	16:14	14	05:21		06:11		20:00 (9)	07:07		08:02	17:14 (8)	08:03	15:26 (7)	08:50		22:05	15	20:58 (10)	21:13	5	20:05 (9)	19:59	18:44	21	17:35 (8)	16:40	27	15:53 (7)	16:13	15	05:22		06:13		19:56 (9)	07:09		08:04	17:12 (8)	08:05	15:26 (7)	08:51		22:04	17	20:59 (10)	21:10	12	20:08 (9)	19:56	18:42	24	17:36 (8)	16:39	27	15:53 (7)	16:13	16	05:23		06:15		19:54 (9)	07:11		08:06	17:11 (8)	08:07	15:26 (7)	08:52		22:03	17	20:59 (10)	21:08	16	20:10 (9)	19:54	18:40	26	17:37 (8)	16:37	27	15:53 (7)	16:14	17	05:25		06:17		19:53 (9)	07:13		08:08	17:10 (8)	08:09	15:28 (7)	08:53		22:02	19	21:00 (10)	21:06	18	20:11 (9)	19:51	18:37	28	17:38 (8)	16:36	26	15:54 (7)	16:14	18	05:26		06:18		19:51 (9)	07:14		08:10	17:09 (8)	08:11	15:28 (7)	08:54		22:01	20	21:01 (10)	21:04	20	20:11 (9)	19:49	18:35	30	17:39 (8)	16:34	25	15:53 (7)	16:14	19	05:28		06:20		19:50 (9)	07:16		08:12	17:08 (8)	08:12	15:29 (7)	08:55		21:59	21	21:01 (10)	21:01	22	20:12 (9)	19:46	18:33	31	17:39 (8)	16:33	24	15:53 (7)	16:14	20	05:29		06:22		19:49 (9)	07:18		08:14	17:07 (8)	08:14	15:30 (7)	08:55		21:58	23	21:02 (10)	20:59	24	20:13 (9)	19:44	18:30	32	17:39 (8)	16:31	23	15:53 (7)	16:15	21	05:30		06:24		19:48 (9)	07:20		08:16	17:07 (8)	08:16	15:31 (7)	08:56		21:56	23	21:03 (10)	20:57	24	20:12 (9)	19:41	18:28	32	17:39 (8)	16:30	21	15:52 (7)	16:15	22	05:32		06:26		19:48 (9)	07:22		08:18	17:07 (8)	08:18	15:32 (7)	08:56		21:55	24	21:03 (10)	20:55	24	20:12 (9)	19:39	18:26	32	17:39 (8)	16:29	20	15:52 (7)	16:15	23	05:34		06:27		19:48 (9)	07:23		08:20	17:06 (8)	08:20	15:33 (7)	08:57		21:54	25	21:04 (10)	20:52	24	20:12 (9)	19:36	18:24	33	17:39 (8)	16:27	18	15:51 (7)	16:16	24	05:35		06:29		19:48 (9)	07:25		08:22	17:06 (8)	08:22	15:34 (7)	08:57		21:52	24	21:03 (10)	20:50	24	20:12 (9)	19:34	18:21	32	17:38 (8)	16:26	16	15:50 (7)	16:17	25	05:37		06:31		19:47 (9)	07:27		07:24	16:07 (8)	08:23	15:36 (7)	08:58		21:51	25	21:03 (10)	20:48	24	20:11 (9)	19:31	17:19	31	16:38 (8)	16:25	13	15:49 (7)	16:17	26	05:38		06:33		19:47 (9)	07:29		07:26	16:07 (8)	08:25	15:38 (7)	08:58		21:49	25	21:04 (10)	20:45	24	20:11 (9)	19:29	17:17	30	16:37 (8)	16:24	10	15:48 (7)	16:18	27	05:40		06:35		19:48 (9)	07:31		07:27	16:07 (8)	08:27	15:41 (7)	08:58		21:47	25	21:03 (10)	20:43	22	20:10 (9)	19:26	17:15	29	16:36 (8)	16:23	5	15:46 (7)	16:19	28	05:42		06:36		19:48 (9)	07:32		07:29	16:09 (8)	08:28		08:58		21:46	25	21:04 (10)	20:40	20	20:08 (9)	19:24	17:13	27	16:36 (8)	16:22		16:19	29	05:43		06:38		19:49 (9)	07:34		07:31	16:09 (8)	08:30		08:58		21:44	25	21:03 (10)	20:38	18	20:07 (9)	19:21	17:11	26	16:35 (8)	16:21		16:20	30	05:45		06:40		19:50 (9)	07:36		07:33	16:10 (8)	08:32		08:58		21:42	24	21:03 (10)	20:36	16	20:06 (9)	19:19	17:09	24	16:34 (8)	16:20		16:21	31	05:47		06:42		19:53 (9)			07:35					08:58		21:40	23	21:03 (10)	20:33	10	20:03 (9)		17:06	20	16:32 (8)			16:22	Potential sun hours	515		461		382		328		257		231		Total, worst case	519		461		536		562		Sun reduction	0.27		0.27		0.23		0.20		Oper. time red.	1.00		1.00		1.00		1.00		Wind dir. red.	0.63		0.60		0.58		0.61		Total reduction	0.17		0.16		0.14		0.12		Total, real	86		75		73		68																																																																																																																																										
7	05:13	21:28 (11)	05:59	20:48 (10)	06:54	07:49		07:49	15:27 (7)	08:42			22:12	8	21:36 (11)	21:27	6	20:54 (10)	20:16	19:01	16:53	23	15:50 (7)	16:15	8	05:14	21:29 (11)	06:00		06:56	07:51		07:51	15:26 (7)	08:43			22:11	6	21:35 (11)	21:25		20:14	18:59	16:51	25	15:51 (7)	16:15	9	05:15	21:30 (11)	06:02		06:58	07:53		07:53	15:26 (7)	08:45			22:10	4	21:34 (11)	21:23		20:11	18:56	16:49	25	15:51 (7)	16:14	10	05:16		06:04		07:00	07:55		07:55	15:26 (7)	08:46			22:09		21:21		20:09	18:54		16:47	27	15:53 (7)	16:14	11	05:17		06:06		07:02	07:57		07:57	15:26 (7)	08:47			22:08	7	20:53 (10)	21:19	20:06	18:52		16:45	27	15:53 (7)	16:14	12	05:18		06:08		07:03	07:59		17:20 (8)	07:59	15:26 (7)	08:48		22:07	10	20:55 (10)	21:17	20:04	18:49	11	17:31 (8)	16:44	27	15:53 (7)	16:14	13	05:19		06:09		07:05	08:00		17:17 (8)	08:01	15:26 (7)	08:49		22:06	13	20:56 (10)	21:15	20:01	18:47	17	17:34 (8)	16:42	27	15:53 (7)	16:14	14	05:21		06:11		20:00 (9)	07:07		08:02	17:14 (8)	08:03	15:26 (7)	08:50		22:05	15	20:58 (10)	21:13	5	20:05 (9)	19:59	18:44	21	17:35 (8)	16:40	27	15:53 (7)	16:13	15	05:22		06:13		19:56 (9)	07:09		08:04	17:12 (8)	08:05	15:26 (7)	08:51		22:04	17	20:59 (10)	21:10	12	20:08 (9)	19:56	18:42	24	17:36 (8)	16:39	27	15:53 (7)	16:13	16	05:23		06:15		19:54 (9)	07:11		08:06	17:11 (8)	08:07	15:26 (7)	08:52		22:03	17	20:59 (10)	21:08	16	20:10 (9)	19:54	18:40	26	17:37 (8)	16:37	27	15:53 (7)	16:14	17	05:25		06:17		19:53 (9)	07:13		08:08	17:10 (8)	08:09	15:28 (7)	08:53		22:02	19	21:00 (10)	21:06	18	20:11 (9)	19:51	18:37	28	17:38 (8)	16:36	26	15:54 (7)	16:14	18	05:26		06:18		19:51 (9)	07:14		08:10	17:09 (8)	08:11	15:28 (7)	08:54		22:01	20	21:01 (10)	21:04	20	20:11 (9)	19:49	18:35	30	17:39 (8)	16:34	25	15:53 (7)	16:14	19	05:28		06:20		19:50 (9)	07:16		08:12	17:08 (8)	08:12	15:29 (7)	08:55		21:59	21	21:01 (10)	21:01	22	20:12 (9)	19:46	18:33	31	17:39 (8)	16:33	24	15:53 (7)	16:14	20	05:29		06:22		19:49 (9)	07:18		08:14	17:07 (8)	08:14	15:30 (7)	08:55		21:58	23	21:02 (10)	20:59	24	20:13 (9)	19:44	18:30	32	17:39 (8)	16:31	23	15:53 (7)	16:15	21	05:30		06:24		19:48 (9)	07:20		08:16	17:07 (8)	08:16	15:31 (7)	08:56		21:56	23	21:03 (10)	20:57	24	20:12 (9)	19:41	18:28	32	17:39 (8)	16:30	21	15:52 (7)	16:15	22	05:32		06:26		19:48 (9)	07:22		08:18	17:07 (8)	08:18	15:32 (7)	08:56		21:55	24	21:03 (10)	20:55	24	20:12 (9)	19:39	18:26	32	17:39 (8)	16:29	20	15:52 (7)	16:15	23	05:34		06:27		19:48 (9)	07:23		08:20	17:06 (8)	08:20	15:33 (7)	08:57		21:54	25	21:04 (10)	20:52	24	20:12 (9)	19:36	18:24	33	17:39 (8)	16:27	18	15:51 (7)	16:16	24	05:35		06:29		19:48 (9)	07:25		08:22	17:06 (8)	08:22	15:34 (7)	08:57		21:52	24	21:03 (10)	20:50	24	20:12 (9)	19:34	18:21	32	17:38 (8)	16:26	16	15:50 (7)	16:17	25	05:37		06:31		19:47 (9)	07:27		07:24	16:07 (8)	08:23	15:36 (7)	08:58		21:51	25	21:03 (10)	20:48	24	20:11 (9)	19:31	17:19	31	16:38 (8)	16:25	13	15:49 (7)	16:17	26	05:38		06:33		19:47 (9)	07:29		07:26	16:07 (8)	08:25	15:38 (7)	08:58		21:49	25	21:04 (10)	20:45	24	20:11 (9)	19:29	17:17	30	16:37 (8)	16:24	10	15:48 (7)	16:18	27	05:40		06:35		19:48 (9)	07:31		07:27	16:07 (8)	08:27	15:41 (7)	08:58		21:47	25	21:03 (10)	20:43	22	20:10 (9)	19:26	17:15	29	16:36 (8)	16:23	5	15:46 (7)	16:19	28	05:42		06:36		19:48 (9)	07:32		07:29	16:09 (8)	08:28		08:58		21:46	25	21:04 (10)	20:40	20	20:08 (9)	19:24	17:13	27	16:36 (8)	16:22		16:19	29	05:43		06:38		19:49 (9)	07:34		07:31	16:09 (8)	08:30		08:58		21:44	25	21:03 (10)	20:38	18	20:07 (9)	19:21	17:11	26	16:35 (8)	16:21		16:20	30	05:45		06:40		19:50 (9)	07:36		07:33	16:10 (8)	08:32		08:58		21:42	24	21:03 (10)	20:36	16	20:06 (9)	19:19	17:09	24	16:34 (8)	16:20		16:21	31	05:47		06:42		19:53 (9)			07:35					08:58		21:40	23	21:03 (10)	20:33	10	20:03 (9)		17:06	20	16:32 (8)			16:22	Potential sun hours	515		461		382		328		257		231		Total, worst case	519		461		536		562		Sun reduction	0.27		0.27		0.23		0.20		Oper. time red.	1.00		1.00		1.00		1.00		Wind dir. red.	0.63		0.60		0.58		0.61		Total reduction	0.17		0.16		0.14		0.12		Total, real	86		75		73		68																																																																																																																																																							
	22:12	8	21:36 (11)	21:27	6	20:54 (10)	20:16	19:01	16:53	23	15:50 (7)	16:15	8	05:14	21:29 (11)	06:00		06:56	07:51		07:51	15:26 (7)	08:43			22:11	6	21:35 (11)	21:25		20:14	18:59	16:51	25	15:51 (7)	16:15	9	05:15	21:30 (11)	06:02		06:58	07:53		07:53	15:26 (7)	08:45			22:10	4	21:34 (11)	21:23		20:11	18:56	16:49	25	15:51 (7)	16:14	10	05:16		06:04		07:00	07:55		07:55	15:26 (7)	08:46			22:09		21:21		20:09	18:54		16:47	27	15:53 (7)	16:14	11	05:17		06:06		07:02	07:57		07:57	15:26 (7)	08:47			22:08	7	20:53 (10)	21:19	20:06	18:52		16:45	27	15:53 (7)	16:14	12	05:18		06:08		07:03	07:59		17:20 (8)	07:59	15:26 (7)	08:48		22:07	10	20:55 (10)	21:17	20:04	18:49	11	17:31 (8)	16:44	27	15:53 (7)	16:14	13	05:19		06:09		07:05	08:00		17:17 (8)	08:01	15:26 (7)	08:49		22:06	13	20:56 (10)	21:15	20:01	18:47	17	17:34 (8)	16:42	27	15:53 (7)	16:14	14	05:21		06:11		20:00 (9)	07:07		08:02	17:14 (8)	08:03	15:26 (7)	08:50		22:05	15	20:58 (10)	21:13	5	20:05 (9)	19:59	18:44	21	17:35 (8)	16:40	27	15:53 (7)	16:13	15	05:22		06:13		19:56 (9)	07:09		08:04	17:12 (8)	08:05	15:26 (7)	08:51		22:04	17	20:59 (10)	21:10	12	20:08 (9)	19:56	18:42	24	17:36 (8)	16:39	27	15:53 (7)	16:13	16	05:23		06:15		19:54 (9)	07:11		08:06	17:11 (8)	08:07	15:26 (7)	08:52		22:03	17	20:59 (10)	21:08	16	20:10 (9)	19:54	18:40	26	17:37 (8)	16:37	27	15:53 (7)	16:14	17	05:25		06:17		19:53 (9)	07:13		08:08	17:10 (8)	08:09	15:28 (7)	08:53		22:02	19	21:00 (10)	21:06	18	20:11 (9)	19:51	18:37	28	17:38 (8)	16:36	26	15:54 (7)	16:14	18	05:26		06:18		19:51 (9)	07:14		08:10	17:09 (8)	08:11	15:28 (7)	08:54		22:01	20	21:01 (10)	21:04	20	20:11 (9)	19:49	18:35	30	17:39 (8)	16:34	25	15:53 (7)	16:14	19	05:28		06:20		19:50 (9)	07:16		08:12	17:08 (8)	08:12	15:29 (7)	08:55		21:59	21	21:01 (10)	21:01	22	20:12 (9)	19:46	18:33	31	17:39 (8)	16:33	24	15:53 (7)	16:14	20	05:29		06:22		19:49 (9)	07:18		08:14	17:07 (8)	08:14	15:30 (7)	08:55		21:58	23	21:02 (10)	20:59	24	20:13 (9)	19:44	18:30	32	17:39 (8)	16:31	23	15:53 (7)	16:15	21	05:30		06:24		19:48 (9)	07:20		08:16	17:07 (8)	08:16	15:31 (7)	08:56		21:56	23	21:03 (10)	20:57	24	20:12 (9)	19:41	18:28	32	17:39 (8)	16:30	21	15:52 (7)	16:15	22	05:32		06:26		19:48 (9)	07:22		08:18	17:07 (8)	08:18	15:32 (7)	08:56		21:55	24	21:03 (10)	20:55	24	20:12 (9)	19:39	18:26	32	17:39 (8)	16:29	20	15:52 (7)	16:15	23	05:34		06:27		19:48 (9)	07:23		08:20	17:06 (8)	08:20	15:33 (7)	08:57		21:54	25	21:04 (10)	20:52	24	20:12 (9)	19:36	18:24	33	17:39 (8)	16:27	18	15:51 (7)	16:16	24	05:35		06:29		19:48 (9)	07:25		08:22	17:06 (8)	08:22	15:34 (7)	08:57		21:52	24	21:03 (10)	20:50	24	20:12 (9)	19:34	18:21	32	17:38 (8)	16:26	16	15:50 (7)	16:17	25	05:37		06:31		19:47 (9)	07:27		07:24	16:07 (8)	08:23	15:36 (7)	08:58		21:51	25	21:03 (10)	20:48	24	20:11 (9)	19:31	17:19	31	16:38 (8)	16:25	13	15:49 (7)	16:17	26	05:38		06:33		19:47 (9)	07:29		07:26	16:07 (8)	08:25	15:38 (7)	08:58		21:49	25	21:04 (10)	20:45	24	20:11 (9)	19:29	17:17	30	16:37 (8)	16:24	10	15:48 (7)	16:18	27	05:40		06:35		19:48 (9)	07:31		07:27	16:07 (8)	08:27	15:41 (7)	08:58		21:47	25	21:03 (10)	20:43	22	20:10 (9)	19:26	17:15	29	16:36 (8)	16:23	5	15:46 (7)	16:19	28	05:42		06:36		19:48 (9)	07:32		07:29	16:09 (8)	08:28		08:58		21:46	25	21:04 (10)	20:40	20	20:08 (9)	19:24	17:13	27	16:36 (8)	16:22		16:19	29	05:43		06:38		19:49 (9)	07:34		07:31	16:09 (8)	08:30		08:58		21:44	25	21:03 (10)	20:38	18	20:07 (9)	19:21	17:11	26	16:35 (8)	16:21		16:20	30	05:45		06:40		19:50 (9)	07:36		07:33	16:10 (8)	08:32		08:58		21:42	24	21:03 (10)	20:36	16	20:06 (9)	19:19	17:09	24	16:34 (8)	16:20		16:21	31	05:47		06:42		19:53 (9)			07:35					08:58		21:40	23	21:03 (10)	20:33	10	20:03 (9)		17:06	20	16:32 (8)			16:22	Potential sun hours	515		461		382		328		257		231		Total, worst case	519		461		536		562		Sun reduction	0.27		0.27		0.23		0.20		Oper. time red.	1.00		1.00		1.00		1.00		Wind dir. red.	0.63		0.60		0.58		0.61		Total reduction	0.17		0.16		0.14		0.12		Total, real	86		75		73		68																																																																																																																																																																			
8	05:14	21:29 (11)	06:00		06:56	07:51		07:51	15:26 (7)	08:43			22:11	6	21:35 (11)	21:25		20:14	18:59	16:51	25	15:51 (7)	16:15	9	05:15	21:30 (11)	06:02		06:58	07:53		07:53	15:26 (7)	08:45			22:10	4	21:34 (11)	21:23		20:11	18:56	16:49	25	15:51 (7)	16:14	10	05:16		06:04		07:00	07:55		07:55	15:26 (7)	08:46			22:09		21:21		20:09	18:54		16:47	27	15:53 (7)	16:14	11	05:17		06:06		07:02	07:57		07:57	15:26 (7)	08:47			22:08	7	20:53 (10)	21:19	20:06	18:52		16:45	27	15:53 (7)	16:14	12	05:18		06:08		07:03	07:59		17:20 (8)	07:59	15:26 (7)	08:48		22:07	10	20:55 (10)	21:17	20:04	18:49	11	17:31 (8)	16:44	27	15:53 (7)	16:14	13	05:19		06:09		07:05	08:00		17:17 (8)	08:01	15:26 (7)	08:49		22:06	13	20:56 (10)	21:15	20:01	18:47	17	17:34 (8)	16:42	27	15:53 (7)	16:14	14	05:21		06:11		20:00 (9)	07:07		08:02	17:14 (8)	08:03	15:26 (7)	08:50		22:05	15	20:58 (10)	21:13	5	20:05 (9)	19:59	18:44	21	17:35 (8)	16:40	27	15:53 (7)	16:13	15	05:22		06:13		19:56 (9)	07:09		08:04	17:12 (8)	08:05	15:26 (7)	08:51		22:04	17	20:59 (10)	21:10	12	20:08 (9)	19:56	18:42	24	17:36 (8)	16:39	27	15:53 (7)	16:13	16	05:23		06:15		19:54 (9)	07:11		08:06	17:11 (8)	08:07	15:26 (7)	08:52		22:03	17	20:59 (10)	21:08	16	20:10 (9)	19:54	18:40	26	17:37 (8)	16:37	27	15:53 (7)	16:14	17	05:25		06:17		19:53 (9)	07:13		08:08	17:10 (8)	08:09	15:28 (7)	08:53		22:02	19	21:00 (10)	21:06	18	20:11 (9)	19:51	18:37	28	17:38 (8)	16:36	26	15:54 (7)	16:14	18	05:26		06:18		19:51 (9)	07:14		08:10	17:09 (8)	08:11	15:28 (7)	08:54		22:01	20	21:01 (10)	21:04	20	20:11 (9)	19:49	18:35	30	17:39 (8)	16:34	25	15:53 (7)	16:14	19	05:28		06:20		19:50 (9)	07:16		08:12	17:08 (8)	08:12	15:29 (7)	08:55		21:59	21	21:01 (10)	21:01	22	20:12 (9)	19:46	18:33	31	17:39 (8)	16:33	24	15:53 (7)	16:14	20	05:29		06:22		19:49 (9)	07:18		08:14	17:07 (8)	08:14	15:30 (7)	08:55		21:58	23	21:02 (10)	20:59	24	20:13 (9)	19:44	18:30	32	17:39 (8)	16:31	23	15:53 (7)	16:15	21	05:30		06:24		19:48 (9)	07:20		08:16	17:07 (8)	08:16	15:31 (7)	08:56		21:56	23	21:03 (10)	20:57	24	20:12 (9)	19:41	18:28	32	17:39 (8)	16:30	21	15:52 (7)	16:15	22	05:32		06:26		19:48 (9)	07:22		08:18	17:07 (8)	08:18	15:32 (7)	08:56		21:55	24	21:03 (10)	20:55	24	20:12 (9)	19:39	18:26	32	17:39 (8)	16:29	20	15:52 (7)	16:15	23	05:34		06:27		19:48 (9)	07:23		08:20	17:06 (8)	08:20	15:33 (7)	08:57		21:54	25	21:04 (10)	20:52	24	20:12 (9)	19:36	18:24	33	17:39 (8)	16:27	18	15:51 (7)	16:16	24	05:35		06:29		19:48 (9)	07:25		08:22	17:06 (8)	08:22	15:34 (7)	08:57		21:52	24	21:03 (10)	20:50	24	20:12 (9)	19:34	18:21	32	17:38 (8)	16:26	16	15:50 (7)	16:17	25	05:37		06:31		19:47 (9)	07:27		07:24	16:07 (8)	08:23	15:36 (7)	08:58		21:51	25	21:03 (10)	20:48	24	20:11 (9)	19:31	17:19	31	16:38 (8)	16:25	13	15:49 (7)	16:17	26	05:38		06:33		19:47 (9)	07:29		07:26	16:07 (8)	08:25	15:38 (7)	08:58		21:49	25	21:04 (10)	20:45	24	20:11 (9)	19:29	17:17	30	16:37 (8)	16:24	10	15:48 (7)	16:18	27	05:40		06:35		19:48 (9)	07:31		07:27	16:07 (8)	08:27	15:41 (7)	08:58		21:47	25	21:03 (10)	20:43	22	20:10 (9)	19:26	17:15	29	16:36 (8)	16:23	5	15:46 (7)	16:19	28	05:42		06:36		19:48 (9)	07:32		07:29	16:09 (8)	08:28		08:58		21:46	25	21:04 (10)	20:40	20	20:08 (9)	19:24	17:13	27	16:36 (8)	16:22		16:19	29	05:43		06:38		19:49 (9)	07:34		07:31	16:09 (8)	08:30		08:58		21:44	25	21:03 (10)	20:38	18	20:07 (9)	19:21	17:11	26	16:35 (8)	16:21		16:20	30	05:45		06:40		19:50 (9)	07:36		07:33	16:10 (8)	08:32		08:58		21:42	24	21:03 (10)	20:36	16	20:06 (9)	19:19	17:09	24	16:34 (8)	16:20		16:21	31	05:47		06:42		19:53 (9)			07:35					08:58		21:40	23	21:03 (10)	20:33	10	20:03 (9)		17:06	20	16:32 (8)			16:22	Potential sun hours	515		461		382		328		257		231		Total, worst case	519		461		536		562		Sun reduction	0.27		0.27		0.23		0.20		Oper. time red.	1.00		1.00		1.00		1.00		Wind dir. red.	0.63		0.60		0.58		0.61		Total reduction	0.17		0.16		0.14		0.12		Total, real	86		75		73		68																																																																																																																																																																																
	22:11	6	21:35 (11)	21:25		20:14	18:59	16:51	25	15:51 (7)	16:15	9	05:15	21:30 (11)	06:02		06:58	07:53		07:53	15:26 (7)	08:45			22:10	4	21:34 (11)	21:23		20:11	18:56	16:49	25	15:51 (7)	16:14	10	05:16		06:04		07:00	07:55		07:55	15:26 (7)	08:46			22:09		21:21		20:09	18:54		16:47	27	15:53 (7)	16:14	11	05:17		06:06		07:02	07:57		07:57	15:26 (7)	08:47			22:08	7	20:53 (10)	21:19	20:06	18:52		16:45	27	15:53 (7)	16:14	12	05:18		06:08		07:03	07:59		17:20 (8)	07:59	15:26 (7)	08:48		22:07	10	20:55 (10)	21:17	20:04	18:49	11	17:31 (8)	16:44	27	15:53 (7)	16:14	13	05:19		06:09		07:05	08:00		17:17 (8)	08:01	15:26 (7)	08:49		22:06	13	20:56 (10)	21:15	20:01	18:47	17	17:34 (8)	16:42	27	15:53 (7)	16:14	14	05:21		06:11		20:00 (9)	07:07		08:02	17:14 (8)	08:03	15:26 (7)	08:50		22:05	15	20:58 (10)	21:13	5	20:05 (9)	19:59	18:44	21	17:35 (8)	16:40	27	15:53 (7)	16:13	15	05:22		06:13		19:56 (9)	07:09		08:04	17:12 (8)	08:05	15:26 (7)	08:51		22:04	17	20:59 (10)	21:10	12	20:08 (9)	19:56	18:42	24	17:36 (8)	16:39	27	15:53 (7)	16:13	16	05:23		06:15		19:54 (9)	07:11		08:06	17:11 (8)	08:07	15:26 (7)	08:52		22:03	17	20:59 (10)	21:08	16	20:10 (9)	19:54	18:40	26	17:37 (8)	16:37	27	15:53 (7)	16:14	17	05:25		06:17		19:53 (9)	07:13		08:08	17:10 (8)	08:09	15:28 (7)	08:53		22:02	19	21:00 (10)	21:06	18	20:11 (9)	19:51	18:37	28	17:38 (8)	16:36	26	15:54 (7)	16:14	18	05:26		06:18		19:51 (9)	07:14		08:10	17:09 (8)	08:11	15:28 (7)	08:54		22:01	20	21:01 (10)	21:04	20	20:11 (9)	19:49	18:35	30	17:39 (8)	16:34	25	15:53 (7)	16:14	19	05:28		06:20		19:50 (9)	07:16		08:12	17:08 (8)	08:12	15:29 (7)	08:55		21:59	21	21:01 (10)	21:01	22	20:12 (9)	19:46	18:33	31	17:39 (8)	16:33	24	15:53 (7)	16:14	20	05:29		06:22		19:49 (9)	07:18		08:14	17:07 (8)	08:14	15:30 (7)	08:55		21:58	23	21:02 (10)	20:59	24	20:13 (9)	19:44	18:30	32	17:39 (8)	16:31	23	15:53 (7)	16:15	21	05:30		06:24		19:48 (9)	07:20		08:16	17:07 (8)	08:16	15:31 (7)	08:56		21:56	23	21:03 (10)	20:57	24	20:12 (9)	19:41	18:28	32	17:39 (8)	16:30	21	15:52 (7)	16:15	22	05:32		06:26		19:48 (9)	07:22		08:18	17:07 (8)	08:18	15:32 (7)	08:56		21:55	24	21:03 (10)	20:55	24	20:12 (9)	19:39	18:26	32	17:39 (8)	16:29	20	15:52 (7)	16:15	23	05:34		06:27		19:48 (9)	07:23		08:20	17:06 (8)	08:20	15:33 (7)	08:57		21:54	25	21:04 (10)	20:52	24	20:12 (9)	19:36	18:24	33	17:39 (8)	16:27	18	15:51 (7)	16:16	24	05:35		06:29		19:48 (9)	07:25		08:22	17:06 (8)	08:22	15:34 (7)	08:57		21:52	24	21:03 (10)	20:50	24	20:12 (9)	19:34	18:21	32	17:38 (8)	16:26	16	15:50 (7)	16:17	25	05:37		06:31		19:47 (9)	07:27		07:24	16:07 (8)	08:23	15:36 (7)	08:58		21:51	25	21:03 (10)	20:48	24	20:11 (9)	19:31	17:19	31	16:38 (8)	16:25	13	15:49 (7)	16:17	26	05:38		06:33		19:47 (9)	07:29		07:26	16:07 (8)	08:25	15:38 (7)	08:58		21:49	25	21:04 (10)	20:45	24	20:11 (9)	19:29	17:17	30	16:37 (8)	16:24	10	15:48 (7)	16:18	27	05:40		06:35		19:48 (9)	07:31		07:27	16:07 (8)	08:27	15:41 (7)	08:58		21:47	25	21:03 (10)	20:43	22	20:10 (9)	19:26	17:15	29	16:36 (8)	16:23	5	15:46 (7)	16:19	28	05:42		06:36		19:48 (9)	07:32		07:29	16:09 (8)	08:28		08:58		21:46	25	21:04 (10)	20:40	20	20:08 (9)	19:24	17:13	27	16:36 (8)	16:22		16:19	29	05:43		06:38		19:49 (9)	07:34		07:31	16:09 (8)	08:30		08:58		21:44	25	21:03 (10)	20:38	18	20:07 (9)	19:21	17:11	26	16:35 (8)	16:21		16:20	30	05:45		06:40		19:50 (9)	07:36		07:33	16:10 (8)	08:32		08:58		21:42	24	21:03 (10)	20:36	16	20:06 (9)	19:19	17:09	24	16:34 (8)	16:20		16:21	31	05:47		06:42		19:53 (9)			07:35					08:58		21:40	23	21:03 (10)	20:33	10	20:03 (9)		17:06	20	16:32 (8)			16:22	Potential sun hours	515		461		382		328		257		231		Total, worst case	519		461		536		562		Sun reduction	0.27		0.27		0.23		0.20		Oper. time red.	1.00		1.00		1.00		1.00		Wind dir. red.	0.63		0.60		0.58		0.61		Total reduction	0.17		0.16		0.14		0.12		Total, real	86		75		73		68																																																																																																																																																																																												
9	05:15	21:30 (11)	06:02		06:58	07:53		07:53	15:26 (7)	08:45			22:10	4	21:34 (11)	21:23		20:11	18:56	16:49	25	15:51 (7)	16:14	10	05:16		06:04		07:00	07:55		07:55	15:26 (7)	08:46			22:09		21:21		20:09	18:54		16:47	27	15:53 (7)	16:14	11	05:17		06:06		07:02	07:57		07:57	15:26 (7)	08:47			22:08	7	20:53 (10)	21:19	20:06	18:52		16:45	27	15:53 (7)	16:14	12	05:18		06:08		07:03	07:59		17:20 (8)	07:59	15:26 (7)	08:48		22:07	10	20:55 (10)	21:17	20:04	18:49	11	17:31 (8)	16:44	27	15:53 (7)	16:14	13	05:19		06:09		07:05	08:00		17:17 (8)	08:01	15:26 (7)	08:49		22:06	13	20:56 (10)	21:15	20:01	18:47	17	17:34 (8)	16:42	27	15:53 (7)	16:14	14	05:21		06:11		20:00 (9)	07:07		08:02	17:14 (8)	08:03	15:26 (7)	08:50		22:05	15	20:58 (10)	21:13	5	20:05 (9)	19:59	18:44	21	17:35 (8)	16:40	27	15:53 (7)	16:13	15	05:22		06:13		19:56 (9)	07:09		08:04	17:12 (8)	08:05	15:26 (7)	08:51		22:04	17	20:59 (10)	21:10	12	20:08 (9)	19:56	18:42	24	17:36 (8)	16:39	27	15:53 (7)	16:13	16	05:23		06:15		19:54 (9)	07:11		08:06	17:11 (8)	08:07	15:26 (7)	08:52		22:03	17	20:59 (10)	21:08	16	20:10 (9)	19:54	18:40	26	17:37 (8)	16:37	27	15:53 (7)	16:14	17	05:25		06:17		19:53 (9)	07:13		08:08	17:10 (8)	08:09	15:28 (7)	08:53		22:02	19	21:00 (10)	21:06	18	20:11 (9)	19:51	18:37	28	17:38 (8)	16:36	26	15:54 (7)	16:14	18	05:26		06:18		19:51 (9)	07:14		08:10	17:09 (8)	08:11	15:28 (7)	08:54		22:01	20	21:01 (10)	21:04	20	20:11 (9)	19:49	18:35	30	17:39 (8)	16:34	25	15:53 (7)	16:14	19	05:28		06:20		19:50 (9)	07:16		08:12	17:08 (8)	08:12	15:29 (7)	08:55		21:59	21	21:01 (10)	21:01	22	20:12 (9)	19:46	18:33	31	17:39 (8)	16:33	24	15:53 (7)	16:14	20	05:29		06:22		19:49 (9)	07:18		08:14	17:07 (8)	08:14	15:30 (7)	08:55		21:58	23	21:02 (10)	20:59	24	20:13 (9)	19:44	18:30	32	17:39 (8)	16:31	23	15:53 (7)	16:15	21	05:30		06:24		19:48 (9)	07:20		08:16	17:07 (8)	08:16	15:31 (7)	08:56		21:56	23	21:03 (10)	20:57	24	20:12 (9)	19:41	18:28	32	17:39 (8)	16:30	21	15:52 (7)	16:15	22	05:32		06:26		19:48 (9)	07:22		08:18	17:07 (8)	08:18	15:32 (7)	08:56		21:55	24	21:03 (10)	20:55	24	20:12 (9)	19:39	18:26	32	17:39 (8)	16:29	20	15:52 (7)	16:15	23	05:34		06:27		19:48 (9)	07:23		08:20	17:06 (8)	08:20	15:33 (7)	08:57		21:54	25	21:04 (10)	20:52	24	20:12 (9)	19:36	18:24	33	17:39 (8)	16:27	18	15:51 (7)	16:16	24	05:35		06:29		19:48 (9)	07:25		08:22	17:06 (8)	08:22	15:34 (7)	08:57		21:52	24	21:03 (10)	20:50	24	20:12 (9)	19:34	18:21	32	17:38 (8)	16:26	16	15:50 (7)	16:17	25	05:37		06:31		19:47 (9)	07:27		07:24	16:07 (8)	08:23	15:36 (7)	08:58		21:51	25	21:03 (10)	20:48	24	20:11 (9)	19:31	17:19	31	16:38 (8)	16:25	13	15:49 (7)	16:17	26	05:38		06:33		19:47 (9)	07:29		07:26	16:07 (8)	08:25	15:38 (7)	08:58		21:49	25	21:04 (10)	20:45	24	20:11 (9)	19:29	17:17	30	16:37 (8)	16:24	10	15:48 (7)	16:18	27	05:40		06:35		19:48 (9)	07:31		07:27	16:07 (8)	08:27	15:41 (7)	08:58		21:47	25	21:03 (10)	20:43	22	20:10 (9)	19:26	17:15	29	16:36 (8)	16:23	5	15:46 (7)	16:19	28	05:42		06:36		19:48 (9)	07:32		07:29	16:09 (8)	08:28		08:58		21:46	25	21:04 (10)	20:40	20	20:08 (9)	19:24	17:13	27	16:36 (8)	16:22		16:19	29	05:43		06:38		19:49 (9)	07:34		07:31	16:09 (8)	08:30		08:58		21:44	25	21:03 (10)	20:38	18	20:07 (9)	19:21	17:11	26	16:35 (8)	16:21		16:20	30	05:45		06:40		19:50 (9)	07:36		07:33	16:10 (8)	08:32		08:58		21:42	24	21:03 (10)	20:36	16	20:06 (9)	19:19	17:09	24	16:34 (8)	16:20		16:21	31	05:47		06:42		19:53 (9)			07:35					08:58		21:40	23	21:03 (10)	20:33	10	20:03 (9)		17:06	20	16:32 (8)			16:22	Potential sun hours	515		461		382		328		257		231		Total, worst case	519		461		536		562		Sun reduction	0.27		0.27		0.23		0.20		Oper. time red.	1.00		1.00		1.00		1.00		Wind dir. red.	0.63		0.60		0.58		0.61		Total reduction	0.17		0.16		0.14		0.12		Total, real	86		75		73		68																																																																																																																																																																																																								
	22:10	4	21:34 (11)	21:23		20:11	18:56	16:49	25	15:51 (7)	16:14	10	05:16		06:04		07:00	07:55		07:55	15:26 (7)	08:46			22:09		21:21		20:09	18:54		16:47	27	15:53 (7)	16:14	11	05:17		06:06		07:02	07:57		07:57	15:26 (7)	08:47			22:08	7	20:53 (10)	21:19	20:06	18:52		16:45	27	15:53 (7)	16:14	12	05:18		06:08		07:03	07:59		17:20 (8)	07:59	15:26 (7)	08:48		22:07	10	20:55 (10)	21:17	20:04	18:49	11	17:31 (8)	16:44	27	15:53 (7)	16:14	13	05:19		06:09		07:05	08:00		17:17 (8)	08:01	15:26 (7)	08:49		22:06	13	20:56 (10)	21:15	20:01	18:47	17	17:34 (8)	16:42	27	15:53 (7)	16:14	14	05:21		06:11		20:00 (9)	07:07		08:02	17:14 (8)	08:03	15:26 (7)	08:50		22:05	15	20:58 (10)	21:13	5	20:05 (9)	19:59	18:44	21	17:35 (8)	16:40	27	15:53 (7)	16:13	15	05:22		06:13		19:56 (9)	07:09		08:04	17:12 (8)	08:05	15:26 (7)	08:51		22:04	17	20:59 (10)	21:10	12	20:08 (9)	19:56	18:42	24	17:36 (8)	16:39	27	15:53 (7)	16:13	16	05:23		06:15		19:54 (9)	07:11		08:06	17:11 (8)	08:07	15:26 (7)	08:52		22:03	17	20:59 (10)	21:08	16	20:10 (9)	19:54	18:40	26	17:37 (8)	16:37	27	15:53 (7)	16:14	17	05:25		06:17		19:53 (9)	07:13		08:08	17:10 (8)	08:09	15:28 (7)	08:53		22:02	19	21:00 (10)	21:06	18	20:11 (9)	19:51	18:37	28	17:38 (8)	16:36	26	15:54 (7)	16:14	18	05:26		06:18		19:51 (9)	07:14		08:10	17:09 (8)	08:11	15:28 (7)	08:54		22:01	20	21:01 (10)	21:04	20	20:11 (9)	19:49	18:35	30	17:39 (8)	16:34	25	15:53 (7)	16:14	19	05:28		06:20		19:50 (9)	07:16		08:12	17:08 (8)	08:12	15:29 (7)	08:55		21:59	21	21:01 (10)	21:01	22	20:12 (9)	19:46	18:33	31	17:39 (8)	16:33	24	15:53 (7)	16:14	20	05:29		06:22		19:49 (9)	07:18		08:14	17:07 (8)	08:14	15:30 (7)	08:55		21:58	23	21:02 (10)	20:59	24	20:13 (9)	19:44	18:30	32	17:39 (8)	16:31	23	15:53 (7)	16:15	21	05:30		06:24		19:48 (9)	07:20		08:16	17:07 (8)	08:16	15:31 (7)	08:56		21:56	23	21:03 (10)	20:57	24	20:12 (9)	19:41	18:28	32	17:39 (8)	16:30	21	15:52 (7)	16:15	22	05:32		06:26		19:48 (9)	07:22		08:18	17:07 (8)	08:18	15:32 (7)	08:56		21:55	24	21:03 (10)	20:55	24	20:12 (9)	19:39	18:26	32	17:39 (8)	16:29	20	15:52 (7)	16:15	23	05:34		06:27		19:48 (9)	07:23		08:20	17:06 (8)	08:20	15:33 (7)	08:57		21:54	25	21:04 (10)	20:52	24	20:12 (9)	19:36	18:24	33	17:39 (8)	16:27	18	15:51 (7)	16:16	24	05:35		06:29		19:48 (9)	07:25		08:22	17:06 (8)	08:22	15:34 (7)	08:57		21:52	24	21:03 (10)	20:50	24	20:12 (9)	19:34	18:21	32	17:38 (8)	16:26	16	15:50 (7)	16:17	25	05:37		06:31		19:47 (9)	07:27		07:24	16:07 (8)	08:23	15:36 (7)	08:58		21:51	25	21:03 (10)	20:48	24	20:11 (9)	19:31	17:19	31	16:38 (8)	16:25	13	15:49 (7)	16:17	26	05:38		06:33		19:47 (9)	07:29		07:26	16:07 (8)	08:25	15:38 (7)	08:58		21:49	25	21:04 (10)	20:45	24	20:11 (9)	19:29	17:17	30	16:37 (8)	16:24	10	15:48 (7)	16:18	27	05:40		06:35		19:48 (9)	07:31		07:27	16:07 (8)	08:27	15:41 (7)	08:58		21:47	25	21:03 (10)	20:43	22	20:10 (9)	19:26	17:15	29	16:36 (8)	16:23	5	15:46 (7)	16:19	28	05:42		06:36		19:48 (9)	07:32		07:29	16:09 (8)	08:28		08:58		21:46	25	21:04 (10)	20:40	20	20:08 (9)	19:24	17:13	27	16:36 (8)	16:22		16:19	29	05:43		06:38		19:49 (9)	07:34		07:31	16:09 (8)	08:30		08:58		21:44	25	21:03 (10)	20:38	18	20:07 (9)	19:21	17:11	26	16:35 (8)	16:21		16:20	30	05:45		06:40		19:50 (9)	07:36		07:33	16:10 (8)	08:32		08:58		21:42	24	21:03 (10)	20:36	16	20:06 (9)	19:19	17:09	24	16:34 (8)	16:20		16:21	31	05:47		06:42		19:53 (9)			07:35					08:58		21:40	23	21:03 (10)	20:33	10	20:03 (9)		17:06	20	16:32 (8)			16:22	Potential sun hours	515		461		382		328		257		231		Total, worst case	519		461		536		562		Sun reduction	0.27		0.27		0.23		0.20		Oper. time red.	1.00		1.00		1.00		1.00		Wind dir. red.	0.63		0.60		0.58		0.61		Total reduction	0.17		0.16		0.14		0.12		Total, real	86		75		73		68																																																																																																																																																																																																																				
10	05:16		06:04		07:00	07:55		07:55	15:26 (7)	08:46			22:09		21:21		20:09	18:54		16:47	27	15:53 (7)	16:14	11	05:17		06:06		07:02	07:57		07:57	15:26 (7)	08:47			22:08	7	20:53 (10)	21:19	20:06	18:52		16:45	27	15:53 (7)	16:14	12	05:18		06:08		07:03	07:59		17:20 (8)	07:59	15:26 (7)	08:48		22:07	10	20:55 (10)	21:17	20:04	18:49	11	17:31 (8)	16:44	27	15:53 (7)	16:14	13	05:19		06:09		07:05	08:00		17:17 (8)	08:01	15:26 (7)	08:49		22:06	13	20:56 (10)	21:15	20:01	18:47	17	17:34 (8)	16:42	27	15:53 (7)	16:14	14	05:21		06:11		20:00 (9)	07:07		08:02	17:14 (8)	08:03	15:26 (7)	08:50		22:05	15	20:58 (10)	21:13	5	20:05 (9)	19:59	18:44	21	17:35 (8)	16:40	27	15:53 (7)	16:13	15	05:22		06:13		19:56 (9)	07:09		08:04	17:12 (8)	08:05	15:26 (7)	08:51		22:04	17	20:59 (10)	21:10	12	20:08 (9)	19:56	18:42	24	17:36 (8)	16:39	27	15:53 (7)	16:13	16	05:23		06:15		19:54 (9)	07:11		08:06	17:11 (8)	08:07	15:26 (7)	08:52		22:03	17	20:59 (10)	21:08	16	20:10 (9)	19:54	18:40	26	17:37 (8)	16:37	27	15:53 (7)	16:14	17	05:25		06:17		19:53 (9)	07:13		08:08	17:10 (8)	08:09	15:28 (7)	08:53		22:02	19	21:00 (10)	21:06	18	20:11 (9)	19:51	18:37	28	17:38 (8)	16:36	26	15:54 (7)	16:14	18	05:26		06:18		19:51 (9)	07:14		08:10	17:09 (8)	08:11	15:28 (7)	08:54		22:01	20	21:01 (10)	21:04	20	20:11 (9)	19:49	18:35	30	17:39 (8)	16:34	25	15:53 (7)	16:14	19	05:28		06:20		19:50 (9)	07:16		08:12	17:08 (8)	08:12	15:29 (7)	08:55		21:59	21	21:01 (10)	21:01	22	20:12 (9)	19:46	18:33	31	17:39 (8)	16:33	24	15:53 (7)	16:14	20	05:29		06:22		19:49 (9)	07:18		08:14	17:07 (8)	08:14	15:30 (7)	08:55		21:58	23	21:02 (10)	20:59	24	20:13 (9)	19:44	18:30	32	17:39 (8)	16:31	23	15:53 (7)	16:15	21	05:30		06:24		19:48 (9)	07:20		08:16	17:07 (8)	08:16	15:31 (7)	08:56		21:56	23	21:03 (10)	20:57	24	20:12 (9)	19:41	18:28	32	17:39 (8)	16:30	21	15:52 (7)	16:15	22	05:32		06:26		19:48 (9)	07:22		08:18	17:07 (8)	08:18	15:32 (7)	08:56		21:55	24	21:03 (10)	20:55	24	20:12 (9)	19:39	18:26	32	17:39 (8)	16:29	20	15:52 (7)	16:15	23	05:34		06:27		19:48 (9)	07:23		08:20	17:06 (8)	08:20	15:33 (7)	08:57		21:54	25	21:04 (10)	20:52	24	20:12 (9)	19:36	18:24	33	17:39 (8)	16:27	18	15:51 (7)	16:16	24	05:35		06:29		19:48 (9)	07:25		08:22	17:06 (8)	08:22	15:34 (7)	08:57		21:52	24	21:03 (10)	20:50	24	20:12 (9)	19:34	18:21	32	17:38 (8)	16:26	16	15:50 (7)	16:17	25	05:37		06:31		19:47 (9)	07:27		07:24	16:07 (8)	08:23	15:36 (7)	08:58		21:51	25	21:03 (10)	20:48	24	20:11 (9)	19:31	17:19	31	16:38 (8)	16:25	13	15:49 (7)	16:17	26	05:38		06:33		19:47 (9)	07:29		07:26	16:07 (8)	08:25	15:38 (7)	08:58		21:49	25	21:04 (10)	20:45	24	20:11 (9)	19:29	17:17	30	16:37 (8)	16:24	10	15:48 (7)	16:18	27	05:40		06:35		19:48 (9)	07:31		07:27	16:07 (8)	08:27	15:41 (7)	08:58		21:47	25	21:03 (10)	20:43	22	20:10 (9)	19:26	17:15	29	16:36 (8)	16:23	5	15:46 (7)	16:19	28	05:42		06:36		19:48 (9)	07:32		07:29	16:09 (8)	08:28		08:58		21:46	25	21:04 (10)	20:40	20	20:08 (9)	19:24	17:13	27	16:36 (8)	16:22		16:19	29	05:43		06:38		19:49 (9)	07:34		07:31	16:09 (8)	08:30		08:58		21:44	25	21:03 (10)	20:38	18	20:07 (9)	19:21	17:11	26	16:35 (8)	16:21		16:20	30	05:45		06:40		19:50 (9)	07:36		07:33	16:10 (8)	08:32		08:58		21:42	24	21:03 (10)	20:36	16	20:06 (9)	19:19	17:09	24	16:34 (8)	16:20		16:21	31	05:47		06:42		19:53 (9)			07:35					08:58		21:40	23	21:03 (10)	20:33	10	20:03 (9)		17:06	20	16:32 (8)			16:22	Potential sun hours	515		461		382		328		257		231		Total, worst case	519		461		536		562		Sun reduction	0.27		0.27		0.23		0.20		Oper. time red.	1.00		1.00		1.00		1.00		Wind dir. red.	0.63		0.60		0.58		0.61		Total reduction	0.17		0.16		0.14		0.12		Total, real	86		75		73		68																																																																																																																																																																																																																																
	22:09		21:21		20:09	18:54		16:47	27	15:53 (7)	16:14	11	05:17		06:06		07:02	07:57		07:57	15:26 (7)	08:47			22:08	7	20:53 (10)	21:19	20:06	18:52		16:45	27	15:53 (7)	16:14	12	05:18		06:08		07:03	07:59		17:20 (8)	07:59	15:26 (7)	08:48		22:07	10	20:55 (10)	21:17	20:04	18:49	11	17:31 (8)	16:44	27	15:53 (7)	16:14	13	05:19		06:09		07:05	08:00		17:17 (8)	08:01	15:26 (7)	08:49		22:06	13	20:56 (10)	21:15	20:01	18:47	17	17:34 (8)	16:42	27	15:53 (7)	16:14	14	05:21		06:11		20:00 (9)	07:07		08:02	17:14 (8)	08:03	15:26 (7)	08:50		22:05	15	20:58 (10)	21:13	5	20:05 (9)	19:59	18:44	21	17:35 (8)	16:40	27	15:53 (7)	16:13	15	05:22		06:13		19:56 (9)	07:09		08:04	17:12 (8)	08:05	15:26 (7)	08:51		22:04	17	20:59 (10)	21:10	12	20:08 (9)	19:56	18:42	24	17:36 (8)	16:39	27	15:53 (7)	16:13	16	05:23		06:15		19:54 (9)	07:11		08:06	17:11 (8)	08:07	15:26 (7)	08:52		22:03	17	20:59 (10)	21:08	16	20:10 (9)	19:54	18:40	26	17:37 (8)	16:37	27	15:53 (7)	16:14	17	05:25		06:17		19:53 (9)	07:13		08:08	17:10 (8)	08:09	15:28 (7)	08:53		22:02	19	21:00 (10)	21:06	18	20:11 (9)	19:51	18:37	28	17:38 (8)	16:36	26	15:54 (7)	16:14	18	05:26		06:18		19:51 (9)	07:14		08:10	17:09 (8)	08:11	15:28 (7)	08:54		22:01	20	21:01 (10)	21:04	20	20:11 (9)	19:49	18:35	30	17:39 (8)	16:34	25	15:53 (7)	16:14	19	05:28		06:20		19:50 (9)	07:16		08:12	17:08 (8)	08:12	15:29 (7)	08:55		21:59	21	21:01 (10)	21:01	22	20:12 (9)	19:46	18:33	31	17:39 (8)	16:33	24	15:53 (7)	16:14	20	05:29		06:22		19:49 (9)	07:18		08:14	17:07 (8)	08:14	15:30 (7)	08:55		21:58	23	21:02 (10)	20:59	24	20:13 (9)	19:44	18:30	32	17:39 (8)	16:31	23	15:53 (7)	16:15	21	05:30		06:24		19:48 (9)	07:20		08:16	17:07 (8)	08:16	15:31 (7)	08:56		21:56	23	21:03 (10)	20:57	24	20:12 (9)	19:41	18:28	32	17:39 (8)	16:30	21	15:52 (7)	16:15	22	05:32		06:26		19:48 (9)	07:22		08:18	17:07 (8)	08:18	15:32 (7)	08:56		21:55	24	21:03 (10)	20:55	24	20:12 (9)	19:39	18:26	32	17:39 (8)	16:29	20	15:52 (7)	16:15	23	05:34		06:27		19:48 (9)	07:23		08:20	17:06 (8)	08:20	15:33 (7)	08:57		21:54	25	21:04 (10)	20:52	24	20:12 (9)	19:36	18:24	33	17:39 (8)	16:27	18	15:51 (7)	16:16	24	05:35		06:29		19:48 (9)	07:25		08:22	17:06 (8)	08:22	15:34 (7)	08:57		21:52	24	21:03 (10)	20:50	24	20:12 (9)	19:34	18:21	32	17:38 (8)	16:26	16	15:50 (7)	16:17	25	05:37		06:31		19:47 (9)	07:27		07:24	16:07 (8)	08:23	15:36 (7)	08:58		21:51	25	21:03 (10)	20:48	24	20:11 (9)	19:31	17:19	31	16:38 (8)	16:25	13	15:49 (7)	16:17	26	05:38		06:33		19:47 (9)	07:29		07:26	16:07 (8)	08:25	15:38 (7)	08:58		21:49	25	21:04 (10)	20:45	24	20:11 (9)	19:29	17:17	30	16:37 (8)	16:24	10	15:48 (7)	16:18	27	05:40		06:35		19:48 (9)	07:31		07:27	16:07 (8)	08:27	15:41 (7)	08:58		21:47	25	21:03 (10)	20:43	22	20:10 (9)	19:26	17:15	29	16:36 (8)	16:23	5	15:46 (7)	16:19	28	05:42		06:36		19:48 (9)	07:32		07:29	16:09 (8)	08:28		08:58		21:46	25	21:04 (10)	20:40	20	20:08 (9)	19:24	17:13	27	16:36 (8)	16:22		16:19	29	05:43		06:38		19:49 (9)	07:34		07:31	16:09 (8)	08:30		08:58		21:44	25	21:03 (10)	20:38	18	20:07 (9)	19:21	17:11	26	16:35 (8)	16:21		16:20	30	05:45		06:40		19:50 (9)	07:36		07:33	16:10 (8)	08:32		08:58		21:42	24	21:03 (10)	20:36	16	20:06 (9)	19:19	17:09	24	16:34 (8)	16:20		16:21	31	05:47		06:42		19:53 (9)			07:35					08:58		21:40	23	21:03 (10)	20:33	10	20:03 (9)		17:06	20	16:32 (8)			16:22	Potential sun hours	515		461		382		328		257		231		Total, worst case	519		461		536		562		Sun reduction	0.27		0.27		0.23		0.20		Oper. time red.	1.00		1.00		1.00		1.00		Wind dir. red.	0.63		0.60		0.58		0.61		Total reduction	0.17		0.16		0.14		0.12		Total, real	86		75		73		68																																																																																																																																																																																																																																												
11	05:17		06:06		07:02	07:57		07:57	15:26 (7)	08:47			22:08	7	20:53 (10)	21:19	20:06	18:52		16:45	27	15:53 (7)	16:14	12	05:18		06:08		07:03	07:59		17:20 (8)	07:59	15:26 (7)	08:48		22:07	10	20:55 (10)	21:17	20:04	18:49	11	17:31 (8)	16:44	27	15:53 (7)	16:14	13	05:19		06:09		07:05	08:00		17:17 (8)	08:01	15:26 (7)	08:49		22:06	13	20:56 (10)	21:15	20:01	18:47	17	17:34 (8)	16:42	27	15:53 (7)	16:14	14	05:21		06:11		20:00 (9)	07:07		08:02	17:14 (8)	08:03	15:26 (7)	08:50		22:05	15	20:58 (10)	21:13	5	20:05 (9)	19:59	18:44	21	17:35 (8)	16:40	27	15:53 (7)	16:13	15	05:22		06:13		19:56 (9)	07:09		08:04	17:12 (8)	08:05	15:26 (7)	08:51		22:04	17	20:59 (10)	21:10	12	20:08 (9)	19:56	18:42	24	17:36 (8)	16:39	27	15:53 (7)	16:13	16	05:23		06:15		19:54 (9)	07:11		08:06	17:11 (8)	08:07	15:26 (7)	08:52		22:03	17	20:59 (10)	21:08	16	20:10 (9)	19:54	18:40	26	17:37 (8)	16:37	27	15:53 (7)	16:14	17	05:25		06:17		19:53 (9)	07:13		08:08	17:10 (8)	08:09	15:28 (7)	08:53		22:02	19	21:00 (10)	21:06	18	20:11 (9)	19:51	18:37	28	17:38 (8)	16:36	26	15:54 (7)	16:14	18	05:26		06:18		19:51 (9)	07:14		08:10	17:09 (8)	08:11	15:28 (7)	08:54		22:01	20	21:01 (10)	21:04	20	20:11 (9)	19:49	18:35	30	17:39 (8)	16:34	25	15:53 (7)	16:14	19	05:28		06:20		19:50 (9)	07:16		08:12	17:08 (8)	08:12	15:29 (7)	08:55		21:59	21	21:01 (10)	21:01	22	20:12 (9)	19:46	18:33	31	17:39 (8)	16:33	24	15:53 (7)	16:14	20	05:29		06:22		19:49 (9)	07:18		08:14	17:07 (8)	08:14	15:30 (7)	08:55		21:58	23	21:02 (10)	20:59	24	20:13 (9)	19:44	18:30	32	17:39 (8)	16:31	23	15:53 (7)	16:15	21	05:30		06:24		19:48 (9)	07:20		08:16	17:07 (8)	08:16	15:31 (7)	08:56		21:56	23	21:03 (10)	20:57	24	20:12 (9)	19:41	18:28	32	17:39 (8)	16:30	21	15:52 (7)	16:15	22	05:32		06:26		19:48 (9)	07:22		08:18	17:07 (8)	08:18	15:32 (7)	08:56		21:55	24	21:03 (10)	20:55	24	20:12 (9)	19:39	18:26	32	17:39 (8)	16:29	20	15:52 (7)	16:15	23	05:34		06:27		19:48 (9)	07:23		08:20	17:06 (8)	08:20	15:33 (7)	08:57		21:54	25	21:04 (10)	20:52	24	20:12 (9)	19:36	18:24	33	17:39 (8)	16:27	18	15:51 (7)	16:16	24	05:35		06:29		19:48 (9)	07:25		08:22	17:06 (8)	08:22	15:34 (7)	08:57		21:52	24	21:03 (10)	20:50	24	20:12 (9)	19:34	18:21	32	17:38 (8)	16:26	16	15:50 (7)	16:17	25	05:37		06:31		19:47 (9)	07:27		07:24	16:07 (8)	08:23	15:36 (7)	08:58		21:51	25	21:03 (10)	20:48	24	20:11 (9)	19:31	17:19	31	16:38 (8)	16:25	13	15:49 (7)	16:17	26	05:38		06:33		19:47 (9)	07:29		07:26	16:07 (8)	08:25	15:38 (7)	08:58		21:49	25	21:04 (10)	20:45	24	20:11 (9)	19:29	17:17	30	16:37 (8)	16:24	10	15:48 (7)	16:18	27	05:40		06:35		19:48 (9)	07:31		07:27	16:07 (8)	08:27	15:41 (7)	08:58		21:47	25	21:03 (10)	20:43	22	20:10 (9)	19:26	17:15	29	16:36 (8)	16:23	5	15:46 (7)	16:19	28	05:42		06:36		19:48 (9)	07:32		07:29	16:09 (8)	08:28		08:58		21:46	25	21:04 (10)	20:40	20	20:08 (9)	19:24	17:13	27	16:36 (8)	16:22		16:19	29	05:43		06:38		19:49 (9)	07:34		07:31	16:09 (8)	08:30		08:58		21:44	25	21:03 (10)	20:38	18	20:07 (9)	19:21	17:11	26	16:35 (8)	16:21		16:20	30	05:45		06:40		19:50 (9)	07:36		07:33	16:10 (8)	08:32		08:58		21:42	24	21:03 (10)	20:36	16	20:06 (9)	19:19	17:09	24	16:34 (8)	16:20		16:21	31	05:47		06:42		19:53 (9)			07:35					08:58		21:40	23	21:03 (10)	20:33	10	20:03 (9)		17:06	20	16:32 (8)			16:22	Potential sun hours	515		461		382		328		257		231		Total, worst case	519		461		536		562		Sun reduction	0.27		0.27		0.23		0.20		Oper. time red.	1.00		1.00		1.00		1.00		Wind dir. red.	0.63		0.60		0.58		0.61		Total reduction	0.17		0.16		0.14		0.12		Total, real	86		75		73		68																																																																																																																																																																																																																																																								
	22:08	7	20:53 (10)	21:19	20:06	18:52		16:45	27	15:53 (7)	16:14	12	05:18		06:08		07:03	07:59		17:20 (8)	07:59	15:26 (7)	08:48		22:07	10	20:55 (10)	21:17	20:04	18:49	11	17:31 (8)	16:44	27	15:53 (7)	16:14	13	05:19		06:09		07:05	08:00		17:17 (8)	08:01	15:26 (7)	08:49		22:06	13	20:56 (10)	21:15	20:01	18:47	17	17:34 (8)	16:42	27	15:53 (7)	16:14	14	05:21		06:11		20:00 (9)	07:07		08:02	17:14 (8)	08:03	15:26 (7)	08:50		22:05	15	20:58 (10)	21:13	5	20:05 (9)	19:59	18:44	21	17:35 (8)	16:40	27	15:53 (7)	16:13	15	05:22		06:13		19:56 (9)	07:09		08:04	17:12 (8)	08:05	15:26 (7)	08:51		22:04	17	20:59 (10)	21:10	12	20:08 (9)	19:56	18:42	24	17:36 (8)	16:39	27	15:53 (7)	16:13	16	05:23		06:15		19:54 (9)	07:11		08:06	17:11 (8)	08:07	15:26 (7)	08:52		22:03	17	20:59 (10)	21:08	16	20:10 (9)	19:54	18:40	26	17:37 (8)	16:37	27	15:53 (7)	16:14	17	05:25		06:17		19:53 (9)	07:13		08:08	17:10 (8)	08:09	15:28 (7)	08:53		22:02	19	21:00 (10)	21:06	18	20:11 (9)	19:51	18:37	28	17:38 (8)	16:36	26	15:54 (7)	16:14	18	05:26		06:18		19:51 (9)	07:14		08:10	17:09 (8)	08:11	15:28 (7)	08:54		22:01	20	21:01 (10)	21:04	20	20:11 (9)	19:49	18:35	30	17:39 (8)	16:34	25	15:53 (7)	16:14	19	05:28		06:20		19:50 (9)	07:16		08:12	17:08 (8)	08:12	15:29 (7)	08:55		21:59	21	21:01 (10)	21:01	22	20:12 (9)	19:46	18:33	31	17:39 (8)	16:33	24	15:53 (7)	16:14	20	05:29		06:22		19:49 (9)	07:18		08:14	17:07 (8)	08:14	15:30 (7)	08:55		21:58	23	21:02 (10)	20:59	24	20:13 (9)	19:44	18:30	32	17:39 (8)	16:31	23	15:53 (7)	16:15	21	05:30		06:24		19:48 (9)	07:20		08:16	17:07 (8)	08:16	15:31 (7)	08:56		21:56	23	21:03 (10)	20:57	24	20:12 (9)	19:41	18:28	32	17:39 (8)	16:30	21	15:52 (7)	16:15	22	05:32		06:26		19:48 (9)	07:22		08:18	17:07 (8)	08:18	15:32 (7)	08:56		21:55	24	21:03 (10)	20:55	24	20:12 (9)	19:39	18:26	32	17:39 (8)	16:29	20	15:52 (7)	16:15	23	05:34		06:27		19:48 (9)	07:23		08:20	17:06 (8)	08:20	15:33 (7)	08:57		21:54	25	21:04 (10)	20:52	24	20:12 (9)	19:36	18:24	33	17:39 (8)	16:27	18	15:51 (7)	16:16	24	05:35		06:29		19:48 (9)	07:25		08:22	17:06 (8)	08:22	15:34 (7)	08:57		21:52	24	21:03 (10)	20:50	24	20:12 (9)	19:34	18:21	32	17:38 (8)	16:26	16	15:50 (7)	16:17	25	05:37		06:31		19:47 (9)	07:27		07:24	16:07 (8)	08:23	15:36 (7)	08:58		21:51	25	21:03 (10)	20:48	24	20:11 (9)	19:31	17:19	31	16:38 (8)	16:25	13	15:49 (7)	16:17	26	05:38		06:33		19:47 (9)	07:29		07:26	16:07 (8)	08:25	15:38 (7)	08:58		21:49	25	21:04 (10)	20:45	24	20:11 (9)	19:29	17:17	30	16:37 (8)	16:24	10	15:48 (7)	16:18	27	05:40		06:35		19:48 (9)	07:31		07:27	16:07 (8)	08:27	15:41 (7)	08:58		21:47	25	21:03 (10)	20:43	22	20:10 (9)	19:26	17:15	29	16:36 (8)	16:23	5	15:46 (7)	16:19	28	05:42		06:36		19:48 (9)	07:32		07:29	16:09 (8)	08:28		08:58		21:46	25	21:04 (10)	20:40	20	20:08 (9)	19:24	17:13	27	16:36 (8)	16:22		16:19	29	05:43		06:38		19:49 (9)	07:34		07:31	16:09 (8)	08:30		08:58		21:44	25	21:03 (10)	20:38	18	20:07 (9)	19:21	17:11	26	16:35 (8)	16:21		16:20	30	05:45		06:40		19:50 (9)	07:36		07:33	16:10 (8)	08:32		08:58		21:42	24	21:03 (10)	20:36	16	20:06 (9)	19:19	17:09	24	16:34 (8)	16:20		16:21	31	05:47		06:42		19:53 (9)			07:35					08:58		21:40	23	21:03 (10)	20:33	10	20:03 (9)		17:06	20	16:32 (8)			16:22	Potential sun hours	515		461		382		328		257		231		Total, worst case	519		461		536		562		Sun reduction	0.27		0.27		0.23		0.20		Oper. time red.	1.00		1.00		1.00		1.00		Wind dir. red.	0.63		0.60		0.58		0.61		Total reduction	0.17		0.16		0.14		0.12		Total, real	86		75		73		68																																																																																																																																																																																																																																																																				
12	05:18		06:08		07:03	07:59		17:20 (8)	07:59	15:26 (7)	08:48		22:07	10	20:55 (10)	21:17	20:04	18:49	11	17:31 (8)	16:44	27	15:53 (7)	16:14	13	05:19		06:09		07:05	08:00		17:17 (8)	08:01	15:26 (7)	08:49		22:06	13	20:56 (10)	21:15	20:01	18:47	17	17:34 (8)	16:42	27	15:53 (7)	16:14	14	05:21		06:11		20:00 (9)	07:07		08:02	17:14 (8)	08:03	15:26 (7)	08:50		22:05	15	20:58 (10)	21:13	5	20:05 (9)	19:59	18:44	21	17:35 (8)	16:40	27	15:53 (7)	16:13	15	05:22		06:13		19:56 (9)	07:09		08:04	17:12 (8)	08:05	15:26 (7)	08:51		22:04	17	20:59 (10)	21:10	12	20:08 (9)	19:56	18:42	24	17:36 (8)	16:39	27	15:53 (7)	16:13	16	05:23		06:15		19:54 (9)	07:11		08:06	17:11 (8)	08:07	15:26 (7)	08:52		22:03	17	20:59 (10)	21:08	16	20:10 (9)	19:54	18:40	26	17:37 (8)	16:37	27	15:53 (7)	16:14	17	05:25		06:17		19:53 (9)	07:13		08:08	17:10 (8)	08:09	15:28 (7)	08:53		22:02	19	21:00 (10)	21:06	18	20:11 (9)	19:51	18:37	28	17:38 (8)	16:36	26	15:54 (7)	16:14	18	05:26		06:18		19:51 (9)	07:14		08:10	17:09 (8)	08:11	15:28 (7)	08:54		22:01	20	21:01 (10)	21:04	20	20:11 (9)	19:49	18:35	30	17:39 (8)	16:34	25	15:53 (7)	16:14	19	05:28		06:20		19:50 (9)	07:16		08:12	17:08 (8)	08:12	15:29 (7)	08:55		21:59	21	21:01 (10)	21:01	22	20:12 (9)	19:46	18:33	31	17:39 (8)	16:33	24	15:53 (7)	16:14	20	05:29		06:22		19:49 (9)	07:18		08:14	17:07 (8)	08:14	15:30 (7)	08:55		21:58	23	21:02 (10)	20:59	24	20:13 (9)	19:44	18:30	32	17:39 (8)	16:31	23	15:53 (7)	16:15	21	05:30		06:24		19:48 (9)	07:20		08:16	17:07 (8)	08:16	15:31 (7)	08:56		21:56	23	21:03 (10)	20:57	24	20:12 (9)	19:41	18:28	32	17:39 (8)	16:30	21	15:52 (7)	16:15	22	05:32		06:26		19:48 (9)	07:22		08:18	17:07 (8)	08:18	15:32 (7)	08:56		21:55	24	21:03 (10)	20:55	24	20:12 (9)	19:39	18:26	32	17:39 (8)	16:29	20	15:52 (7)	16:15	23	05:34		06:27		19:48 (9)	07:23		08:20	17:06 (8)	08:20	15:33 (7)	08:57		21:54	25	21:04 (10)	20:52	24	20:12 (9)	19:36	18:24	33	17:39 (8)	16:27	18	15:51 (7)	16:16	24	05:35		06:29		19:48 (9)	07:25		08:22	17:06 (8)	08:22	15:34 (7)	08:57		21:52	24	21:03 (10)	20:50	24	20:12 (9)	19:34	18:21	32	17:38 (8)	16:26	16	15:50 (7)	16:17	25	05:37		06:31		19:47 (9)	07:27		07:24	16:07 (8)	08:23	15:36 (7)	08:58		21:51	25	21:03 (10)	20:48	24	20:11 (9)	19:31	17:19	31	16:38 (8)	16:25	13	15:49 (7)	16:17	26	05:38		06:33		19:47 (9)	07:29		07:26	16:07 (8)	08:25	15:38 (7)	08:58		21:49	25	21:04 (10)	20:45	24	20:11 (9)	19:29	17:17	30	16:37 (8)	16:24	10	15:48 (7)	16:18	27	05:40		06:35		19:48 (9)	07:31		07:27	16:07 (8)	08:27	15:41 (7)	08:58		21:47	25	21:03 (10)	20:43	22	20:10 (9)	19:26	17:15	29	16:36 (8)	16:23	5	15:46 (7)	16:19	28	05:42		06:36		19:48 (9)	07:32		07:29	16:09 (8)	08:28		08:58		21:46	25	21:04 (10)	20:40	20	20:08 (9)	19:24	17:13	27	16:36 (8)	16:22		16:19	29	05:43		06:38		19:49 (9)	07:34		07:31	16:09 (8)	08:30		08:58		21:44	25	21:03 (10)	20:38	18	20:07 (9)	19:21	17:11	26	16:35 (8)	16:21		16:20	30	05:45		06:40		19:50 (9)	07:36		07:33	16:10 (8)	08:32		08:58		21:42	24	21:03 (10)	20:36	16	20:06 (9)	19:19	17:09	24	16:34 (8)	16:20		16:21	31	05:47		06:42		19:53 (9)			07:35					08:58		21:40	23	21:03 (10)	20:33	10	20:03 (9)		17:06	20	16:32 (8)			16:22	Potential sun hours	515		461		382		328		257		231		Total, worst case	519		461		536		562		Sun reduction	0.27		0.27		0.23		0.20		Oper. time red.	1.00		1.00		1.00		1.00		Wind dir. red.	0.63		0.60		0.58		0.61		Total reduction	0.17		0.16		0.14		0.12		Total, real	86		75		73		68																																																																																																																																																																																																																																																																																
	22:07	10	20:55 (10)	21:17	20:04	18:49	11	17:31 (8)	16:44	27	15:53 (7)	16:14	13	05:19		06:09		07:05	08:00		17:17 (8)	08:01	15:26 (7)	08:49		22:06	13	20:56 (10)	21:15	20:01	18:47	17	17:34 (8)	16:42	27	15:53 (7)	16:14	14	05:21		06:11		20:00 (9)	07:07		08:02	17:14 (8)	08:03	15:26 (7)	08:50		22:05	15	20:58 (10)	21:13	5	20:05 (9)	19:59	18:44	21	17:35 (8)	16:40	27	15:53 (7)	16:13	15	05:22		06:13		19:56 (9)	07:09		08:04	17:12 (8)	08:05	15:26 (7)	08:51		22:04	17	20:59 (10)	21:10	12	20:08 (9)	19:56	18:42	24	17:36 (8)	16:39	27	15:53 (7)	16:13	16	05:23		06:15		19:54 (9)	07:11		08:06	17:11 (8)	08:07	15:26 (7)	08:52		22:03	17	20:59 (10)	21:08	16	20:10 (9)	19:54	18:40	26	17:37 (8)	16:37	27	15:53 (7)	16:14	17	05:25		06:17		19:53 (9)	07:13		08:08	17:10 (8)	08:09	15:28 (7)	08:53		22:02	19	21:00 (10)	21:06	18	20:11 (9)	19:51	18:37	28	17:38 (8)	16:36	26	15:54 (7)	16:14	18	05:26		06:18		19:51 (9)	07:14		08:10	17:09 (8)	08:11	15:28 (7)	08:54		22:01	20	21:01 (10)	21:04	20	20:11 (9)	19:49	18:35	30	17:39 (8)	16:34	25	15:53 (7)	16:14	19	05:28		06:20		19:50 (9)	07:16		08:12	17:08 (8)	08:12	15:29 (7)	08:55		21:59	21	21:01 (10)	21:01	22	20:12 (9)	19:46	18:33	31	17:39 (8)	16:33	24	15:53 (7)	16:14	20	05:29		06:22		19:49 (9)	07:18		08:14	17:07 (8)	08:14	15:30 (7)	08:55		21:58	23	21:02 (10)	20:59	24	20:13 (9)	19:44	18:30	32	17:39 (8)	16:31	23	15:53 (7)	16:15	21	05:30		06:24		19:48 (9)	07:20		08:16	17:07 (8)	08:16	15:31 (7)	08:56		21:56	23	21:03 (10)	20:57	24	20:12 (9)	19:41	18:28	32	17:39 (8)	16:30	21	15:52 (7)	16:15	22	05:32		06:26		19:48 (9)	07:22		08:18	17:07 (8)	08:18	15:32 (7)	08:56		21:55	24	21:03 (10)	20:55	24	20:12 (9)	19:39	18:26	32	17:39 (8)	16:29	20	15:52 (7)	16:15	23	05:34		06:27		19:48 (9)	07:23		08:20	17:06 (8)	08:20	15:33 (7)	08:57		21:54	25	21:04 (10)	20:52	24	20:12 (9)	19:36	18:24	33	17:39 (8)	16:27	18	15:51 (7)	16:16	24	05:35		06:29		19:48 (9)	07:25		08:22	17:06 (8)	08:22	15:34 (7)	08:57		21:52	24	21:03 (10)	20:50	24	20:12 (9)	19:34	18:21	32	17:38 (8)	16:26	16	15:50 (7)	16:17	25	05:37		06:31		19:47 (9)	07:27		07:24	16:07 (8)	08:23	15:36 (7)	08:58		21:51	25	21:03 (10)	20:48	24	20:11 (9)	19:31	17:19	31	16:38 (8)	16:25	13	15:49 (7)	16:17	26	05:38		06:33		19:47 (9)	07:29		07:26	16:07 (8)	08:25	15:38 (7)	08:58		21:49	25	21:04 (10)	20:45	24	20:11 (9)	19:29	17:17	30	16:37 (8)	16:24	10	15:48 (7)	16:18	27	05:40		06:35		19:48 (9)	07:31		07:27	16:07 (8)	08:27	15:41 (7)	08:58		21:47	25	21:03 (10)	20:43	22	20:10 (9)	19:26	17:15	29	16:36 (8)	16:23	5	15:46 (7)	16:19	28	05:42		06:36		19:48 (9)	07:32		07:29	16:09 (8)	08:28		08:58		21:46	25	21:04 (10)	20:40	20	20:08 (9)	19:24	17:13	27	16:36 (8)	16:22		16:19	29	05:43		06:38		19:49 (9)	07:34		07:31	16:09 (8)	08:30		08:58		21:44	25	21:03 (10)	20:38	18	20:07 (9)	19:21	17:11	26	16:35 (8)	16:21		16:20	30	05:45		06:40		19:50 (9)	07:36		07:33	16:10 (8)	08:32		08:58		21:42	24	21:03 (10)	20:36	16	20:06 (9)	19:19	17:09	24	16:34 (8)	16:20		16:21	31	05:47		06:42		19:53 (9)			07:35					08:58		21:40	23	21:03 (10)	20:33	10	20:03 (9)		17:06	20	16:32 (8)			16:22	Potential sun hours	515		461		382		328		257		231		Total, worst case	519		461		536		562		Sun reduction	0.27		0.27		0.23		0.20		Oper. time red.	1.00		1.00		1.00		1.00		Wind dir. red.	0.63		0.60		0.58		0.61		Total reduction	0.17		0.16		0.14		0.12		Total, real	86		75		73		68																																																																																																																																																																																																																																																																																												
13	05:19		06:09		07:05	08:00		17:17 (8)	08:01	15:26 (7)	08:49		22:06	13	20:56 (10)	21:15	20:01	18:47	17	17:34 (8)	16:42	27	15:53 (7)	16:14	14	05:21		06:11		20:00 (9)	07:07		08:02	17:14 (8)	08:03	15:26 (7)	08:50		22:05	15	20:58 (10)	21:13	5	20:05 (9)	19:59	18:44	21	17:35 (8)	16:40	27	15:53 (7)	16:13	15	05:22		06:13		19:56 (9)	07:09		08:04	17:12 (8)	08:05	15:26 (7)	08:51		22:04	17	20:59 (10)	21:10	12	20:08 (9)	19:56	18:42	24	17:36 (8)	16:39	27	15:53 (7)	16:13	16	05:23		06:15		19:54 (9)	07:11		08:06	17:11 (8)	08:07	15:26 (7)	08:52		22:03	17	20:59 (10)	21:08	16	20:10 (9)	19:54	18:40	26	17:37 (8)	16:37	27	15:53 (7)	16:14	17	05:25		06:17		19:53 (9)	07:13		08:08	17:10 (8)	08:09	15:28 (7)	08:53		22:02	19	21:00 (10)	21:06	18	20:11 (9)	19:51	18:37	28	17:38 (8)	16:36	26	15:54 (7)	16:14	18	05:26		06:18		19:51 (9)	07:14		08:10	17:09 (8)	08:11	15:28 (7)	08:54		22:01	20	21:01 (10)	21:04	20	20:11 (9)	19:49	18:35	30	17:39 (8)	16:34	25	15:53 (7)	16:14	19	05:28		06:20		19:50 (9)	07:16		08:12	17:08 (8)	08:12	15:29 (7)	08:55		21:59	21	21:01 (10)	21:01	22	20:12 (9)	19:46	18:33	31	17:39 (8)	16:33	24	15:53 (7)	16:14	20	05:29		06:22		19:49 (9)	07:18		08:14	17:07 (8)	08:14	15:30 (7)	08:55		21:58	23	21:02 (10)	20:59	24	20:13 (9)	19:44	18:30	32	17:39 (8)	16:31	23	15:53 (7)	16:15	21	05:30		06:24		19:48 (9)	07:20		08:16	17:07 (8)	08:16	15:31 (7)	08:56		21:56	23	21:03 (10)	20:57	24	20:12 (9)	19:41	18:28	32	17:39 (8)	16:30	21	15:52 (7)	16:15	22	05:32		06:26		19:48 (9)	07:22		08:18	17:07 (8)	08:18	15:32 (7)	08:56		21:55	24	21:03 (10)	20:55	24	20:12 (9)	19:39	18:26	32	17:39 (8)	16:29	20	15:52 (7)	16:15	23	05:34		06:27		19:48 (9)	07:23		08:20	17:06 (8)	08:20	15:33 (7)	08:57		21:54	25	21:04 (10)	20:52	24	20:12 (9)	19:36	18:24	33	17:39 (8)	16:27	18	15:51 (7)	16:16	24	05:35		06:29		19:48 (9)	07:25		08:22	17:06 (8)	08:22	15:34 (7)	08:57		21:52	24	21:03 (10)	20:50	24	20:12 (9)	19:34	18:21	32	17:38 (8)	16:26	16	15:50 (7)	16:17	25	05:37		06:31		19:47 (9)	07:27		07:24	16:07 (8)	08:23	15:36 (7)	08:58		21:51	25	21:03 (10)	20:48	24	20:11 (9)	19:31	17:19	31	16:38 (8)	16:25	13	15:49 (7)	16:17	26	05:38		06:33		19:47 (9)	07:29		07:26	16:07 (8)	08:25	15:38 (7)	08:58		21:49	25	21:04 (10)	20:45	24	20:11 (9)	19:29	17:17	30	16:37 (8)	16:24	10	15:48 (7)	16:18	27	05:40		06:35		19:48 (9)	07:31		07:27	16:07 (8)	08:27	15:41 (7)	08:58		21:47	25	21:03 (10)	20:43	22	20:10 (9)	19:26	17:15	29	16:36 (8)	16:23	5	15:46 (7)	16:19	28	05:42		06:36		19:48 (9)	07:32		07:29	16:09 (8)	08:28		08:58		21:46	25	21:04 (10)	20:40	20	20:08 (9)	19:24	17:13	27	16:36 (8)	16:22		16:19	29	05:43		06:38		19:49 (9)	07:34		07:31	16:09 (8)	08:30		08:58		21:44	25	21:03 (10)	20:38	18	20:07 (9)	19:21	17:11	26	16:35 (8)	16:21		16:20	30	05:45		06:40		19:50 (9)	07:36		07:33	16:10 (8)	08:32		08:58		21:42	24	21:03 (10)	20:36	16	20:06 (9)	19:19	17:09	24	16:34 (8)	16:20		16:21	31	05:47		06:42		19:53 (9)			07:35					08:58		21:40	23	21:03 (10)	20:33	10	20:03 (9)		17:06	20	16:32 (8)			16:22	Potential sun hours	515		461		382		328		257		231		Total, worst case	519		461		536		562		Sun reduction	0.27		0.27		0.23		0.20		Oper. time red.	1.00		1.00		1.00		1.00		Wind dir. red.	0.63		0.60		0.58		0.61		Total reduction	0.17		0.16		0.14		0.12		Total, real	86		75		73		68																																																																																																																																																																																																																																																																																																									
	22:06	13	20:56 (10)	21:15	20:01	18:47	17	17:34 (8)	16:42	27	15:53 (7)	16:14	14	05:21		06:11		20:00 (9)	07:07		08:02	17:14 (8)	08:03	15:26 (7)	08:50		22:05	15	20:58 (10)	21:13	5	20:05 (9)	19:59	18:44	21	17:35 (8)	16:40	27	15:53 (7)	16:13	15	05:22		06:13		19:56 (9)	07:09		08:04	17:12 (8)	08:05	15:26 (7)	08:51		22:04	17	20:59 (10)	21:10	12	20:08 (9)	19:56	18:42	24	17:36 (8)	16:39	27	15:53 (7)	16:13	16	05:23		06:15		19:54 (9)	07:11		08:06	17:11 (8)	08:07	15:26 (7)	08:52		22:03	17	20:59 (10)	21:08	16	20:10 (9)	19:54	18:40	26	17:37 (8)	16:37	27	15:53 (7)	16:14	17	05:25		06:17		19:53 (9)	07:13		08:08	17:10 (8)	08:09	15:28 (7)	08:53		22:02	19	21:00 (10)	21:06	18	20:11 (9)	19:51	18:37	28	17:38 (8)	16:36	26	15:54 (7)	16:14	18	05:26		06:18		19:51 (9)	07:14		08:10	17:09 (8)	08:11	15:28 (7)	08:54		22:01	20	21:01 (10)	21:04	20	20:11 (9)	19:49	18:35	30	17:39 (8)	16:34	25	15:53 (7)	16:14	19	05:28		06:20		19:50 (9)	07:16		08:12	17:08 (8)	08:12	15:29 (7)	08:55		21:59	21	21:01 (10)	21:01	22	20:12 (9)	19:46	18:33	31	17:39 (8)	16:33	24	15:53 (7)	16:14	20	05:29		06:22		19:49 (9)	07:18		08:14	17:07 (8)	08:14	15:30 (7)	08:55		21:58	23	21:02 (10)	20:59	24	20:13 (9)	19:44	18:30	32	17:39 (8)	16:31	23	15:53 (7)	16:15	21	05:30		06:24		19:48 (9)	07:20		08:16	17:07 (8)	08:16	15:31 (7)	08:56		21:56	23	21:03 (10)	20:57	24	20:12 (9)	19:41	18:28	32	17:39 (8)	16:30	21	15:52 (7)	16:15	22	05:32		06:26		19:48 (9)	07:22		08:18	17:07 (8)	08:18	15:32 (7)	08:56		21:55	24	21:03 (10)	20:55	24	20:12 (9)	19:39	18:26	32	17:39 (8)	16:29	20	15:52 (7)	16:15	23	05:34		06:27		19:48 (9)	07:23		08:20	17:06 (8)	08:20	15:33 (7)	08:57		21:54	25	21:04 (10)	20:52	24	20:12 (9)	19:36	18:24	33	17:39 (8)	16:27	18	15:51 (7)	16:16	24	05:35		06:29		19:48 (9)	07:25		08:22	17:06 (8)	08:22	15:34 (7)	08:57		21:52	24	21:03 (10)	20:50	24	20:12 (9)	19:34	18:21	32	17:38 (8)	16:26	16	15:50 (7)	16:17	25	05:37		06:31		19:47 (9)	07:27		07:24	16:07 (8)	08:23	15:36 (7)	08:58		21:51	25	21:03 (10)	20:48	24	20:11 (9)	19:31	17:19	31	16:38 (8)	16:25	13	15:49 (7)	16:17	26	05:38		06:33		19:47 (9)	07:29		07:26	16:07 (8)	08:25	15:38 (7)	08:58		21:49	25	21:04 (10)	20:45	24	20:11 (9)	19:29	17:17	30	16:37 (8)	16:24	10	15:48 (7)	16:18	27	05:40		06:35		19:48 (9)	07:31		07:27	16:07 (8)	08:27	15:41 (7)	08:58		21:47	25	21:03 (10)	20:43	22	20:10 (9)	19:26	17:15	29	16:36 (8)	16:23	5	15:46 (7)	16:19	28	05:42		06:36		19:48 (9)	07:32		07:29	16:09 (8)	08:28		08:58		21:46	25	21:04 (10)	20:40	20	20:08 (9)	19:24	17:13	27	16:36 (8)	16:22		16:19	29	05:43		06:38		19:49 (9)	07:34		07:31	16:09 (8)	08:30		08:58		21:44	25	21:03 (10)	20:38	18	20:07 (9)	19:21	17:11	26	16:35 (8)	16:21		16:20	30	05:45		06:40		19:50 (9)	07:36		07:33	16:10 (8)	08:32		08:58		21:42	24	21:03 (10)	20:36	16	20:06 (9)	19:19	17:09	24	16:34 (8)	16:20		16:21	31	05:47		06:42		19:53 (9)			07:35					08:58		21:40	23	21:03 (10)	20:33	10	20:03 (9)		17:06	20	16:32 (8)			16:22	Potential sun hours	515		461		382		328		257		231		Total, worst case	519		461		536		562		Sun reduction	0.27		0.27		0.23		0.20		Oper. time red.	1.00		1.00		1.00		1.00		Wind dir. red.	0.63		0.60		0.58		0.61		Total reduction	0.17		0.16		0.14		0.12		Total, real	86		75		73		68																																																																																																																																																																																																																																																																																																																					
14	05:21		06:11		20:00 (9)	07:07		08:02	17:14 (8)	08:03	15:26 (7)	08:50		22:05	15	20:58 (10)	21:13	5	20:05 (9)	19:59	18:44	21	17:35 (8)	16:40	27	15:53 (7)	16:13	15	05:22		06:13		19:56 (9)	07:09		08:04	17:12 (8)	08:05	15:26 (7)	08:51		22:04	17	20:59 (10)	21:10	12	20:08 (9)	19:56	18:42	24	17:36 (8)	16:39	27	15:53 (7)	16:13	16	05:23		06:15		19:54 (9)	07:11		08:06	17:11 (8)	08:07	15:26 (7)	08:52		22:03	17	20:59 (10)	21:08	16	20:10 (9)	19:54	18:40	26	17:37 (8)	16:37	27	15:53 (7)	16:14	17	05:25		06:17		19:53 (9)	07:13		08:08	17:10 (8)	08:09	15:28 (7)	08:53		22:02	19	21:00 (10)	21:06	18	20:11 (9)	19:51	18:37	28	17:38 (8)	16:36	26	15:54 (7)	16:14	18	05:26		06:18		19:51 (9)	07:14		08:10	17:09 (8)	08:11	15:28 (7)	08:54		22:01	20	21:01 (10)	21:04	20	20:11 (9)	19:49	18:35	30	17:39 (8)	16:34	25	15:53 (7)	16:14	19	05:28		06:20		19:50 (9)	07:16		08:12	17:08 (8)	08:12	15:29 (7)	08:55		21:59	21	21:01 (10)	21:01	22	20:12 (9)	19:46	18:33	31	17:39 (8)	16:33	24	15:53 (7)	16:14	20	05:29		06:22		19:49 (9)	07:18		08:14	17:07 (8)	08:14	15:30 (7)	08:55		21:58	23	21:02 (10)	20:59	24	20:13 (9)	19:44	18:30	32	17:39 (8)	16:31	23	15:53 (7)	16:15	21	05:30		06:24		19:48 (9)	07:20		08:16	17:07 (8)	08:16	15:31 (7)	08:56		21:56	23	21:03 (10)	20:57	24	20:12 (9)	19:41	18:28	32	17:39 (8)	16:30	21	15:52 (7)	16:15	22	05:32		06:26		19:48 (9)	07:22		08:18	17:07 (8)	08:18	15:32 (7)	08:56		21:55	24	21:03 (10)	20:55	24	20:12 (9)	19:39	18:26	32	17:39 (8)	16:29	20	15:52 (7)	16:15	23	05:34		06:27		19:48 (9)	07:23		08:20	17:06 (8)	08:20	15:33 (7)	08:57		21:54	25	21:04 (10)	20:52	24	20:12 (9)	19:36	18:24	33	17:39 (8)	16:27	18	15:51 (7)	16:16	24	05:35		06:29		19:48 (9)	07:25		08:22	17:06 (8)	08:22	15:34 (7)	08:57		21:52	24	21:03 (10)	20:50	24	20:12 (9)	19:34	18:21	32	17:38 (8)	16:26	16	15:50 (7)	16:17	25	05:37		06:31		19:47 (9)	07:27		07:24	16:07 (8)	08:23	15:36 (7)	08:58		21:51	25	21:03 (10)	20:48	24	20:11 (9)	19:31	17:19	31	16:38 (8)	16:25	13	15:49 (7)	16:17	26	05:38		06:33		19:47 (9)	07:29		07:26	16:07 (8)	08:25	15:38 (7)	08:58		21:49	25	21:04 (10)	20:45	24	20:11 (9)	19:29	17:17	30	16:37 (8)	16:24	10	15:48 (7)	16:18	27	05:40		06:35		19:48 (9)	07:31		07:27	16:07 (8)	08:27	15:41 (7)	08:58		21:47	25	21:03 (10)	20:43	22	20:10 (9)	19:26	17:15	29	16:36 (8)	16:23	5	15:46 (7)	16:19	28	05:42		06:36		19:48 (9)	07:32		07:29	16:09 (8)	08:28		08:58		21:46	25	21:04 (10)	20:40	20	20:08 (9)	19:24	17:13	27	16:36 (8)	16:22		16:19	29	05:43		06:38		19:49 (9)	07:34		07:31	16:09 (8)	08:30		08:58		21:44	25	21:03 (10)	20:38	18	20:07 (9)	19:21	17:11	26	16:35 (8)	16:21		16:20	30	05:45		06:40		19:50 (9)	07:36		07:33	16:10 (8)	08:32		08:58		21:42	24	21:03 (10)	20:36	16	20:06 (9)	19:19	17:09	24	16:34 (8)	16:20		16:21	31	05:47		06:42		19:53 (9)			07:35					08:58		21:40	23	21:03 (10)	20:33	10	20:03 (9)		17:06	20	16:32 (8)			16:22	Potential sun hours	515		461		382		328		257		231		Total, worst case	519		461		536		562		Sun reduction	0.27		0.27		0.23		0.20		Oper. time red.	1.00		1.00		1.00		1.00		Wind dir. red.	0.63		0.60		0.58		0.61		Total reduction	0.17		0.16		0.14		0.12		Total, real	86		75		73		68																																																																																																																																																																																																																																																																																																																																		
	22:05	15	20:58 (10)	21:13	5	20:05 (9)	19:59	18:44	21	17:35 (8)	16:40	27	15:53 (7)	16:13	15	05:22		06:13		19:56 (9)	07:09		08:04	17:12 (8)	08:05	15:26 (7)	08:51		22:04	17	20:59 (10)	21:10	12	20:08 (9)	19:56	18:42	24	17:36 (8)	16:39	27	15:53 (7)	16:13	16	05:23		06:15		19:54 (9)	07:11		08:06	17:11 (8)	08:07	15:26 (7)	08:52		22:03	17	20:59 (10)	21:08	16	20:10 (9)	19:54	18:40	26	17:37 (8)	16:37	27	15:53 (7)	16:14	17	05:25		06:17		19:53 (9)	07:13		08:08	17:10 (8)	08:09	15:28 (7)	08:53		22:02	19	21:00 (10)	21:06	18	20:11 (9)	19:51	18:37	28	17:38 (8)	16:36	26	15:54 (7)	16:14	18	05:26		06:18		19:51 (9)	07:14		08:10	17:09 (8)	08:11	15:28 (7)	08:54		22:01	20	21:01 (10)	21:04	20	20:11 (9)	19:49	18:35	30	17:39 (8)	16:34	25	15:53 (7)	16:14	19	05:28		06:20		19:50 (9)	07:16		08:12	17:08 (8)	08:12	15:29 (7)	08:55		21:59	21	21:01 (10)	21:01	22	20:12 (9)	19:46	18:33	31	17:39 (8)	16:33	24	15:53 (7)	16:14	20	05:29		06:22		19:49 (9)	07:18		08:14	17:07 (8)	08:14	15:30 (7)	08:55		21:58	23	21:02 (10)	20:59	24	20:13 (9)	19:44	18:30	32	17:39 (8)	16:31	23	15:53 (7)	16:15	21	05:30		06:24		19:48 (9)	07:20		08:16	17:07 (8)	08:16	15:31 (7)	08:56		21:56	23	21:03 (10)	20:57	24	20:12 (9)	19:41	18:28	32	17:39 (8)	16:30	21	15:52 (7)	16:15	22	05:32		06:26		19:48 (9)	07:22		08:18	17:07 (8)	08:18	15:32 (7)	08:56		21:55	24	21:03 (10)	20:55	24	20:12 (9)	19:39	18:26	32	17:39 (8)	16:29	20	15:52 (7)	16:15	23	05:34		06:27		19:48 (9)	07:23		08:20	17:06 (8)	08:20	15:33 (7)	08:57		21:54	25	21:04 (10)	20:52	24	20:12 (9)	19:36	18:24	33	17:39 (8)	16:27	18	15:51 (7)	16:16	24	05:35		06:29		19:48 (9)	07:25		08:22	17:06 (8)	08:22	15:34 (7)	08:57		21:52	24	21:03 (10)	20:50	24	20:12 (9)	19:34	18:21	32	17:38 (8)	16:26	16	15:50 (7)	16:17	25	05:37		06:31		19:47 (9)	07:27		07:24	16:07 (8)	08:23	15:36 (7)	08:58		21:51	25	21:03 (10)	20:48	24	20:11 (9)	19:31	17:19	31	16:38 (8)	16:25	13	15:49 (7)	16:17	26	05:38		06:33		19:47 (9)	07:29		07:26	16:07 (8)	08:25	15:38 (7)	08:58		21:49	25	21:04 (10)	20:45	24	20:11 (9)	19:29	17:17	30	16:37 (8)	16:24	10	15:48 (7)	16:18	27	05:40		06:35		19:48 (9)	07:31		07:27	16:07 (8)	08:27	15:41 (7)	08:58		21:47	25	21:03 (10)	20:43	22	20:10 (9)	19:26	17:15	29	16:36 (8)	16:23	5	15:46 (7)	16:19	28	05:42		06:36		19:48 (9)	07:32		07:29	16:09 (8)	08:28		08:58		21:46	25	21:04 (10)	20:40	20	20:08 (9)	19:24	17:13	27	16:36 (8)	16:22		16:19	29	05:43		06:38		19:49 (9)	07:34		07:31	16:09 (8)	08:30		08:58		21:44	25	21:03 (10)	20:38	18	20:07 (9)	19:21	17:11	26	16:35 (8)	16:21		16:20	30	05:45		06:40		19:50 (9)	07:36		07:33	16:10 (8)	08:32		08:58		21:42	24	21:03 (10)	20:36	16	20:06 (9)	19:19	17:09	24	16:34 (8)	16:20		16:21	31	05:47		06:42		19:53 (9)			07:35					08:58		21:40	23	21:03 (10)	20:33	10	20:03 (9)		17:06	20	16:32 (8)			16:22	Potential sun hours	515		461		382		328		257		231		Total, worst case	519		461		536		562		Sun reduction	0.27		0.27		0.23		0.20		Oper. time red.	1.00		1.00		1.00		1.00		Wind dir. red.	0.63		0.60		0.58		0.61		Total reduction	0.17		0.16		0.14		0.12		Total, real	86		75		73		68																																																																																																																																																																																																																																																																																																																																															
15	05:22		06:13		19:56 (9)	07:09		08:04	17:12 (8)	08:05	15:26 (7)	08:51		22:04	17	20:59 (10)	21:10	12	20:08 (9)	19:56	18:42	24	17:36 (8)	16:39	27	15:53 (7)	16:13	16	05:23		06:15		19:54 (9)	07:11		08:06	17:11 (8)	08:07	15:26 (7)	08:52		22:03	17	20:59 (10)	21:08	16	20:10 (9)	19:54	18:40	26	17:37 (8)	16:37	27	15:53 (7)	16:14	17	05:25		06:17		19:53 (9)	07:13		08:08	17:10 (8)	08:09	15:28 (7)	08:53		22:02	19	21:00 (10)	21:06	18	20:11 (9)	19:51	18:37	28	17:38 (8)	16:36	26	15:54 (7)	16:14	18	05:26		06:18		19:51 (9)	07:14		08:10	17:09 (8)	08:11	15:28 (7)	08:54		22:01	20	21:01 (10)	21:04	20	20:11 (9)	19:49	18:35	30	17:39 (8)	16:34	25	15:53 (7)	16:14	19	05:28		06:20		19:50 (9)	07:16		08:12	17:08 (8)	08:12	15:29 (7)	08:55		21:59	21	21:01 (10)	21:01	22	20:12 (9)	19:46	18:33	31	17:39 (8)	16:33	24	15:53 (7)	16:14	20	05:29		06:22		19:49 (9)	07:18		08:14	17:07 (8)	08:14	15:30 (7)	08:55		21:58	23	21:02 (10)	20:59	24	20:13 (9)	19:44	18:30	32	17:39 (8)	16:31	23	15:53 (7)	16:15	21	05:30		06:24		19:48 (9)	07:20		08:16	17:07 (8)	08:16	15:31 (7)	08:56		21:56	23	21:03 (10)	20:57	24	20:12 (9)	19:41	18:28	32	17:39 (8)	16:30	21	15:52 (7)	16:15	22	05:32		06:26		19:48 (9)	07:22		08:18	17:07 (8)	08:18	15:32 (7)	08:56		21:55	24	21:03 (10)	20:55	24	20:12 (9)	19:39	18:26	32	17:39 (8)	16:29	20	15:52 (7)	16:15	23	05:34		06:27		19:48 (9)	07:23		08:20	17:06 (8)	08:20	15:33 (7)	08:57		21:54	25	21:04 (10)	20:52	24	20:12 (9)	19:36	18:24	33	17:39 (8)	16:27	18	15:51 (7)	16:16	24	05:35		06:29		19:48 (9)	07:25		08:22	17:06 (8)	08:22	15:34 (7)	08:57		21:52	24	21:03 (10)	20:50	24	20:12 (9)	19:34	18:21	32	17:38 (8)	16:26	16	15:50 (7)	16:17	25	05:37		06:31		19:47 (9)	07:27		07:24	16:07 (8)	08:23	15:36 (7)	08:58		21:51	25	21:03 (10)	20:48	24	20:11 (9)	19:31	17:19	31	16:38 (8)	16:25	13	15:49 (7)	16:17	26	05:38		06:33		19:47 (9)	07:29		07:26	16:07 (8)	08:25	15:38 (7)	08:58		21:49	25	21:04 (10)	20:45	24	20:11 (9)	19:29	17:17	30	16:37 (8)	16:24	10	15:48 (7)	16:18	27	05:40		06:35		19:48 (9)	07:31		07:27	16:07 (8)	08:27	15:41 (7)	08:58		21:47	25	21:03 (10)	20:43	22	20:10 (9)	19:26	17:15	29	16:36 (8)	16:23	5	15:46 (7)	16:19	28	05:42		06:36		19:48 (9)	07:32		07:29	16:09 (8)	08:28		08:58		21:46	25	21:04 (10)	20:40	20	20:08 (9)	19:24	17:13	27	16:36 (8)	16:22		16:19	29	05:43		06:38		19:49 (9)	07:34		07:31	16:09 (8)	08:30		08:58		21:44	25	21:03 (10)	20:38	18	20:07 (9)	19:21	17:11	26	16:35 (8)	16:21		16:20	30	05:45		06:40		19:50 (9)	07:36		07:33	16:10 (8)	08:32		08:58		21:42	24	21:03 (10)	20:36	16	20:06 (9)	19:19	17:09	24	16:34 (8)	16:20		16:21	31	05:47		06:42		19:53 (9)			07:35					08:58		21:40	23	21:03 (10)	20:33	10	20:03 (9)		17:06	20	16:32 (8)			16:22	Potential sun hours	515		461		382		328		257		231		Total, worst case	519		461		536		562		Sun reduction	0.27		0.27		0.23		0.20		Oper. time red.	1.00		1.00		1.00		1.00		Wind dir. red.	0.63		0.60		0.58		0.61		Total reduction	0.17		0.16		0.14		0.12		Total, real	86		75		73		68																																																																																																																																																																																																																																																																																																																																																														
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16	05:23		06:15		19:54 (9)	07:11		08:06	17:11 (8)	08:07	15:26 (7)	08:52		22:03	17	20:59 (10)	21:08	16	20:10 (9)	19:54	18:40	26	17:37 (8)	16:37	27	15:53 (7)	16:14	17	05:25		06:17		19:53 (9)	07:13		08:08	17:10 (8)	08:09	15:28 (7)	08:53		22:02	19	21:00 (10)	21:06	18	20:11 (9)	19:51	18:37	28	17:38 (8)	16:36	26	15:54 (7)	16:14	18	05:26		06:18		19:51 (9)	07:14		08:10	17:09 (8)	08:11	15:28 (7)	08:54		22:01	20	21:01 (10)	21:04	20	20:11 (9)	19:49	18:35	30	17:39 (8)	16:34	25	15:53 (7)	16:14	19	05:28		06:20		19:50 (9)	07:16		08:12	17:08 (8)	08:12	15:29 (7)	08:55		21:59	21	21:01 (10)	21:01	22	20:12 (9)	19:46	18:33	31	17:39 (8)	16:33	24	15:53 (7)	16:14	20	05:29		06:22		19:49 (9)	07:18		08:14	17:07 (8)	08:14	15:30 (7)	08:55		21:58	23	21:02 (10)	20:59	24	20:13 (9)	19:44	18:30	32	17:39 (8)	16:31	23	15:53 (7)	16:15	21	05:30		06:24		19:48 (9)	07:20		08:16	17:07 (8)	08:16	15:31 (7)	08:56		21:56	23	21:03 (10)	20:57	24	20:12 (9)	19:41	18:28	32	17:39 (8)	16:30	21	15:52 (7)	16:15	22	05:32		06:26		19:48 (9)	07:22		08:18	17:07 (8)	08:18	15:32 (7)	08:56		21:55	24	21:03 (10)	20:55	24	20:12 (9)	19:39	18:26	32	17:39 (8)	16:29	20	15:52 (7)	16:15	23	05:34		06:27		19:48 (9)	07:23		08:20	17:06 (8)	08:20	15:33 (7)	08:57		21:54	25	21:04 (10)	20:52	24	20:12 (9)	19:36	18:24	33	17:39 (8)	16:27	18	15:51 (7)	16:16	24	05:35		06:29		19:48 (9)	07:25		08:22	17:06 (8)	08:22	15:34 (7)	08:57		21:52	24	21:03 (10)	20:50	24	20:12 (9)	19:34	18:21	32	17:38 (8)	16:26	16	15:50 (7)	16:17	25	05:37		06:31		19:47 (9)	07:27		07:24	16:07 (8)	08:23	15:36 (7)	08:58		21:51	25	21:03 (10)	20:48	24	20:11 (9)	19:31	17:19	31	16:38 (8)	16:25	13	15:49 (7)	16:17	26	05:38		06:33		19:47 (9)	07:29		07:26	16:07 (8)	08:25	15:38 (7)	08:58		21:49	25	21:04 (10)	20:45	24	20:11 (9)	19:29	17:17	30	16:37 (8)	16:24	10	15:48 (7)	16:18	27	05:40		06:35		19:48 (9)	07:31		07:27	16:07 (8)	08:27	15:41 (7)	08:58		21:47	25	21:03 (10)	20:43	22	20:10 (9)	19:26	17:15	29	16:36 (8)	16:23	5	15:46 (7)	16:19	28	05:42		06:36		19:48 (9)	07:32		07:29	16:09 (8)	08:28		08:58		21:46	25	21:04 (10)	20:40	20	20:08 (9)	19:24	17:13	27	16:36 (8)	16:22		16:19	29	05:43		06:38		19:49 (9)	07:34		07:31	16:09 (8)	08:30		08:58		21:44	25	21:03 (10)	20:38	18	20:07 (9)	19:21	17:11	26	16:35 (8)	16:21		16:20	30	05:45		06:40		19:50 (9)	07:36		07:33	16:10 (8)	08:32		08:58		21:42	24	21:03 (10)	20:36	16	20:06 (9)	19:19	17:09	24	16:34 (8)	16:20		16:21	31	05:47		06:42		19:53 (9)			07:35					08:58		21:40	23	21:03 (10)	20:33	10	20:03 (9)		17:06	20	16:32 (8)			16:22	Potential sun hours	515		461		382		328		257		231		Total, worst case	519		461		536		562		Sun reduction	0.27		0.27		0.23		0.20		Oper. time red.	1.00		1.00		1.00		1.00		Wind dir. red.	0.63		0.60		0.58		0.61		Total reduction	0.17		0.16		0.14		0.12		Total, real	86		75		73		68																																																																																																																																																																																																																																																																																																																																																																																										
	22:03	17	20:59 (10)	21:08	16	20:10 (9)	19:54	18:40	26	17:37 (8)	16:37	27	15:53 (7)	16:14	17	05:25		06:17		19:53 (9)	07:13		08:08	17:10 (8)	08:09	15:28 (7)	08:53		22:02	19	21:00 (10)	21:06	18	20:11 (9)	19:51	18:37	28	17:38 (8)	16:36	26	15:54 (7)	16:14	18	05:26		06:18		19:51 (9)	07:14		08:10	17:09 (8)	08:11	15:28 (7)	08:54		22:01	20	21:01 (10)	21:04	20	20:11 (9)	19:49	18:35	30	17:39 (8)	16:34	25	15:53 (7)	16:14	19	05:28		06:20		19:50 (9)	07:16		08:12	17:08 (8)	08:12	15:29 (7)	08:55		21:59	21	21:01 (10)	21:01	22	20:12 (9)	19:46	18:33	31	17:39 (8)	16:33	24	15:53 (7)	16:14	20	05:29		06:22		19:49 (9)	07:18		08:14	17:07 (8)	08:14	15:30 (7)	08:55		21:58	23	21:02 (10)	20:59	24	20:13 (9)	19:44	18:30	32	17:39 (8)	16:31	23	15:53 (7)	16:15	21	05:30		06:24		19:48 (9)	07:20		08:16	17:07 (8)	08:16	15:31 (7)	08:56		21:56	23	21:03 (10)	20:57	24	20:12 (9)	19:41	18:28	32	17:39 (8)	16:30	21	15:52 (7)	16:15	22	05:32		06:26		19:48 (9)	07:22		08:18	17:07 (8)	08:18	15:32 (7)	08:56		21:55	24	21:03 (10)	20:55	24	20:12 (9)	19:39	18:26	32	17:39 (8)	16:29	20	15:52 (7)	16:15	23	05:34		06:27		19:48 (9)	07:23		08:20	17:06 (8)	08:20	15:33 (7)	08:57		21:54	25	21:04 (10)	20:52	24	20:12 (9)	19:36	18:24	33	17:39 (8)	16:27	18	15:51 (7)	16:16	24	05:35		06:29		19:48 (9)	07:25		08:22	17:06 (8)	08:22	15:34 (7)	08:57		21:52	24	21:03 (10)	20:50	24	20:12 (9)	19:34	18:21	32	17:38 (8)	16:26	16	15:50 (7)	16:17	25	05:37		06:31		19:47 (9)	07:27		07:24	16:07 (8)	08:23	15:36 (7)	08:58		21:51	25	21:03 (10)	20:48	24	20:11 (9)	19:31	17:19	31	16:38 (8)	16:25	13	15:49 (7)	16:17	26	05:38		06:33		19:47 (9)	07:29		07:26	16:07 (8)	08:25	15:38 (7)	08:58		21:49	25	21:04 (10)	20:45	24	20:11 (9)	19:29	17:17	30	16:37 (8)	16:24	10	15:48 (7)	16:18	27	05:40		06:35		19:48 (9)	07:31		07:27	16:07 (8)	08:27	15:41 (7)	08:58		21:47	25	21:03 (10)	20:43	22	20:10 (9)	19:26	17:15	29	16:36 (8)	16:23	5	15:46 (7)	16:19	28	05:42		06:36		19:48 (9)	07:32		07:29	16:09 (8)	08:28		08:58		21:46	25	21:04 (10)	20:40	20	20:08 (9)	19:24	17:13	27	16:36 (8)	16:22		16:19	29	05:43		06:38		19:49 (9)	07:34		07:31	16:09 (8)	08:30		08:58		21:44	25	21:03 (10)	20:38	18	20:07 (9)	19:21	17:11	26	16:35 (8)	16:21		16:20	30	05:45		06:40		19:50 (9)	07:36		07:33	16:10 (8)	08:32		08:58		21:42	24	21:03 (10)	20:36	16	20:06 (9)	19:19	17:09	24	16:34 (8)	16:20		16:21	31	05:47		06:42		19:53 (9)			07:35					08:58		21:40	23	21:03 (10)	20:33	10	20:03 (9)		17:06	20	16:32 (8)			16:22	Potential sun hours	515		461		382		328		257		231		Total, worst case	519		461		536		562		Sun reduction	0.27		0.27		0.23		0.20		Oper. time red.	1.00		1.00		1.00		1.00		Wind dir. red.	0.63		0.60		0.58		0.61		Total reduction	0.17		0.16		0.14		0.12		Total, real	86		75		73		68																																																																																																																																																																																																																																																																																																																																																																																																							
17	05:25		06:17		19:53 (9)	07:13		08:08	17:10 (8)	08:09	15:28 (7)	08:53		22:02	19	21:00 (10)	21:06	18	20:11 (9)	19:51	18:37	28	17:38 (8)	16:36	26	15:54 (7)	16:14	18	05:26		06:18		19:51 (9)	07:14		08:10	17:09 (8)	08:11	15:28 (7)	08:54		22:01	20	21:01 (10)	21:04	20	20:11 (9)	19:49	18:35	30	17:39 (8)	16:34	25	15:53 (7)	16:14	19	05:28		06:20		19:50 (9)	07:16		08:12	17:08 (8)	08:12	15:29 (7)	08:55		21:59	21	21:01 (10)	21:01	22	20:12 (9)	19:46	18:33	31	17:39 (8)	16:33	24	15:53 (7)	16:14	20	05:29		06:22		19:49 (9)	07:18		08:14	17:07 (8)	08:14	15:30 (7)	08:55		21:58	23	21:02 (10)	20:59	24	20:13 (9)	19:44	18:30	32	17:39 (8)	16:31	23	15:53 (7)	16:15	21	05:30		06:24		19:48 (9)	07:20		08:16	17:07 (8)	08:16	15:31 (7)	08:56		21:56	23	21:03 (10)	20:57	24	20:12 (9)	19:41	18:28	32	17:39 (8)	16:30	21	15:52 (7)	16:15	22	05:32		06:26		19:48 (9)	07:22		08:18	17:07 (8)	08:18	15:32 (7)	08:56		21:55	24	21:03 (10)	20:55	24	20:12 (9)	19:39	18:26	32	17:39 (8)	16:29	20	15:52 (7)	16:15	23	05:34		06:27		19:48 (9)	07:23		08:20	17:06 (8)	08:20	15:33 (7)	08:57		21:54	25	21:04 (10)	20:52	24	20:12 (9)	19:36	18:24	33	17:39 (8)	16:27	18	15:51 (7)	16:16	24	05:35		06:29		19:48 (9)	07:25		08:22	17:06 (8)	08:22	15:34 (7)	08:57		21:52	24	21:03 (10)	20:50	24	20:12 (9)	19:34	18:21	32	17:38 (8)	16:26	16	15:50 (7)	16:17	25	05:37		06:31		19:47 (9)	07:27		07:24	16:07 (8)	08:23	15:36 (7)	08:58		21:51	25	21:03 (10)	20:48	24	20:11 (9)	19:31	17:19	31	16:38 (8)	16:25	13	15:49 (7)	16:17	26	05:38		06:33		19:47 (9)	07:29		07:26	16:07 (8)	08:25	15:38 (7)	08:58		21:49	25	21:04 (10)	20:45	24	20:11 (9)	19:29	17:17	30	16:37 (8)	16:24	10	15:48 (7)	16:18	27	05:40		06:35		19:48 (9)	07:31		07:27	16:07 (8)	08:27	15:41 (7)	08:58		21:47	25	21:03 (10)	20:43	22	20:10 (9)	19:26	17:15	29	16:36 (8)	16:23	5	15:46 (7)	16:19	28	05:42		06:36		19:48 (9)	07:32		07:29	16:09 (8)	08:28		08:58		21:46	25	21:04 (10)	20:40	20	20:08 (9)	19:24	17:13	27	16:36 (8)	16:22		16:19	29	05:43		06:38		19:49 (9)	07:34		07:31	16:09 (8)	08:30		08:58		21:44	25	21:03 (10)	20:38	18	20:07 (9)	19:21	17:11	26	16:35 (8)	16:21		16:20	30	05:45		06:40		19:50 (9)	07:36		07:33	16:10 (8)	08:32		08:58		21:42	24	21:03 (10)	20:36	16	20:06 (9)	19:19	17:09	24	16:34 (8)	16:20		16:21	31	05:47		06:42		19:53 (9)			07:35					08:58		21:40	23	21:03 (10)	20:33	10	20:03 (9)		17:06	20	16:32 (8)			16:22	Potential sun hours	515		461		382		328		257		231		Total, worst case	519		461		536		562		Sun reduction	0.27		0.27		0.23		0.20		Oper. time red.	1.00		1.00		1.00		1.00		Wind dir. red.	0.63		0.60		0.58		0.61		Total reduction	0.17		0.16		0.14		0.12		Total, real	86		75		73		68																																																																																																																																																																																																																																																																																																																																																																																																																						
	22:02	19	21:00 (10)	21:06	18	20:11 (9)	19:51	18:37	28	17:38 (8)	16:36	26	15:54 (7)	16:14	18	05:26		06:18		19:51 (9)	07:14		08:10	17:09 (8)	08:11	15:28 (7)	08:54		22:01	20	21:01 (10)	21:04	20	20:11 (9)	19:49	18:35	30	17:39 (8)	16:34	25	15:53 (7)	16:14	19	05:28		06:20		19:50 (9)	07:16		08:12	17:08 (8)	08:12	15:29 (7)	08:55		21:59	21	21:01 (10)	21:01	22	20:12 (9)	19:46	18:33	31	17:39 (8)	16:33	24	15:53 (7)	16:14	20	05:29		06:22		19:49 (9)	07:18		08:14	17:07 (8)	08:14	15:30 (7)	08:55		21:58	23	21:02 (10)	20:59	24	20:13 (9)	19:44	18:30	32	17:39 (8)	16:31	23	15:53 (7)	16:15	21	05:30		06:24		19:48 (9)	07:20		08:16	17:07 (8)	08:16	15:31 (7)	08:56		21:56	23	21:03 (10)	20:57	24	20:12 (9)	19:41	18:28	32	17:39 (8)	16:30	21	15:52 (7)	16:15	22	05:32		06:26		19:48 (9)	07:22		08:18	17:07 (8)	08:18	15:32 (7)	08:56		21:55	24	21:03 (10)	20:55	24	20:12 (9)	19:39	18:26	32	17:39 (8)	16:29	20	15:52 (7)	16:15	23	05:34		06:27		19:48 (9)	07:23		08:20	17:06 (8)	08:20	15:33 (7)	08:57		21:54	25	21:04 (10)	20:52	24	20:12 (9)	19:36	18:24	33	17:39 (8)	16:27	18	15:51 (7)	16:16	24	05:35		06:29		19:48 (9)	07:25		08:22	17:06 (8)	08:22	15:34 (7)	08:57		21:52	24	21:03 (10)	20:50	24	20:12 (9)	19:34	18:21	32	17:38 (8)	16:26	16	15:50 (7)	16:17	25	05:37		06:31		19:47 (9)	07:27		07:24	16:07 (8)	08:23	15:36 (7)	08:58		21:51	25	21:03 (10)	20:48	24	20:11 (9)	19:31	17:19	31	16:38 (8)	16:25	13	15:49 (7)	16:17	26	05:38		06:33		19:47 (9)	07:29		07:26	16:07 (8)	08:25	15:38 (7)	08:58		21:49	25	21:04 (10)	20:45	24	20:11 (9)	19:29	17:17	30	16:37 (8)	16:24	10	15:48 (7)	16:18	27	05:40		06:35		19:48 (9)	07:31		07:27	16:07 (8)	08:27	15:41 (7)	08:58		21:47	25	21:03 (10)	20:43	22	20:10 (9)	19:26	17:15	29	16:36 (8)	16:23	5	15:46 (7)	16:19	28	05:42		06:36		19:48 (9)	07:32		07:29	16:09 (8)	08:28		08:58		21:46	25	21:04 (10)	20:40	20	20:08 (9)	19:24	17:13	27	16:36 (8)	16:22		16:19	29	05:43		06:38		19:49 (9)	07:34		07:31	16:09 (8)	08:30		08:58		21:44	25	21:03 (10)	20:38	18	20:07 (9)	19:21	17:11	26	16:35 (8)	16:21		16:20	30	05:45		06:40		19:50 (9)	07:36		07:33	16:10 (8)	08:32		08:58		21:42	24	21:03 (10)	20:36	16	20:06 (9)	19:19	17:09	24	16:34 (8)	16:20		16:21	31	05:47		06:42		19:53 (9)			07:35					08:58		21:40	23	21:03 (10)	20:33	10	20:03 (9)		17:06	20	16:32 (8)			16:22	Potential sun hours	515		461		382		328		257		231		Total, worst case	519		461		536		562		Sun reduction	0.27		0.27		0.23		0.20		Oper. time red.	1.00		1.00		1.00		1.00		Wind dir. red.	0.63		0.60		0.58		0.61		Total reduction	0.17		0.16		0.14		0.12		Total, real	86		75		73		68																																																																																																																																																																																																																																																																																																																																																																																																																																			
18	05:26		06:18		19:51 (9)	07:14		08:10	17:09 (8)	08:11	15:28 (7)	08:54		22:01	20	21:01 (10)	21:04	20	20:11 (9)	19:49	18:35	30	17:39 (8)	16:34	25	15:53 (7)	16:14	19	05:28		06:20		19:50 (9)	07:16		08:12	17:08 (8)	08:12	15:29 (7)	08:55		21:59	21	21:01 (10)	21:01	22	20:12 (9)	19:46	18:33	31	17:39 (8)	16:33	24	15:53 (7)	16:14	20	05:29		06:22		19:49 (9)	07:18		08:14	17:07 (8)	08:14	15:30 (7)	08:55		21:58	23	21:02 (10)	20:59	24	20:13 (9)	19:44	18:30	32	17:39 (8)	16:31	23	15:53 (7)	16:15	21	05:30		06:24		19:48 (9)	07:20		08:16	17:07 (8)	08:16	15:31 (7)	08:56		21:56	23	21:03 (10)	20:57	24	20:12 (9)	19:41	18:28	32	17:39 (8)	16:30	21	15:52 (7)	16:15	22	05:32		06:26		19:48 (9)	07:22		08:18	17:07 (8)	08:18	15:32 (7)	08:56		21:55	24	21:03 (10)	20:55	24	20:12 (9)	19:39	18:26	32	17:39 (8)	16:29	20	15:52 (7)	16:15	23	05:34		06:27		19:48 (9)	07:23		08:20	17:06 (8)	08:20	15:33 (7)	08:57		21:54	25	21:04 (10)	20:52	24	20:12 (9)	19:36	18:24	33	17:39 (8)	16:27	18	15:51 (7)	16:16	24	05:35		06:29		19:48 (9)	07:25		08:22	17:06 (8)	08:22	15:34 (7)	08:57		21:52	24	21:03 (10)	20:50	24	20:12 (9)	19:34	18:21	32	17:38 (8)	16:26	16	15:50 (7)	16:17	25	05:37		06:31		19:47 (9)	07:27		07:24	16:07 (8)	08:23	15:36 (7)	08:58		21:51	25	21:03 (10)	20:48	24	20:11 (9)	19:31	17:19	31	16:38 (8)	16:25	13	15:49 (7)	16:17	26	05:38		06:33		19:47 (9)	07:29		07:26	16:07 (8)	08:25	15:38 (7)	08:58		21:49	25	21:04 (10)	20:45	24	20:11 (9)	19:29	17:17	30	16:37 (8)	16:24	10	15:48 (7)	16:18	27	05:40		06:35		19:48 (9)	07:31		07:27	16:07 (8)	08:27	15:41 (7)	08:58		21:47	25	21:03 (10)	20:43	22	20:10 (9)	19:26	17:15	29	16:36 (8)	16:23	5	15:46 (7)	16:19	28	05:42		06:36		19:48 (9)	07:32		07:29	16:09 (8)	08:28		08:58		21:46	25	21:04 (10)	20:40	20	20:08 (9)	19:24	17:13	27	16:36 (8)	16:22		16:19	29	05:43		06:38		19:49 (9)	07:34		07:31	16:09 (8)	08:30		08:58		21:44	25	21:03 (10)	20:38	18	20:07 (9)	19:21	17:11	26	16:35 (8)	16:21		16:20	30	05:45		06:40		19:50 (9)	07:36		07:33	16:10 (8)	08:32		08:58		21:42	24	21:03 (10)	20:36	16	20:06 (9)	19:19	17:09	24	16:34 (8)	16:20		16:21	31	05:47		06:42		19:53 (9)			07:35					08:58		21:40	23	21:03 (10)	20:33	10	20:03 (9)		17:06	20	16:32 (8)			16:22	Potential sun hours	515		461		382		328		257		231		Total, worst case	519		461		536		562		Sun reduction	0.27		0.27		0.23		0.20		Oper. time red.	1.00		1.00		1.00		1.00		Wind dir. red.	0.63		0.60		0.58		0.61		Total reduction	0.17		0.16		0.14		0.12		Total, real	86		75		73		68																																																																																																																																																																																																																																																																																																																																																																																																																																																		
	22:01	20	21:01 (10)	21:04	20	20:11 (9)	19:49	18:35	30	17:39 (8)	16:34	25	15:53 (7)	16:14	19	05:28		06:20		19:50 (9)	07:16		08:12	17:08 (8)	08:12	15:29 (7)	08:55		21:59	21	21:01 (10)	21:01	22	20:12 (9)	19:46	18:33	31	17:39 (8)	16:33	24	15:53 (7)	16:14	20	05:29		06:22		19:49 (9)	07:18		08:14	17:07 (8)	08:14	15:30 (7)	08:55		21:58	23	21:02 (10)	20:59	24	20:13 (9)	19:44	18:30	32	17:39 (8)	16:31	23	15:53 (7)	16:15	21	05:30		06:24		19:48 (9)	07:20		08:16	17:07 (8)	08:16	15:31 (7)	08:56		21:56	23	21:03 (10)	20:57	24	20:12 (9)	19:41	18:28	32	17:39 (8)	16:30	21	15:52 (7)	16:15	22	05:32		06:26		19:48 (9)	07:22		08:18	17:07 (8)	08:18	15:32 (7)	08:56		21:55	24	21:03 (10)	20:55	24	20:12 (9)	19:39	18:26	32	17:39 (8)	16:29	20	15:52 (7)	16:15	23	05:34		06:27		19:48 (9)	07:23		08:20	17:06 (8)	08:20	15:33 (7)	08:57		21:54	25	21:04 (10)	20:52	24	20:12 (9)	19:36	18:24	33	17:39 (8)	16:27	18	15:51 (7)	16:16	24	05:35		06:29		19:48 (9)	07:25		08:22	17:06 (8)	08:22	15:34 (7)	08:57		21:52	24	21:03 (10)	20:50	24	20:12 (9)	19:34	18:21	32	17:38 (8)	16:26	16	15:50 (7)	16:17	25	05:37		06:31		19:47 (9)	07:27		07:24	16:07 (8)	08:23	15:36 (7)	08:58		21:51	25	21:03 (10)	20:48	24	20:11 (9)	19:31	17:19	31	16:38 (8)	16:25	13	15:49 (7)	16:17	26	05:38		06:33		19:47 (9)	07:29		07:26	16:07 (8)	08:25	15:38 (7)	08:58		21:49	25	21:04 (10)	20:45	24	20:11 (9)	19:29	17:17	30	16:37 (8)	16:24	10	15:48 (7)	16:18	27	05:40		06:35		19:48 (9)	07:31		07:27	16:07 (8)	08:27	15:41 (7)	08:58		21:47	25	21:03 (10)	20:43	22	20:10 (9)	19:26	17:15	29	16:36 (8)	16:23	5	15:46 (7)	16:19	28	05:42		06:36		19:48 (9)	07:32		07:29	16:09 (8)	08:28		08:58		21:46	25	21:04 (10)	20:40	20	20:08 (9)	19:24	17:13	27	16:36 (8)	16:22		16:19	29	05:43		06:38		19:49 (9)	07:34		07:31	16:09 (8)	08:30		08:58		21:44	25	21:03 (10)	20:38	18	20:07 (9)	19:21	17:11	26	16:35 (8)	16:21		16:20	30	05:45		06:40		19:50 (9)	07:36		07:33	16:10 (8)	08:32		08:58		21:42	24	21:03 (10)	20:36	16	20:06 (9)	19:19	17:09	24	16:34 (8)	16:20		16:21	31	05:47		06:42		19:53 (9)			07:35					08:58		21:40	23	21:03 (10)	20:33	10	20:03 (9)		17:06	20	16:32 (8)			16:22	Potential sun hours	515		461		382		328		257		231		Total, worst case	519		461		536		562		Sun reduction	0.27		0.27		0.23		0.20		Oper. time red.	1.00		1.00		1.00		1.00		Wind dir. red.	0.63		0.60		0.58		0.61		Total reduction	0.17		0.16		0.14		0.12		Total, real	86		75		73		68																																																																																																																																																																																																																																																																																																																																																																																																																																																															
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	21:59	21	21:01 (10)	21:01	22	20:12 (9)	19:46	18:33	31	17:39 (8)	16:33	24	15:53 (7)	16:14	20	05:29		06:22		19:49 (9)	07:18		08:14	17:07 (8)	08:14	15:30 (7)	08:55		21:58	23	21:02 (10)	20:59	24	20:13 (9)	19:44	18:30	32	17:39 (8)	16:31	23	15:53 (7)	16:15	21	05:30		06:24		19:48 (9)	07:20		08:16	17:07 (8)	08:16	15:31 (7)	08:56		21:56	23	21:03 (10)	20:57	24	20:12 (9)	19:41	18:28	32	17:39 (8)	16:30	21	15:52 (7)	16:15	22	05:32		06:26		19:48 (9)	07:22		08:18	17:07 (8)	08:18	15:32 (7)	08:56		21:55	24	21:03 (10)	20:55	24	20:12 (9)	19:39	18:26	32	17:39 (8)	16:29	20	15:52 (7)	16:15	23	05:34		06:27		19:48 (9)	07:23		08:20	17:06 (8)	08:20	15:33 (7)	08:57		21:54	25	21:04 (10)	20:52	24	20:12 (9)	19:36	18:24	33	17:39 (8)	16:27	18	15:51 (7)	16:16	24	05:35		06:29		19:48 (9)	07:25		08:22	17:06 (8)	08:22	15:34 (7)	08:57		21:52	24	21:03 (10)	20:50	24	20:12 (9)	19:34	18:21	32	17:38 (8)	16:26	16	15:50 (7)	16:17	25	05:37		06:31		19:47 (9)	07:27		07:24	16:07 (8)	08:23	15:36 (7)	08:58		21:51	25	21:03 (10)	20:48	24	20:11 (9)	19:31	17:19	31	16:38 (8)	16:25	13	15:49 (7)	16:17	26	05:38		06:33		19:47 (9)	07:29		07:26	16:07 (8)	08:25	15:38 (7)	08:58		21:49	25	21:04 (10)	20:45	24	20:11 (9)	19:29	17:17	30	16:37 (8)	16:24	10	15:48 (7)	16:18	27	05:40		06:35		19:48 (9)	07:31		07:27	16:07 (8)	08:27	15:41 (7)	08:58		21:47	25	21:03 (10)	20:43	22	20:10 (9)	19:26	17:15	29	16:36 (8)	16:23	5	15:46 (7)	16:19	28	05:42		06:36		19:48 (9)	07:32		07:29	16:09 (8)	08:28		08:58		21:46	25	21:04 (10)	20:40	20	20:08 (9)	19:24	17:13	27	16:36 (8)	16:22		16:19	29	05:43		06:38		19:49 (9)	07:34		07:31	16:09 (8)	08:30		08:58		21:44	25	21:03 (10)	20:38	18	20:07 (9)	19:21	17:11	26	16:35 (8)	16:21		16:20	30	05:45		06:40		19:50 (9)	07:36		07:33	16:10 (8)	08:32		08:58		21:42	24	21:03 (10)	20:36	16	20:06 (9)	19:19	17:09	24	16:34 (8)	16:20		16:21	31	05:47		06:42		19:53 (9)			07:35					08:58		21:40	23	21:03 (10)	20:33	10	20:03 (9)		17:06	20	16:32 (8)			16:22	Potential sun hours	515		461		382		328		257		231		Total, worst case	519		461		536		562		Sun reduction	0.27		0.27		0.23		0.20		Oper. time red.	1.00		1.00		1.00		1.00		Wind dir. red.	0.63		0.60		0.58		0.61		Total reduction	0.17		0.16		0.14		0.12		Total, real	86		75		73		68																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
20	05:29		06:22		19:49 (9)	07:18		08:14	17:07 (8)	08:14	15:30 (7)	08:55		21:58	23	21:02 (10)	20:59	24	20:13 (9)	19:44	18:30	32	17:39 (8)	16:31	23	15:53 (7)	16:15	21	05:30		06:24		19:48 (9)	07:20		08:16	17:07 (8)	08:16	15:31 (7)	08:56		21:56	23	21:03 (10)	20:57	24	20:12 (9)	19:41	18:28	32	17:39 (8)	16:30	21	15:52 (7)	16:15	22	05:32		06:26		19:48 (9)	07:22		08:18	17:07 (8)	08:18	15:32 (7)	08:56		21:55	24	21:03 (10)	20:55	24	20:12 (9)	19:39	18:26	32	17:39 (8)	16:29	20	15:52 (7)	16:15	23	05:34		06:27		19:48 (9)	07:23		08:20	17:06 (8)	08:20	15:33 (7)	08:57		21:54	25	21:04 (10)	20:52	24	20:12 (9)	19:36	18:24	33	17:39 (8)	16:27	18	15:51 (7)	16:16	24	05:35		06:29		19:48 (9)	07:25		08:22	17:06 (8)	08:22	15:34 (7)	08:57		21:52	24	21:03 (10)	20:50	24	20:12 (9)	19:34	18:21	32	17:38 (8)	16:26	16	15:50 (7)	16:17	25	05:37		06:31		19:47 (9)	07:27		07:24	16:07 (8)	08:23	15:36 (7)	08:58		21:51	25	21:03 (10)	20:48	24	20:11 (9)	19:31	17:19	31	16:38 (8)	16:25	13	15:49 (7)	16:17	26	05:38		06:33		19:47 (9)	07:29		07:26	16:07 (8)	08:25	15:38 (7)	08:58		21:49	25	21:04 (10)	20:45	24	20:11 (9)	19:29	17:17	30	16:37 (8)	16:24	10	15:48 (7)	16:18	27	05:40		06:35		19:48 (9)	07:31		07:27	16:07 (8)	08:27	15:41 (7)	08:58		21:47	25	21:03 (10)	20:43	22	20:10 (9)	19:26	17:15	29	16:36 (8)	16:23	5	15:46 (7)	16:19	28	05:42		06:36		19:48 (9)	07:32		07:29	16:09 (8)	08:28		08:58		21:46	25	21:04 (10)	20:40	20	20:08 (9)	19:24	17:13	27	16:36 (8)	16:22		16:19	29	05:43		06:38		19:49 (9)	07:34		07:31	16:09 (8)	08:30		08:58		21:44	25	21:03 (10)	20:38	18	20:07 (9)	19:21	17:11	26	16:35 (8)	16:21		16:20	30	05:45		06:40		19:50 (9)	07:36		07:33	16:10 (8)	08:32		08:58		21:42	24	21:03 (10)	20:36	16	20:06 (9)	19:19	17:09	24	16:34 (8)	16:20		16:21	31	05:47		06:42		19:53 (9)			07:35					08:58		21:40	23	21:03 (10)	20:33	10	20:03 (9)		17:06	20	16:32 (8)			16:22	Potential sun hours	515		461		382		328		257		231		Total, worst case	519		461		536		562		Sun reduction	0.27		0.27		0.23		0.20		Oper. time red.	1.00		1.00		1.00		1.00		Wind dir. red.	0.63		0.60		0.58		0.61		Total reduction	0.17		0.16		0.14		0.12		Total, real	86		75		73		68																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
	21:58	23	21:02 (10)	20:59	24	20:13 (9)	19:44	18:30	32	17:39 (8)	16:31	23	15:53 (7)	16:15	21	05:30		06:24		19:48 (9)	07:20		08:16	17:07 (8)	08:16	15:31 (7)	08:56		21:56	23	21:03 (10)	20:57	24	20:12 (9)	19:41	18:28	32	17:39 (8)	16:30	21	15:52 (7)	16:15	22	05:32		06:26		19:48 (9)	07:22		08:18	17:07 (8)	08:18	15:32 (7)	08:56		21:55	24	21:03 (10)	20:55	24	20:12 (9)	19:39	18:26	32	17:39 (8)	16:29	20	15:52 (7)	16:15	23	05:34		06:27		19:48 (9)	07:23		08:20	17:06 (8)	08:20	15:33 (7)	08:57		21:54	25	21:04 (10)	20:52	24	20:12 (9)	19:36	18:24	33	17:39 (8)	16:27	18	15:51 (7)	16:16	24	05:35		06:29		19:48 (9)	07:25		08:22	17:06 (8)	08:22	15:34 (7)	08:57		21:52	24	21:03 (10)	20:50	24	20:12 (9)	19:34	18:21	32	17:38 (8)	16:26	16	15:50 (7)	16:17	25	05:37		06:31		19:47 (9)	07:27		07:24	16:07 (8)	08:23	15:36 (7)	08:58		21:51	25	21:03 (10)	20:48	24	20:11 (9)	19:31	17:19	31	16:38 (8)	16:25	13	15:49 (7)	16:17	26	05:38		06:33		19:47 (9)	07:29		07:26	16:07 (8)	08:25	15:38 (7)	08:58		21:49	25	21:04 (10)	20:45	24	20:11 (9)	19:29	17:17	30	16:37 (8)	16:24	10	15:48 (7)	16:18	27	05:40		06:35		19:48 (9)	07:31		07:27	16:07 (8)	08:27	15:41 (7)	08:58		21:47	25	21:03 (10)	20:43	22	20:10 (9)	19:26	17:15	29	16:36 (8)	16:23	5	15:46 (7)	16:19	28	05:42		06:36		19:48 (9)	07:32		07:29	16:09 (8)	08:28		08:58		21:46	25	21:04 (10)	20:40	20	20:08 (9)	19:24	17:13	27	16:36 (8)	16:22		16:19	29	05:43		06:38		19:49 (9)	07:34		07:31	16:09 (8)	08:30		08:58		21:44	25	21:03 (10)	20:38	18	20:07 (9)	19:21	17:11	26	16:35 (8)	16:21		16:20	30	05:45		06:40		19:50 (9)	07:36		07:33	16:10 (8)	08:32		08:58		21:42	24	21:03 (10)	20:36	16	20:06 (9)	19:19	17:09	24	16:34 (8)	16:20		16:21	31	05:47		06:42		19:53 (9)			07:35					08:58		21:40	23	21:03 (10)	20:33	10	20:03 (9)		17:06	20	16:32 (8)			16:22	Potential sun hours	515		461		382		328		257		231		Total, worst case	519		461		536		562		Sun reduction	0.27		0.27		0.23		0.20		Oper. time red.	1.00		1.00		1.00		1.00		Wind dir. red.	0.63		0.60		0.58		0.61		Total reduction	0.17		0.16		0.14		0.12		Total, real	86		75		73		68																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
21	05:30		06:24		19:48 (9)	07:20		08:16	17:07 (8)	08:16	15:31 (7)	08:56		21:56	23	21:03 (10)	20:57	24	20:12 (9)	19:41	18:28	32	17:39 (8)	16:30	21	15:52 (7)	16:15	22	05:32		06:26		19:48 (9)	07:22		08:18	17:07 (8)	08:18	15:32 (7)	08:56		21:55	24	21:03 (10)	20:55	24	20:12 (9)	19:39	18:26	32	17:39 (8)	16:29	20	15:52 (7)	16:15	23	05:34		06:27		19:48 (9)	07:23		08:20	17:06 (8)	08:20	15:33 (7)	08:57		21:54	25	21:04 (10)	20:52	24	20:12 (9)	19:36	18:24	33	17:39 (8)	16:27	18	15:51 (7)	16:16	24	05:35		06:29		19:48 (9)	07:25		08:22	17:06 (8)	08:22	15:34 (7)	08:57		21:52	24	21:03 (10)	20:50	24	20:12 (9)	19:34	18:21	32	17:38 (8)	16:26	16	15:50 (7)	16:17	25	05:37		06:31		19:47 (9)	07:27		07:24	16:07 (8)	08:23	15:36 (7)	08:58		21:51	25	21:03 (10)	20:48	24	20:11 (9)	19:31	17:19	31	16:38 (8)	16:25	13	15:49 (7)	16:17	26	05:38		06:33		19:47 (9)	07:29		07:26	16:07 (8)	08:25	15:38 (7)	08:58		21:49	25	21:04 (10)	20:45	24	20:11 (9)	19:29	17:17	30	16:37 (8)	16:24	10	15:48 (7)	16:18	27	05:40		06:35		19:48 (9)	07:31		07:27	16:07 (8)	08:27	15:41 (7)	08:58		21:47	25	21:03 (10)	20:43	22	20:10 (9)	19:26	17:15	29	16:36 (8)	16:23	5	15:46 (7)	16:19	28	05:42		06:36		19:48 (9)	07:32		07:29	16:09 (8)	08:28		08:58		21:46	25	21:04 (10)	20:40	20	20:08 (9)	19:24	17:13	27	16:36 (8)	16:22		16:19	29	05:43		06:38		19:49 (9)	07:34		07:31	16:09 (8)	08:30		08:58		21:44	25	21:03 (10)	20:38	18	20:07 (9)	19:21	17:11	26	16:35 (8)	16:21		16:20	30	05:45		06:40		19:50 (9)	07:36		07:33	16:10 (8)	08:32		08:58		21:42	24	21:03 (10)	20:36	16	20:06 (9)	19:19	17:09	24	16:34 (8)	16:20		16:21	31	05:47		06:42		19:53 (9)			07:35					08:58		21:40	23	21:03 (10)	20:33	10	20:03 (9)		17:06	20	16:32 (8)			16:22	Potential sun hours	515		461		382		328		257		231		Total, worst case	519		461		536		562		Sun reduction	0.27		0.27		0.23		0.20		Oper. time red.	1.00		1.00		1.00		1.00		Wind dir. red.	0.63		0.60		0.58		0.61		Total reduction	0.17		0.16		0.14		0.12		Total, real	86		75		73		68																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
	21:56	23	21:03 (10)	20:57	24	20:12 (9)	19:41	18:28	32	17:39 (8)	16:30	21	15:52 (7)	16:15	22	05:32		06:26		19:48 (9)	07:22		08:18	17:07 (8)	08:18	15:32 (7)	08:56		21:55	24	21:03 (10)	20:55	24	20:12 (9)	19:39	18:26	32	17:39 (8)	16:29	20	15:52 (7)	16:15	23	05:34		06:27		19:48 (9)	07:23		08:20	17:06 (8)	08:20	15:33 (7)	08:57		21:54	25	21:04 (10)	20:52	24	20:12 (9)	19:36	18:24	33	17:39 (8)	16:27	18	15:51 (7)	16:16	24	05:35		06:29		19:48 (9)	07:25		08:22	17:06 (8)	08:22	15:34 (7)	08:57		21:52	24	21:03 (10)	20:50	24	20:12 (9)	19:34	18:21	32	17:38 (8)	16:26	16	15:50 (7)	16:17	25	05:37		06:31		19:47 (9)	07:27		07:24	16:07 (8)	08:23	15:36 (7)	08:58		21:51	25	21:03 (10)	20:48	24	20:11 (9)	19:31	17:19	31	16:38 (8)	16:25	13	15:49 (7)	16:17	26	05:38		06:33		19:47 (9)	07:29		07:26	16:07 (8)	08:25	15:38 (7)	08:58		21:49	25	21:04 (10)	20:45	24	20:11 (9)	19:29	17:17	30	16:37 (8)	16:24	10	15:48 (7)	16:18	27	05:40		06:35		19:48 (9)	07:31		07:27	16:07 (8)	08:27	15:41 (7)	08:58		21:47	25	21:03 (10)	20:43	22	20:10 (9)	19:26	17:15	29	16:36 (8)	16:23	5	15:46 (7)	16:19	28	05:42		06:36		19:48 (9)	07:32		07:29	16:09 (8)	08:28		08:58		21:46	25	21:04 (10)	20:40	20	20:08 (9)	19:24	17:13	27	16:36 (8)	16:22		16:19	29	05:43		06:38		19:49 (9)	07:34		07:31	16:09 (8)	08:30		08:58		21:44	25	21:03 (10)	20:38	18	20:07 (9)	19:21	17:11	26	16:35 (8)	16:21		16:20	30	05:45		06:40		19:50 (9)	07:36		07:33	16:10 (8)	08:32		08:58		21:42	24	21:03 (10)	20:36	16	20:06 (9)	19:19	17:09	24	16:34 (8)	16:20		16:21	31	05:47		06:42		19:53 (9)			07:35					08:58		21:40	23	21:03 (10)	20:33	10	20:03 (9)		17:06	20	16:32 (8)			16:22	Potential sun hours	515		461		382		328		257		231		Total, worst case	519		461		536		562		Sun reduction	0.27		0.27		0.23		0.20		Oper. time red.	1.00		1.00		1.00		1.00		Wind dir. red.	0.63		0.60		0.58		0.61		Total reduction	0.17		0.16		0.14		0.12		Total, real	86		75		73		68																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
22	05:32		06:26		19:48 (9)	07:22		08:18	17:07 (8)	08:18	15:32 (7)	08:56		21:55	24	21:03 (10)	20:55	24	20:12 (9)	19:39	18:26	32	17:39 (8)	16:29	20	15:52 (7)	16:15	23	05:34		06:27		19:48 (9)	07:23		08:20	17:06 (8)	08:20	15:33 (7)	08:57		21:54	25	21:04 (10)	20:52	24	20:12 (9)	19:36	18:24	33	17:39 (8)	16:27	18	15:51 (7)	16:16	24	05:35		06:29		19:48 (9)	07:25		08:22	17:06 (8)	08:22	15:34 (7)	08:57		21:52	24	21:03 (10)	20:50	24	20:12 (9)	19:34	18:21	32	17:38 (8)	16:26	16	15:50 (7)	16:17	25	05:37		06:31		19:47 (9)	07:27		07:24	16:07 (8)	08:23	15:36 (7)	08:58		21:51	25	21:03 (10)	20:48	24	20:11 (9)	19:31	17:19	31	16:38 (8)	16:25	13	15:49 (7)	16:17	26	05:38		06:33		19:47 (9)	07:29		07:26	16:07 (8)	08:25	15:38 (7)	08:58		21:49	25	21:04 (10)	20:45	24	20:11 (9)	19:29	17:17	30	16:37 (8)	16:24	10	15:48 (7)	16:18	27	05:40		06:35		19:48 (9)	07:31		07:27	16:07 (8)	08:27	15:41 (7)	08:58		21:47	25	21:03 (10)	20:43	22	20:10 (9)	19:26	17:15	29	16:36 (8)	16:23	5	15:46 (7)	16:19	28	05:42		06:36		19:48 (9)	07:32		07:29	16:09 (8)	08:28		08:58		21:46	25	21:04 (10)	20:40	20	20:08 (9)	19:24	17:13	27	16:36 (8)	16:22		16:19	29	05:43		06:38		19:49 (9)	07:34		07:31	16:09 (8)	08:30		08:58		21:44	25	21:03 (10)	20:38	18	20:07 (9)	19:21	17:11	26	16:35 (8)	16:21		16:20	30	05:45		06:40		19:50 (9)	07:36		07:33	16:10 (8)	08:32		08:58		21:42	24	21:03 (10)	20:36	16	20:06 (9)	19:19	17:09	24	16:34 (8)	16:20		16:21	31	05:47		06:42		19:53 (9)			07:35					08:58		21:40	23	21:03 (10)	20:33	10	20:03 (9)		17:06	20	16:32 (8)			16:22	Potential sun hours	515		461		382		328		257		231		Total, worst case	519		461		536		562		Sun reduction	0.27		0.27		0.23		0.20		Oper. time red.	1.00		1.00		1.00		1.00		Wind dir. red.	0.63		0.60		0.58		0.61		Total reduction	0.17		0.16		0.14		0.12		Total, real	86		75		73		68																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
	21:55	24	21:03 (10)	20:55	24	20:12 (9)	19:39	18:26	32	17:39 (8)	16:29	20	15:52 (7)	16:15	23	05:34		06:27		19:48 (9)	07:23		08:20	17:06 (8)	08:20	15:33 (7)	08:57		21:54	25	21:04 (10)	20:52	24	20:12 (9)	19:36	18:24	33	17:39 (8)	16:27	18	15:51 (7)	16:16	24	05:35		06:29		19:48 (9)	07:25		08:22	17:06 (8)	08:22	15:34 (7)	08:57		21:52	24	21:03 (10)	20:50	24	20:12 (9)	19:34	18:21	32	17:38 (8)	16:26	16	15:50 (7)	16:17	25	05:37		06:31		19:47 (9)	07:27		07:24	16:07 (8)	08:23	15:36 (7)	08:58		21:51	25	21:03 (10)	20:48	24	20:11 (9)	19:31	17:19	31	16:38 (8)	16:25	13	15:49 (7)	16:17	26	05:38		06:33		19:47 (9)	07:29		07:26	16:07 (8)	08:25	15:38 (7)	08:58		21:49	25	21:04 (10)	20:45	24	20:11 (9)	19:29	17:17	30	16:37 (8)	16:24	10	15:48 (7)	16:18	27	05:40		06:35		19:48 (9)	07:31		07:27	16:07 (8)	08:27	15:41 (7)	08:58		21:47	25	21:03 (10)	20:43	22	20:10 (9)	19:26	17:15	29	16:36 (8)	16:23	5	15:46 (7)	16:19	28	05:42		06:36		19:48 (9)	07:32		07:29	16:09 (8)	08:28		08:58		21:46	25	21:04 (10)	20:40	20	20:08 (9)	19:24	17:13	27	16:36 (8)	16:22		16:19	29	05:43		06:38		19:49 (9)	07:34		07:31	16:09 (8)	08:30		08:58		21:44	25	21:03 (10)	20:38	18	20:07 (9)	19:21	17:11	26	16:35 (8)	16:21		16:20	30	05:45		06:40		19:50 (9)	07:36		07:33	16:10 (8)	08:32		08:58		21:42	24	21:03 (10)	20:36	16	20:06 (9)	19:19	17:09	24	16:34 (8)	16:20		16:21	31	05:47		06:42		19:53 (9)			07:35					08:58		21:40	23	21:03 (10)	20:33	10	20:03 (9)		17:06	20	16:32 (8)			16:22	Potential sun hours	515		461		382		328		257		231		Total, worst case	519		461		536		562		Sun reduction	0.27		0.27		0.23		0.20		Oper. time red.	1.00		1.00		1.00		1.00		Wind dir. red.	0.63		0.60		0.58		0.61		Total reduction	0.17		0.16		0.14		0.12		Total, real	86		75		73		68																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
23	05:34		06:27		19:48 (9)	07:23		08:20	17:06 (8)	08:20	15:33 (7)	08:57		21:54	25	21:04 (10)	20:52	24	20:12 (9)	19:36	18:24	33	17:39 (8)	16:27	18	15:51 (7)	16:16	24	05:35		06:29		19:48 (9)	07:25		08:22	17:06 (8)	08:22	15:34 (7)	08:57		21:52	24	21:03 (10)	20:50	24	20:12 (9)	19:34	18:21	32	17:38 (8)	16:26	16	15:50 (7)	16:17	25	05:37		06:31		19:47 (9)	07:27		07:24	16:07 (8)	08:23	15:36 (7)	08:58		21:51	25	21:03 (10)	20:48	24	20:11 (9)	19:31	17:19	31	16:38 (8)	16:25	13	15:49 (7)	16:17	26	05:38		06:33		19:47 (9)	07:29		07:26	16:07 (8)	08:25	15:38 (7)	08:58		21:49	25	21:04 (10)	20:45	24	20:11 (9)	19:29	17:17	30	16:37 (8)	16:24	10	15:48 (7)	16:18	27	05:40		06:35		19:48 (9)	07:31		07:27	16:07 (8)	08:27	15:41 (7)	08:58		21:47	25	21:03 (10)	20:43	22	20:10 (9)	19:26	17:15	29	16:36 (8)	16:23	5	15:46 (7)	16:19	28	05:42		06:36		19:48 (9)	07:32		07:29	16:09 (8)	08:28		08:58		21:46	25	21:04 (10)	20:40	20	20:08 (9)	19:24	17:13	27	16:36 (8)	16:22		16:19	29	05:43		06:38		19:49 (9)	07:34		07:31	16:09 (8)	08:30		08:58		21:44	25	21:03 (10)	20:38	18	20:07 (9)	19:21	17:11	26	16:35 (8)	16:21		16:20	30	05:45		06:40		19:50 (9)	07:36		07:33	16:10 (8)	08:32		08:58		21:42	24	21:03 (10)	20:36	16	20:06 (9)	19:19	17:09	24	16:34 (8)	16:20		16:21	31	05:47		06:42		19:53 (9)			07:35					08:58		21:40	23	21:03 (10)	20:33	10	20:03 (9)		17:06	20	16:32 (8)			16:22	Potential sun hours	515		461		382		328		257		231		Total, worst case	519		461		536		562		Sun reduction	0.27		0.27		0.23		0.20		Oper. time red.	1.00		1.00		1.00		1.00		Wind dir. red.	0.63		0.60		0.58		0.61		Total reduction	0.17		0.16		0.14		0.12		Total, real	86		75		73		68																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
	21:54	25	21:04 (10)	20:52	24	20:12 (9)	19:36	18:24	33	17:39 (8)	16:27	18	15:51 (7)	16:16	24	05:35		06:29		19:48 (9)	07:25		08:22	17:06 (8)	08:22	15:34 (7)	08:57		21:52	24	21:03 (10)	20:50	24	20:12 (9)	19:34	18:21	32	17:38 (8)	16:26	16	15:50 (7)	16:17	25	05:37		06:31		19:47 (9)	07:27		07:24	16:07 (8)	08:23	15:36 (7)	08:58		21:51	25	21:03 (10)	20:48	24	20:11 (9)	19:31	17:19	31	16:38 (8)	16:25	13	15:49 (7)	16:17	26	05:38		06:33		19:47 (9)	07:29		07:26	16:07 (8)	08:25	15:38 (7)	08:58		21:49	25	21:04 (10)	20:45	24	20:11 (9)	19:29	17:17	30	16:37 (8)	16:24	10	15:48 (7)	16:18	27	05:40		06:35		19:48 (9)	07:31		07:27	16:07 (8)	08:27	15:41 (7)	08:58		21:47	25	21:03 (10)	20:43	22	20:10 (9)	19:26	17:15	29	16:36 (8)	16:23	5	15:46 (7)	16:19	28	05:42		06:36		19:48 (9)	07:32		07:29	16:09 (8)	08:28		08:58		21:46	25	21:04 (10)	20:40	20	20:08 (9)	19:24	17:13	27	16:36 (8)	16:22		16:19	29	05:43		06:38		19:49 (9)	07:34		07:31	16:09 (8)	08:30		08:58		21:44	25	21:03 (10)	20:38	18	20:07 (9)	19:21	17:11	26	16:35 (8)	16:21		16:20	30	05:45		06:40		19:50 (9)	07:36		07:33	16:10 (8)	08:32		08:58		21:42	24	21:03 (10)	20:36	16	20:06 (9)	19:19	17:09	24	16:34 (8)	16:20		16:21	31	05:47		06:42		19:53 (9)			07:35					08:58		21:40	23	21:03 (10)	20:33	10	20:03 (9)		17:06	20	16:32 (8)			16:22	Potential sun hours	515		461		382		328		257		231		Total, worst case	519		461		536		562		Sun reduction	0.27		0.27		0.23		0.20		Oper. time red.	1.00		1.00		1.00		1.00		Wind dir. red.	0.63		0.60		0.58		0.61		Total reduction	0.17		0.16		0.14		0.12		Total, real	86		75		73		68																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
24	05:35		06:29		19:48 (9)	07:25		08:22	17:06 (8)	08:22	15:34 (7)	08:57		21:52	24	21:03 (10)	20:50	24	20:12 (9)	19:34	18:21	32	17:38 (8)	16:26	16	15:50 (7)	16:17	25	05:37		06:31		19:47 (9)	07:27		07:24	16:07 (8)	08:23	15:36 (7)	08:58		21:51	25	21:03 (10)	20:48	24	20:11 (9)	19:31	17:19	31	16:38 (8)	16:25	13	15:49 (7)	16:17	26	05:38		06:33		19:47 (9)	07:29		07:26	16:07 (8)	08:25	15:38 (7)	08:58		21:49	25	21:04 (10)	20:45	24	20:11 (9)	19:29	17:17	30	16:37 (8)	16:24	10	15:48 (7)	16:18	27	05:40		06:35		19:48 (9)	07:31		07:27	16:07 (8)	08:27	15:41 (7)	08:58		21:47	25	21:03 (10)	20:43	22	20:10 (9)	19:26	17:15	29	16:36 (8)	16:23	5	15:46 (7)	16:19	28	05:42		06:36		19:48 (9)	07:32		07:29	16:09 (8)	08:28		08:58		21:46	25	21:04 (10)	20:40	20	20:08 (9)	19:24	17:13	27	16:36 (8)	16:22		16:19	29	05:43		06:38		19:49 (9)	07:34		07:31	16:09 (8)	08:30		08:58		21:44	25	21:03 (10)	20:38	18	20:07 (9)	19:21	17:11	26	16:35 (8)	16:21		16:20	30	05:45		06:40		19:50 (9)	07:36		07:33	16:10 (8)	08:32		08:58		21:42	24	21:03 (10)	20:36	16	20:06 (9)	19:19	17:09	24	16:34 (8)	16:20		16:21	31	05:47		06:42		19:53 (9)			07:35					08:58		21:40	23	21:03 (10)	20:33	10	20:03 (9)		17:06	20	16:32 (8)			16:22	Potential sun hours	515		461		382		328		257		231		Total, worst case	519		461		536		562		Sun reduction	0.27		0.27		0.23		0.20		Oper. time red.	1.00		1.00		1.00		1.00		Wind dir. red.	0.63		0.60		0.58		0.61		Total reduction	0.17		0.16		0.14		0.12		Total, real	86		75		73		68																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
	21:52	24	21:03 (10)	20:50	24	20:12 (9)	19:34	18:21	32	17:38 (8)	16:26	16	15:50 (7)	16:17	25	05:37		06:31		19:47 (9)	07:27		07:24	16:07 (8)	08:23	15:36 (7)	08:58		21:51	25	21:03 (10)	20:48	24	20:11 (9)	19:31	17:19	31	16:38 (8)	16:25	13	15:49 (7)	16:17	26	05:38		06:33		19:47 (9)	07:29		07:26	16:07 (8)	08:25	15:38 (7)	08:58		21:49	25	21:04 (10)	20:45	24	20:11 (9)	19:29	17:17	30	16:37 (8)	16:24	10	15:48 (7)	16:18	27	05:40		06:35		19:48 (9)	07:31		07:27	16:07 (8)	08:27	15:41 (7)	08:58		21:47	25	21:03 (10)	20:43	22	20:10 (9)	19:26	17:15	29	16:36 (8)	16:23	5	15:46 (7)	16:19	28	05:42		06:36		19:48 (9)	07:32		07:29	16:09 (8)	08:28		08:58		21:46	25	21:04 (10)	20:40	20	20:08 (9)	19:24	17:13	27	16:36 (8)	16:22		16:19	29	05:43		06:38		19:49 (9)	07:34		07:31	16:09 (8)	08:30		08:58		21:44	25	21:03 (10)	20:38	18	20:07 (9)	19:21	17:11	26	16:35 (8)	16:21		16:20	30	05:45		06:40		19:50 (9)	07:36		07:33	16:10 (8)	08:32		08:58		21:42	24	21:03 (10)	20:36	16	20:06 (9)	19:19	17:09	24	16:34 (8)	16:20		16:21	31	05:47		06:42		19:53 (9)			07:35					08:58		21:40	23	21:03 (10)	20:33	10	20:03 (9)		17:06	20	16:32 (8)			16:22	Potential sun hours	515		461		382		328		257		231		Total, worst case	519		461		536		562		Sun reduction	0.27		0.27		0.23		0.20		Oper. time red.	1.00		1.00		1.00		1.00		Wind dir. red.	0.63		0.60		0.58		0.61		Total reduction	0.17		0.16		0.14		0.12		Total, real	86		75		73		68																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
25	05:37		06:31		19:47 (9)	07:27		07:24	16:07 (8)	08:23	15:36 (7)	08:58		21:51	25	21:03 (10)	20:48	24	20:11 (9)	19:31	17:19	31	16:38 (8)	16:25	13	15:49 (7)	16:17	26	05:38		06:33		19:47 (9)	07:29		07:26	16:07 (8)	08:25	15:38 (7)	08:58		21:49	25	21:04 (10)	20:45	24	20:11 (9)	19:29	17:17	30	16:37 (8)	16:24	10	15:48 (7)	16:18	27	05:40		06:35		19:48 (9)	07:31		07:27	16:07 (8)	08:27	15:41 (7)	08:58		21:47	25	21:03 (10)	20:43	22	20:10 (9)	19:26	17:15	29	16:36 (8)	16:23	5	15:46 (7)	16:19	28	05:42		06:36		19:48 (9)	07:32		07:29	16:09 (8)	08:28		08:58		21:46	25	21:04 (10)	20:40	20	20:08 (9)	19:24	17:13	27	16:36 (8)	16:22		16:19	29	05:43		06:38		19:49 (9)	07:34		07:31	16:09 (8)	08:30		08:58		21:44	25	21:03 (10)	20:38	18	20:07 (9)	19:21	17:11	26	16:35 (8)	16:21		16:20	30	05:45		06:40		19:50 (9)	07:36		07:33	16:10 (8)	08:32		08:58		21:42	24	21:03 (10)	20:36	16	20:06 (9)	19:19	17:09	24	16:34 (8)	16:20		16:21	31	05:47		06:42		19:53 (9)			07:35					08:58		21:40	23	21:03 (10)	20:33	10	20:03 (9)		17:06	20	16:32 (8)			16:22	Potential sun hours	515		461		382		328		257		231		Total, worst case	519		461		536		562		Sun reduction	0.27		0.27		0.23		0.20		Oper. time red.	1.00		1.00		1.00		1.00		Wind dir. red.	0.63		0.60		0.58		0.61		Total reduction	0.17		0.16		0.14		0.12		Total, real	86		75		73		68																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
	21:51	25	21:03 (10)	20:48	24	20:11 (9)	19:31	17:19	31	16:38 (8)	16:25	13	15:49 (7)	16:17	26	05:38		06:33		19:47 (9)	07:29		07:26	16:07 (8)	08:25	15:38 (7)	08:58		21:49	25	21:04 (10)	20:45	24	20:11 (9)	19:29	17:17	30	16:37 (8)	16:24	10	15:48 (7)	16:18	27	05:40		06:35		19:48 (9)	07:31		07:27	16:07 (8)	08:27	15:41 (7)	08:58		21:47	25	21:03 (10)	20:43	22	20:10 (9)	19:26	17:15	29	16:36 (8)	16:23	5	15:46 (7)	16:19	28	05:42		06:36		19:48 (9)	07:32		07:29	16:09 (8)	08:28		08:58		21:46	25	21:04 (10)	20:40	20	20:08 (9)	19:24	17:13	27	16:36 (8)	16:22		16:19	29	05:43		06:38		19:49 (9)	07:34		07:31	16:09 (8)	08:30		08:58		21:44	25	21:03 (10)	20:38	18	20:07 (9)	19:21	17:11	26	16:35 (8)	16:21		16:20	30	05:45		06:40		19:50 (9)	07:36		07:33	16:10 (8)	08:32		08:58		21:42	24	21:03 (10)	20:36	16	20:06 (9)	19:19	17:09	24	16:34 (8)	16:20		16:21	31	05:47		06:42		19:53 (9)			07:35					08:58		21:40	23	21:03 (10)	20:33	10	20:03 (9)		17:06	20	16:32 (8)			16:22	Potential sun hours	515		461		382		328		257		231		Total, worst case	519		461		536		562		Sun reduction	0.27		0.27		0.23		0.20		Oper. time red.	1.00		1.00		1.00		1.00		Wind dir. red.	0.63		0.60		0.58		0.61		Total reduction	0.17		0.16		0.14		0.12		Total, real	86		75		73		68																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
26	05:38		06:33		19:47 (9)	07:29		07:26	16:07 (8)	08:25	15:38 (7)	08:58		21:49	25	21:04 (10)	20:45	24	20:11 (9)	19:29	17:17	30	16:37 (8)	16:24	10	15:48 (7)	16:18	27	05:40		06:35		19:48 (9)	07:31		07:27	16:07 (8)	08:27	15:41 (7)	08:58		21:47	25	21:03 (10)	20:43	22	20:10 (9)	19:26	17:15	29	16:36 (8)	16:23	5	15:46 (7)	16:19	28	05:42		06:36		19:48 (9)	07:32		07:29	16:09 (8)	08:28		08:58		21:46	25	21:04 (10)	20:40	20	20:08 (9)	19:24	17:13	27	16:36 (8)	16:22		16:19	29	05:43		06:38		19:49 (9)	07:34		07:31	16:09 (8)	08:30		08:58		21:44	25	21:03 (10)	20:38	18	20:07 (9)	19:21	17:11	26	16:35 (8)	16:21		16:20	30	05:45		06:40		19:50 (9)	07:36		07:33	16:10 (8)	08:32		08:58		21:42	24	21:03 (10)	20:36	16	20:06 (9)	19:19	17:09	24	16:34 (8)	16:20		16:21	31	05:47		06:42		19:53 (9)			07:35					08:58		21:40	23	21:03 (10)	20:33	10	20:03 (9)		17:06	20	16:32 (8)			16:22	Potential sun hours	515		461		382		328		257		231		Total, worst case	519		461		536		562		Sun reduction	0.27		0.27		0.23		0.20		Oper. time red.	1.00		1.00		1.00		1.00		Wind dir. red.	0.63		0.60		0.58		0.61		Total reduction	0.17		0.16		0.14		0.12		Total, real	86		75		73		68																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
	21:49	25	21:04 (10)	20:45	24	20:11 (9)	19:29	17:17	30	16:37 (8)	16:24	10	15:48 (7)	16:18	27	05:40		06:35		19:48 (9)	07:31		07:27	16:07 (8)	08:27	15:41 (7)	08:58		21:47	25	21:03 (10)	20:43	22	20:10 (9)	19:26	17:15	29	16:36 (8)	16:23	5	15:46 (7)	16:19	28	05:42		06:36		19:48 (9)	07:32		07:29	16:09 (8)	08:28		08:58		21:46	25	21:04 (10)	20:40	20	20:08 (9)	19:24	17:13	27	16:36 (8)	16:22		16:19	29	05:43		06:38		19:49 (9)	07:34		07:31	16:09 (8)	08:30		08:58		21:44	25	21:03 (10)	20:38	18	20:07 (9)	19:21	17:11	26	16:35 (8)	16:21		16:20	30	05:45		06:40		19:50 (9)	07:36		07:33	16:10 (8)	08:32		08:58		21:42	24	21:03 (10)	20:36	16	20:06 (9)	19:19	17:09	24	16:34 (8)	16:20		16:21	31	05:47		06:42		19:53 (9)			07:35					08:58		21:40	23	21:03 (10)	20:33	10	20:03 (9)		17:06	20	16:32 (8)			16:22	Potential sun hours	515		461		382		328		257		231		Total, worst case	519		461		536		562		Sun reduction	0.27		0.27		0.23		0.20		Oper. time red.	1.00		1.00		1.00		1.00		Wind dir. red.	0.63		0.60		0.58		0.61		Total reduction	0.17		0.16		0.14		0.12		Total, real	86		75		73		68																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
27	05:40		06:35		19:48 (9)	07:31		07:27	16:07 (8)	08:27	15:41 (7)	08:58		21:47	25	21:03 (10)	20:43	22	20:10 (9)	19:26	17:15	29	16:36 (8)	16:23	5	15:46 (7)	16:19	28	05:42		06:36		19:48 (9)	07:32		07:29	16:09 (8)	08:28		08:58		21:46	25	21:04 (10)	20:40	20	20:08 (9)	19:24	17:13	27	16:36 (8)	16:22		16:19	29	05:43		06:38		19:49 (9)	07:34		07:31	16:09 (8)	08:30		08:58		21:44	25	21:03 (10)	20:38	18	20:07 (9)	19:21	17:11	26	16:35 (8)	16:21		16:20	30	05:45		06:40		19:50 (9)	07:36		07:33	16:10 (8)	08:32		08:58		21:42	24	21:03 (10)	20:36	16	20:06 (9)	19:19	17:09	24	16:34 (8)	16:20		16:21	31	05:47		06:42		19:53 (9)			07:35					08:58		21:40	23	21:03 (10)	20:33	10	20:03 (9)		17:06	20	16:32 (8)			16:22	Potential sun hours	515		461		382		328		257		231		Total, worst case	519		461		536		562		Sun reduction	0.27		0.27		0.23		0.20		Oper. time red.	1.00		1.00		1.00		1.00		Wind dir. red.	0.63		0.60		0.58		0.61		Total reduction	0.17		0.16		0.14		0.12		Total, real	86		75		73		68																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
	21:47	25	21:03 (10)	20:43	22	20:10 (9)	19:26	17:15	29	16:36 (8)	16:23	5	15:46 (7)	16:19	28	05:42		06:36		19:48 (9)	07:32		07:29	16:09 (8)	08:28		08:58		21:46	25	21:04 (10)	20:40	20	20:08 (9)	19:24	17:13	27	16:36 (8)	16:22		16:19	29	05:43		06:38		19:49 (9)	07:34		07:31	16:09 (8)	08:30		08:58		21:44	25	21:03 (10)	20:38	18	20:07 (9)	19:21	17:11	26	16:35 (8)	16:21		16:20	30	05:45		06:40		19:50 (9)	07:36		07:33	16:10 (8)	08:32		08:58		21:42	24	21:03 (10)	20:36	16	20:06 (9)	19:19	17:09	24	16:34 (8)	16:20		16:21	31	05:47		06:42		19:53 (9)			07:35					08:58		21:40	23	21:03 (10)	20:33	10	20:03 (9)		17:06	20	16:32 (8)			16:22	Potential sun hours	515		461		382		328		257		231		Total, worst case	519		461		536		562		Sun reduction	0.27		0.27		0.23		0.20		Oper. time red.	1.00		1.00		1.00		1.00		Wind dir. red.	0.63		0.60		0.58		0.61		Total reduction	0.17		0.16		0.14		0.12		Total, real	86		75		73		68																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
28	05:42		06:36		19:48 (9)	07:32		07:29	16:09 (8)	08:28		08:58		21:46	25	21:04 (10)	20:40	20	20:08 (9)	19:24	17:13	27	16:36 (8)	16:22		16:19	29	05:43		06:38		19:49 (9)	07:34		07:31	16:09 (8)	08:30		08:58		21:44	25	21:03 (10)	20:38	18	20:07 (9)	19:21	17:11	26	16:35 (8)	16:21		16:20	30	05:45		06:40		19:50 (9)	07:36		07:33	16:10 (8)	08:32		08:58		21:42	24	21:03 (10)	20:36	16	20:06 (9)	19:19	17:09	24	16:34 (8)	16:20		16:21	31	05:47		06:42		19:53 (9)			07:35					08:58		21:40	23	21:03 (10)	20:33	10	20:03 (9)		17:06	20	16:32 (8)			16:22	Potential sun hours	515		461		382		328		257		231		Total, worst case	519		461		536		562		Sun reduction	0.27		0.27		0.23		0.20		Oper. time red.	1.00		1.00		1.00		1.00		Wind dir. red.	0.63		0.60		0.58		0.61		Total reduction	0.17		0.16		0.14		0.12		Total, real	86		75		73		68																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
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	21:42	24	21:03 (10)	20:36	16	20:06 (9)	19:19	17:09	24	16:34 (8)	16:20		16:21	31	05:47		06:42		19:53 (9)			07:35					08:58		21:40	23	21:03 (10)	20:33	10	20:03 (9)		17:06	20	16:32 (8)			16:22	Potential sun hours	515		461		382		328		257		231		Total, worst case	519		461		536		562		Sun reduction	0.27		0.27		0.23		0.20		Oper. time red.	1.00		1.00		1.00		1.00		Wind dir. red.	0.63		0.60		0.58		0.61		Total reduction	0.17		0.16		0.14		0.12		Total, real	86		75		73		68																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
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Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: BB - H54  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January	February	March	April	May	June
1	08:58 16:24	08:27 17:16	07:29 18:13	07:12 20:12	18:38 (16) 06:02	19:36 (15) 05:11
2	08:58 16:25	08:25 17:18	07:26 18:15	07:10 20:14	28 19:06 (16) 21:09	25 20:01 (15) 22:00
3	08:58 16:26	08:24 17:20	07:24 18:17	07:07 20:16	26 19:05 (16) 21:11	23 20:00 (15) 22:01
4	08:58 16:27	08:22 17:22	07:21 18:19	07:05 20:18	24 18:39 (16) 06:00	21 19:59 (15) 22:02
5	08:57 16:28	08:20 17:24	07:19 18:21	07:02 20:20	22 19:02 (16) 21:14	18 19:57 (15) 22:03
6	08:57 16:30	08:18 17:26	07:17 18:23	07:00 20:22	19 19:01 (16) 21:16	14 19:55 (15) 22:05
7	08:56 16:31	08:16 17:28	07:14 18:24	06:58 20:24	13 18:57 (16) 21:18	10 19:54 (15) 22:06
8	08:56 16:33	08:14 17:30	07:12 18:26	06:55 20:25	05:50 21:22	05:06 22:08
9	08:55 16:34	08:12 17:32	07:09 18:28	06:53 20:27	05:46 21:23	05:05 22:09
10	08:55 16:36	08:10 17:34	07:07 18:30	06:50 20:29	05:44 21:25	05:05 22:09
11	08:54 16:37	08:08 17:36	07:04 18:32	06:48 20:31	05:42 21:27	05:04 22:10
12	08:53 16:39	08:06 17:38	07:02 18:34	06:45 20:33	05:40 21:29	05:04 22:11
13	08:52 16:40	08:04 17:40	07:00 18:36	06:43 20:35	05:38 21:31	05:04 22:12
14	08:51 16:42	08:02 17:42	06:57 18:38	06:41 20:37	05:37 21:32	05:03 22:12
15	08:50 16:44	08:00 17:44	06:55 18:40	06:38 20:39	8 19:48 (15) 05:35	05:03 22:13
16	08:49 16:45	07:58 17:46	06:52 18:42	06:36 20:41	14 19:58 (15) 21:36	05:03 22:14
17	08:48 16:47	07:56 17:49	06:50 18:44	06:33 20:42	19 19:42 (15) 21:37	05:03 22:14
18	08:47 16:49	07:54 17:51	06:47 18:46	06:31 20:44	19 20:01 (15) 21:37	05:03 22:15
19	08:46 16:51	07:51 17:53	06:45 18:48	12 17:50 (16) 06:29	24 19:39 (15) 05:28	05:03 22:15
20	08:45 16:53	07:49 17:55	06:42 18:50	18 17:46 (16) 06:26	24 20:03 (15) 21:41	05:03 22:15
21	08:44 16:54	07:47 17:57	06:40 18:52	18 18:04 (16) 06:24	26 20:03 (15) 21:42	05:03 22:15
22	08:42 16:56	07:45 17:59	06:37 18:53	21 18:06 (16) 20:50	27 20:04 (15) 21:44	05:03 22:15
23	08:41 16:58	07:42 18:01	06:35 18:55	24 18:07 (16) 20:52	28 20:04 (15) 21:46	05:03 22:16
24	08:40 17:00	07:40 18:03	06:32 18:57	26 18:08 (16) 20:54	29 20:05 (15) 21:47	05:04 22:16
25	08:38 17:02	07:38 18:05	06:30 18:59	28 18:08 (16) 20:56	29 20:05 (15) 21:49	05:04 22:16
26	08:37 17:04	07:36 18:07	06:27 19:01	29 18:09 (16) 20:58	30 20:04 (15) 21:50	05:04 22:16
27	08:35 17:06	07:33 18:09	06:25 19:03	30 18:09 (16) 20:59	30 20:04 (15) 21:52	05:05 22:16
28	08:34 17:08	07:31 18:11	06:22 19:05	31 18:09 (16) 21:01	28 20:03 (15) 21:53	05:05 22:16
29	08:32 17:10	07:29 18:11	06:20 19:05	31 18:08 (16) 21:03	28 20:03 (15) 21:55	05:06 22:16
30	08:30 17:12	07:27 18:12	06:18 19:05	31 18:08 (16) 21:05	28 20:03 (15) 21:56	05:07 22:15
31	08:29 17:14	07:25 18:13	06:16 19:05	30 18:37 (16) 21:07	26 20:02 (15) 21:57	05:07 22:15
Potential sun hours	248	272	367	421	496	513
Total, worst case			341	528	111	
Sun reduction			0.22	0.34	0.36	
Oper. time red.			1.00	1.00	1.00	
Wind dir. red.			0.57	0.58	0.59	
Total reduction			0.13	0.20	0.21	
Total, real			44	106	24	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: BB - H54

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	July	August	September	October	November	December		
1	05:07 22:15	05:48 21:39	06:44 20:31	07:38 19:16	07:37 17:04	08:33 16:19		
2	05:08 22:14	05:50 21:37	06:45 20:28	07:40 19:14	07:39 17:02	08:35 16:18		
3	05:09 22:14	05:52 21:35	06:47 20:26	07:42 19:11	07:41 17:00	08:36 16:17		
4	05:10 22:13	05:53 21:33	06:49 20:23	07:43 19:09	07:43 16:58	08:38 16:17		
5	05:11 22:13	05:55 21:31	06:51 20:21	07:45 19:06	07:45 16:56	08:39 16:16		
6	05:11 22:12	05:57 21:29	19:56 (15) 20:00 (15)	06:53 20:19	18:40 (16) 18:53 (16)	07:47 19:04	07:47 16:54	08:41 16:16
7	05:12 22:12	05:59 21:27	19:52 (15) 20:04 (15)	06:54 20:16	18:38 (16) 18:56 (16)	07:49 19:01	07:49 16:53	08:42 16:15
8	05:14 22:11	06:00 21:25	19:50 (15) 20:05 (15)	06:56 20:14	18:35 (16) 18:56 (16)	07:51 18:59	07:51 16:51	08:43 16:15
9	05:15 22:10	06:02 21:23	19:48 (15) 20:07 (15)	06:58 20:11	18:33 (16) 18:57 (16)	07:53 18:56	07:53 16:49	08:45 16:14
10	05:16 22:09	06:04 21:21	19:47 (15) 20:09 (15)	07:00 20:09	18:32 (16) 18:58 (16)	07:55 18:54	07:55 16:47	08:46 16:14
11	05:17 22:08	06:06 21:19	19:45 (15) 20:09 (15)	07:02 20:06	18:31 (16) 18:59 (16)	07:57 18:51	07:57 16:45	08:47 16:14
12	05:18 22:07	06:07 21:17	19:45 (15) 20:10 (15)	07:03 20:04	18:29 (16) 18:58 (16)	07:58 18:49	07:59 16:44	08:48 16:14
13	05:19 22:06	06:09 21:15	19:44 (15) 20:11 (15)	07:05 20:01	18:28 (16) 18:59 (16)	08:00 18:47	08:01 16:42	08:49 16:13
14	05:21 22:05	06:11 21:12	19:43 (15) 20:10 (15)	07:07 19:59	18:28 (16) 18:59 (16)	08:02 18:44	08:03 16:40	08:50 16:13
15	05:22 22:04	06:13 21:10	19:42 (15) 20:11 (15)	07:09 19:56	18:28 (16) 18:59 (16)	08:04 18:42	08:05 16:39	08:51 16:13
16	05:23 22:03	06:15 21:08	19:42 (15) 20:11 (15)	07:11 19:54	18:27 (16) 18:58 (16)	08:06 18:40	08:07 16:37	08:52 16:13
17	05:25 22:02	06:16 21:06	19:42 (15) 20:11 (15)	07:12 19:51	18:27 (16) 18:57 (16)	08:08 18:37	08:09 16:36	08:53 16:14
18	05:26 22:01	06:18 21:04	19:41 (15) 20:10 (15)	07:14 19:49	18:27 (16) 18:57 (16)	08:10 18:35	08:11 16:34	08:54 16:14
19	05:27 21:59	06:20 21:01	19:41 (15) 20:10 (15)	07:16 19:46	18:27 (16) 18:56 (16)	08:12 18:33	08:12 16:33	08:55 16:14
20	05:29 21:58	06:22 20:59	19:42 (15) 20:10 (15)	07:18 19:44	18:27 (16) 18:54 (16)	08:14 18:30	08:14 16:31	08:55 16:14
21	05:30 21:56	06:24 20:57	19:41 (15) 20:09 (15)	07:20 19:41	18:28 (16) 18:53 (16)	08:16 18:28	08:16 16:30	08:56 16:15
22	05:32 21:55	06:25 20:55	19:41 (15) 20:08 (15)	07:21 19:39	18:29 (16) 18:51 (16)	08:18 18:26	08:18 16:29	08:56 16:15
23	05:33 21:54	06:27 20:52	19:42 (15) 20:08 (15)	07:23 19:36	18:30 (16) 18:49 (16)	08:20 18:24	08:20 16:27	08:57 16:16
24	05:35 21:52	06:29 20:50	19:42 (15) 20:06 (15)	07:25 19:33	18:33 (16) 18:47 (16)	08:22 18:21	08:22 16:26	08:57 16:16
25	05:37 21:51	06:31 20:48	19:43 (15) 20:05 (15)	07:27 19:31	18:36 (16) 18:41 (16)	07:24 17:19	08:23 16:25	08:58 16:17
26	05:38 21:49	06:33 20:45	19:45 (15) 20:03 (15)	07:29 19:28	18:41 (16)	07:25 17:17	08:25 16:24	08:58 16:18
27	05:40 21:47	06:35 20:43	19:47 (15) 20:01 (15)	07:31 19:26	18:41 (16)	07:27 17:15	08:27 16:23	08:58 16:19
28	05:41 21:46	06:36 20:40	19:49 (15) 19:56 (15)	07:32 19:23	18:41 (16)	07:29 17:13	08:28 16:22	08:58 16:19
29	05:43 21:44	06:38 20:38	19:45 (15)	07:34 19:21	18:41 (16)	07:31 17:11	08:30 16:21	08:58 16:20
30	05:45 21:42	06:40 20:36	19:45 (15)	07:36 19:18	18:41 (16)	07:33 17:08	08:32 16:20	08:58 16:21
31	05:46 21:40	06:42 20:33	19:45 (15)	07:35 17:06	18:41 (16)	07:35 17:06	08:58 16:22	08:58 16:22
Potential sun hours	515	461	383	327	257	230		
Total, worst case		514	484					
Sun reduction		0.27	0.29					
Oper. time red.		1.00	1.00					
Wind dir. red.		0.59	0.57					
Total reduction		0.16	0.17					
Total, real		83	81					

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: BC - H55  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January		February		March		April		May		June	
1	08:58	15:33 (1)	08:27	07:29	07:12	06:02	20:16 (7)	05:12	20:21 (7)			
	16:24	12	15:45 (1)	17:16	18:13	20:12	21:09	16	20:32 (7)	22:00	9	20:30 (7)
2	08:58	15:35 (1)	08:25	07:26	07:10	06:00	20:14 (7)	05:11	20:24 (7)			
	16:25	10	15:45 (1)	17:18	18:15	20:14	21:11	20	20:34 (7)	22:01	2	20:26 (7)
3	08:58	15:35 (1)	08:24	07:24	07:07	05:58	20:12 (7)	05:10				
	16:26	9	15:44 (1)	17:20	18:17	20:16	21:12	23	20:35 (7)	22:02		
4	08:58	15:37 (1)	08:22	07:21	07:05	05:56	20:11 (7)	05:09				
	16:27	8	15:45 (1)	17:22	18:19	20:18	21:14	25	20:36 (7)	22:03		
5	08:57	15:38 (1)	08:20	07:19	07:03	05:54	20:11 (7)	05:08				
	16:29	5	15:43 (1)	17:24	18:21	20:20	21:16	27	20:38 (7)	22:04		
6	08:57		08:18	07:17	07:00	05:52	20:10 (7)	05:07				
	16:30		17:26	18:23	20:22	21:18	28	20:38 (7)	22:06			
7	08:56		08:16	07:14	06:58	05:50	20:09 (7)	05:07		21:23 (8)		
	16:31		17:28	18:25	20:24	21:20	30	20:39 (7)	22:07	6	21:29 (8)	
8	08:56		08:14	07:12	06:55	05:48	20:08 (7)	05:06		21:21 (8)		
	16:33		17:30	18:27	20:26	21:22	31	20:39 (7)	22:08	9	21:30 (8)	
9	08:55		08:12	07:09	06:53	05:46	20:08 (7)	05:05		21:21 (8)		
	16:34		17:32	18:28	20:27	21:23	31	20:39 (7)	22:08	11	21:32 (8)	
10	08:55		08:10	07:07	06:50	05:44	20:08 (7)	05:05		21:20 (8)		
	16:36		17:34	18:30	20:29	21:25	32	20:40 (7)	22:09	12	21:32 (8)	
11	08:54		08:08	07:05	06:48	05:42	20:07 (7)	05:04		21:19 (8)		
	16:37		17:36	18:32	20:31	21:27	33	20:40 (7)	22:10	15	21:34 (8)	
12	08:53		08:06	07:02	06:45	05:40	20:07 (7)	05:04		21:19 (8)		
	16:39		17:38	18:34	20:33	21:29	32	20:39 (7)	22:11	16	21:35 (8)	
13	08:52		08:04	07:00	06:43	05:39	20:08 (7)	05:04		21:19 (8)		
	16:40		17:40	18:36	20:35	21:31	32	20:40 (7)	22:12	17	21:36 (8)	
14	08:51		08:02	06:57	06:41	05:37	20:07 (7)	05:03		21:18 (8)		
	16:42		17:43	18:38	20:37	21:32	33	20:40 (7)	22:12	17	21:35 (8)	
15	08:50		08:00	06:55	06:38	05:35	20:07 (7)	05:03		21:19 (8)		
	16:44		17:45	18:40	20:39	21:34	32	20:39 (7)	22:13	17	21:36 (8)	
16	08:49		07:58	06:52	06:36	05:33	20:08 (7)	05:03		21:19 (8)		
	16:46		17:47	18:42	20:41	21:36	32	20:40 (7)	22:13	17	21:36 (8)	
17	08:48		07:56	06:50	06:34	05:32	20:07 (7)	05:03		21:19 (8)		
	16:47		17:49	18:44	20:42	21:37	32	20:39 (7)	22:14	18	21:37 (8)	
18	08:47		07:54	06:47	06:31	05:30	20:08 (7)	05:03		21:19 (8)		
	16:49		17:51	18:46	20:44	21:39	31	20:39 (7)	22:14	18	21:37 (8)	
19	08:46		07:51	06:45	06:29	05:28	20:08 (7)	05:03		21:19 (8)		
	16:51		17:53	18:48	20:46	21:41	30	20:38 (7)	22:15	19	21:38 (8)	
20	08:45		07:49	06:42	06:27	05:27	20:09 (7)	05:03		21:19 (8)		
	16:53		17:55	18:50	20:48	21:42	29	20:38 (7)	22:15	19	21:38 (8)	
21	08:44		07:47	06:40	06:24	05:25	20:10 (7)	05:03		21:20 (8)		
	16:55		17:57	18:51	20:50	21:44	28	20:38 (7)	22:15	19	21:39 (8)	
22	08:42		07:45	06:37	06:22	05:24	20:09 (7)	05:03		21:20 (8)		
	16:56		17:59	18:53	20:52	21:46	28	20:37 (7)	22:16	19	21:39 (8)	
23	08:41		07:42	06:35	06:20	05:23	20:10 (7)	05:03		21:20 (8)		
	16:58		18:01	18:55	20:54	21:47	27	20:37 (7)	22:16	19	21:39 (8)	
24	08:40		07:40	06:32	06:17	05:21	20:11 (7)	05:04		21:20 (8)		
	17:00		18:03	18:57	20:56	21:49	26	20:37 (7)	22:16	18	21:38 (8)	
25	08:38		07:38	06:30	06:15	05:20	20:12 (7)	05:04		21:21 (8)		
	17:02		18:05	18:59	20:58	21:50	24	20:36 (7)	22:16	18	21:39 (8)	
26	08:37		07:36	06:27	06:13	05:18	20:13 (7)	05:05		21:21 (8)		
	17:04		18:07	19:01	20:59	21:52	23	20:36 (7)	22:16	18	21:39 (8)	
27	08:35		07:33	06:25	06:11	05:17	20:14 (7)	05:05		21:22 (8)		
	17:06		18:09	19:03	21:01	21:53	21	20:35 (7)	22:16	17	21:39 (8)	
28	08:34		07:31	06:22	06:09	05:16	20:15 (7)	05:06		21:21 (8)		
	17:08		18:11	19:05	21:03	21:54	19	20:34 (7)	22:16	18	21:39 (8)	
29	08:32			07:20	06:06	05:15	20:16 (7)	05:06		21:22 (8)		
	17:10			20:07	21:05	21:56	18	20:34 (7)	22:15	17	21:39 (8)	
30	08:30			07:17	06:04	05:14	20:18 (7)	05:07		21:23 (8)		
	17:12			20:09	21:07	21:57	15	20:33 (7)	22:15	16	21:39 (8)	
31	08:29			07:15		05:13		20:19 (7)				
	17:14			20:10		21:59	12	20:31 (7)				
Potential sun hours	248		272	367	421	496		513				
Total, worst case		44			12		820		401			
Sun reduction		0.17			0.34		0.36		0.26			
Oper. time red.		1.00			1.00		1.00		1.00			
Wind dir. red.		0.63			0.62		0.62		0.64			
Total reduction		0.11			0.21		0.22		0.16			
Total, real		5			3		183		66			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: BC - H55  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

July		August		September		October		November		December		
1	05:07	21:23 (8)	05:48	20:17 (7)	06:44	07:38	07:37	08:33				
	22:15	15	21:38 (8)	21:39	33	20:50 (7)	20:31	19:16	17:04	16:19		
2	05:08	21:24 (8)	05:50	20:18 (7)	06:45	07:40	07:39	08:35				
	22:14	14	21:38 (8)	21:37	32	20:50 (7)	20:28	19:14	17:02	16:18		
3	05:09	21:26 (8)	05:52	20:17 (7)	06:47	07:42	07:41	08:36				
	22:14	12	21:38 (8)	21:35	32	20:49 (7)	20:26	19:11	17:00	16:18		
4	05:10	21:26 (8)	05:53	20:18 (7)	06:49	07:44	07:43	08:38				
	22:13	10	21:36 (8)	21:33	31	20:49 (7)	20:24	19:09	16:58	16:17		
5	05:11	21:27 (8)	05:55	20:19 (7)	06:51	07:45	07:45	08:39				
	22:13	8	21:35 (8)	21:31	30	20:49 (7)	20:21	19:06	16:56	16:16		
6	05:12	21:30 (8)	05:57	20:19 (7)	06:53	07:47	07:47	08:41				
	22:12	3	21:33 (8)	21:29	29	20:48 (7)	20:19	19:04	16:55	16:16		
7	05:13		05:59	20:19 (7)	06:55	07:49	07:49	08:42		15:25 (1)		
	22:12		21:27	28	20:47 (7)	20:16	19:01	16:53	16:15	5	15:30 (1)	
8	05:14		06:00	20:21 (7)	06:56	07:51	07:51	08:43		15:25 (1)		
	22:11		21:25	26	20:47 (7)	20:14	18:59	16:51	16:15	8	15:33 (1)	
9	05:15		06:02	20:21 (7)	06:58	07:53	07:53	08:45		15:24 (1)		
	22:10		21:23	24	20:45 (7)	20:11	18:56	16:49	16:14	10	15:34 (1)	
10	05:16		06:04	20:22 (7)	07:00	07:55	07:55	08:46		15:24 (1)		
	22:09		21:21	22	20:44 (7)	20:09	18:54	16:47	16:14	10	15:34 (1)	
11	05:17		20:29 (7)	06:06	20:24 (7)	07:02	07:57	07:57	08:47		15:23 (1)	
	22:08	7	20:36 (7)	21:19	19	20:43 (7)	20:06	18:52	16:45	16:14	12	15:35 (1)
12	05:18		20:27 (7)	06:08	20:25 (7)	07:04	07:59	07:59	08:48		15:24 (1)	
	22:07	11	20:38 (7)	21:17	15	20:40 (7)	20:04	18:49	16:44	16:14	12	15:36 (1)
13	05:19		20:27 (7)	06:09	20:28 (7)	07:05	08:00	08:01	08:49		15:24 (1)	
	22:06	13	20:40 (7)	21:15	9	20:37 (7)	20:01	18:47	16:42	16:14	12	15:36 (1)
14	05:21		20:26 (7)	06:11		07:07	08:02	08:03	08:50		15:24 (1)	
	22:05	16	20:42 (7)	21:12		19:59	18:44	16:40	16:14	11	15:35 (1)	
15	05:22		20:24 (7)	06:13		07:09	08:04	08:05	08:51		15:25 (1)	
	22:04	19	20:43 (7)	21:10		19:56	18:42	16:39	16:14	10	15:35 (1)	
16	05:23		20:23 (7)	06:15		07:11	08:06	08:07	08:52		15:25 (1)	
	22:03	20	20:43 (7)	21:08		19:54	18:40	16:37	16:14	10	15:35 (1)	
17	05:25		20:22 (7)	06:17		07:13	08:08	08:09	08:53		15:24 (1)	
	22:02	22	20:44 (7)	21:06		19:51	18:37	16:36	16:14	11	15:35 (1)	
18	05:26		20:22 (7)	06:18		07:14	08:10	08:11	08:54		15:25 (1)	
	22:00	23	20:45 (7)	21:04		19:49	18:35	16:34	16:14	10	15:35 (1)	
19	05:28		20:21 (7)	06:20		07:16	08:12	08:12	08:54		15:26 (1)	
	21:59	25	20:46 (7)	21:01		19:46	18:33	16:33	16:14	10	15:36 (1)	
20	05:29		20:20 (7)	06:22		07:18	08:14	08:14	08:55		15:26 (1)	
	21:58	26	20:46 (7)	20:59		19:44	18:30	16:31	16:15	10	15:36 (1)	
21	05:31		20:20 (7)	06:24		07:20	08:16	08:16	08:56		15:26 (1)	
	21:56	27	20:47 (7)	20:57		19:41	18:28	16:30	16:15	10	15:36 (1)	
22	05:32		20:20 (7)	06:26		07:22	08:18	08:18	08:56		15:27 (1)	
	21:55	28	20:48 (7)	20:55		19:39	18:26	16:29	16:15	10	15:37 (1)	
23	05:34		20:20 (7)	06:27		07:23	08:20	08:20	08:57		15:27 (1)	
	21:54	29	20:49 (7)	20:52		19:36	18:24	16:27	16:16	10	15:37 (1)	
24	05:35		20:19 (7)	06:29		07:25	08:22	08:22	08:57		15:28 (1)	
	21:52	30	20:49 (7)	20:50		19:34	18:21	16:26	16:17	9	15:37 (1)	
25	05:37		20:18 (7)	06:31		07:27	07:24	08:23	08:58		15:29 (1)	
	21:50	31	20:49 (7)	20:48		19:31	17:19	16:25	16:17	10	15:39 (1)	
26	05:38		20:18 (7)	06:33		07:29	07:26	08:25	08:58		15:29 (1)	
	21:49	32	20:50 (7)	20:45		19:29	17:17	16:24	16:18	10	15:39 (1)	
27	05:40		20:18 (7)	06:35		07:31	07:27	08:27	08:58		15:30 (1)	
	21:47	31	20:49 (7)	20:43		19:26	17:15	16:23	16:19	10	15:40 (1)	
28	05:42		20:18 (7)	06:36		07:32	07:29	08:28	08:58		15:30 (1)	
	21:46	32	20:50 (7)	20:40		19:24	17:13	16:22	16:20	11	15:41 (1)	
29	05:43		20:18 (7)	06:38		07:34	07:31	08:30	08:58		15:31 (1)	
	21:44	33	20:51 (7)	20:38		19:21	17:11	16:21	16:20	11	15:42 (1)	
30	05:45		20:18 (7)	06:40		07:36	07:33	08:32	08:58		15:32 (1)	
	21:42	32	20:50 (7)	20:36		19:19	17:09	16:20	16:21	11	15:43 (1)	
31	05:47		20:18 (7)	06:42			07:35		08:58		15:33 (1)	
	21:40	32	20:50 (7)	20:33			17:06		16:22	11	15:44 (1)	
Potential sun hours	515		461		382	328	257	231				
Total, worst case		581		330					254			
Sun reduction		0.27		0.27					0.12			
Oper. time red.		1.00		1.00					1.00			
Wind dir. red.		0.62		0.62					0.63			
Total reduction		0.16		0.17					0.08			
Total, real		96		56					19			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)



### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: BD - H56  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June
1	08:58 16:24	08:27 17:16	07:29 18:13	07:12 20:12	06:02 15	20:03 (16) 22:00 23
2	08:58 16:25	08:25 17:18	07:26 18:15	07:10 20:14	06:00 19	20:01 (16) 22:01 20
3	08:58 16:26	08:24 17:20	07:24 18:17	07:07 20:16	05:58 21	19:59 (16) 22:02 16
4	08:58 16:27	08:22 17:22	07:21 18:19	07:05 20:18	05:56 24	19:58 (16) 22:03 18
5	08:57 16:28	08:20 17:24	07:19 18:21	07:02 20:20	05:54 26	19:57 (16) 22:05 18
6	08:57 16:30	08:18 17:26	07:17 18:23	07:00 20:22	05:52 27	19:57 (16) 22:06 20
7	08:56 16:31	08:16 17:28	07:14 18:24	06:58 20:24	05:50 29	19:56 (16) 22:07 21
8	08:56 16:33	08:14 17:30	07:12 18:26	06:55 20:25	05:48 30	19:55 (16) 22:08 22
9	08:55 16:34	08:12 17:32	07:09 18:28	06:53 20:27	05:46 31	19:54 (16) 22:09 22
10	08:55 16:36	08:10 17:34	07:07 18:30	06:50 20:29	05:44 31	19:54 (16) 22:09 23
11	08:54 16:37	08:08 17:36	07:04 18:32	06:48 20:31	05:42 32	19:54 (16) 22:10 23
12	08:53 16:39	08:06 17:38	07:02 18:34	06:45 20:33	05:40 32	19:54 (16) 22:11 23
13	08:52 16:40	08:04 17:40	07:00 18:36	06:43 20:35	05:38 32	19:53 (16) 22:12 24
14	08:51 16:42	08:02 17:42	06:57 18:38	06:41 20:37	05:37 32	19:54 (16) 22:12 24
15	08:50 16:44	08:00 17:44	06:55 18:40	06:38 20:39	05:35 32	19:54 (16) 22:13 24
16	08:49 16:45	07:58 17:46	06:52 18:42	06:36 20:41	05:33 32	19:54 (16) 22:14 24
17	08:48 16:47	07:56 17:49	06:50 18:44	06:33 20:42	05:32 31	19:54 (16) 22:14 24
18	08:47 16:49	07:54 17:51	06:47 18:46	06:31 20:44	05:30 31	19:55 (16) 22:14 25
19	08:46 16:51	07:51 17:53	06:45 18:48	06:29 20:46	05:28 30	19:55 (16) 22:15 25
20	08:45 16:53	07:49 17:55	06:42 18:50	06:26 20:48	05:27 30	19:55 (16) 22:15 25
21	08:44 16:54	07:47 17:57	06:40 18:51	06:24 20:50	05:25 29	19:56 (16) 22:15 25
22	08:42 16:56	07:45 17:59	06:37 18:53	06:22 20:52	05:24 28	19:56 (16) 22:16 25
23	08:41 16:58	07:42 18:01	06:35 18:55	06:20 20:54	05:22 26	19:57 (16) 22:16 25
24	08:40 17:00	07:40 18:03	06:32 18:57	06:17 20:56	05:21 25	19:58 (16) 22:16 25
25	08:38 17:02	07:38 18:05	06:30 18:59	06:15 20:58	05:20 24	19:59 (16) 22:16 25
26	08:37 17:04	07:36 18:07	06:27 19:01	06:13 20:59	05:18 22	20:00 (16) 22:16 24
27	08:35 17:06	07:33 18:09	06:25 19:03	06:11 21:01	05:17 21	20:00 (16) 22:16 24
28	08:34 17:08	07:31 18:11	06:22 19:05	06:08 21:03	05:16 19	20:01 (16) 22:16 24
29	08:32 17:10		07:20 20:07	06:06 21:05	05:15 17	20:02 (16) 22:15 24
30	08:30 17:12		07:17 20:08	06:04 21:07	8 20:07 (16) 20:15 (16)	05:14 21:57
31	08:29 17:14		07:15 20:10			20:05 (16) 21:11 (15)
Potential sun hours	248	272	367	421	496	513
Total, worst case				8	824	688
Sun reduction				0.34	0.36	0.26
Oper. time red.				1.00	1.00	1.00
Wind dir. red.				0.61	0.61	0.63
Total reduction				0.21	0.22	0.16
Total, real				2	182	111

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: BD - H56

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	July	August	September	October	November	December		
1	05:07	21:01 (15)	05:48	20:04 (16)	06:44	07:38	07:37	08:33
	22:15	23 21:24 (15)	21:39	32 20:36 (16)	20:31	19:16	17:04	16:19
2	05:08	21:01 (15)	05:50	20:05 (16)	06:45	07:40	07:39	08:35
	22:14	23 21:24 (15)	21:37	31 20:36 (16)	20:28	19:14	17:02	16:18
3	05:09	21:02 (15)	05:52	20:04 (16)	06:47	07:42	07:41	08:36
	22:14	22 21:24 (15)	21:35	31 20:35 (16)	20:26	19:11	17:00	16:17
4	05:10	21:02 (15)	05:53	20:05 (16)	06:49	07:43	07:43	08:38
	22:13	21 21:23 (15)	21:33	30 20:35 (16)	20:23	19:09	16:58	16:17
5	05:11	21:02 (15)	05:55	20:06 (16)	06:51	07:45	07:45	08:39
	22:13	21 21:23 (15)	21:31	29 20:35 (16)	20:21	19:06	16:56	16:16
6	05:12	21:03 (15)	05:57	20:06 (16)	06:53	07:47	07:47	08:41
	22:12	20 21:23 (15)	21:29	28 20:34 (16)	20:19	19:04	16:54	16:16
7	05:13	21:04 (15)	05:59	20:06 (16)	06:54	07:49	07:49	08:42
	22:12	19 21:23 (15)	21:27	28 20:34 (16)	20:16	19:01	16:53	16:15
8	05:14	21:04 (15)	06:00	20:07 (16)	06:56	07:51	07:51	08:43
	22:11	19 21:23 (15)	21:25	25 20:32 (16)	20:14	18:59	16:51	16:15
9	05:15	21:05 (15)	06:02	20:08 (16)	06:58	07:53	07:53	08:45
	22:10	17 21:22 (15)	21:23	23 20:31 (16)	20:11	18:56	16:49	16:14
10	05:16	21:06 (15)	06:04	20:09 (16)	07:00	07:55	07:55	08:46
	22:09	16 21:22 (15)	21:21	21 20:30 (16)	20:09	18:54	16:47	16:14
11	05:17	20:15 (16)	06:06	20:10 (16)	07:02	07:57	07:57	08:47
	22:08	22 21:21 (15)	21:19	18 20:28 (16)	20:06	18:51	16:45	16:14
12	05:18	20:14 (16)	06:07	20:12 (16)	07:03	07:58	07:59	08:48
	22:07	23 21:20 (15)	21:17	13 20:25 (16)	20:04	18:49	16:44	16:14
13	05:19	20:12 (16)	06:09	20:17 (16)	07:05	08:00	08:01	08:49
	22:06	22 21:18 (15)	21:15	4 20:21 (16)	20:01	18:47	16:42	16:13
14	05:21	20:12 (16)	06:11		07:07	08:02	08:03	08:50
	22:05	18 21:16 (15)	21:12		19:59	18:44	16:40	16:13
15	05:22	20:11 (16)	06:13		07:09	08:04	08:05	08:51
	22:04	18 20:29 (16)	21:10		19:56	18:42	16:39	16:13
16	05:23	20:10 (16)	06:15		07:11	08:06	08:07	08:52
	22:03	20 20:30 (16)	21:08		19:54	18:40	16:37	16:13
17	05:25	20:09 (16)	06:16		07:12	08:08	08:09	08:53
	22:02	22 20:31 (16)	21:06		19:51	18:37	16:36	16:14
18	05:26	20:09 (16)	06:18		07:14	08:10	08:11	08:54
	22:01	23 20:32 (16)	21:04		19:49	18:35	16:34	16:14
19	05:27	20:08 (16)	06:20		07:16	08:12	08:12	08:55
	21:59	25 20:33 (16)	21:01		19:46	18:33	16:33	16:14
20	05:29	20:07 (16)	06:22		07:18	08:14	08:14	08:55
	21:58	26 20:33 (16)	20:59		19:44	18:30	16:31	16:14
21	05:30	20:07 (16)	06:24		07:20	08:16	08:16	08:56
	21:56	27 20:34 (16)	20:57		19:41	18:28	16:30	16:15
22	05:32	20:06 (16)	06:25		07:21	08:18	08:18	08:56
	21:55	28 20:34 (16)	20:55		19:39	18:26	16:29	16:15
23	05:33	20:05 (16)	06:27		07:23	08:20	08:20	08:57
	21:54	29 20:34 (16)	20:52		19:36	18:24	16:27	16:16
24	05:35	20:06 (16)	06:29		07:25	08:22	08:22	08:57
	21:52	29 20:35 (16)	20:50		19:33	18:21	16:26	16:16
25	05:37	20:05 (16)	06:31		07:27	07:24	08:23	08:58
	21:50	30 20:35 (16)	20:48		19:31	17:19	16:25	16:17
26	05:38	20:05 (16)	06:33		07:29	07:25	08:25	08:58
	21:49	31 20:36 (16)	20:45		19:28	17:17	16:24	16:18
27	05:40	20:04 (16)	06:35		07:31	07:27	08:27	08:58
	21:47	32 20:36 (16)	20:43		19:26	17:15	16:23	16:19
28	05:41	20:05 (16)	06:36		07:32	07:29	08:28	08:58
	21:46	31 20:36 (16)	20:40		19:23	17:13	16:22	16:19
29	05:43	20:04 (16)	06:38		07:34	07:31	08:30	08:58
	21:44	32 20:36 (16)	20:38		19:21	17:11	16:21	16:20
30	05:45	20:04 (16)	06:40		07:36	07:33	08:32	08:58
	21:42	32 20:36 (16)	20:36		19:18	17:08	16:20	16:21
31	05:46	20:05 (16)	06:42			07:35		08:58
	21:40	32 20:37 (16)	20:33			17:06		16:22
Potential sun hours	515		461		383	327	257	230
Total, worst case		753		313				
Sun reduction		0.27		0.27				
Oper. time red.		1.00		1.00				
Wind dir. red.		0.62		0.61				
Total reduction		0.16		0.17				
Total, real		123		52				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: BE - H57  
 Assumptions for shadow calculations Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

Operational time  
 N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

January		February		March	April	May		June								
1	08:58 16:24	15:26 (7) 15:45 (7)	08:27 17:16	16:10 (8) 16:39 (8)	07:29 18:13	07:12 20:12		06:02 20:13 (10)	05:12 22:00			21:06 (11) 21:24 (11)				
2	08:58 16:25	15:48 (7) 15:47 (7)	08:25 17:18	16:10 (8) 16:39 (8)	07:26 18:15	07:10 20:14		06:00 20:12 (10)	05:11 22:01	18		21:05 (11) 21:25 (11)				
3	08:58 16:26	15:27 (7) 15:48 (7)	08:24 17:20	16:10 (8) 16:40 (8)	07:24 18:17	07:07 20:16	12	19:34 (9) 19:46 (9)	05:58 21:13	23		20:11 (10) 20:36 (10)	05:10 22:02	20		21:05 (11) 21:25 (11)
4	08:58 16:27	15:27 (7) 15:48 (7)	08:22 17:22	16:09 (8) 16:40 (8)	07:22 18:19	07:05 20:18		19:32 (9) 19:49 (9)	05:56 21:14	25		20:11 (10) 20:36 (10)	05:09 22:03	20		21:06 (11) 21:26 (11)
5	08:57 16:29	15:26 (7) 15:48 (7)	08:20 17:24	16:09 (8) 16:41 (8)	07:19 18:21	07:03 20:20	17	19:31 (9) 19:50 (9)	05:54 21:16	26		20:11 (10) 20:37 (10)	05:08 22:05	20		21:05 (11) 21:26 (11)
6	08:57 16:30	15:27 (7) 15:50 (7)	08:18 17:26	16:09 (8) 16:41 (8)	07:17 18:23	07:00 20:22	19	19:29 (9) 19:51 (9)	05:52 21:18	26		20:11 (10) 20:37 (10)	05:07 22:06	21		21:05 (11) 21:26 (11)
7	08:56 16:31	15:27 (7) 15:50 (7)	08:16 17:28	16:09 (8) 16:41 (8)	07:14 18:25	06:58 20:24	24	19:28 (9) 19:52 (9)	05:50 21:20	27		20:10 (10) 20:37 (10)	05:07 22:07	21		21:06 (11) 21:27 (11)
8	08:56 16:33	15:27 (7) 15:51 (7)	08:14 17:30	16:10 (8) 16:41 (8)	07:12 18:26	06:55 20:26	24	19:27 (9) 19:51 (9)	05:48 21:22	27		20:10 (10) 20:37 (10)	05:06 22:08	21		21:05 (11) 21:26 (11)
9	08:55 16:34	15:28 (7) 15:52 (7)	08:12 17:32	16:09 (8) 16:40 (8)	07:09 18:28	06:53 20:27	26	19:26 (9) 19:52 (9)	05:46 21:23	27		20:10 (10) 20:36 (10)	05:05 22:09	21		21:06 (11) 21:27 (11)
10	08:55 16:36	15:28 (7) 15:53 (7)	08:10 17:34	16:10 (8) 16:40 (8)	07:07 18:30	06:50 20:29	26	19:26 (9) 19:52 (9)	05:44 21:25	26		20:11 (10) 20:37 (10)	05:05 22:09	22		21:05 (11) 21:27 (11)
11	08:54 16:37	15:28 (7) 15:53 (7)	08:08 17:36	16:10 (8) 16:40 (8)	07:05 18:32	06:48 20:31	26	19:25 (9) 19:51 (9)	05:42 21:27	25		20:11 (10) 20:36 (10)	05:04 22:10	21		21:06 (11) 21:27 (11)
12	08:53 16:39	15:28 (7) 15:54 (7)	08:06 17:38	16:11 (8) 16:39 (8)	07:02 18:34	06:45 20:33	25	19:26 (9) 19:51 (9)	05:40 21:29	24		20:11 (10) 20:35 (10)	05:04 22:11	22		21:06 (11) 21:28 (11)
13	08:52 16:40	15:28 (7) 15:54 (7)	08:04 17:40	16:12 (8) 16:39 (8)	07:00 18:36	06:43 20:35	25	19:25 (9) 19:50 (9)	05:39 21:31	24		20:11 (10) 20:35 (10)	05:04 22:12	21		21:07 (11) 21:28 (11)
14	08:51 16:42	15:29 (7) 15:55 (7)	08:02 17:42	16:13 (8) 16:38 (8)	06:57 18:38	06:41 20:37	23	19:26 (9) 19:49 (9)	05:37 21:32	22		20:12 (10) 20:34 (10)	05:03 22:12	22		21:06 (11) 21:28 (11)
15	08:50 16:44	15:28 (7) 15:54 (7)	08:00 17:45	16:14 (8) 16:36 (8)	06:55 18:40	06:38 20:39	23	19:26 (9) 19:49 (9)	05:35 21:34	20		20:13 (10) 20:33 (10)	05:03 22:13	22		21:06 (11) 21:28 (11)
16	08:49 16:45	15:29 (7) 15:55 (7)	07:58 17:47	16:16 (8) 16:35 (8)	06:52 18:42	06:36 20:41	21	19:27 (9) 19:48 (9)	05:33 21:36	19		20:14 (10) 20:33 (10)	05:03 22:14	21		21:07 (11) 21:28 (11)
17	08:48 16:47	15:29 (7) 15:56 (7)	07:56 17:49	16:18 (8) 16:33 (8)	06:50 18:44	06:34 20:43	18	19:28 (9) 19:46 (9)	05:32 21:37	17		20:15 (10) 20:32 (10)	05:03 22:14	21		21:07 (11) 21:28 (11)
18	08:47 16:49	15:30 (7) 15:56 (7)	07:54 17:51	16:23 (8) 16:29 (8)	06:47 18:46	06:31 20:44	14	19:30 (9) 19:44 (9)	05:30 21:39	14		20:17 (10) 20:31 (10)	05:03 22:14	22		21:07 (11) 21:29 (11)
19	08:46 16:51	15:30 (7) 15:56 (7)	07:51 17:53		06:45 18:48	06:29 20:46	8	19:33 (9) 19:41 (9)	05:28 21:41	11		20:18 (10) 20:29 (10)	05:03 22:15	22		21:07 (11) 21:29 (11)
20	08:45 16:53	15:31 (7) 15:56 (7)	07:49 17:55		06:42 18:50	06:27 20:48			05:27 21:42	5		20:21 (10) 20:26 (10)	05:03 22:15	22		21:07 (11) 21:29 (11)
21	08:44 16:54	15:31 (7) 15:56 (7)	07:47 17:57		06:40 18:51	06:24 20:50			05:25 21:44				05:03 22:15	22		21:08 (11) 21:30 (11)
22	08:42 16:56	15:32 (7) 15:56 (7)	07:45 17:59		06:37 18:53	06:22 20:52			05:24 21:46				05:03 22:16	22		21:08 (11) 21:30 (11)
23	08:41 16:58	15:32 (7) 15:55 (7)	07:42 18:01		06:35 18:55	06:20 20:54			05:22 21:47				05:03 22:16	22		21:08 (11) 21:30 (11)
24	08:40 17:00	15:34 (7) 15:56 (7)	07:40 18:03		06:32 18:57	06:17 20:56			05:21 21:49				05:04 22:16	22		21:08 (11) 21:30 (11)
25	08:38 17:02	15:35 (7) 16:28 (8)	07:38 18:05		06:30 18:59	06:15 20:58			05:20 21:50	5		21:11 (11) 21:16 (11)	05:04 22:16	22		21:09 (11) 21:31 (11)
26	08:37 17:04	15:36 (7) 16:30 (8)	07:36 18:07		06:27 19:01	06:13 20:59			05:18 21:52	9		21:09 (11) 21:18 (11)	05:05 22:16	21		21:09 (11) 21:30 (11)
27	08:35 17:06	15:38 (7) 16:33 (8)	07:33 18:09		06:25 19:03	06:11 21:01	8	20:20 (10) 20:28 (10)	05:17 21:53	11		21:08 (11) 21:19 (11)	05:05 22:16	21		21:10 (11) 21:31 (11)
28	08:34 17:08	15:40 (7) 16:34 (8)	07:31 18:11		06:22 19:05	06:09 21:03	14	20:17 (10) 20:31 (10)	05:16 21:55	12		21:08 (11) 21:20 (11)	05:06 22:16	22		21:09 (11) 21:31 (11)
29	08:32 17:10	15:43 (7) 16:35 (8)			07:20 20:07	06:06 21:05	17	20:16 (10) 20:33 (10)	05:15 21:56	15		21:07 (11) 21:22 (11)	05:06 22:15	21		21:10 (11) 21:31 (11)
30	08:31 17:12	16:11 (8) 16:36 (8)			07:17 20:09	06:04 21:07	20	20:14 (10) 20:34 (10)	05:14 21:57	16		21:07 (11) 21:23 (11)	05:07 22:15	22		21:09 (11) 21:31 (11)
31	08:29 17:14	16:10 (8) 16:37 (8)			07:15 20:10				05:13 21:59	18		21:06 (11) 21:24 (11)				
Potential sun hours	248		272		367		421		496				513			
Total, worst case	789		479				412		520				638			
Sun reduction	0.17		0.22				0.34		0.36				0.26			
Oper. time red.	1.00		1.00				1.00		1.00				1.00			
Wind dir. red.	0.62		0.60				0.59		0.62				0.63			
Total reduction	0.11		0.13				0.20		0.22				0.16			
Total, real	83		63				84		116				103			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: BE - H57  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	July		August		September		October		November		December					
1	05:07	21:10 (11)	05:48	20:21 (10)	06:44	19:24 (9)	07:38	07:37	15:39 (8)	08:33	15:10 (7)					
2	22:15	21	21:31 (11)	21:39	25	20:46 (10)	20:31	26	19:50 (9)	19:16	17:04	31	16:10 (8)	16:19	25	15:35 (7)
3	05:08	21:11 (11)	05:50	20:21 (10)	06:45	19:24 (9)	07:40	07:39	15:39 (8)	08:35	15:10 (7)					
4	22:14	21	21:32 (11)	21:37	26	20:47 (10)	20:28	26	19:50 (9)	19:14	17:02	31	16:10 (8)	16:18	25	15:35 (7)
5	05:09	21:11 (11)	05:52	20:20 (10)	06:47	19:24 (9)	07:42	07:41	15:38 (8)	08:36	15:11 (7)					
6	22:14	21	21:32 (11)	21:35	26	20:46 (10)	20:26	26	19:50 (9)	19:11	17:00	32	16:10 (8)	16:18	24	15:35 (7)
7	05:10	21:10 (11)	05:53	20:20 (10)	06:49	19:24 (9)	07:44	07:43	15:39 (8)	08:38	15:12 (7)					
8	22:13	22	21:32 (11)	21:33	27	20:47 (10)	20:24	24	19:48 (9)	19:09	16:58	32	16:11 (8)	16:17	24	15:36 (7)
9	05:11	21:11 (11)	05:55	20:21 (10)	06:51	19:24 (9)	07:45	07:45	15:39 (8)	08:39	15:12 (7)					
10	22:13	21	21:32 (11)	21:31	26	20:47 (10)	20:21	24	19:48 (9)	19:06	16:56	32	16:11 (8)	16:16	23	15:35 (7)
11	05:12	21:11 (11)	05:57	20:20 (10)	06:53	19:25 (9)	07:47	07:47	15:39 (8)	08:41	15:13 (7)					
12	22:12	21	21:32 (11)	21:29	26	20:46 (10)	20:19	22	19:47 (9)	19:04	16:55	31	16:10 (8)	16:16	23	15:36 (7)
13	05:13	21:12 (11)	05:59	20:20 (10)	06:54	19:26 (9)	07:49	07:49	15:39 (8)	08:42	15:13 (7)					
14	22:12	20	21:32 (11)	21:27	27	20:47 (10)	20:16	20	19:46 (9)	19:01	16:53	31	16:10 (8)	16:15	22	15:35 (7)
15	05:14	21:12 (11)	06:00	20:21 (10)	06:56	19:26 (9)	07:51	07:51	15:39 (8)	08:43	15:15 (7)					
16	22:11	20	21:32 (11)	21:25	26	20:47 (10)	20:14	17	19:43 (9)	18:59	16:51	31	16:10 (8)	16:15	21	15:36 (7)
17	05:15	21:12 (11)	06:02	20:20 (10)	06:58	19:28 (9)	07:53	07:53	15:40 (8)	08:45	15:15 (7)					
18	22:10	20	21:32 (11)	21:23	25	20:45 (10)	20:11	13	19:41 (9)	18:56	16:49	29	16:09 (8)	16:14	21	15:36 (7)
19	05:16	21:13 (11)	06:04	20:21 (10)	07:00	19:33 (9)	07:55	07:55	15:41 (8)	08:46	15:16 (7)					
20	22:09	19	21:32 (11)	21:21	24	20:45 (10)	20:09	3	19:36 (9)	18:54	16:47	28	16:09 (8)	16:14	20	15:36 (7)
21	05:17	21:13 (11)	06:06	20:22 (10)	07:02	19:36 (9)	07:57	07:57	15:42 (8)	08:47	15:17 (7)					
22	22:08	19	21:32 (11)	21:19	23	20:45 (10)	20:06	16:45	27	16:09 (8)	16:14	19	15:35 (7)	15:16 (7)		
23	05:18	21:13 (11)	06:08	20:22 (10)	07:04	18:52	07:59	07:59	15:43 (8)	08:48	15:18 (7)					
24	22:07	19	21:32 (11)	21:17	21	20:43 (10)	20:04	18:49	16:44	25	16:08 (8)	16:14	18	15:36 (7)		
25	05:19	21:14 (11)	06:09	20:23 (10)	07:05	18:00	08:00	08:01	15:14 (7)	08:49	15:18 (7)					
26	22:06	17	21:31 (11)	21:15	19	20:42 (10)	20:01	18:47	16:42	30	16:07 (8)	16:14	17	15:35 (7)		
27	05:21	21:15 (11)	06:11	20:24 (10)	07:07	18:02	08:02	08:03	15:12 (7)	08:50	15:19 (7)					
28	22:05	16	21:31 (11)	21:13	17	20:41 (10)	19:59	18:44	16:40	33	16:06 (8)	16:13	16	15:35 (7)		
29	05:22	21:16 (11)	06:13	20:26 (10)	07:09	18:04	08:04	08:05	15:10 (7)	08:51	15:20 (7)					
30	22:04	14	21:30 (11)	21:10	12	20:38 (10)	19:56	18:42	16:39	34	16:04 (8)	16:13	15	15:35 (7)		
31	05:23	21:16 (11)	06:15	20:29 (10)	07:11	18:06	08:06	08:07	15:09 (7)	08:52	15:21 (7)					
32	22:03	12	21:28 (11)	21:08	6	20:35 (10)	19:54	18:40	16:37	33	16:03 (8)	16:14	14	15:35 (7)		
33	05:25	21:17 (11)	06:17	19:54	07:13	18:08	08:08	08:09	15:09 (7)	08:53	15:21 (7)					
34	22:02	10	21:27 (11)	21:06	19:51	18:37	08:37	16:36	30	16:01 (8)	16:14	14	15:35 (7)			
35	05:26	21:19 (11)	06:18	19:51	07:14	18:10	08:10	08:11	15:08 (7)	08:54	15:21 (7)					
36	22:01	8	21:27 (11)	21:04	19:49	18:35	08:35	16:34	22	15:30 (7)	16:14	14	15:35 (7)			
37	05:28	21:21 (11)	06:20	19:49	07:16	18:35	08:35	08:12	15:07 (7)	08:55	15:22 (7)					
38	21:59	4	21:25 (11)	21:01	19:46	18:33	08:33	16:33	23	15:30 (7)	16:14	13	15:35 (7)			
39	05:29	06:22	19:46	07:18	18:33	08:14	08:14	15:07 (7)	08:55	15:23 (7)						
40	21:58	20:59	19:44	07:18	18:30	08:14	08:14	16:31	24	15:31 (7)	16:15	13	15:36 (7)			
41	05:30	06:24	07:20	07:20	18:30	08:16	08:16	16:30	25	15:32 (7)	16:15	13	15:36 (7)			
42	21:57	20:57	19:41	07:21	18:28	08:18	08:18	16:29	25	15:32 (7)	16:15	13	15:37 (7)			
43	05:32	06:26	07:22	07:22	18:26	08:18	08:18	16:29	25	15:32 (7)	16:15	13	15:37 (7)			
44	21:55	20:55	19:39	07:23	18:26	08:20	08:20	16:27	26	15:33 (7)	16:16	13	15:37 (7)			
45	05:34	06:27	07:23	07:23	18:24	08:20	08:20	16:27	26	15:33 (7)	16:16	13	15:37 (7)			
46	21:54	20:52	19:36	07:25	18:24	08:22	08:22	16:27	26	15:33 (7)	16:16	13	15:37 (7)			
47	05:35	06:29	07:25	07:25	18:22	08:22	08:22	16:26	26	15:33 (7)	16:17	13	15:37 (7)			
48	21:52	8	20:38 (10)	20:50	9	19:45 (9)	19:34	18:21	9	17:00 (8)	16:26	26	15:33 (7)	16:17	13	15:37 (7)
49	05:37	20:27 (10)	06:31	19:32 (9)	07:27	18:24	07:24	15:47 (8)	08:23	15:07 (7)	08:58	15:25 (7)				
50	21:51	13	20:40 (10)	20:48	15	19:47 (9)	19:31	17:19	16	16:03 (8)	16:25	27	15:34 (7)	16:17	14	15:39 (7)
51	05:38	20:26 (10)	06:33	19:30 (9)	07:29	17:26	15:45 (8)	08:25	15:08 (7)	08:58	15:25 (7)					
52	21:49	16	20:42 (10)	20:45	19	19:49 (9)	19:29	17:17	20	16:05 (8)	16:24	26	15:34 (7)	16:18	14	15:39 (7)
53	05:40	20:25 (10)	06:35	19:29 (9)	07:31	17:15	15:43 (8)	08:27	15:08 (7)	08:58	15:25 (7)					
54	21:47	17	20:42 (10)	20:43	21	19:50 (9)	19:26	17:15	23	16:06 (8)	16:23	27	15:35 (7)	16:19	15	15:40 (7)
55	05:42	20:24 (10)	06:36	19:27 (9)	07:32	17:13	15:43 (8)	08:28	15:08 (7)	08:58	15:26 (7)					
56	21:46	20	20:44 (10)	20:40	23	19:50 (9)	19:24	17:13	25	16:08 (8)	16:22	26	15:34 (7)	16:19	15	15:41 (7)
57	05:43	20:23 (10)	06:38	19:26 (9)	07:34	17:11	15:41 (8)	08:30	15:08 (7)	08:58	15:26 (7)					
58	21:44	21	20:44 (10)	20:38	24	19:50 (9)	19:21	17:11	27	16:08 (8)	16:21	26	15:34 (7)	16:20	16	15:42 (7)
59	05:45	20:22 (10)	06:40	19:26 (9)	07:36	17:09	15:40 (8)	08:32	15:09 (7)	08:58	15:26 (7)					
60	21:42	23	20:45 (10)	20:36	25	19:51 (9)	19:19	17:09	29	16:09 (8)	16:20	26	15:35 (7)	16:21	17	15:43 (7)
61	05:47	20:22 (10)	06:42	19:25 (9)	07:36	17:09	15:40 (8)	08:32	15:09 (7)	08:58	15:26 (7)					
62	21:40	24	20:46 (10)	20:33	26	19:51 (9)	17:06	29	16:09 (8)	16:20	26	15:35 (7)	16:21	17	15:43 (7)	
63	Potential sun hours	515	461	382	201	328	257	231	542							
64	Total, worst case	467	518	201	178	849	542									
65	Sun reduction	0.27	0.27	0.29	0.23	0.20	0.12									
66	Oper. time red.	1.00	1.00	1.00	1.00	1.00	1.00									
67	Wind dir. red.	0.62	0.61	0.59	0.60	0.61	0.63									
68	Total reduction	0.17	0.17	0.17	0.14	0.12	0.07									
69	Total, real	77	86	35	25	103	41									

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		



### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: BF - H58  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:58 16:24	15:16 (15) 15:44 (15)	08:27 17:16	07:29 18:13	07:12 20:12	06:02 21:09	05:11 22:00	05:07 22:15	05:48 21:39	06:44 20:31	07:38 19:16	08:33 17:04
2	08:58 16:25	15:16 (15) 15:45 (15)	08:24 17:18	07:26 18:15	07:10 20:14	06:00 21:11	05:10 22:01	05:08 22:15	05:50 21:37	06:45 20:28	07:40 19:14	08:35 17:02
3	08:58 16:26	15:17 (15) 15:46 (15)	08:24 17:20	07:24 18:17	07:07 20:16	05:58 21:13	05:10 22:02	05:09 22:14	05:52 21:35	06:47 20:26	07:42 19:11	08:37 17:00
4	08:58 16:27	15:17 (15) 15:46 (15)	08:22 17:22	07:21 18:19	07:05 20:18	05:56 21:14	05:09 22:04	05:10 22:14	05:53 21:33	06:49 20:24	07:44 19:09	08:38 16:58
5	08:57 16:28	15:17 (15) 15:47 (15)	08:20 17:24	07:19 18:21	07:02 20:20	05:54 21:16	05:08 22:05	05:11 22:13	05:55 21:31	06:51 20:21	07:45 19:06	08:39 16:56
6	08:57 16:30	15:17 (15) 15:48 (15)	08:18 17:26	07:17 18:23	07:00 20:22	05:52 21:18	05:07 22:06	05:11 22:12	05:57 21:29	06:53 20:19	07:47 19:04	08:41 16:54
7	08:57 16:31	15:17 (15) 15:48 (15)	08:16 17:28	07:14 18:24	06:58 20:24	05:50 21:20	05:06 22:07	05:12 22:12	05:59 21:27	06:54 20:16	07:49 19:01	08:42 16:53
8	08:56 16:33	15:17 (15) 15:48 (15)	08:14 17:30	07:12 18:26	06:55 20:26	05:48 21:22	05:06 22:08	05:13 22:11	06:00 21:25	06:56 20:14	07:51 18:59	08:45 16:51
9	08:55 16:34	15:18 (15) 15:50 (15)	08:12 17:32	07:09 18:28	06:53 20:27	05:46 21:24	05:05 22:09	05:15 22:10	06:02 21:23	06:58 20:11	07:53 18:56	08:45 16:49
10	08:55 16:36	15:18 (15) 15:50 (15)	08:10 17:34	07:07 18:30	06:50 20:29	05:44 21:25	05:05 22:09	05:16 22:09	06:04 21:21	07:00 20:09	07:55 18:54	08:46 16:47
11	08:54 16:37	15:19 (15) 15:51 (15)	08:08 17:36	07:05 18:32	06:48 20:31	05:42 21:27	05:04 22:10	05:17 22:08	06:06 21:19	07:02 20:06	07:57 18:51	08:47 16:45
12	08:53 16:39	15:19 (15) 15:51 (15)	08:06 17:38	07:02 18:34	06:45 20:33	05:40 21:29	05:04 22:11	05:18 22:07	06:07 21:17	07:03 20:04	07:59 18:49	08:48 16:44
13	08:52 16:40	15:19 (15) 15:52 (15)	08:04 17:40	07:00 18:36	06:43 20:35	05:38 21:31	05:03 22:12	05:19 22:06	06:09 21:15	07:05 20:01	08:00 18:47	08:49 16:42
14	08:51 16:42	15:19 (15) 15:52 (15)	08:02 17:42	06:57 18:38	06:41 20:37	05:37 21:32	05:03 22:12	05:21 22:05	06:11 21:13	07:07 19:59	08:02 18:44	08:50 16:40
15	08:51 16:44	15:19 (15) 15:52 (15)	08:00 17:44	06:55 18:40	06:38 20:39	05:35 21:34	05:03 22:13	05:22 22:04	06:13 21:10	07:09 19:56	08:04 18:42	08:51 16:39
16	08:50 16:45	15:20 (15) 15:52 (15)	07:58 17:46	06:52 18:42	06:36 20:41	05:33 21:36	05:03 22:14	05:23 22:03	06:15 21:08	07:11 19:54	08:06 18:40	08:52 16:37
17	08:48 16:47	15:20 (15) 15:53 (15)	07:56 17:49	06:50 18:44	06:33 20:43	05:32 21:37	05:03 22:14	05:25 22:02	06:16 21:06	07:12 19:51	08:08 18:37	08:53 16:36
18	08:47 16:49	15:21 (15) 15:53 (15)	07:54 17:51	06:47 18:46	06:31 20:44	05:30 21:39	05:03 22:15	05:26 22:01	06:18 21:04	07:14 19:49	08:10 18:35	08:54 16:34
19	08:46 16:51	15:21 (15) 15:53 (15)	07:51 17:53	06:45 18:48	06:29 20:46	05:28 21:41	05:03 22:15	05:27 21:59	06:20 21:01	07:16 19:46	08:12 18:33	08:55 16:33
20	08:45 16:53	15:22 (15) 15:53 (15)	07:49 17:55	06:42 18:50	06:26 20:48	05:27 21:42	05:03 22:15	05:29 21:58	06:22 20:59	07:18 19:44	08:14 18:30	08:55 16:31
21	08:44 16:54	15:22 (15) 15:53 (15)	07:47 17:57	06:40 18:51	06:24 20:50	05:25 21:44	05:03 22:16	05:30 21:57	06:24 20:57	07:20 19:41	08:16 18:28	08:56 16:30
22	08:42 16:56	15:23 (15) 15:53 (15)	07:45 17:59	06:37 18:53	06:22 20:52	05:24 21:46	05:03 22:16	05:32 21:55	06:25 20:55	07:21 19:39	08:18 18:26	08:56 16:29
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26	08:37 17:04	15:26 (15) 15:52 (15)	07:36 18:07	06:27 19:01	06:13 20:59	05:18 21:52	05:04 22:16	05:38 21:49	06:33 20:45	07:29 19:28	08:25 18:17	08:58 16:24
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30	08:31 17:12	15:33 (15) 15:47 (15)	07:17 20:09	06:04 21:07	05:14 21:57	05:07 22:15	05:45 21:42	06:40 20:36	07:36 19:18	08:33 18:02	09:00 17:08	08:59 16:20
31	08:29 17:14	15:37 (15) 15:44 (15)	07:15 20:10	06:03 21:09	05:12 21:59	05:05 22:15	05:46 21:40	06:42 20:33	07:35 19:06	08:35 17:06	09:00 16:22	08:59 15:44
Potential sun hours	248		272	367	421	496	513	515	461	383	327	257
Total, worst case	880											906
Sun reduction	0.17											0.12
Oper. time red.	1.00											1.00
Wind dir. red.	0.63											0.63
Total reduction	0.11											0.08
Total, real	94										69	68

Table layout: For each day in each month the following matrix apply

Day in month Sun rise (hh:mm) Sun set (hh:mm) Minutes with flicker First time (hh:mm) with flicker Last time (hh:mm) with flicker (WTG causing flicker first time) (WTG causing flicker last time)





## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: BH - H60  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:58 16:24	08:27 17:16	07:29 18:13	07:13 20:12	06:02 21:09	05:12 22:00	05:08 22:15	05:48 21:38	06:44 20:31	07:38 19:16	07:37 17:05	08:33 16:19
2	08:58 16:25	08:25 17:18	07:26 18:15	07:10 20:14	06:00 21:11	05:11 22:01	05:09 22:14	05:50 21:37	06:46 20:28	07:40 19:14	07:39 17:03	08:35 16:19
3	08:58 16:26	08:24 17:20	07:24 18:17	07:08 20:16	05:58 21:12	05:10 22:02	05:09 22:14	05:52 21:35	06:47 20:26	07:42 19:11	07:41 17:01	08:36 16:18
4	08:58 16:28	08:22 17:22	07:22 18:19	07:05 20:18	05:56 21:14	05:09 22:03	05:10 22:13	05:54 21:33	06:49 20:24	07:44 19:09	07:43 16:59	08:38 16:17
5	08:57 16:29	08:20 17:24	07:19 18:21	07:03 20:20	05:54 21:16	05:08 22:04	05:11 22:13	05:55 21:31	06:51 20:21	07:45 19:06	07:45 16:57	08:39 16:17
6	08:57 16:30	08:18 17:26	07:17 18:23	07:00 20:22	05:52 21:18	05:08 22:05	05:12 22:12	05:57 21:29	06:53 20:19	07:47 19:04	07:47 16:55	08:41 16:16
7	08:56 16:32	08:16 17:28	07:14 18:25	06:58 20:24	05:50 21:20	05:07 22:06	05:13 22:11	05:59 21:27	06:55 20:16	07:49 19:01	07:49 16:53	08:42 16:15
8	08:56 16:33	08:14 17:30	07:12 18:27	06:55 20:26	05:48 21:22	05:06 22:07	05:14 22:11	06:01 21:25	06:56 20:14	07:51 18:59	07:51 16:51	08:43 16:15
9	08:55 16:34	08:12 17:32	07:09 18:29	06:53 20:27	05:46 21:23	05:06 22:08	05:15 22:10	06:02 21:23	06:58 20:11	07:53 18:57	07:53 16:49	08:45 16:15
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12	08:53 16:39	08:06 17:39	07:02 18:34	06:46 20:33	05:41 21:29	05:04 22:11	05:19 22:07	06:08 21:17	07:04 20:04	07:59 18:49	07:59 16:44	08:48 16:14
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15	08:50 16:44	08:00 17:45	06:55 18:40	06:38 20:39	05:35 21:34	05:03 22:13	05:22 22:04	06:13 21:10	07:09 19:56	08:04 18:42	08:05 16:39	08:51 16:14
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17	08:48 16:48	07:56 17:49	06:50 18:44	06:34 20:42	05:32 21:37	05:03 22:14	05:25 22:02	06:17 21:06	07:13 19:51	08:08 18:37	08:09 16:36	08:53 16:14
18	08:47 16:49	07:54 17:51	06:47 18:46	06:31 20:44	05:30 21:39	05:03 22:14	05:26 22:00	06:19 21:04	07:14 19:49	08:10 18:35	08:10 16:34	08:54 16:14
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20	08:45 16:53	07:49 17:55	06:42 18:50	06:27 20:48	05:27 21:42	05:03 22:15	05:29 21:58	06:22 20:59	07:18 19:44	08:14 18:31	08:14 16:32	08:55 16:15
21	08:44 16:55	07:47 17:57	06:40 18:52	06:24 20:50	05:26 21:44	05:03 22:15	05:31 21:56	06:24 20:57	07:20 19:41	08:16 18:28	08:16 16:30	08:56 16:15
22	08:42 16:57	07:45 17:59	06:37 18:53	06:22 20:52	05:24 21:45	05:04 22:15	05:32 21:55	06:26 20:55	07:22 19:39	08:18 18:26	08:18 16:29	08:56 16:16
23	08:41 16:58	07:42 18:01	06:35 18:55	06:20 20:54	05:23 21:47	05:04 22:16	05:34 21:53	06:28 20:52	07:23 19:36	08:20 18:24	08:20 16:28	08:57 16:16
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31	08:29 17:14	07:25 18:10	06:15 19:05	06:03 21:09	05:13 21:58	05:07 22:15	05:47 21:40	06:42 20:33	07:35 17:07	07:35 16:23	08:58 16:23	08:58 16:23
Potential sun hours	248	272	367	421	496	513	515	461	382	328	257	231
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: BI - H61

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.36	2.16	2.65	4.82	5.79	4.41	4.42	4.07	3.73	2.48	1.71	0.89

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:58 16:24	08:27 17:16	15:57 (1) 16:17 (1)	07:29 18:13	06:02 20:12	05:12 21:09	05:08 22:00	05:48 22:15	06:44 21:39	07:38 20:31	07:37 19:16	08:33 17:04
2	08:58 16:25	08:25 17:18	16:00 (1) 16:16 (1)	07:26 18:15	06:00 20:14	05:11 21:11	05:08 22:01	05:50 22:14	06:46 21:37	07:40 20:28	07:39 19:14	08:35 17:02
3	08:58 16:26	15:47 (1) 08:24	16:03 (1) 16:14 (1)	07:24 18:17	06:08 20:16	05:58 21:12	05:10 22:02	05:52 22:14	06:47 21:35	07:42 20:26	07:41 19:11	08:36 17:00
4	08:58 16:27	15:49 (1) 08:22	17:22	07:21 18:19	07:05 20:18	05:56 21:14	05:09 22:13	05:10 22:23	05:53 21:33	06:49 20:24	07:44 19:09	08:38 16:58
5	08:57 16:29	15:47 (1) 08:20	17:24	07:19 18:21	07:03 20:20	05:54 21:16	05:08 22:04	05:11 22:13	05:55 21:31	06:51 20:21	07:45 19:06	08:39 16:57
6	08:57 16:30	15:47 (1) 08:18	17:28	07:17 18:23	07:00 20:22	05:52 21:18	05:07 22:06	05:12 22:12	05:57 21:29	06:53 20:19	07:47 19:04	08:41 16:55
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11	08:54 16:37	15:47 (1) 08:08	17:36	07:05 18:32	06:48 20:31	05:42 21:27	05:05 22:10	05:17 22:08	06:06 21:19	07:02 20:06	07:57 18:52	08:47 16:45
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19	08:46 16:51	15:48 (1) 07:51	17:53	06:45 18:48	06:29 20:46	05:29 21:41	05:03 22:15	05:28 21:59	06:20 21:01	07:16 20:06	08:12 18:33	08:12 16:33
20	08:45 16:53	15:49 (1) 07:49	17:55	06:42 18:50	06:27 20:48	05:27 21:42	05:03 22:15	05:29 21:58	06:22 20:59	07:18 20:02	08:14 18:30	08:14 16:31
21	08:44 16:55	15:48 (1) 07:47	17:57	06:40 18:52	06:24 20:50	05:25 21:44	05:03 22:15	05:31 21:56	06:24 20:57	07:20 20:07	08:16 18:28	08:16 16:30
22	08:42 16:56	15:49 (1) 07:45	17:59	06:37 18:53	06:22 20:52	05:24 21:46	05:03 22:16	05:32 21:55	06:26 20:55	07:22 20:09	08:18 18:26	08:18 16:29
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26	08:37 17:04	15:51 (1) 07:36	18:07	06:27 19:01	06:13 20:59	05:19 21:52	05:05 22:16	05:38 21:49	06:33 20:45	07:29 20:09	08:25 18:24	08:25 16:24
27	08:35 17:06	15:52 (1) 07:33	18:09	06:25 19:03	06:11 21:01	05:17 21:53	05:05 22:16	05:40 21:47	06:35 20:43	07:31 20:06	08:27 18:29	08:27 16:23
28	08:34 17:08	15:53 (1) 07:31	18:11	06:22 19:05	06:09 21:03	05:16 21:54	05:06 22:16	05:42 21:46	06:36 20:40	07:32 20:04	08:28 18:24	08:28 16:22
29	08:32 17:10	15:54 (1) 07:30	18:11	07:20 20:07	06:06 21:05	05:15 21:56	05:06 22:15	05:43 21:44	06:38 20:38	07:34 20:04	08:30 18:24	08:30 16:21
30	08:30 17:12	15:55 (1) 07:30	18:11	07:17 20:09	06:04 21:07	05:14 21:57	05:07 22:15	05:45 21:42	06:40 20:36	07:36 20:04	08:32 18:24	08:32 16:20
31	08:29 17:14	15:56 (1) 07:30	18:11	07:15 20:10	05:13 21:58	05:13 22:15	05:07 22:15	05:47 21:40	06:42 20:33	07:35 20:06	08:33 18:24	08:33 16:21
Potential sun hours	248	272	367	421	496	513	515	461	382	257	568	231
Total, worst case	576	47									568	65
Sun reduction	0.17	0.22									0.20	0.12
Oper. time red.	1.00	1.00									1.00	1.00
Wind dir. red.	0.61	0.61									0.61	0.61
Total reduction	0.10	0.14									0.12	0.07
Total, real	60	6									70	5

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: BJ - H62

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

Table with 12 columns for months (January-December) and rows for 31 days. Columns contain time ranges and counts. Summary rows at the bottom include 'Potential sun hours', 'Total, worst case', 'Sun reduction', 'Oper. time red.', 'Wind dir. red.', 'Total reduction', and 'Total, real'.

Table layout: For each day in each month the following matrix apply

Day in month Sun rise (hh:mm) Sun set (hh:mm) Minutes with flicker First time (hh:mm) with flicker Last time (hh:mm) with flicker (WTG causing flicker first time) (WTG causing flicker last time)



### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case  
 Assumptions for shadow calculations

Shadow receptor: BK - H63

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June	July	August	September	October	November	December	
1	08:58 16:24	15:17 (1) 15:45 (1)	08:27 17:16	07:29 18:13									
2	08:58 16:25	15:18 (1) 15:47 (1)	08:25 17:18	07:26 18:15									
3	08:58 16:26	15:18 (1) 15:48 (1)	08:24 17:20	07:24 18:17									
4	08:58 16:27	15:19 (1) 15:49 (1)	08:22 17:22	07:22 18:19									
5	08:57 16:29	15:19 (1) 15:50 (1)	08:20 17:24	07:19 18:21									
6	08:57 16:30	15:20 (1) 15:52 (1)	08:18 17:26	07:17 18:23									
7	08:56 16:31	15:21 (1) 15:52 (1)	08:16 17:28	07:14 18:25									
8	08:56 16:33	15:21 (1) 15:52 (1)	08:14 17:30	07:12 18:27									
9	08:55 16:34	15:22 (1) 15:52 (1)	08:12 17:32	07:09 18:28									
10	08:55 16:36	15:23 (1) 15:53 (1)	08:10 17:34	07:07 18:30									
11	08:54 16:37	15:23 (1) 15:53 (1)	08:08 17:36	07:05 18:32									
12	08:53 16:39	15:24 (1) 15:53 (1)	08:06 17:38	07:02 18:34									
13	08:52 16:41	15:25 (1) 15:53 (1)	08:04 17:41	07:00 18:36									
14	08:51 16:42	15:25 (1) 15:52 (1)	08:02 17:43	06:57 18:38									
15	08:50 16:44	15:26 (1) 15:52 (1)	08:00 17:45	06:55 18:40									
16	08:49 16:46	15:27 (1) 15:52 (1)	07:58 17:47	06:52 18:42									
17	08:48 16:47	15:28 (1) 15:52 (1)	07:56 17:49	06:50 18:44									
18	08:47 16:49	15:30 (1) 15:52 (1)	07:54 17:51	06:47 18:46									
19	08:46 16:51	15:31 (1) 15:51 (1)	07:51 17:53	06:45 18:48									
20	08:45 16:53	15:33 (1) 15:50 (1)	07:49 17:55	06:42 18:50									
21	08:44 16:55	15:34 (1) 15:49 (1)	07:47 17:57	06:40 18:52									
22	08:42 16:56	15:38 (1) 15:47 (1)	07:45 17:59	06:37 18:53									
23	08:41 16:58		07:42 18:01	06:35 18:55									
24	08:40 17:00		07:40 18:03	06:32 18:57									
25	08:38 17:02		07:38 18:05	06:30 18:59									
26	08:37 17:04		07:36 18:07	06:27 19:01									
27	08:35 17:06		07:33 18:09	06:25 19:03									
28	08:34 17:08		07:31 18:11	06:22 19:05									
29	08:32 17:10		07:29 18:13	06:20 19:07									
30	08:30 17:12		07:27 18:15	06:18 19:09									
31	08:29 17:14		07:25 18:17	06:16 19:11									
Potential sun hours	248		272	367	421	496	513	515	461	382	328	257	231
Total, worst case	575			82						80		242	834
Sun reduction	0.17			0.22						0.29		0.20	0.12
Oper. time red.	1.00			1.00						1.00		1.00	1.00
Wind dir. red.	0.63			0.58						0.58		0.63	0.63
Total reduction	0.11			0.13						0.17		0.13	0.08
Total, real	61			11						14		30	63

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Assumptions for shadow calculations

Shadow receptor: BL - H64

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:58 16:24	08:27 17:16	07:29 18:13	07:12 20:12	06:02 21:09	05:11 22:00	05:07 22:15	21:01 (16) 21:39	05:48 20:31	06:44 19:16	07:38 17:04	07:37 16:19
2	08:58 16:25	08:25 17:18	07:26 18:15	07:10 20:14	06:00 21:11	05:11 22:01	05:08 22:14	21:02 (16) 21:37	05:50 20:28	06:45 19:14	07:40 17:02	07:39 16:18
3	08:58 16:26	08:24 17:20	07:24 18:17	07:07 20:16	05:58 21:12	05:10 22:02	05:09 22:14	21:03 (16) 21:35	05:52 20:26	06:47 19:11	07:42 17:00	07:41 16:17
4	08:58 16:27	08:22 17:22	07:21 18:19	07:05 20:18	05:56 21:14	05:09 22:03	05:10 22:13	21:03 (16) 21:33	05:53 20:23	06:49 19:09	07:43 16:58	07:43 16:17
5	08:57 16:28	08:20 17:24	07:19 18:21	07:02 20:20	05:54 21:16	05:08 22:05	05:11 22:13	21:05 (16) 21:31	05:55 20:21	06:51 19:06	07:45 16:56	07:45 16:16
6	08:57 16:30	08:18 17:26	07:17 18:23	07:00 20:22	05:52 21:18	05:07 22:06	05:12 22:12	21:06 (16) 21:29	05:57 20:19	06:53 19:04	07:47 16:54	07:47 16:16
7	08:56 16:31	08:16 17:28	07:14 18:24	06:58 20:24	05:50 21:20	05:07 22:07	05:13 22:12	21:08 (16) 21:14 (16)	05:59 20:16	06:54 19:01	07:49 16:53	07:49 16:15
8	08:56 16:33	08:14 17:30	07:12 18:26	06:55 20:25	05:48 21:22	05:06 22:08	05:14 22:11	21:11 (16) 21:11 (16)	06:00 21:25	06:56 20:14	07:51 18:59	07:51 16:51
9	08:55 16:34	08:12 17:32	07:09 18:28	06:53 20:27	05:46 21:23	05:05 22:09	05:15 22:10	20:58 (16) 21:13 (16)	06:02 21:23	06:58 20:11	07:53 18:56	07:53 16:49
10	08:55 16:36	08:10 17:34	07:07 18:30	06:50 20:29	05:44 21:25	05:05 22:09	05:16 22:09	20:57 (16) 21:13 (16)	06:04 21:21	07:00 20:09	07:55 18:54	07:55 16:47
11	08:54 16:37	08:08 17:36	07:04 18:32	06:48 20:31	05:42 21:27	05:04 22:10	05:17 22:08	20:57 (16) 21:14 (16)	06:06 21:19	07:02 20:06	07:57 18:51	07:57 16:45
12	08:53 16:39	08:06 17:38	07:02 18:34	06:45 20:33	05:40 21:29	05:04 22:11	05:18 22:07	20:57 (16) 21:15 (16)	06:07 21:17	07:03 20:04	07:58 18:49	07:59 16:44
13	08:52 16:40	08:04 17:40	07:00 18:36	06:43 20:35	05:38 21:31	05:04 22:12	05:19 22:06	20:56 (16) 21:15 (16)	06:09 21:15	07:05 20:01	08:00 18:47	08:01 16:42
14	08:51 16:42	08:02 17:42	06:57 18:38	06:41 20:37	05:37 21:32	05:03 22:12	05:21 22:05	20:56 (16) 21:16 (16)	06:11 21:12	07:07 19:59	08:02 18:44	08:03 16:40
15	08:50 16:44	08:00 17:44	06:55 18:40	06:38 20:39	05:35 21:34	05:03 22:13	05:22 22:04	20:56 (16) 21:16 (16)	06:13 21:10	07:09 19:56	08:04 18:42	08:05 16:39
16	08:49 16:45	07:58 17:46	06:52 18:42	06:36 20:41	05:33 21:36	05:03 22:14	05:23 22:03	20:56 (16) 21:17 (16)	06:15 21:08	07:11 19:54	08:06 18:40	08:07 16:37
17	08:48 16:47	07:56 17:49	06:50 18:44	06:33 20:42	05:32 21:37	05:03 22:14	05:25 22:02	20:57 (16) 21:17 (16)	06:16 21:06	07:12 19:51	08:08 18:37	08:09 16:36
18	08:47 16:49	07:54 17:51	06:47 18:46	06:31 20:44	05:30 21:39	05:03 22:14	05:26 22:01	20:57 (16) 21:18 (16)	06:18 21:04	07:14 19:49	08:10 18:35	08:11 16:34
19	08:46 16:51	07:51 17:53	06:45 18:48	06:29 20:46	05:28 21:41	05:03 22:15	05:27 21:59	20:57 (16) 21:18 (16)	06:20 21:01	07:16 19:46	08:12 18:33	08:12 16:33
20	08:45 16:53	07:49 17:55	06:42 18:50	06:26 20:48	05:27 21:42	05:03 22:15	05:29 21:58	20:57 (16) 21:18 (16)	06:22 20:59	07:18 19:44	08:14 18:30	08:14 16:31
21	08:44 16:54	07:47 17:57	06:40 18:51	06:24 20:50	05:25 21:44	05:03 22:15	05:30 21:56	20:57 (16) 21:18 (16)	06:24 20:57	07:20 19:41	08:16 18:28	08:16 16:30
22	08:42 16:56	07:45 17:59	06:37 18:53	06:22 20:52	05:24 21:46	05:03 22:16	05:32 21:55	20:58 (16) 21:19 (16)	06:25 20:55	07:21 19:39	08:18 18:26	08:18 16:29
23	08:41 16:58	07:42 18:01	06:35 18:55	06:20 20:54	05:22 21:47	05:03 22:16	05:33 21:54	20:58 (16) 21:19 (16)	06:27 20:52	07:23 19:36	08:20 18:24	08:20 16:27
24	08:40 17:00	07:40 18:03	06:32 18:57	06:17 20:56	05:21 21:49	05:04 22:16	05:35 21:52	20:58 (16) 21:19 (16)	06:29 20:50	07:25 19:33	08:22 18:21	08:22 16:26
25	08:38 17:02	07:38 18:05	06:30 18:59	06:15 20:58	05:20 21:50	05:04 22:16	05:37 21:50	20:59 (16) 21:19 (16)	06:31 20:48	07:27 19:31	08:23 17:19	08:23 16:25
26	08:37 17:04	07:36 18:07	06:27 19:01	06:13 20:59	05:18 21:52	05:04 22:16	05:38 21:49	20:59 (16) 21:19 (16)	06:33 20:45	07:29 19:28	08:25 17:17	08:25 16:24
27	08:35 17:06	07:33 18:09	06:25 19:03	06:11 21:01	05:17 21:53	05:05 22:16	05:40 21:47	20:59 (16) 21:20 (16)	06:35 20:43	07:31 19:26	08:27 17:15	08:27 16:23
28	08:34 17:08	07:31 18:11	06:22 19:05	06:08 21:03	05:16 21:55	05:05 22:16	05:41 21:46	20:59 (16) 21:19 (16)	06:36 20:40	07:32 19:23	08:29 17:13	08:28 16:22
29	08:32 17:10	07:20 18:07	06:06 20:07	05:06 21:05	05:15 21:56	05:06 22:15	05:43 21:44	21:00 (16) 21:19 (16)	06:38 20:38	07:34 19:21	08:31 17:11	08:30 16:21
30	08:30 17:12	07:17 18:08	05:07 20:08	05:14 21:07	05:07 21:57	05:07 22:15	05:45 21:42	21:00 (16) 21:19 (16)	06:40 20:36	07:36 19:18	08:33 17:08	08:32 16:20
31	08:29 17:14	07:15 18:10	05:13 20:10	05:13 21:59	05:13 21:59	05:13 21:59	05:46 21:40	05:46 20:33	06:42 20:33	07:35 17:06	08:35 16:22	08:58 16:22
Potential sun hours	248	272	367	421	496	513	515	461	383	328	257	231
Total, worst case							468					
Sun reduction							0.26					
Oper. time red.							1.00					
Wind dir. red.							0.63					
Total reduction							0.16					
Total, real							76					

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)





## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: BM - H65

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:58 16:24	08:27 17:16	07:29 18:13	07:13 20:12	06:02 21:09	05:12 22:00	05:08 22:15	05:49 21:39	06:44 20:31	07:38 19:16	07:37 17:05	08:33 16:19
2	08:58 16:25	08:25 17:18	07:26 18:15	07:10 20:14	06:00 21:11	05:11 22:01	05:09 22:14	05:50 21:37	06:46 20:28	07:40 19:14	07:39 17:03	08:35 16:19
3	08:58 16:26	08:24 17:20	07:24 18:17	07:08 20:16	05:58 21:12	05:10 22:02	05:09 22:14	05:52 21:35	06:47 20:26	07:42 19:11	07:41 17:01	08:36 16:18
4	08:58 16:28	08:22 17:22	07:22 18:19	07:05 20:18	05:56 21:14	05:09 22:03	05:10 22:13	05:54 21:33	06:49 20:24	07:44 19:09	07:43 16:59	08:38 16:17
5	08:57 16:29	08:20 17:24	07:19 18:21	07:03 20:20	05:54 21:16	05:08 22:04	05:11 22:13	05:55 21:31	06:51 20:21	07:45 19:06	07:45 16:57	08:39 16:17
6	08:57 16:30	08:18 17:26	07:17 18:23	07:00 20:22	05:52 21:18	05:08 22:05	05:12 22:12	05:57 21:29	06:53 20:19	07:47 19:04	07:47 16:55	08:41 16:16
7	08:56 16:32	08:16 17:28	07:14 18:25	06:58 20:24	05:50 21:20	05:07 22:06	05:13 22:11	05:59 21:27	06:55 20:16	07:49 19:01	07:49 16:53	08:42 16:16
8	08:56 16:33	08:14 17:30	07:12 18:27	06:55 20:26	05:48 21:22	05:06 22:07	05:14 22:11	06:01 21:25	06:56 20:14	07:51 18:59	07:51 16:51	08:43 16:15
9	08:55 16:35	08:12 17:32	07:10 18:29	06:53 20:27	05:46 21:23	05:06 22:08	05:15 22:10	06:02 21:23	06:58 20:11	07:53 18:57	07:53 16:49	08:45 16:15
10	08:55 16:36	08:10 17:35	07:07 18:31	06:51 20:29	05:44 21:25	05:05 22:09	05:16 22:09	06:04 21:21	07:00 20:09	07:55 18:54	07:55 16:47	08:46 16:14
11	08:54 16:38	08:08 17:37	07:05 18:32	06:48 20:31	05:43 21:27	05:05 22:10	05:17 22:08	06:06 21:19	07:02 20:06	07:57 18:52	07:57 16:46	08:47 16:14
12	08:53 16:39	08:06 17:39	07:02 18:34	06:46 20:33	05:41 21:29	05:04 22:11	05:19 22:07	06:08 21:17	07:04 20:04	07:59 18:49	07:59 16:44	08:48 16:14
13	08:52 16:41	08:04 17:41	07:00 18:36	06:43 20:35	05:39 21:30	05:04 22:12	05:20 22:06	06:10 21:15	07:05 20:01	08:00 18:47	08:01 16:42	08:49 16:14
14	08:51 16:42	08:02 17:43	06:57 18:38	06:41 20:37	05:37 21:32	05:04 22:12	05:21 22:05	06:11 21:12	07:07 19:59	08:02 18:45	08:03 16:41	08:50 16:14
15	08:50 16:44	08:00 17:45	06:55 18:40	06:39 20:39	05:35 21:34	05:04 22:13	05:22 22:04	06:13 21:10	07:09 19:56	08:04 18:42	08:05 16:39	08:51 16:14
16	08:49 16:46	07:58 17:47	06:52 18:42	06:36 20:41	05:34 21:36	05:03 22:13	05:24 22:03	06:15 21:08	07:11 19:54	08:06 18:40	08:07 16:37	08:52 16:14
17	08:48 16:48	07:56 17:49	06:50 18:44	06:34 20:43	05:32 21:37	05:03 22:14	05:25 22:02	06:17 21:06	07:13 19:51	08:08 18:38	08:09 16:36	08:53 16:14
18	08:47 16:49	07:54 17:51	06:47 18:46	06:31 20:44	05:30 21:39	05:03 22:14	05:26 22:00	06:19 21:04	07:14 19:49	08:10 18:35	08:11 16:34	08:54 16:14
19	08:46 16:51	07:51 17:53	06:45 18:48	06:29 20:46	05:29 21:41	05:03 22:15	05:28 21:59	06:20 21:01	07:16 19:46	08:12 18:33	08:12 16:33	08:54 16:15
20	08:45 16:53	07:49 17:55	06:42 18:50	06:27 20:48	05:27 21:42	05:03 22:15	05:29 21:58	06:22 20:59	07:18 19:44	08:14 18:31	08:14 16:32	08:55 16:15
21	08:44 16:55	07:47 17:57	06:40 18:52	06:24 20:50	05:26 21:44	05:03 22:15	05:31 21:56	06:24 20:57	07:20 19:41	08:16 18:28	08:16 16:30	08:56 16:15
22	08:42 16:57	07:45 17:59	06:37 18:53	06:22 20:52	05:24 21:45	05:04 22:15	05:32 21:55	06:26 20:55	07:22 19:39	08:18 18:26	08:18 16:29	08:56 16:16
23	08:41 16:59	07:43 18:01	06:35 18:55	06:20 20:54	05:23 21:47	05:04 22:16	05:34 21:53	06:28 20:52	07:23 19:36	08:20 18:24	08:20 16:28	08:57 16:16
24	08:40 17:00	07:40 18:03	06:32 18:57	06:18 20:56	05:21 21:49	05:04 22:16	05:35 21:52	06:29 20:50	07:25 19:34	08:22 18:22	08:22 16:26	08:57 16:17
25	08:38 17:02	07:38 18:05	06:30 18:59	06:15 20:58	05:20 21:50	05:04 22:16	05:37 21:50	06:31 20:48	07:27 19:31	07:24 17:19	08:23 16:25	08:57 16:18
26	08:37 17:04	07:36 18:07	06:29 19:01	06:13 20:59	05:19 21:52	05:05 22:16	05:39 21:49	06:33 20:45	07:29 19:29	07:26 17:17	08:25 16:24	08:58 16:18
27	08:35 17:06	07:33 18:09	06:25 19:03	06:11 21:01	05:18 21:53	05:05 22:16	05:40 21:47	06:35 20:43	07:31 19:26	07:28 17:15	08:27 16:23	08:58 16:19
28	08:34 17:08	07:31 18:11	06:23 19:05	06:09 21:03	05:16 21:54	05:06 22:15	05:42 21:46	06:37 20:41	07:33 19:24	07:29 17:13	08:28 16:22	08:58 16:20
29	08:32 17:10	07:29 18:07	06:20 19:01	06:07 21:05	05:15 21:56	05:06 22:15	05:43 21:44	06:38 20:38	07:34 19:21	07:31 17:11	08:30 16:21	08:58 16:21
30	08:30 17:12	07:27 18:04	06:18 19:01	06:05 21:07	05:14 21:57	05:07 22:15	05:45 21:42	06:40 20:36	07:36 19:19	07:33 17:09	08:32 16:20	08:58 16:22
31	08:29 17:14	07:25 18:01	06:15 19:01	06:10 21:07	05:13 21:58	05:07 22:15	05:47 21:40	06:42 20:33	07:35 17:07	07:35 16:23	08:58 16:23	
Potential sun hours	248	272	367	421	496	513	515	461	382	328	257	231
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: BN - H66  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January	February	March	April	May	June										
1	08:58 16:24	08:27 17:16	16:09 (7) 18:13	07:29 18:13	16:52 (8) 20:12	07:12 20:12	06:02 21:09									21:16 (11)
2	08:58 16:25	08:25 17:18	16:09 (7) 18:15	07:26 18:15	16:52 (8) 20:14	07:10 20:14	06:00 21:11									21:15 (11)
3	08:58 16:26	08:24 17:20	16:09 (7) 18:17	07:24 18:17	16:54 (8) 20:16	07:07 20:16	05:58 21:12									21:15 (11)
4	08:58 16:27	08:22 17:22	16:09 (7) 18:19	07:21 18:19	16:56 (8) 20:18	07:05 20:18	05:56 21:14		8	20:34 (10)						21:15 (11)
5	08:57 16:29	08:20 17:24	16:09 (7) 18:21	07:19 18:21	17:00 (8) 20:20	07:03 20:20	05:54 21:16		12	20:33 (10)						21:15 (11)
6	08:57 16:30	08:18 17:26	16:10 (7) 18:23	07:17 18:23	17:06 (8) 20:22	07:00 20:22	05:52 21:18		16	20:31 (10)						21:14 (11)
7	08:56 16:31	08:16 17:28	16:11 (7) 18:25	07:14 18:25			05:50 21:20			20:47 (10)						21:30 (11)
8	08:56 16:33	08:14 17:30	16:11 (7) 18:26	07:12 18:26			05:48 21:22		18	20:40 (10)						21:15 (11)
9	08:55 16:34	08:12 17:32	16:12 (7) 18:28	07:09 18:28			05:46 21:23		19	20:48 (10)						21:14 (11)
10	08:55 16:36	08:10 17:34	16:13 (7) 18:30	07:07 18:30			05:44 21:25		21	20:49 (10)						21:32 (11)
11	08:54 16:37	08:08 17:36	16:15 (7) 18:32	07:05 18:32			05:42 21:27		22	20:49 (10)						21:32 (11)
12	08:53 16:39	08:06 17:38	16:18 (7) 18:34	07:02 18:34			05:40 21:29		23	20:50 (10)						21:14 (11)
13	08:52 16:40	08:04 17:40	16:27 (7) 18:36	07:00 18:36			05:39 21:31		23	20:50 (10)						21:15 (11)
14	08:51 16:42	08:02 17:42	16:59 (8) 18:38	06:57 18:38			05:37 21:33		23	20:49 (10)						21:15 (11)
15	08:50 16:44	08:00 17:45	16:56 (8) 18:40	06:55 18:40			05:35 21:34		23	20:50 (10)						21:15 (11)
16	08:49 16:45	07:58 17:47	16:54 (8) 18:42	06:52 18:42			05:33 21:36		23	20:49 (10)						21:15 (11)
17	08:48 16:47	07:56 17:49	16:53 (8) 18:44	06:50 18:44			05:32 21:37		23	20:50 (10)						21:15 (11)
18	08:47 16:49	07:54 17:51	16:53 (8) 18:46	06:47 18:46			05:30 21:39		22	20:48 (9)						21:15 (11)
19	08:46 16:51	07:51 17:53	16:51 (8) 18:48	06:45 18:48			05:28 21:41		21	20:49 (10)						21:16 (11)
20	08:45 16:53	07:49 17:55	16:51 (8) 18:50	06:42 18:50			05:27 21:42		21	20:48 (10)						21:16 (11)
21	08:44 16:54	07:47 17:57	16:50 (8) 18:51	06:40 18:51			05:25 21:44		20	20:48 (10)						21:16 (11)
22	08:42 16:56	07:45 17:59	16:49 (8) 18:53	06:37 18:53			05:24 21:46		19	20:49 (10)						21:17 (11)
23	08:41 16:58	16:15 (7) 16:23 (7)	07:42 18:01	16:50 (8) 18:55			05:22 21:47		18	20:47 (10)						21:17 (11)
24	08:40 17:00	8 16:13 (7) 16:26 (7)	07:40 18:03	16:50 (8) 18:57			05:21 21:49		15	20:46 (10)						21:17 (11)
25	08:38 17:02	16:12 (7) 16:28 (7)	07:38 18:05	16:49 (8) 18:59			05:20 21:50		14	20:46 (10)						21:17 (11)
26	08:37 17:04	16:10 (7) 16:29 (7)	07:36 18:07	16:50 (8) 19:01			05:18 21:52		12	20:45 (10)						21:17 (11)
27	08:35 17:06	19 16:10 (7) 16:31 (7)	07:33 18:09	16:50 (8) 19:03			05:17 21:53		9	20:44 (10)						21:18 (11)
28	08:34 17:08	21 16:10 (7) 16:32 (7)	07:31 18:11	16:51 (8) 19:05			05:16 21:55		3	20:41 (10)						21:18 (11)
29	08:32 17:10	22 16:09 (7) 16:32 (7)	07:29 20:07	17:17 (8) 20:07			05:15 21:56		2	21:20 (11)						21:18 (11)
30	08:31 17:12	23 16:09 (7) 16:33 (7)	07:17 20:09	07:17 20:09			05:14 21:57		2	21:22 (11)						21:18 (11)
31	08:29 17:14	24 16:08 (7) 16:33 (7)	07:15 20:10	07:15 20:10			05:13 21:59		5	21:23 (11)						21:18 (11)
Potential sun hours	248	272	367	421	496	513										
Total, worst case	171	647	85	297	442	518										
Sun reduction	0.17	0.22	0.22	0.34	0.36	0.26										
Oper. time red.	1.00	1.00	1.00	1.00	1.00	1.00										
Wind dir. red.	0.60	0.59	0.58	0.59	0.62	0.63										
Total reduction	0.10	0.13	0.13	0.20	0.22	0.16										
Total, real	17	85	11	60	99	84										

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: BN - H66  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	July	August	September	October	November	December								
1	05:07	21:19 (11)	05:48	20:37 (10)	06:44	07:38								
	22:15	18	21:37 (11)	21:39	23	21:00 (10)	20:31	19:16	17:04	19	16:01 (7)	16:19		
2	05:08	21:19 (11)	05:50	20:38 (10)	06:45	07:40								
	22:14	18	21:37 (11)	21:37	22	21:00 (10)	20:28	19:14	17:02	21	16:02 (7)	16:18		
3	05:09	21:20 (11)	05:52	20:37 (10)	06:47	07:42								
	22:14	18	21:38 (11)	21:35	22	20:59 (10)	20:26	19:11	17:00	22	16:02 (7)	16:18		
4	05:10	21:19 (11)	05:53	20:38 (10)	06:49	07:44								
	22:13	18	21:37 (11)	21:33	21	20:59 (10)	20:24	19:09	16:58	24	16:04 (7)	16:17		
5	05:11	21:20 (11)	05:55	20:39 (10)	06:51	07:45								
	22:13	17	21:37 (11)	21:31	19	20:58 (10)	20:21	19:06	16:56	24	16:04 (7)	16:16		
6	05:12	21:20 (11)	05:57	20:39 (10)	06:53	07:47								
	22:12	16	21:36 (11)	21:29	18	20:57 (10)	20:19	19:04	16:55	26	16:05 (7)	16:16		
7	05:13	21:21 (11)	05:59	20:41 (10)	06:54	07:49								
	22:12	15	21:36 (11)	21:27	15	20:56 (10)	20:16	19:01	16:53	26	16:05 (7)	16:15		
8	05:14	21:21 (11)	06:00	20:43 (10)	06:56	07:51								
	22:11	14	21:35 (11)	21:25	11	20:54 (10)	20:14	18:59	16:51	26	16:05 (7)	16:15		
9	05:15	21:22 (11)	06:02	20:45 (10)	06:58	07:53								
	22:10	12	21:34 (11)	21:23	6	20:51 (10)	20:11	18:56	11	17:44 (8)	16:49	25	16:04 (7)	16:14
10	05:16	21:23 (11)	06:04	20:51 (10)	07:00	07:55								
	22:09	11	21:34 (11)	21:21		20:09	18:54	16	17:46 (8)	16:47	25	16:05 (7)	16:14	
11	05:17	21:23 (11)	06:06	20:09	07:02	07:57								
	22:08	10	21:33 (11)	21:19		20:06	18:52	21	17:48 (8)	16:45	25	16:05 (7)	16:14	
12	05:18	21:24 (11)	06:08	20:07	07:03	07:59								
	22:07	8	21:32 (11)	21:17		20:04	18:49	23	17:49 (8)	16:44	25	16:05 (7)	16:14	
13	05:19	21:25 (11)	06:09	20:05	07:05	08:00								
	22:06	6	21:31 (11)	21:15		20:01	18:47	26	17:50 (8)	16:42	23	16:04 (7)	16:14	
14	05:21	21:27 (11)	06:11	20:07	07:07	08:02								
	22:05	4	21:31 (11)	21:13		19:59	18:44	27	17:50 (8)	16:40	21	16:03 (7)	16:13	
15	05:22		06:13	20:09	07:09	08:04								
	22:04		21:10	19:56	18:42	29	17:51 (8)	16:39	21	16:03 (7)	16:13			
16	05:23		06:15	19:58 (9)	07:11	08:06								
	22:03		21:08	9	20:07 (9)	19:54	18:40	29	17:51 (8)	16:37	19	16:02 (7)	16:14	
17	05:25	20:45 (10)	06:17	19:56 (9)	07:13	08:08								
	22:02	6	20:51 (10)	21:06	13	20:09 (9)	19:51	18:37	30	17:51 (8)	16:36	16	16:02 (7)	16:14
18	05:26	20:44 (10)	06:18	19:53 (9)	07:14	08:10								
	22:01	10	20:54 (10)	21:04	17	20:10 (9)	19:49	18:35	30	17:51 (8)	16:34	13	16:00 (7)	16:14
19	05:28	20:42 (10)	06:20	19:52 (9)	07:16	08:12								
	21:59	13	20:55 (10)	21:01	19	20:11 (9)	19:46	18:33	30	17:51 (8)	16:33	8	15:58 (7)	16:14
20	05:29	20:41 (10)	06:22	19:52 (9)	07:18	08:14								
	21:58	15	20:56 (10)	20:59	20	20:12 (9)	19:44	18:30	29	17:50 (8)	16:31		16:15	
21	05:30	20:41 (10)	06:24	19:50 (9)	07:20	08:16								
	21:56	16	20:57 (10)	20:57	22	20:12 (9)	19:41	18:28	29	17:50 (8)	16:30		16:15	
22	05:32	20:39 (10)	06:26	19:50 (9)	07:22	08:18								
	21:55	19	20:58 (10)	20:55	22	20:12 (9)	19:39	18:26	28	17:49 (8)	16:29		16:15	
23	05:34	20:39 (10)	06:27	19:49 (9)	07:23	08:20								
	21:54	20	20:59 (10)	20:52	23	20:12 (9)	19:36	18:24	26	17:48 (8)	16:27		16:16	
24	05:35	20:38 (10)	06:29	19:49 (9)	07:25	08:22								
	21:52	21	20:59 (10)	20:50	24	20:13 (9)	19:34	18:21	25	17:47 (8)	16:26		16:17	
25	05:37	20:38 (10)	06:31	19:48 (9)	07:27	07:24								
	21:51	21	20:59 (10)	20:48	23	20:11 (9)	19:31	17:19	23	16:46 (8)	16:25		16:17	
26	05:38	20:38 (10)	06:33	19:49 (9)	07:29	07:26								
	21:49	22	21:00 (10)	20:45	22	20:11 (9)	19:29	17:17	20	16:44 (8)	16:24		16:18	
27	05:40	20:37 (10)	06:35	19:49 (9)	07:31	07:27								
	21:47	23	21:00 (10)	20:43	22	20:11 (9)	19:26	17:15	16	16:42 (8)	16:23		16:19	
28	05:42	20:37 (10)	06:36	19:49 (9)	07:32	07:29								
	21:46	23	21:00 (10)	20:40	20	20:09 (9)	19:24	17:13	11	16:40 (8)	16:22		16:19	
29	05:43	20:37 (10)	06:38	19:50 (9)	07:34	07:31								
	21:44	23	21:00 (10)	20:38	18	20:08 (9)	19:21	17:11		16:21			16:20	
30	05:45	20:37 (10)	06:40	19:51 (9)	07:36	07:33								
	21:42	23	21:00 (10)	20:36	15	20:06 (9)	19:19	17:09	11	15:58 (7)	16:20		16:21	
31	05:47	20:37 (10)	06:42	19:53 (9)		07:35	15:44 (7)						16:21	
	21:40	24	21:01 (10)	20:33	11	20:04 (9)		17:06	16	16:00 (7)			16:22	
Potential sun hours	515		461		382	328		257		231				
Total, worst case		464		457		506		409						
Sun reduction		0.27		0.27		0.23		0.20						
Oper. time red.		1.00		1.00		1.00		1.00						
Wind dir. red.		0.63		0.60		0.58		0.60						
Total reduction		0.17		0.16		0.14		0.12						
Total, real		77		75		69		49						

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)



## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: BO - H67

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June
1	08:58 16:24	08:27 17:16 28	15:56 (16) 16:24 (16) 18:13	07:29 17:23 (15) 29	16:54 (15) 17:23 (15) 20:12	06:02 21:09 22:00
2	08:58 16:25	08:25 17:18 28	15:56 (16) 16:24 (16) 18:15	07:26 17:22 (15) 28	16:54 (15) 17:22 (15) 20:14	06:00 21:11 22:01
3	08:58 16:26	08:24 17:20 28	15:56 (16) 16:24 (16) 18:17	07:24 17:22 (15) 28	16:54 (15) 17:22 (15) 20:16	05:58 21:13 22:02
4	08:58 16:27	08:22 17:22 27	15:57 (16) 16:24 (16) 18:19	07:21 17:21 (15) 27	16:54 (15) 17:21 (15) 20:18	05:56 21:14 22:03
5	08:57 16:28	08:20 17:24 26	15:57 (16) 16:23 (16) 18:21	07:19 17:20 (15) 24	16:56 (15) 17:20 (15) 20:20	05:54 21:16 22:05
6	08:57 16:30	08:18 17:26 25	15:58 (16) 16:23 (16) 18:23	07:17 17:18 (15) 22	16:56 (15) 17:18 (15) 20:22	05:52 21:18 22:06
7	08:56 16:31	08:16 17:28 23	15:59 (16) 16:22 (16) 18:24	07:14 17:17 (15) 19	16:58 (15) 17:17 (15) 20:24	05:50 21:20 22:07
8	08:56 16:33	08:14 17:30 22	16:00 (16) 16:22 (16) 18:26	07:12 17:14 (15) 14	17:00 (15) 20:25 21:22	05:48 22:08 22:08
9	08:55 16:34	08:12 17:32 20	16:00 (16) 16:20 (16) 18:28	07:09 17:09 (15) 4	17:05 (15) 20:27 21:23	05:46 22:09 22:09
10	08:55 16:36	08:10 17:34 17	16:02 (16) 16:19 (16) 18:30	07:07 18:30	06:50 20:29 21:25	05:44 22:09 22:09
11	08:54 16:37	08:08 17:36 12	16:05 (16) 16:17 (16) 18:32	07:05 18:32	06:48 20:31 21:27	05:42 22:10 22:10
12	08:53 16:39	08:06 17:38 2	16:10 (16) 16:12 (16) 18:34	07:02 18:34	06:45 20:33 21:29	05:40 22:11 22:11
13	08:52 16:40	08:04 17:40	07:00 18:36	06:43 20:35 21:31	05:38 21:31 22:12	05:03 22:12 22:12
14	08:51 16:42	08:02 17:42	06:57 18:38	06:41 20:37 21:32	05:37 21:32 22:12	05:03 22:12 22:12
15	08:51 16:44	08:00 17:44	06:55 18:40	06:38 20:39 21:34	05:35 21:34 22:13	05:03 22:13 22:13
16	08:50 16:45	07:58 17:46	06:52 18:42	06:36 20:41 21:36	05:33 21:36 22:14	05:03 22:14 22:14
17	08:48 16:47	07:56 17:48	06:50 18:44	06:33 20:42 21:37	05:32 21:37 22:14	05:03 22:14 22:14
18	08:47 16:49	07:54 17:51 9	17:05 (15) 17:14 (15) 18:46	06:47 17:14 (15) 18:46	06:31 20:44 21:39	05:30 22:15 22:15
19	08:46 16:51	07:51 17:53 15	17:02 (15) 17:17 (15) 18:48	06:45 17:17 (15) 18:48	06:29 20:46 21:41	05:28 22:15 22:15
20	08:45 16:52	16:03 (16) 07:49 7	17:00 (15) 17:19 (15) 18:50	06:42 17:19 (15) 18:50	06:26 20:48 21:42	05:27 22:15 22:15
21	08:44 16:54	16:10 (16) 16:01 (16) 17:55	17:07 16:59 (15) 18:50	06:40 17:21 (15) 18:51	06:24 20:50 21:44	05:25 22:16 22:16
22	08:42 16:56	16:00 (16) 16:15 (16) 17:59	07:45 17:21 (15) 18:53	06:37 16:57 (15) 18:53	06:22 20:52 21:46	05:24 22:16 22:16
23	08:41 16:58	15:58 (16) 16:16 (16) 18:01	07:42 16:56 (15) 18:55	06:35 17:22 (15) 18:55	06:20 20:54 21:47	05:22 22:16 22:16
24	08:40 17:00	15:58 (16) 16:18 (16) 18:03	07:40 16:56 (15) 18:57	06:32 17:23 (15) 18:57	06:17 20:56 21:49	05:21 22:16 22:16
25	08:38 17:02	15:57 (16) 16:19 (16) 18:05	07:38 16:54 (15) 18:59	06:30 17:23 (15) 18:59	06:15 20:58 21:50	05:20 22:16 22:16
26	08:37 17:04	22 15:56 (16) 16:19 (16) 18:07	07:36 16:54 (15) 19:01	06:27 17:24 (15) 19:01	06:13 20:59 21:52	05:18 22:16 22:16
27	08:35 17:06	23 15:57 (16) 16:21 (16) 18:09	07:33 16:53 (15) 19:03	06:25 17:23 (15) 19:03	06:11 21:01 21:53	05:17 22:16 22:16
28	08:34 17:08	24 15:56 (16) 16:22 (16) 18:11	07:31 16:54 (15) 19:05	06:22 17:23 (15) 19:05	06:08 21:03 21:55	05:16 22:16 22:16
29	08:32 17:10	26 15:56 (16) 16:22 (16)	07:20 20:07	06:06 21:05 21:56	05:15 21:56 22:15	05:06 22:15 22:15
30	08:31 17:12	27 15:55 (16) 16:22 (16)	07:17 20:08	06:04 21:07 21:57	05:14 21:57 22:15	05:07 22:15 22:15
31	08:29 17:14	27 15:55 (16) 16:22 (16)	07:15 20:10	05:12 21:59	05:12 21:59	22:15 22:15
Potential sun hours	248	272	367	421	496	513
Total, worst case	246	518	195			
Sun reduction	0.17	0.22	0.22			
Oper. time red.	1.00	1.00	1.00			
Wind dir. red.	0.61	0.60	0.58			
Total reduction	0.10	0.13	0.13			
Total, real	26	69	25			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: BO - H67  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	July	August	September	October	November	December
1	05:07	05:48	06:44	07:38	07:37	15:31 (16) 08:33
	22:15	21:39	20:31	19:16	17:04	17 15:48 (16) 16:19
2	05:08	05:50	06:45	07:40	07:39	15:30 (16) 08:35
	22:14	21:37	20:28	19:14	17:02	20 15:50 (16) 16:18
3	05:09	05:52	06:47	07:42	07:41	15:28 (16) 08:36
	22:14	21:35	20:26	19:11	17:00	23 15:51 (16) 16:17
4	05:10	05:53	06:49	07:43	07:43	15:28 (16) 08:38
	22:14	21:33	20:23	19:09	16:58	24 15:52 (16) 16:17
5	05:11	05:55	06:51	07:45	17:39 (15)	07:45 15:28 (16) 08:39
	22:13	21:31	20:21	19:06	10 17:49 (15)	16:56 25 15:53 (16) 16:16
6	05:11	05:57	06:53	07:47	17:35 (15)	07:47 15:27 (16) 08:41
	22:12	21:29	20:19	19:04	17 17:52 (15)	16:54 26 15:53 (16) 16:16
7	05:12	05:59	06:54	07:49	17:33 (15)	07:49 15:27 (16) 08:42
	22:12	21:27	20:16	19:01	20 17:53 (15)	16:53 26 15:53 (16) 16:15
8	05:13	06:00	06:56	07:51	17:31 (15)	07:51 15:26 (16) 08:43
	22:11	21:25	20:14	18:59	24 17:55 (15)	16:51 27 15:53 (16) 16:15
9	05:15	06:02	06:58	07:53	17:30 (15)	07:53 15:26 (16) 08:45
	22:10	21:23	20:11	18:56	25 17:55 (15)	16:49 28 15:54 (16) 16:14
10	05:16	06:04	07:00	07:55	17:29 (15)	07:55 15:27 (16) 08:46
	22:09	21:21	20:09	18:54	27 17:56 (15)	16:47 27 15:54 (16) 16:14
11	05:17	06:06	07:02	07:57	17:28 (15)	07:57 15:27 (16) 08:47
	22:08	21:19	20:06	18:51	28 17:56 (15)	16:45 27 15:54 (16) 16:14
12	05:18	06:07	07:03	07:58	17:28 (15)	07:59 15:27 (16) 08:48
	22:07	21:17	20:04	18:49	29 17:57 (15)	16:44 27 15:54 (16) 16:13
13	05:19	06:09	07:05	08:00	17:27 (15)	08:01 15:28 (16) 08:49
	22:06	21:15	20:01	18:47	30 17:57 (15)	16:42 26 15:54 (16) 16:13
14	05:21	06:11	07:07	08:02	17:27 (15)	08:03 15:28 (16) 08:50
	22:05	21:13	19:59	18:44	29 17:56 (15)	16:40 25 15:53 (16) 16:13
15	05:22	06:13	07:09	08:04	17:27 (15)	08:05 15:29 (16) 08:51
	22:04	21:10	19:56	18:42	29 17:56 (15)	16:39 24 15:53 (16) 16:13
16	05:23	06:15	07:11	08:06	17:27 (15)	08:07 15:29 (16) 08:52
	22:03	21:08	19:54	18:40	29 17:56 (15)	16:37 23 15:52 (16) 16:13
17	05:25	06:16	07:12	08:08	17:27 (15)	08:09 15:31 (16) 08:53
	22:02	21:06	19:51	18:37	28 17:55 (15)	16:36 22 15:53 (16) 16:14
18	05:26	06:18	07:14	08:10	17:27 (15)	08:11 15:32 (16) 08:54
	22:01	21:04	19:49	18:35	27 17:54 (15)	16:34 20 15:52 (16) 16:14
19	05:27	06:20	07:16	08:12	17:28 (15)	08:12 15:33 (16) 08:55
	21:59	21:01	19:46	18:33	25 17:53 (15)	16:33 18 15:51 (16) 16:14
20	05:29	06:22	07:18	08:14	17:28 (15)	08:14 15:35 (16) 08:55
	21:58	20:59	19:44	18:30	24 17:52 (15)	16:31 15 15:50 (16) 16:14
21	05:30	06:24	07:20	08:16	17:29 (15)	08:16 15:37 (16) 08:56
	21:57	20:57	19:41	18:28	22 17:51 (15)	16:30 11 15:48 (16) 16:15
22	05:32	06:25	07:21	08:18	17:31 (15)	08:18 15:39 (16) 08:56
	21:55	20:55	19:39	18:26	18 17:49 (15)	16:29 7 15:46 (16) 16:15
23	05:33	06:27	07:23	08:20	17:33 (15)	08:20 08:57
	21:54	20:52	19:36	18:24	13 17:46 (15)	16:27 16:16
24	05:35	06:29	07:25	08:22	17:36 (15)	08:22 08:57
	21:52	20:50	19:33	18:21	6 17:42 (15)	16:26 16:16
25	05:36	06:31	07:27	07:24	08:23 08:58	
	21:51	20:48	19:31	17:19	16:25 16:17	
26	05:38	06:33	07:29	07:26	08:25 08:58	
	21:49	20:45	19:28	17:17	16:24 16:18	
27	05:40	06:35	07:31	07:27	08:27 08:58	
	21:47	20:43	19:26	17:15	16:23 16:18	
28	05:41	06:36	07:32	07:29	08:29 08:58	
	21:46	20:40	19:23	17:13	16:22 16:19	
29	05:43	06:38	07:34	07:31	08:30 08:58	
	21:44	20:38	19:21	17:10	16:21 16:20	
30	05:45	06:40	07:36	07:33	15:37 (16)	08:32 08:59
	21:42	20:36	19:18	17:08	6 15:43 (16)	16:20 16:21
31	05:46	06:42	07:35	07:35	15:34 (16)	08:58 08:58
	21:40	20:33	17:06	13 15:47 (16)	16:22 16:22	
Potential sun hours	515	461	383	327	257	230
Total, worst case				479	488	
Sun reduction				0.23	0.20	
Oper. time red.				1.00	1.00	
Wind dir. red.				0.58	0.61	
Total reduction				0.14	0.12	
Total, real				66	59	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: BP - H68  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January	February	March	April	May	June	July	August	September	October	November	December	
1	08:58 16:24	08:27 17:16	07:29 18:13	07:12 20:12	06:02 21:09	05:11 22:00	20:27 (16) 22:15	05:07 21:04 (16)	20:32 (16) 21:39	06:44 20:31	07:38 19:16	07:37 17:04	08:33 16:19
2	08:58 16:25	08:25 17:18	07:26 18:15	07:10 20:14	06:00 21:11	05:11 22:01	20:27 (16) 22:14	05:08 21:04 (16)	20:33 (16) 21:37	06:45 20:28	07:40 19:14	07:39 17:02	08:35 16:18
3	08:58 16:26	08:24 17:20	07:24 18:17	07:07 20:16	05:58 21:12	05:10 22:02	20:26 (16) 22:14	05:09 21:05 (16)	20:33 (16) 21:35	06:47 20:26	07:42 19:11	07:41 17:00	08:36 16:17
4	08:58 16:27	08:22 17:22	07:21 18:19	07:05 20:18	05:56 21:14	05:09 22:03	20:26 (16) 22:13	05:10 21:04 (16)	20:32 (16) 21:33	06:49 20:23	07:43 19:09	07:43 16:58	08:38 16:17
5	08:57 16:28	08:20 17:24	07:19 18:21	07:02 20:20	05:54 21:16	05:08 22:05	20:27 (16) 22:13	05:11 21:04 (16)	20:33 (16) 21:31	06:51 20:21	07:45 19:06	07:45 16:56	08:39 16:16
6	08:57 16:30	08:18 17:26	07:17 18:23	07:00 20:22	05:52 21:18	05:07 22:06	20:27 (16) 22:12	05:12 21:05 (16)	20:33 (16) 21:29	06:53 20:19	07:47 19:04	07:47 16:54	08:41 16:16
7	08:56 16:31	08:16 17:28	07:14 18:24	06:58 20:24	05:50 21:20	05:07 22:07	20:27 (16) 22:12	05:13 21:05 (16)	20:33 (16) 21:27	06:54 20:16	07:49 19:01	07:49 16:53	08:42 16:15
8	08:56 16:33	08:14 17:30	07:12 18:26	06:55 20:25	05:48 21:22	05:06 22:08	20:27 (16) 22:11	05:14 21:05 (16)	20:34 (16) 21:25	06:56 20:14	07:51 18:59	07:51 16:51	08:43 16:15
9	08:55 16:34	08:12 17:32	07:09 18:28	06:53 20:27	05:46 21:23	05:05 22:09	20:28 (16) 22:10	05:15 21:05 (16)	20:34 (16) 21:23	06:58 20:11	07:53 18:56	07:53 16:49	08:45 16:14
10	08:55 16:36	08:10 17:34	07:07 18:30	06:50 20:29	05:44 21:25	05:05 22:09	20:27 (16) 22:09	05:16 21:05 (16)	20:34 (16) 21:21	07:00 20:09	07:55 18:54	07:55 16:47	08:46 16:14
11	08:54 16:37	08:08 17:36	07:04 18:32	06:48 20:31	05:42 21:27	05:04 22:10	20:28 (16) 22:08	05:17 21:05 (16)	20:34 (16) 21:19	07:02 20:06	07:57 18:51	07:57 16:45	08:47 16:14
12	08:53 16:39	08:06 17:38	07:02 18:34	06:45 20:33	05:40 21:29	05:04 22:11	20:29 (16) 22:07	05:18 21:05 (16)	20:34 (16) 21:17	07:03 20:04	07:58 18:49	07:59 16:44	08:48 16:14
13	08:52 16:40	08:04 17:40	07:00 18:36	06:43 20:35	05:38 21:31	05:04 22:12	20:28 (16) 22:06	05:19 21:05 (16)	20:34 (16) 21:15	07:05 20:01	08:00 18:47	08:01 16:42	08:49 16:13
14	08:51 16:42	08:02 17:42	06:57 18:38	06:41 20:37	05:37 21:32	05:03 22:12	20:28 (16) 22:05	05:21 21:06 (16)	20:36 (16) 21:12	07:07 19:59	08:02 18:44	08:03 16:40	08:50 16:13
15	08:50 16:44	08:00 17:44	06:55 18:40	06:38 20:39	05:35 21:34	05:03 22:13	20:29 (16) 22:04	05:22 21:06 (16)	20:36 (16) 21:10	07:09 19:56	08:04 18:42	08:05 16:39	08:51 16:13
16	08:49 16:45	07:58 17:46	06:52 18:42	06:36 20:41	05:33 21:36	05:03 22:14	20:29 (16) 22:03	05:23 21:05 (16)	20:36 (16) 21:08	07:11 19:54	08:06 18:40	08:07 16:37	08:52 16:13
17	08:48 16:47	07:56 17:49	06:50 18:44	06:33 20:42	05:32 21:37	05:03 22:14	20:29 (16) 22:02	05:25 21:06 (16)	20:36 (16) 21:06	07:12 19:51	08:08 18:37	08:09 16:36	08:53 16:14
18	08:47 16:49	07:54 17:51	06:47 18:46	06:31 20:44	05:30 21:39	05:03 22:14	20:30 (16) 22:01	05:26 21:05 (16)	20:37 (16) 21:04	07:14 19:49	08:10 18:35	08:11 16:34	08:54 16:14
19	08:46 16:51	07:51 17:53	06:45 18:48	06:29 20:46	05:28 21:41	05:03 22:15	20:30 (16) 21:59	05:27 21:01 (16)	20:38 (16) 21:01	07:16 19:46	08:12 18:33	08:12 16:33	08:55 16:14
20	08:45 16:53	07:49 17:55	06:42 18:50	06:26 20:48	05:27 21:42	05:03 22:15	20:30 (16) 21:58	05:29 21:03 (16)	20:38 (16) 20:59	07:18 19:44	08:14 18:30	08:14 16:31	08:55 16:14
21	08:44 16:54	07:47 17:57	06:40 18:51	06:24 20:50	05:25 21:44	05:03 22:15	20:30 (16) 21:56	05:30 21:03 (16)	20:39 (16) 20:57	07:20 19:41	08:16 18:28	08:16 16:30	08:56 16:15
22	08:42 16:56	07:45 17:59	06:37 18:53	06:22 20:52	05:24 21:46	05:03 22:16	20:29 (16) 22:16	05:32 21:55	20:40 (16) 21:52	07:21 19:39	08:18 18:26	08:18 16:29	08:56 16:15
23	08:41 16:58	07:42 18:01	06:35 18:55	06:20 20:54	05:22 21:47	05:03 22:16	20:28 (16) 22:16	05:33 21:54	20:40 (16) 21:51	07:23 19:36	08:20 18:24	08:20 16:27	08:57 16:16
24	08:40 17:00	07:40 18:03	06:32 18:57	06:17 20:56	05:21 21:49	05:04 22:16	20:28 (16) 22:16	05:34 21:52	20:31 (16) 21:52	07:25 20:50	08:22 18:21	08:22 16:26	08:57 16:16
25	08:38 17:02	07:38 18:05	06:30 18:59	06:15 20:58	05:20 21:50	05:04 22:16	20:28 (16) 22:16	05:37 21:50	20:43 (16) 20:48	07:27 19:33	08:23 18:21	08:23 16:26	08:58 16:17
26	08:37 17:04	07:36 18:07	06:27 19:01	06:13 20:59	05:18 21:52	05:04 22:16	20:28 (16) 22:16	05:38 21:49	20:45 (16) 20:57	07:29 19:28	08:25 18:17	08:25 16:24	08:58 16:18
27	08:35 17:06	07:33 18:09	06:25 19:03	06:11 21:01	05:17 21:53	05:05 22:16	20:27 (16) 22:16	05:40 21:47	20:47 (16) 20:54	07:31 19:26	08:27 17:15	08:27 16:23	08:58 16:19
28	08:34 17:08	07:31 18:11	06:22 19:05	06:08 21:03	05:16 21:55	05:05 22:16	20:26 (16) 22:16	05:41 21:46	06:36 20:40	07:32 19:23	08:28 18:13	08:28 16:22	08:58 16:19
29	08:32 17:10	07:20 18:07	06:06 19:05	06:06 21:05	05:15 21:56	05:06 22:15	20:26 (16) 22:15	05:43 21:44	06:38 20:38	07:34 19:21	08:30 18:21	08:30 16:21	08:58 16:20
30	08:30 17:12	07:17 18:08	06:04 19:08	06:04 21:07	05:14 21:57	05:07 22:15	20:26 (16) 22:15	05:45 21:42	06:40 20:36	07:36 19:18	08:32 17:08	08:32 16:20	08:58 16:21
31	08:29 17:14	07:15 18:10	06:05 19:10	06:05 21:07	05:13 21:59	05:06 22:16	20:27 (16) 22:16	05:46 21:40	06:42 20:33	07:35 17:06	08:35 16:22	08:35 16:22	08:58 16:22
Potential sun hours	248	272	367	421	496	513	942	723	461	383	327	257	230
Total, worst case					360		942	723					
Sun reduction					0.36		0.26	0.27					
Oper. time red.					1.00		1.00	1.00					
Wind dir. red.					0.62		0.62	0.62					
Total reduction					0.23		0.16	0.17					
Total, real					81		152	120					

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)





### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: BR - H70  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:58 16:24	08:27 17:16	07:29 18:13	07:13 20:12	06:02 21:09	05:12 22:00	05:08 22:15	05:49 21:39	06:44 20:31	07:38 19:16	07:37 17:05	08:33 16:19
2	08:58 16:25	08:25 17:18	07:26 18:15	07:10 20:14	06:00 21:11	05:11 22:01	05:09 22:14	05:50 21:37	06:46 20:28	07:40 19:14	07:39 17:03	08:35 16:19
3	08:58 16:26	08:24 17:20	07:24 18:17	07:08 20:16	05:58 21:12	05:10 22:02	05:09 22:14	05:52 21:35	06:47 20:26	07:42 19:11	07:41 17:01	08:36 16:18
4	08:58 16:28	08:22 17:22	07:22 18:19	07:05 20:18	05:56 21:14	05:09 22:03	05:10 22:13	05:54 21:33	06:49 20:24	07:44 19:09	07:43 16:59	08:38 16:17
5	08:57 16:29	08:20 17:24	07:19 18:21	07:03 20:20	05:54 21:16	05:08 22:04	05:11 22:13	05:55 21:31	06:51 20:21	07:45 19:06	07:45 16:57	08:39 16:17
6	08:57 16:30	08:18 17:26	07:17 18:23	07:00 20:22	05:52 21:18	05:08 22:05	05:12 22:12	05:57 21:29	06:53 20:19	07:47 19:04	07:47 16:55	08:41 16:16
7	08:56 16:32	08:16 17:28	07:14 18:25	06:58 20:24	05:50 21:20	05:07 22:06	05:13 22:11	05:59 21:27	06:55 20:16	07:49 19:01	07:49 16:53	08:42 16:16
8	08:56 16:33	08:14 17:30	07:12 18:27	06:55 20:26	05:48 21:22	05:06 22:07	05:14 22:11	06:01 21:25	06:56 20:14	07:51 18:59	07:51 16:51	08:43 16:15
9	08:55 16:35	08:12 17:32	07:10 18:29	06:53 20:27	05:46 21:23	05:06 22:08	05:15 22:10	06:02 21:23	06:58 20:11	07:53 18:57	07:53 16:49	08:45 16:15
10	08:55 16:36	08:10 17:35	07:07 18:31	06:50 20:29	05:44 21:25	05:05 22:09	05:16 22:09	06:04 21:21	07:00 20:09	07:55 18:54	07:55 16:47	08:46 16:14
11	08:54 16:38	08:08 17:37	07:05 18:32	06:48 20:31	05:43 21:27	05:05 22:10	05:17 22:08	06:06 21:19	07:02 20:06	07:57 18:52	07:57 16:46	08:47 16:14
12	08:53 16:39	08:06 17:39	07:02 18:34	06:46 20:33	05:41 21:29	05:04 22:11	05:19 22:07	06:08 21:17	07:04 20:04	07:59 18:49	07:59 16:44	08:48 16:14
13	08:52 16:41	08:04 17:41	07:00 18:36	06:43 20:35	05:39 21:30	05:04 22:12	05:20 22:06	06:10 21:15	07:05 20:01	08:00 18:47	08:01 16:42	08:49 16:14
14	08:51 16:42	08:02 17:43	06:57 18:38	06:41 20:37	05:37 21:32	05:04 22:12	05:21 22:05	06:11 21:12	07:07 19:59	08:02 18:45	08:03 16:41	08:50 16:14
15	08:50 16:44	08:00 17:45	06:55 18:40	06:39 20:39	05:35 21:34	05:04 22:13	05:22 22:04	06:13 21:10	07:09 19:56	08:04 18:42	08:05 16:39	08:51 16:14
16	08:49 16:46	07:58 17:47	06:52 18:42	06:36 20:41	05:34 21:36	05:03 22:13	05:24 22:03	06:15 21:08	07:11 19:54	08:06 18:40	08:07 16:37	08:52 16:14
17	08:48 16:48	07:56 17:49	06:50 18:44	06:34 20:43	05:32 21:37	05:03 22:14	05:25 22:02	06:17 21:06	07:13 19:51	08:08 18:38	08:09 16:36	08:53 16:14
18	08:47 16:49	07:54 17:51	06:47 18:46	06:31 20:44	05:30 21:39	05:03 22:14	05:26 22:00	06:19 21:04	07:14 19:49	08:10 18:35	08:11 16:34	08:54 16:14
19	08:46 16:51	07:51 17:53	06:45 18:48	06:29 20:46	05:29 21:41	05:03 22:15	05:28 21:59	06:20 21:01	07:16 19:46	08:12 18:33	08:12 16:33	08:54 16:15
20	08:45 16:53	07:49 17:55	06:42 18:50	06:27 20:48	05:27 21:42	05:03 22:15	05:29 21:58	06:22 20:59	07:18 19:44	08:14 18:31	08:14 16:32	08:55 16:15
21	08:44 16:55	07:47 17:57	06:40 18:52	06:24 20:50	05:26 21:44	05:03 22:15	05:31 21:56	06:24 20:57	07:20 19:41	08:16 18:28	08:16 16:30	08:56 16:15
22	08:42 16:57	07:45 17:59	06:37 18:53	06:22 20:52	05:24 21:45	05:04 22:15	05:32 21:55	06:26 20:55	07:22 19:39	08:18 18:26	08:18 16:29	08:56 16:16
23	08:41 16:59	07:43 18:01	06:35 18:55	06:20 20:54	05:23 21:47	05:04 22:16	05:34 21:53	06:28 20:52	07:23 19:36	08:20 18:24	08:20 16:28	08:57 16:16
24	08:40 17:00	07:40 18:03	06:32 18:57	06:18 20:56	05:21 21:49	05:04 22:16	05:35 21:52	06:29 20:50	07:25 19:34	08:22 18:22	08:21 16:26	08:57 16:17
25	08:38 17:02	07:38 18:05	06:30 18:59	06:15 20:58	05:20 21:50	05:04 22:16	05:37 21:50	06:31 20:48	07:27 19:31	07:24 17:19	08:23 16:25	08:57 16:18
26	08:37 17:04	07:36 18:07	06:27 19:01	06:13 20:59	05:19 21:52	05:05 22:16	05:39 21:49	06:33 20:45	07:29 19:29	07:26 17:17	08:25 16:24	08:58 16:18
27	08:35 17:06	07:33 18:09	06:25 19:03	06:11 21:01	05:18 21:53	05:05 22:16	05:40 21:47	06:35 20:43	07:31 19:26	07:27 17:15	08:27 16:23	08:58 16:19
28	08:34 17:08	07:31 18:11	06:22 19:05	06:09 21:03	05:16 21:54	05:06 22:15	05:42 21:46	06:37 20:40	07:33 19:24	07:29 17:13	08:28 16:22	08:58 16:20
29	08:32 17:10	07:29 18:07	06:20 19:01	06:07 21:05	05:15 21:56	05:06 22:15	05:43 21:44	06:38 20:38	07:34 19:21	07:31 17:11	08:30 16:21	08:58 16:21
30	08:30 17:12	07:26 18:09	06:18 19:09	06:05 21:07	05:14 21:57	05:07 22:15	05:45 21:42	06:40 20:36	07:36 19:19	07:33 17:09	08:32 16:20	08:58 16:22
31	08:29 17:14	07:15 18:10	06:10 19:15	05:13 20:15	05:13 21:58	05:07 22:15	05:47 21:40	06:42 20:33	07:35 17:07	07:35 16:23	08:58 16:23	
Potential sun hours	248	272	367	421	496	513	515	461	382	328	257	231
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: BS - H71  
 Assumptions for shadow calculations Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January	February	March	April	May	June
1	08:58 16:24	08:27 17:16	07:29 18:13	07:12 20:12	06:02 21:09	19:57 (16) 22:00
2	08:58 16:25	08:25 17:18	07:26 18:15	07:10 20:14	06:00 21:11	19:56 (16) 22:01
3	08:58 16:26	08:24 17:20	07:24 18:17	07:07 20:16	05:58 21:12	19:55 (16) 22:02
4	08:58 16:27	08:22 17:22	07:21 18:19	07:05 20:18	05:56 21:14	19:54 (16) 22:03
5	08:57 16:28	08:20 17:24	07:19 18:21	07:02 20:20	05:54 21:16	19:53 (16) 22:05
6	08:57 16:30	08:18 17:26	07:17 18:23	07:00 20:22	05:52 21:18	19:54 (16) 22:06
7	08:56 16:31	08:16 17:28	07:14 18:24	06:58 20:24	05:50 21:20	19:53 (16) 22:07
8	08:56 16:33	08:14 17:30	07:12 18:26	06:55 20:25	05:48 21:22	19:53 (16) 22:08
9	08:55 16:34	08:12 17:32	07:09 18:28	06:53 20:27	05:46 21:23	19:52 (16) 22:09
10	08:55 16:36	08:10 17:34	07:07 18:30	06:50 20:29	05:44 21:25	19:52 (16) 22:09
11	08:54 16:37	08:08 17:36	07:04 18:32	06:48 20:31	05:42 21:27	19:53 (16) 22:10
12	08:53 16:39	08:06 17:38	07:02 18:34	06:45 20:33	05:40 21:29	19:53 (16) 22:11
13	08:52 16:40	08:04 17:40	07:00 18:36	06:43 20:35	05:38 21:31	19:53 (16) 22:12
14	08:51 16:42	08:02 17:42	06:57 18:38	06:41 20:37	05:37 21:32	19:54 (16) 22:12
15	08:50 16:44	08:00 17:44	06:55 18:40	06:38 20:39	05:35 21:34	19:54 (16) 22:13
16	08:49 16:45	07:58 17:46	06:52 18:42	06:36 20:41	05:33 21:36	19:55 (16) 22:14
17	08:48 16:47	07:56 17:49	06:50 18:44	06:33 20:42	05:32 21:37	19:55 (16) 22:14
18	08:47 16:49	07:54 17:51	06:47 18:46	06:31 20:44	05:30 21:39	19:56 (16) 22:14
19	08:46 16:51	07:51 17:53	06:45 18:48	06:29 20:46	05:28 21:41	19:57 (16) 22:15
20	08:45 16:53	07:49 17:55	06:42 18:50	06:26 20:48	05:27 21:42	19:58 (16) 22:15
21	08:44 16:54	07:47 17:57	06:40 18:51	06:24 20:50	05:25 21:44	20:00 (16) 22:15
22	08:42 16:56	07:45 17:59	06:37 18:53	06:22 20:52	05:24 21:46	20:01 (16) 22:16
23	08:41 16:58	07:42 18:01	06:35 18:55	06:20 20:54	05:22 21:47	20:03 (16) 22:16
24	08:40 17:00	07:40 18:03	06:32 18:57	06:17 20:56	05:21 21:49	20:06 (16) 22:16
25	08:38 17:02	07:38 18:05	06:30 18:59	06:15 20:58	05:20 21:50	20:53 (15) 22:16
26	08:37 17:04	07:36 18:07	06:27 19:01	06:13 20:59	05:18 21:52	20:52 (15) 22:16
27	08:35 17:06	07:33 18:09	06:25 19:03	06:11 21:01	5 20:06 (16) 21:53	20:50 (15) 22:16
28	08:34 17:08	07:31 18:11	06:22 19:05	06:08 21:03	13 20:15 (16) 21:55	20:50 (15) 22:16
29	08:32 17:10		07:20 20:07	06:06 21:05	17 20:17 (16) 21:56	20:49 (15) 22:15
30	08:30 17:12		07:17 20:08	06:04 21:07	20 20:18 (16) 21:57	20:49 (15) 22:15
31	08:29 17:14		07:15 20:10		21 21:59	20:50 (15) 21:11 (15)
Potential sun hours	248	272	367	421	496	513
Total, worst case				55	699	759
Sun reduction				0.34	0.36	0.26
Oper. time red.				1.00	1.00	1.00
Wind dir. red.				0.61	0.61	0.63
Total reduction				0.21	0.22	0.16
Total, real				11	155	123

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)



## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: BS - H71

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	July	August	September	October	November	December				
1	05:07	20:53 (15)	05:48	20:03 (16)	06:44	07:38	07:37	08:33		
	22:15	26	21:19 (15)	21:39	29	20:32 (16)	20:31	19:16	17:04	16:19
2	05:08	20:54 (15)	05:50	20:03 (16)	06:45	07:40	07:39	08:35		
	22:14	25	21:19 (15)	21:37	30	20:33 (16)	20:28	19:14	17:02	16:18
3	05:09	20:54 (15)	05:52	20:03 (16)	06:47	07:42	07:41	08:36		
	22:14	26	21:20 (15)	21:35	29	20:32 (16)	20:26	19:11	17:00	16:17
4	05:10	20:54 (15)	05:53	20:03 (16)	06:49	07:43	07:43	08:38		
	22:13	25	21:19 (15)	21:33	29	20:32 (16)	20:23	19:09	16:58	16:17
5	05:11	20:54 (15)	05:55	20:03 (16)	06:51	07:45	07:45	08:39		
	22:13	25	21:19 (15)	21:31	30	20:33 (16)	20:21	19:06	16:56	16:16
6	05:12	20:55 (15)	05:57	20:03 (16)	06:53	07:47	07:47	08:41		
	22:12	24	21:19 (15)	21:29	29	20:32 (16)	20:19	19:04	16:54	16:16
7	05:13	20:55 (15)	05:59	20:03 (16)	06:54	07:49	07:49	08:42		
	22:12	24	21:19 (15)	21:27	29	20:32 (16)	20:16	19:01	16:53	16:15
8	05:14	20:55 (15)	06:00	20:03 (16)	06:56	07:51	07:51	08:43		
	22:11	24	21:19 (15)	21:25	28	20:31 (16)	20:14	18:59	16:51	16:15
9	05:15	20:56 (15)	06:02	20:03 (16)	06:58	07:53	07:53	08:45		
	22:10	23	21:19 (15)	21:23	27	20:30 (16)	20:11	18:56	16:49	16:14
10	05:16	20:56 (15)	06:04	20:04 (16)	07:00	07:55	07:55	08:46		
	22:09	23	21:19 (15)	21:21	26	20:30 (16)	20:09	18:54	16:47	16:14
11	05:17	20:56 (15)	06:06	20:04 (16)	07:02	07:57	07:57	08:47		
	22:08	23	21:19 (15)	21:19	24	20:28 (16)	20:06	18:51	16:45	16:14
12	05:18	20:57 (15)	06:07	20:05 (16)	07:03	07:58	07:59	08:48		
	22:07	22	21:19 (15)	21:17	22	20:27 (16)	20:04	18:49	16:44	16:14
13	05:19	20:57 (15)	06:09	20:07 (16)	07:05	08:00	08:01	08:49		
	22:06	21	21:18 (15)	21:15	19	20:26 (16)	20:01	18:47	16:42	16:13
14	05:21	20:59 (15)	06:11	20:08 (16)	07:07	08:02	08:03	08:50		
	22:05	20	21:19 (15)	21:12	16	20:24 (16)	19:59	18:44	16:40	16:13
15	05:22	20:59 (15)	06:13	20:10 (16)	07:09	08:04	08:05	08:51		
	22:04	19	21:18 (15)	21:10	11	20:21 (16)	19:56	18:42	16:39	16:13
16	05:23	21:00 (15)	06:15		07:11	08:06	08:07	08:52		
	22:03	17	21:17 (15)	21:08		19:54	18:40	16:37	16:13	
17	05:25	21:00 (15)	06:16		07:12	08:08	08:09	08:53		
	22:02	16	21:16 (15)	21:06		19:51	18:37	16:36	16:14	
18	05:26	21:02 (15)	06:18		07:14	08:10	08:11	08:54		
	22:01	14	21:16 (15)	21:04		19:49	18:35	16:34	16:14	
19	05:27	21:03 (15)	06:20		07:16	08:12	08:12	08:55		
	21:59	11	21:14 (15)	21:01		19:46	18:33	16:33	16:14	
20	05:29	20:14 (16)	06:22		07:18	08:14	08:14	08:55		
	21:58	14	21:12 (15)	20:59		19:44	18:30	16:31	16:14	
21	05:30	20:12 (16)	06:24		07:20	08:16	08:16	08:56		
	21:56	12	20:24 (16)	20:57		19:41	18:28	16:30	16:15	
22	05:32	20:10 (16)	06:25		07:21	08:18	08:18	08:56		
	21:55	15	20:25 (16)	20:55		19:39	18:26	16:29	16:15	
23	05:33	20:09 (16)	06:27		07:23	08:20	08:20	08:57		
	21:54	17	20:26 (16)	20:52		19:36	18:24	16:27	16:16	
24	05:35	20:08 (16)	06:29		07:25	08:22	08:22	08:57		
	21:52	20	20:28 (16)	20:50		19:33	18:21	16:26	16:16	
25	05:37	20:07 (16)	06:31		07:27	07:24	08:23	08:58		
	21:50	21	20:28 (16)	20:48		19:31	17:19	16:25	16:17	
26	05:38	20:06 (16)	06:33		07:29	07:25	08:25	08:58		
	21:49	24	20:30 (16)	20:45		19:28	17:17	16:24	16:18	
27	05:40	20:05 (16)	06:35		07:31	07:27	08:27	08:58		
	21:47	25	20:30 (16)	20:43		19:26	17:15	16:23	16:19	
28	05:41	20:05 (16)	06:36		07:32	07:29	08:28	08:58		
	21:46	26	20:31 (16)	20:40		19:23	17:13	16:22	16:19	
29	05:43	20:04 (16)	06:38		07:34	07:31	08:30	08:58		
	21:44	27	20:31 (16)	20:38		19:21	17:11	16:21	16:20	
30	05:45	20:04 (16)	06:40		07:36	07:33	08:32	08:58		
	21:42	28	20:32 (16)	20:36		19:18	17:08	16:20	16:21	
31	05:46	20:03 (16)	06:42			07:35		08:58		
	21:40	28	20:31 (16)	20:33		17:06		16:22		
Potential sun hours	515		461		383	327	257	230		
Total, worst case	665		378							
Sun reduction	0.27		0.27							
Oper. time red.	1.00		1.00							
Wind dir. red.	0.62		0.61							
Total reduction	0.16		0.17							
Total, real	110		63							

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: BT - H72

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:58	08:27	07:29	07:13	06:02	05:12	05:08	05:49	06:44	07:38	07:37	08:33
	16:24	17:16	18:13	20:12	21:09	22:00	22:15	21:39	20:31	19:16	17:05	16:19
2	08:58	08:25	07:26	07:10	06:00	05:11	05:09	05:50	06:46	07:40	07:39	08:35
	16:25	17:18	18:15	20:14	21:11	22:01	22:14	21:37	20:28	19:14	17:03	16:19
3	08:58	08:24	07:24	07:08	05:58	05:10	05:09	05:52	06:47	07:42	07:41	08:36
	16:26	17:20	18:17	20:16	21:12	22:02	22:14	21:35	20:26	19:11	17:01	16:18
4	08:58	08:22	07:22	07:05	05:56	05:09	05:10	05:54	06:49	07:44	07:43	08:38
	16:28	17:22	18:19	20:18	21:14	22:03	22:13	21:33	20:24	19:09	16:59	16:17
5	08:57	08:20	07:19	07:03	05:54	05:08	05:11	05:55	06:51	07:45	07:45	08:39
	16:29	17:24	18:21	20:20	21:16	22:04	22:13	21:31	20:21	19:06	16:57	16:17
6	08:57	08:18	07:17	07:00	05:52	05:08	05:12	05:57	06:53	07:47	07:47	08:41
	16:30	17:26	18:23	20:22	21:18	22:05	22:12	21:29	20:19	19:04	16:55	16:16
7	08:56	08:16	07:14	06:58	05:50	05:07	05:13	05:59	06:55	07:49	07:49	08:42
	16:32	17:28	18:25	20:24	21:20	22:06	22:11	21:27	20:16	19:01	16:53	16:16
8	08:56	08:14	07:12	06:55	05:48	05:06	05:14	06:01	06:56	07:51	07:51	08:43
	16:33	17:30	18:27	20:26	21:22	22:07	22:11	21:25	20:14	18:59	16:51	16:15
9	08:55	08:12	07:10	06:53	05:46	05:06	05:15	06:02	06:58	07:53	07:53	08:45
	16:35	17:33	18:29	20:27	21:23	22:08	22:10	21:23	20:11	18:57	16:49	16:15
10	08:55	08:10	07:07	06:51	05:44	05:05	05:16	06:04	07:00	07:55	07:55	08:46
	16:36	17:35	18:31	20:29	21:25	22:09	22:09	21:21	20:09	18:54	16:47	16:14
11	08:54	08:08	07:05	06:48	05:43	05:05	05:17	06:06	07:02	07:57	07:57	08:47
	16:38	17:37	18:32	20:31	21:27	22:10	22:08	21:19	20:06	18:52	16:46	16:14
12	08:53	08:06	07:02	06:46	05:41	05:04	05:19	06:08	07:04	07:59	07:59	08:48
	16:39	17:39	18:34	20:33	21:29	22:11	22:07	21:17	20:04	18:49	16:44	16:14
13	08:52	08:04	07:00	06:43	05:39	05:04	05:20	06:10	07:05	08:00	08:01	08:49
	16:41	17:41	18:36	20:35	21:31	22:12	22:06	21:15	20:01	18:47	16:42	16:14
14	08:51	08:02	06:57	06:41	05:37	05:04	05:21	06:11	07:07	08:02	08:03	08:50
	16:42	17:43	18:38	20:37	21:32	22:12	22:05	21:12	19:59	18:45	16:41	16:14
15	08:50	08:00	06:55	06:39	05:35	05:04	05:22	06:13	07:09	08:04	08:05	08:51
	16:44	17:45	18:40	20:39	21:34	22:13	22:04	21:10	19:56	18:42	16:39	16:14
16	08:49	07:58	06:52	06:36	05:34	05:03	05:24	06:15	07:11	08:06	08:07	08:52
	16:46	17:47	18:42	20:41	21:36	22:13	22:03	21:08	19:54	18:40	16:37	16:14
17	08:48	07:56	06:50	06:34	05:32	05:03	05:25	06:17	07:13	08:08	08:09	08:53
	16:48	17:49	18:44	20:43	21:37	22:14	22:02	21:06	19:51	18:38	16:36	16:14
18	08:47	07:54	06:47	06:31	05:30	05:03	05:26	06:19	07:14	08:10	08:11	08:54
	16:49	17:51	18:46	20:44	21:39	22:14	22:00	21:04	19:49	18:35	16:34	16:14
19	08:46	07:51	06:45	06:29	05:29	05:03	05:28	06:20	07:16	08:12	08:12	08:54
	16:51	17:53	18:48	20:46	21:41	22:15	21:59	21:01	19:46	18:33	16:33	16:15
20	08:45	07:49	06:42	06:27	05:27	05:03	05:29	06:22	07:18	08:14	08:14	08:55
	16:53	17:55	18:50	20:48	21:42	22:15	21:58	20:59	19:44	18:31	16:32	16:15
21	08:44	07:47	06:40	06:24	05:26	05:03	05:31	06:24	07:20	08:16	08:16	08:56
	16:55	17:57	18:52	20:50	21:44	22:15	21:56	20:57	19:41	18:28	16:30	16:15
22	08:42	07:45	06:37	06:22	05:24	05:04	05:32	06:26	07:22	08:18	08:18	08:56
	16:57	17:59	18:54	20:52	21:45	22:16	21:55	20:55	19:39	18:26	16:29	16:16
23	08:41	07:43	06:35	06:20	05:23	05:04	05:34	06:28	07:23	08:20	08:20	08:57
	16:59	18:01	18:55	20:54	21:47	22:16	21:53	20:52	19:36	18:24	16:28	16:16
24	08:40	07:40	06:32	06:18	05:21	05:04	05:35	06:29	07:25	08:22	08:22	08:57
	17:00	18:03	18:57	20:56	21:49	22:16	21:52	20:50	19:34	18:22	16:26	16:17
25	08:38	07:38	06:30	06:15	05:20	05:05	05:37	06:31	07:27	08:24	08:23	08:58
	17:02	18:05	18:59	20:58	21:50	22:16	21:50	20:48	19:31	17:19	16:25	16:18
26	08:37	07:36	06:27	06:13	05:19	05:05	05:39	06:33	07:29	08:26	08:25	08:58
	17:04	18:07	19:01	20:59	21:52	22:16	21:49	20:45	19:29	17:17	16:24	16:18
27	08:35	07:33	06:25	06:11	05:18	05:05	05:40	06:35	07:31	08:28	08:27	08:58
	17:06	18:09	19:03	21:01	21:53	22:16	21:47	20:43	19:26	17:15	16:23	16:19
28	08:34	07:31	06:23	06:09	05:16	05:06	05:42	06:37	07:33	08:29	08:28	08:58
	17:08	18:11	19:05	21:03	21:54	22:15	21:46	20:41	19:24	17:13	16:22	16:20
29	08:32		07:20	06:07	05:15	05:07	05:43	06:38	07:34	08:31	08:30	08:58
	17:10		20:07	21:05	21:56	22:15	21:44	20:38	19:21	17:11	16:21	16:21
30	08:30		07:18	06:05	05:14	05:07	05:45	06:40	07:36	08:33	08:32	08:58
	17:12		20:09	21:07	21:57	22:15	21:42	20:36	19:19	17:09	16:20	16:22
31	08:29		07:15		05:13		05:47	06:42		07:35		08:58
	17:14		20:11		21:58		21:40	20:33		17:07		16:23
Potential sun hours	248	272	367	421	496	513	515	461	382	328	257	231
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: BU - H73  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June
1	08:58 16:24	08:27 17:16	07:29 18:13	07:12 20:12	06:02 21:09	19:34 (16) 22:00
2	08:58 16:25	08:25 17:18	07:26 18:15	07:10 20:14	06:00 21:11	28 20:02 (16) 27 20:02 (16)
3	08:58 16:26	08:24 17:20	07:24 18:17	07:07 20:16	05:58 21:12	19:35 (16) 20:01 (16)
4	08:58 16:27	08:22 17:22	07:21 18:19	07:05 20:18	05:56 21:14	19:36 (16) 20:00 (16)
5	08:57 16:28	08:20 17:24	07:19 18:21	07:02 20:20	05:54 21:16	19:36 (16) 19:59 (16)
6	08:57 16:30	08:18 17:26	07:17 18:23	07:00 20:22	05:52 21:18	19:38 (16) 19:59 (16)
7	08:56 16:31	08:16 17:28	07:14 18:24	06:58 20:24	05:50 21:20	19:39 (16) 19:57 (16)
8	08:56 16:33	08:14 17:30	07:12 18:26	06:55 20:25	05:48 21:22	19:41 (16) 19:56 (16)
9	08:55 16:34	08:12 17:32	07:09 18:28	06:53 20:27	05:46 21:23	19:43 (16) 19:53 (16)
10	08:55 16:36	08:10 17:34	07:07 18:30	06:50 20:29	05:44 21:25	22:09 22:09
11	08:54 16:37	08:08 17:36	07:04 18:32	06:48 20:31	05:42 21:27	05:04 22:10
12	08:53 16:39	08:06 17:38	07:02 18:34	06:45 20:33	05:40 21:29	05:04 22:11
13	08:52 16:40	08:04 17:40	07:00 18:36	06:43 20:35	05:38 21:31	20:36 (15) 20:45 (15)
14	08:51 16:42	08:02 17:42	06:57 18:38	06:41 20:37	05:37 21:32	20:34 (15) 20:48 (15)
15	08:50 16:44	08:00 17:44	06:55 18:40	06:38 20:39	05:35 21:34	20:33 (15) 20:49 (15)
16	08:49 16:45	07:58 17:46	06:52 18:42	06:36 20:41	05:33 21:36	20:32 (15) 20:50 (15)
17	08:48 16:47	07:56 17:49	06:50 18:44	06:33 20:42	05:32 21:37	20:31 (15) 20:51 (15)
18	08:47 16:49	07:54 17:51	06:47 18:46	06:31 20:44	10 19:46 (16) 21:39	05:30 20:52 (15)
19	08:46 16:51	07:51 17:53	06:45 18:48	06:29 20:46	16 19:59 (16) 21:41	05:28 20:52 (15)
20	08:45 16:53	07:49 17:55	06:42 18:50	06:26 20:48	20 19:40 (16) 21:42	05:27 20:53 (15)
21	08:44 16:54	07:47 17:57	06:40 18:51	06:24 20:50	22 20:01 (16) 21:44	05:25 20:54 (15)
22	08:42 16:56	07:45 17:59	06:37 18:53	06:22 20:52	24 19:38 (16) 21:46	05:24 20:53 (15)
23	08:41 16:58	07:42 18:01	06:35 18:55	06:20 20:54	26 19:37 (16) 21:47	05:22 20:54 (15)
24	08:40 17:00	07:40 18:03	06:32 18:57	06:17 20:56	28 19:36 (16) 21:49	05:21 20:54 (15)
25	08:38 17:02	07:38 18:05	06:30 18:59	06:15 20:58	28 19:35 (16) 21:50	05:20 20:55 (15)
26	08:37 17:04	07:36 18:07	06:27 19:01	06:13 20:59	28 19:35 (16) 21:52	05:18 20:55 (15)
27	08:35 17:06	07:33 18:09	06:25 19:03	06:11 21:01	29 19:34 (16) 21:53	05:17 20:54 (15)
28	08:34 17:08	07:31 18:11	06:22 19:05	06:08 21:03	29 19:34 (16) 21:55	05:16 20:54 (15)
29	08:32 17:10	07:29 18:13	06:20 19:07	06:06 21:05	29 19:34 (16) 21:56	05:15 20:54 (15)
30	08:30 17:12	07:27 18:15	06:17 19:09	06:04 21:07	29 19:34 (16) 21:57	05:14 20:54 (15)
31	08:29 17:14	07:25 18:17	06:15 19:11	06:02 21:09	29 20:03 (16) 21:59	05:12 20:55 (15)
Potential sun hours	248	272	367	421	496	513
Total, worst case				318	617	588
Sun reduction				0.34	0.36	0.26
Oper. time red.				1.00	1.00	1.00
Wind dir. red.				0.59	0.61	0.62
Total reduction				0.20	0.22	0.16
Total, real				64	137	95

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: BU - H73

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	July	August	September	October	November	December				
1	05:07	20:38 (15)	05:48	06:44	07:38	07:37	08:33			
	22:15	20	20:58 (15)	21:39	20:31	19:16	17:04	16:19		
2	05:08	20:39 (15)	05:50	06:45	07:40	07:39	08:35			
	22:14	20	20:59 (15)	21:37	20:28	19:13	17:02	16:18		
3	05:09	20:39 (15)	05:52	19:55 (16)	06:47	07:42	07:41	08:36		
	22:14	21	21:00 (15)	21:35	6	20:01 (16)	20:26	19:11	17:00	16:17
4	05:10	20:38 (15)	05:53	19:52 (16)	06:49	07:43	07:43	08:38		
	22:13	21	20:59 (15)	21:33	12	20:04 (16)	20:23	19:09	16:58	16:17
5	05:11	20:38 (15)	05:55	19:50 (16)	06:51	07:45	07:45	08:39		
	22:13	22	21:00 (15)	21:31	16	20:06 (16)	20:21	19:06	16:56	16:16
6	05:12	20:38 (15)	05:57	19:48 (16)	06:53	07:47	07:47	08:41		
	22:12	22	21:00 (15)	21:29	19	20:07 (16)	20:19	19:04	16:54	16:16
7	05:12	20:38 (15)	05:59	19:47 (16)	06:54	07:49	07:49	08:42		
	22:12	23	21:01 (15)	21:27	22	20:09 (16)	20:16	19:01	16:53	16:15
8	05:14	20:38 (15)	06:00	19:46 (16)	06:56	07:51	07:51	08:43		
	22:11	23	21:01 (15)	21:25	23	20:09 (16)	20:14	18:59	16:51	16:15
9	05:15	20:38 (15)	06:02	19:45 (16)	06:58	07:53	07:53	08:45		
	22:10	24	21:02 (15)	21:23	25	20:10 (16)	20:11	18:56	16:49	16:14
10	05:16	20:38 (15)	06:04	19:44 (16)	07:00	07:55	07:55	08:46		
	22:09	24	21:02 (15)	21:21	27	20:11 (16)	20:09	18:54	16:47	16:14
11	05:17	20:38 (15)	06:06	19:43 (16)	07:02	07:57	07:57	08:47		
	22:08	24	21:02 (15)	21:19	27	20:10 (16)	20:06	18:51	16:45	16:14
12	05:18	20:38 (15)	06:07	19:43 (16)	07:03	07:58	07:59	08:48		
	22:07	25	21:03 (15)	21:17	28	20:11 (16)	20:04	18:49	16:44	16:14
13	05:19	20:37 (15)	06:09	19:43 (16)	07:05	08:00	08:01	08:49		
	22:06	26	21:03 (15)	21:15	28	20:11 (16)	20:01	18:47	16:42	16:13
14	05:21	20:38 (15)	06:11	19:42 (16)	07:07	08:02	08:03	08:50		
	22:05	26	21:04 (15)	21:12	29	20:11 (16)	19:59	18:44	16:40	16:13
15	05:22	20:38 (15)	06:13	19:42 (16)	07:09	08:04	08:05	08:51		
	22:04	26	21:04 (15)	21:10	29	20:11 (16)	19:56	18:42	16:39	16:13
16	05:23	20:38 (15)	06:15	19:42 (16)	07:11	08:06	08:07	08:52		
	22:03	26	21:04 (15)	21:08	29	20:11 (16)	19:54	18:40	16:37	16:13
17	05:25	20:38 (15)	06:16	19:42 (16)	07:12	08:08	08:09	08:53		
	22:02	26	21:04 (15)	21:06	29	20:11 (16)	19:51	18:37	16:36	16:14
18	05:26	20:38 (15)	06:18	19:42 (16)	07:14	08:10	08:11	08:54		
	22:01	26	21:04 (15)	21:04	27	20:09 (16)	19:49	18:35	16:34	16:14
19	05:27	20:38 (15)	06:20	19:42 (16)	07:16	08:12	08:12	08:55		
	21:59	26	21:04 (15)	21:01	27	20:09 (16)	19:46	18:33	16:33	16:14
20	05:29	20:38 (15)	06:22	19:43 (16)	07:18	08:14	08:14	08:55		
	21:58	26	21:04 (15)	20:59	25	20:08 (16)	19:44	18:30	16:31	16:14
21	05:30	20:39 (15)	06:24	19:43 (16)	07:20	08:16	08:16	08:56		
	21:56	25	21:04 (15)	20:57	24	20:07 (16)	19:41	18:28	16:30	16:15
22	05:32	20:39 (15)	06:25	19:44 (16)	07:21	08:18	08:18	08:56		
	21:55	25	21:04 (15)	20:55	22	20:06 (16)	19:39	18:26	16:29	16:15
23	05:33	20:39 (15)	06:27	19:45 (16)	07:23	08:20	08:20	08:57		
	21:54	24	21:03 (15)	20:52	19	20:04 (16)	19:36	18:24	16:27	16:16
24	05:35	20:40 (15)	06:29	19:46 (16)	07:25	08:22	08:22	08:57		
	21:52	23	21:03 (15)	20:50	15	20:01 (16)	19:33	18:21	16:26	16:16
25	05:37	20:40 (15)	06:31	19:49 (16)	07:27	07:24	08:23	08:58		
	21:50	22	21:02 (15)	20:48	9	19:58 (16)	19:31	17:19	16:25	16:17
26	05:38	20:41 (15)	06:33	07:29	07:25	08:25	08:25	08:58		
	21:49	21	21:02 (15)	20:45	19:28	17:17	16:24	16:18		
27	05:40	20:41 (15)	06:35	07:31	07:27	08:27	08:27	08:58		
	21:47	20	21:01 (15)	20:43	19:26	17:15	16:23	16:19		
28	05:41	20:43 (15)	06:36	07:32	07:29	08:28	08:28	08:58		
	21:46	17	21:00 (15)	20:40	19:23	17:13	16:22	16:19		
29	05:43	20:43 (15)	06:38	07:34	07:31	08:30	08:30	08:58		
	21:44	16	20:59 (15)	20:38	19:21	17:11	16:21	16:20		
30	05:45	20:45 (15)	06:40	07:36	07:33	08:32	08:32	08:58		
	21:42	12	20:57 (15)	20:36	19:18	17:08	16:20	16:21		
31	05:46	20:47 (15)	06:42	07:35	07:35	08:35	08:35	08:58		
	21:40	7	20:54 (15)	20:33	17:06	16:22	16:22	16:22		
Potential sun hours	515		461	383	327	257	230			
Total, worst case	689		517							
Sun reduction	0.27		0.27							
Oper. time red.	1.00		1.00							
Wind dir. red.	0.62		0.59							
Total reduction	0.17		0.16							
Total, real	114		83							

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: BV - H74  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June
1	08:58 16:24	15:43 (1) 15:45 (1)	08:27 17:16	07:29 18:13	07:12 20:12	06:02 21:09
2	08:58 16:25	15:44 (1) 15:47 (1)	08:25 17:18	07:26 18:15	07:10 20:14	06:00 21:11
3	08:58 16:26	15:44 (1) 15:47 (1)	08:24 17:20	07:24 18:17	07:07 20:16	05:58 21:12
4	08:58 16:27	15:45 (1) 15:49 (1)	08:22 17:22	07:21 18:19	07:05 20:18	05:56 21:14
5	08:57 16:29	15:45 (1) 15:50 (1)	08:20 17:24	07:19 18:21	07:03 20:20	05:54 21:16
6	08:57 16:30	15:46 (1) 15:52 (1)	08:18 17:26	07:17 18:23	07:00 20:22	05:52 21:18
7	08:56 16:31	15:46 (1) 15:54 (1)	08:16 17:28	07:14 18:25	06:58 20:24	05:50 21:20
8	08:56 16:33	15:47 (1) 15:55 (1)	08:14 17:30	07:12 18:26	06:55 20:25	05:48 21:22
9	08:55 16:34	15:47 (1) 15:56 (1)	08:12 17:32	07:09 18:28	06:53 20:27	05:46 21:23
10	08:55 16:36	15:49 (1) 15:59 (1)	08:10 17:34	07:07 18:30	06:50 20:29	05:44 21:25
11	08:54 16:37	15:49 (1) 16:01 (1)	08:08 17:36	07:05 18:32	06:48 20:31	05:42 21:27
12	08:53 16:39	15:50 (1) 16:02 (1)	08:06 17:38	07:02 18:34	06:45 20:33	05:40 21:29
13	08:52 16:40	15:51 (1) 16:04 (1)	08:04 17:40	07:00 18:36	06:43 20:35	05:39 21:31
14	08:51 16:42	15:51 (1) 16:05 (1)	08:02 17:43	06:57 18:38	06:41 20:37	05:37 21:32
15	08:50 16:44	15:52 (1) 16:05 (1)	08:00 17:45	06:55 18:40	06:38 20:39	05:35 21:34
16	08:49 16:46	15:54 (1) 16:04 (1)	07:58 17:47	06:52 18:42	06:36 20:41	05:33 21:36
17	08:48 16:47	15:56 (1) 16:03 (1)	07:56 17:49	06:50 18:44	06:34 20:42	05:32 21:37
18	08:47 16:49	17:51 17:51	06:47 18:46	06:31 20:44	05:30 21:39	20:25 (7) 22:14
19	08:46 16:51	07:51 17:53	06:45 18:48	06:29 20:46	05:28 21:41	20:24 (7) 22:15
20	08:45 16:53	07:49 17:55	06:42 18:50	06:27 20:48	05:27 21:42	20:24 (7) 22:15
21	08:44 16:55	07:47 17:57	06:40 18:51	06:24 20:50	05:25 21:44	20:24 (7) 22:15
22	08:42 16:56	07:45 17:59	06:37 18:53	06:22 20:52	05:24 21:46	20:23 (7) 22:16
23	08:41 16:58	07:42 18:01	06:35 18:55	06:20 20:54	05:23 21:47	20:24 (7) 22:16
24	08:40 17:00	07:40 18:03	06:32 18:57	06:17 20:56	05:21 21:49	20:24 (7) 22:16
25	08:38 17:02	07:38 18:05	06:30 18:59	06:15 20:58	05:20 21:50	20:24 (7) 22:16
26	08:37 17:04	07:36 18:07	06:27 19:01	06:13 20:59	05:18 21:52	20:25 (7) 22:16
27	08:35 17:06	07:33 18:09	06:25 19:03	06:11 21:01	05:17 21:53	20:25 (7) 22:16
28	08:34 17:08	07:31 18:11	06:22 19:05	06:09 21:03	05:16 21:54	20:25 (7) 22:16
29	08:32 17:10	07:20 20:07	06:06 21:05	05:15 21:56	20:26 (7) 22:15	05:06 20:56 (7)
30	08:30 17:12	07:17 20:09	06:04 21:07	05:14 21:57	20:26 (7) 22:15	05:07 20:57 (7)
31	08:29 17:14	07:15 20:10	05:13 21:58	05:13 21:58	20:26 (7) 20:54 (7)	28
Potential sun hours	248		272	367	421	496
Total, worst case		139				606
Sun reduction		0.17				0.36
Oper. time red.		1.00				1.00
Wind dir. red.		0.62				0.62
Total reduction		0.11				0.23
Total, real		15				137

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: BV - H74

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.36	2.16	2.65	4.82	5.79	4.41	4.42	4.07	3.73	2.48	1.71	0.89

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	July		August		September		October		November		December		
1	05:07	20:35 (7)	05:48	20:39 (7)	06:44	07:38	07:37				08:33	15:31 (1)	
	22:15	22	20:57 (7)	21:39	20	20:59 (7)	20:31	19:16	17:04		16:19	12	15:43 (1)
2	05:08	20:36 (7)	05:50	20:40 (7)	06:45	07:40	07:39				08:35	15:31 (1)	
	22:14	21	20:57 (7)	21:37	18	20:58 (7)	20:28	19:14	17:02		16:18	10	15:41 (1)
3	05:09	20:36 (7)	05:52	20:42 (7)	06:47	07:42	07:41				08:36	15:31 (1)	
	22:14	22	20:58 (7)	21:35	13	20:55 (7)	20:26	19:11	17:00		16:18	10	15:41 (1)
4	05:10	20:35 (7)	05:53	20:45 (7)	06:49	07:44	07:43				08:38	15:32 (1)	
	22:13	23	20:58 (7)	21:33	8	20:53 (7)	20:24	19:09	16:58		16:17	8	15:40 (1)
5	05:11	20:35 (7)	05:55		06:51	07:45	07:45				08:39	15:31 (1)	
	22:13	23	20:58 (7)	21:31		20:21	19:06	16:56			16:16	8	15:39 (1)
6	05:12	20:35 (7)	05:57		06:53	07:47	07:47				08:41	15:32 (1)	
	22:12	24	20:59 (7)	21:29		20:19	19:04	16:55			16:16	7	15:39 (1)
7	05:13	20:35 (7)	05:59		06:55	07:49	07:49				08:42	15:32 (1)	
	22:12	25	21:00 (7)	21:27		20:16	19:01	16:53			16:15	6	15:38 (1)
8	05:14	20:35 (7)	06:00		06:56	07:51	07:51				08:43	15:33 (1)	
	22:11	25	21:00 (7)	21:25		20:14	18:59	16:51			16:15	5	15:38 (1)
9	05:15	20:34 (7)	06:02		06:58	07:53	07:53				08:45	15:33 (1)	
	22:10	27	21:01 (7)	21:23		20:11	18:56	16:49			16:14	4	15:37 (1)
10	05:16	20:34 (7)	06:04		07:00	07:55	07:55				08:46	15:33 (1)	
	22:09	27	21:01 (7)	21:21		20:09	18:54	16:47			16:14	3	15:36 (1)
11	05:17	20:34 (7)	06:06		07:02	07:57	07:57				08:47	15:34 (1)	
	22:08	27	21:01 (7)	21:19		20:06	18:52	16:45			16:14	1	15:35 (1)
12	05:18	20:34 (7)	06:08		07:04	07:59	07:59				08:48	15:35 (1)	
	22:07	28	21:02 (7)	21:17		20:04	18:49	16:44			16:14	1	15:36 (1)
13	05:19	20:34 (7)	06:09		07:05	08:00	08:01				08:49	15:35 (1)	
	22:06	29	21:03 (7)	21:15		20:01	18:47	16:42			16:14	1	15:36 (1)
14	05:21	20:34 (7)	06:11		07:07	08:02	08:03				08:50		
	22:05	29	21:03 (7)	21:12		19:59	18:44	16:40			16:14		
15	05:22	20:34 (7)	06:13		07:09	08:04	08:05				08:51		
	22:04	29	21:03 (7)	21:10		19:56	18:42	16:39			16:14		
16	05:23	20:34 (7)	06:15		07:11	08:06	08:07				08:52		
	22:03	29	21:03 (7)	21:08		19:54	18:40	16:37			16:14		
17	05:25	20:33 (7)	06:17		07:13	08:08	08:09				08:53		
	22:02	30	21:03 (7)	21:06		19:51	18:37	16:36			16:14		
18	05:26	20:34 (7)	06:18		07:14	08:10	08:11				08:54		
	22:00	30	21:04 (7)	21:04		19:49	18:35	16:34			16:14		
19	05:28	20:34 (7)	06:20		07:16	08:12	08:12				08:54		
	21:59	30	21:04 (7)	21:01		19:46	18:33	16:33			16:14		
20	05:29	20:33 (7)	06:22		07:18	08:14	08:14				08:55		
	21:58	31	21:04 (7)	20:59		19:44	18:30	16:31			16:15		
21	05:31	20:34 (7)	06:24		07:20	08:16	08:16				08:56		
	21:56	30	21:04 (7)	20:57		19:41	18:28	16:30			16:15		
22	05:32	20:34 (7)	06:26		07:22	08:18	08:18				08:56		
	21:55	30	21:04 (7)	20:55		19:39	18:26	16:29			16:15		
23	05:34	20:35 (7)	06:27		07:23	08:20	08:20				08:57		
	21:54	29	21:04 (7)	20:52		19:36	18:24	16:27			16:16		
24	05:35	20:34 (7)	06:29		07:25	08:22	08:22				08:57		
	21:52	30	21:04 (7)	20:50		19:34	18:21	16:26			16:17		
25	05:37	20:34 (7)	06:31		07:27	07:24	08:23				15:35 (1)	08:58	
	21:50	29	21:03 (7)	20:48		19:31	17:19	16:25		6	15:41 (1)	16:17	
26	05:38	20:35 (7)	06:33		07:29	07:25	08:25				15:33 (1)	08:58	
	21:49	28	21:03 (7)	20:45		19:29	17:17	16:24		10	15:43 (1)	16:18	
27	05:40	20:35 (7)	06:35		07:31	07:27	08:27				15:32 (1)	08:58	
	21:47	27	21:02 (7)	20:43		19:26	17:15	16:23		12	15:44 (1)	16:19	
28	05:42	20:36 (7)	06:36		07:32	07:29	08:28				15:31 (1)	08:58	
	21:46	26	21:02 (7)	20:40		19:24	17:13	16:22		14	15:45 (1)	16:20	
29	05:43	20:37 (7)	06:38		07:34	07:31	08:30				15:31 (1)	08:58	
	21:44	25	21:02 (7)	20:38		19:21	17:11	16:21		13	15:44 (1)	16:20	
30	05:45	20:37 (7)	06:40		07:36	07:33	08:32				15:31 (1)	08:58	
	21:42	24	21:01 (7)	20:36		19:19	17:09	16:20		13	15:44 (1)	16:21	
31	05:47	20:38 (7)	06:42			07:35					08:58		
	21:40	23	21:01 (7)	20:33		17:06					16:22		
Potential sun hours	515		461		382	328	257				231		
Total, worst case		832		59			68				76		
Sun reduction		0.27		0.27			0.20				0.12		
Oper. time red.		1.00		1.00			1.00				1.00		
Wind dir. red.		0.62		0.62			0.62				0.62		
Total reduction		0.17		0.17			0.12				0.07		
Total, real		138		10			8				6		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: BW - H75  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June
1	08:58 16:24	08:27 17:16	16:15 (7) 16:39 (7)	07:29 18:13	16:56 (8) 17:21 (8)	07:12 20:12
2	08:58 16:25	08:25 17:18	16:15 (7) 16:39 (7)	07:26 18:15	16:56 (8) 17:19 (8)	07:10 20:14
3	08:58 16:26	08:24 17:20	16:15 (7) 16:39 (7)	07:24 18:17	16:58 (8) 17:18 (8)	07:07 20:16
4	08:58 16:27	08:22 17:22	16:15 (7) 16:40 (7)	07:21 18:19	16:59 (8) 17:16 (8)	07:05 20:18
5	08:57 16:29	08:20 17:24	16:15 (7) 16:40 (7)	07:19 18:21	17:02 (8) 17:13 (8)	07:03 20:20
6	08:57 16:30	08:18 17:26	16:15 (7) 16:40 (7)	07:17 18:23	07:00 20:22	05:52 21:18
7	08:56 16:31	08:16 17:28	16:16 (7) 16:40 (7)	07:14 18:25	06:58 20:24	05:50 21:20
8	08:56 16:33	08:14 17:30	16:16 (7) 16:40 (7)	07:12 18:26	06:55 20:26	05:48 21:22
9	08:55 16:34	08:12 17:32	16:16 (7) 16:38 (7)	07:09 18:28	06:53 20:27	05:46 21:23
10	08:55 16:36	08:10 17:34	16:17 (7) 16:38 (7)	07:07 18:30	06:50 20:29	05:44 21:25
11	08:54 16:37	08:08 17:36	16:18 (7) 16:37 (7)	07:05 18:32	06:48 20:31	05:42 21:27
12	08:53 16:39	08:06 17:38	16:20 (7) 16:36 (7)	07:02 18:34	06:45 20:33	05:40 21:29
13	08:52 16:40	08:04 17:40	16:22 (7) 16:34 (7)	07:00 18:36	06:43 20:35	05:39 21:31
14	08:51 16:42	08:02 17:42	16:28 (7) 16:29 (7)	06:57 18:38	06:41 20:37	05:37 21:32
15	08:50 16:44	08:00 17:45	17:06 (8) 17:12 (8)	06:55 18:40	06:38 20:39	05:35 21:34
16	08:49 16:45	07:58 17:47	17:02 (8) 17:16 (8)	06:52 18:42	06:36 20:41	05:33 21:36
17	08:48 16:47	07:56 17:49	17:00 (8) 17:18 (8)	06:50 18:44	06:34 20:42	05:32 21:37
18	08:47 16:49	07:54 17:51	16:59 (8) 17:20 (8)	06:47 18:46	06:31 20:44	05:30 21:39
19	08:46 16:51	07:51 17:53	16:57 (8) 17:20 (8)	06:45 18:48	06:29 20:46	05:28 21:41
20	08:45 16:53	07:49 17:55	16:56 (8) 17:22 (8)	06:42 18:50	06:27 20:48	05:27 21:42
21	08:44 16:54	07:47 17:57	16:56 (8) 17:22 (8)	06:40 18:51	06:24 20:50	05:25 21:44
22	08:42 16:56	07:45 17:59	16:55 (8) 17:22 (8)	06:37 18:53	06:22 20:52	05:24 21:46
23	08:41 16:58	07:42 18:01	16:55 (8) 17:23 (8)	06:35 18:55	06:20 20:54	05:22 21:47
24	08:40 17:00	07:40 18:03	16:55 (8) 17:23 (8)	06:32 18:57	06:17 20:56	05:21 21:49
25	08:38 17:02	16:24 (7) 16:26 (7)	07:38 18:05	16:54 (8) 17:22 (8)	06:30 18:59	05:20 21:50
26	08:37 17:04	16:20 (7) 16:30 (7)	07:36 18:07	16:54 (8) 17:23 (8)	06:27 19:01	05:18 21:52
27	08:35 17:06	16:19 (7) 16:33 (7)	07:33 18:09	16:54 (8) 17:21 (8)	06:25 19:03	05:17 21:53
28	08:34 17:08	16:18 (7) 16:34 (7)	07:31 18:11	16:55 (8) 17:21 (8)	06:22 19:05	05:16 21:55
29	08:32 17:10	16:16 (7) 16:35 (7)		07:20 20:07	06:06 21:05	05:15 21:56
30	08:31 17:12	16:16 (7) 16:36 (7)		07:17 20:09	06:04 21:07	05:14 21:57
31	08:29 17:14	16:15 (7) 16:37 (7)		07:15 20:10		05:13 21:59
Potential sun hours	248	272	367	421	496	513
Total, worst case	103	613	96	271	429	544
Sun reduction	0.17	0.22	0.22	0.34	0.36	0.26
Oper. time red.	1.00	1.00	1.00	1.00	1.00	1.00
Wind dir. red.	0.59	0.59	0.58	0.59	0.62	0.63
Total reduction	0.10	0.13	0.13	0.20	0.22	0.16
Total, real	10	80	13	55	96	88

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: BW - H75

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	July		August		September		October		November		December					
1	05:07	21:14 (11)	05:48	20:34 (10)	06:44	19:51 (9)	07:38		07:37	15:46 (7)	08:33					
	22:15	19	21:33 (11)	21:39	22	20:56 (10)	20:31	10	20:01 (9)	19:16	17:04	21	16:07 (7)	16:19		
2	05:08	21:15 (11)	05:50	20:34 (10)	06:45				07:40		07:39	21	16:07 (7)	08:35		
	22:14	19	21:34 (11)	21:37	23	20:57 (10)	20:28			19:14	17:02	23	16:08 (7)	16:18		
3	05:09	21:15 (11)	05:52	20:34 (10)	06:47				07:42		07:41	23	16:08 (7)	08:36		
	22:14	19	21:34 (11)	21:35	22	20:56 (10)	20:26			19:11	17:00	23	16:08 (7)	16:18		
4	05:10	21:15 (11)	05:53	20:34 (10)	06:49				07:44		07:43	23	16:08 (7)	08:38		
	22:13	18	21:33 (11)	21:33	22	20:56 (10)	20:24			19:09	16:58	25	16:10 (7)	16:17		
5	05:11	21:15 (11)	05:55	20:35 (10)	06:51				07:45		07:45	25	16:10 (7)	08:39		
	22:13	19	21:34 (11)	21:31	21	20:56 (10)	20:21			19:06	16:56	25	16:10 (7)	16:16		
6	05:12	21:16 (11)	05:57	20:35 (10)	06:53				07:47		07:47	25	16:10 (7)	08:41		
	22:12	18	21:34 (11)	21:29	20	20:55 (10)	20:19			19:04	16:55	25	16:10 (7)	16:16		
7	05:13	21:16 (11)	05:59	20:36 (10)	06:54				07:49		07:49	25	16:10 (7)	08:42		
	22:12	18	21:34 (11)	21:27	18	20:54 (10)	20:16			19:01	16:53	24	16:09 (7)	16:15		
8	05:14	21:16 (11)	06:00	20:37 (10)	06:56				07:51	17:39 (8)	07:51	24	16:09 (7)	08:43		
	22:11	18	21:34 (11)	21:25	17	20:54 (10)	20:14			18:59	7	17:46 (8)	16:51	24	16:09 (7)	16:15
9	05:15	21:17 (11)	06:02	20:37 (10)	06:58				07:53	17:35 (8)	07:53	24	16:09 (7)	08:45		
	22:10	17	21:34 (11)	21:23	15	20:52 (10)	20:11			18:56	15	17:50 (8)	16:49	24	16:09 (7)	16:14
10	05:16	21:17 (11)	06:04	20:39 (10)	07:00				07:55	17:33 (8)	07:55	24	16:09 (7)	08:46		
	22:09	17	21:34 (11)	21:21	11	20:50 (10)	20:09			18:54	18	17:51 (8)	16:47	23	16:09 (7)	16:14
11	05:17	21:17 (11)	06:06	20:41 (10)	07:02				07:57	17:31 (8)	07:57	23	16:09 (7)	08:47		
	22:08	16	21:33 (11)	21:19	5	20:46 (10)	20:06			18:52	22	17:53 (8)	16:45	22	16:09 (7)	16:14
12	05:18	21:18 (11)	06:08		07:03				07:59	17:30 (8)	07:59	22	16:09 (7)	08:48		
	22:07	14	21:32 (11)	21:17		20:04			18:49	24	17:54 (8)	16:44	20	16:08 (7)	16:14	
13	05:19	21:18 (11)	06:09		07:05				08:00	17:28 (8)	08:01	20	16:08 (7)	08:49		
	22:06	13	21:31 (11)	21:15		20:01			18:47	26	17:54 (8)	16:42	19	16:07 (7)	16:14	
14	05:21	21:20 (11)	06:11		07:07				08:02	17:28 (8)	08:03	19	16:07 (7)	08:50		
	22:05	11	21:31 (11)	21:13		19:59			18:44	27	17:55 (8)	16:40	17	16:06 (7)	16:13	
15	05:22	21:20 (11)	06:13		07:09				08:04	17:27 (8)	08:05	17	16:06 (7)	08:51		
	22:04	10	21:30 (11)	21:10		19:56			18:42	28	17:55 (8)	16:39	14	16:05 (7)	16:13	
16	05:23	21:21 (11)	06:15		07:11				08:06	17:26 (8)	08:07	14	16:05 (7)	08:52		
	22:03	7	21:28 (11)	21:08		19:54			18:40	29	17:55 (8)	16:37	10	16:03 (7)	16:14	
17	05:25	21:22 (11)	06:17		07:12				08:08	17:26 (8)	08:09	10	16:03 (7)	08:53		
	22:02	5	21:27 (11)	21:06		19:51			18:37	29	17:55 (8)	16:36	2	16:00 (7)	16:14	
18	05:26	21:25 (11)	06:18	19:55 (9)	07:14				08:10	17:26 (8)	08:11			08:54		
	22:01	2	21:27 (11)	21:04	10	20:05 (9)	19:49		18:35	28	17:54 (8)	16:34		16:14		
19	05:28		06:20	19:53 (9)	07:16				08:12	17:26 (8)	08:12			08:55		
	21:59		21:01	20:07 (9)	19:46				18:33	28	17:54 (8)	16:33		16:14		
20	05:29		06:22	19:52 (9)	07:18				08:14	17:26 (8)	08:14			08:55		
	21:58		20:59	20:09 (9)	19:44				18:30	27	17:53 (8)	16:31		16:15		
21	05:30	20:43 (10)	06:24	19:50 (9)	07:20				08:16	17:26 (8)	08:16			08:56		
	21:56	5	20:48 (10)	20:57	19	20:09 (9)	19:41		18:28	27	17:53 (8)	16:30		16:15		
22	05:32	20:40 (10)	06:26	19:49 (9)	07:22				08:18	17:27 (8)	08:18			08:56		
	21:55	10	20:50 (10)	20:55	20	20:09 (9)	19:39		18:26	25	17:52 (8)	16:29		16:15		
23	05:34	20:40 (10)	06:27	19:49 (9)	07:23				08:20	17:28 (8)	08:20			08:57		
	21:54	12	20:52 (10)	20:52	21	20:10 (9)	19:36		18:24	22	17:50 (8)	16:27		16:16		
24	05:35	20:38 (10)	06:29	19:48 (9)	07:25				08:22	17:29 (8)	08:22			08:57		
	21:52	15	20:53 (10)	20:50	22	20:10 (9)	19:34		18:21	20	17:49 (8)	16:26		16:17		
25	05:37	20:37 (10)	06:31	19:47 (9)	07:27				07:24	16:30 (8)	08:23			08:58		
	21:51	16	20:53 (10)	20:48	22	20:09 (9)	19:31		17:19	17	16:47 (8)	16:25		16:17		
26	05:38	20:36 (10)	06:33	19:47 (9)	07:29				07:26	16:32 (8)	08:25			08:58		
	21:49	19	20:55 (10)	20:45	22	20:09 (9)	19:29		17:17	12	16:44 (8)	16:24		16:18		
27	05:40	20:35 (10)	06:35	19:47 (9)	07:31				07:27	16:37 (8)	08:27			08:58		
	21:47	20	20:55 (10)	20:43	22	20:09 (9)	19:26		17:15	2	16:39 (8)	16:23		16:19		
28	05:41	20:35 (10)	06:36	19:47 (9)	07:32				07:29	15:55 (7)	08:28			08:58		
	21:46	21	20:56 (10)	20:40	21	20:08 (9)	19:24		17:13	6	16:01 (7)	16:22		16:19		
29	05:43	20:34 (10)	06:38	19:48 (9)	07:34				07:31	15:51 (7)	08:30			08:58		
	21:44	22	20:56 (10)	20:38	19	20:07 (9)	19:21		17:11	13	16:04 (7)	16:21		16:20		
30	05:45	20:34 (10)	06:40	19:49 (9)	07:36				07:33	15:49 (7)	08:32			08:58		
	21:42	22	20:56 (10)	20:36	17	20:06 (9)	19:19		17:08	16	16:05 (7)	16:20		16:21		
31	05:47	20:35 (10)	06:42	19:50 (9)					07:35	15:48 (7)				08:58		
	21:40	22	20:57 (10)	20:33	15	20:05 (9)			17:06	19	16:07 (7)			16:22		
Potential sun hours	515		461		382				328		257			231		
Total, worst case	444		457		10				487		341					
Sun reduction	0.27		0.27		0.29				0.23		0.20					
Oper. time red.	1.00		1.00		1.00				1.00		1.00					
Wind dir. red.	0.62		0.60		0.59				0.58		0.59					
Total reduction	0.17		0.16		0.17				0.14		0.12					
Total, real	74		75		2				67		40					

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: BX - H76  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:58	08:27	07:29	07:13	06:02	05:12	05:08	05:48	06:44	07:38	07:37	08:33
	16:24	17:16	18:13	20:12	21:09	22:00	22:15	21:38	20:31	19:16	17:05	16:19
2	08:58	08:25	07:26	07:10	06:00	05:11	05:09	05:50	06:46	07:40	07:39	08:35
	16:25	17:18	18:15	20:14	21:11	22:01	22:14	21:37	20:28	19:14	17:03	16:19
3	08:58	08:24	07:24	07:08	05:58	05:10	05:09	05:52	06:47	07:42	07:41	08:36
	16:26	17:20	18:17	20:16	21:12	22:02	22:14	21:35	20:26	19:11	17:01	16:18
4	08:58	08:22	07:22	07:05	05:56	05:09	05:10	05:54	06:49	07:44	07:43	08:38
	16:28	17:22	18:19	20:18	21:14	22:03	22:13	21:33	20:24	19:09	16:59	16:17
5	08:57	08:20	07:19	07:03	05:54	05:08	05:11	05:55	06:51	07:45	07:45	08:39
	16:29	17:24	18:21	20:20	21:16	22:04	22:13	21:31	20:21	19:06	16:57	16:17
6	08:57	08:18	07:17	07:00	05:52	05:08	05:12	05:57	06:53	07:47	07:47	08:41
	16:30	17:26	18:23	20:22	21:18	22:05	22:12	21:29	20:19	19:04	16:55	16:16
7	08:56	08:16	07:14	06:58	05:50	05:07	05:13	05:59	06:55	07:49	07:49	08:42
	16:32	17:28	18:25	20:24	21:20	22:06	22:11	21:27	20:16	19:01	16:53	16:16
8	08:56	08:14	07:12	06:55	05:48	05:06	05:14	06:01	06:56	07:51	07:51	08:43
	16:33	17:30	18:27	20:26	21:22	22:07	22:11	21:25	20:14	18:59	16:51	16:15
9	08:55	08:12	07:09	06:53	05:46	05:06	05:15	06:02	06:58	07:53	07:53	08:45
	16:35	17:32	18:29	20:27	21:23	22:08	22:10	21:23	20:11	18:57	16:49	16:15
10	08:54	08:10	07:07	06:50	05:44	05:05	05:16	06:04	07:00	07:55	07:55	08:46
	16:36	17:35	18:31	20:29	21:25	22:09	22:09	21:21	20:09	18:54	16:47	16:14
11	08:54	08:08	07:05	06:48	05:42	05:05	05:17	06:06	07:02	07:57	07:57	08:47
	16:38	17:37	18:32	20:31	21:27	22:10	22:08	21:19	20:06	18:52	16:46	16:14
12	08:53	08:06	07:02	06:46	05:41	05:04	05:19	06:08	07:04	07:59	07:59	08:48
	16:39	17:39	18:34	20:33	21:29	22:11	22:07	21:17	20:04	18:49	16:44	16:14
13	08:52	08:04	07:00	06:43	05:39	05:04	05:20	06:10	07:05	08:00	08:01	08:49
	16:41	17:41	18:36	20:35	21:30	22:12	22:06	21:15	20:01	18:47	16:42	16:14
14	08:51	08:02	06:57	06:41	05:37	05:04	05:21	06:11	07:07	08:02	08:03	08:50
	16:42	17:43	18:38	20:37	21:32	22:12	22:05	21:12	19:59	18:45	16:41	16:14
15	08:50	08:00	06:55	06:38	05:35	05:04	05:22	06:13	07:09	08:04	08:05	08:51
	16:44	17:45	18:40	20:39	21:34	22:13	22:04	21:10	19:56	18:42	16:39	16:14
16	08:49	07:58	06:52	06:36	05:34	05:03	05:24	06:15	07:11	08:06	08:07	08:52
	16:46	17:47	18:42	20:41	21:36	22:13	22:03	21:08	19:54	18:40	16:37	16:14
17	08:48	07:56	06:50	06:34	05:32	05:03	05:25	06:17	07:13	08:08	08:09	08:53
	16:48	17:49	18:44	20:42	21:37	22:14	22:02	21:06	19:51	18:38	16:36	16:14
18	08:47	07:54	06:47	06:31	05:30	05:03	05:26	06:19	07:14	08:10	08:10	08:54
	16:49	17:51	18:46	20:44	21:39	22:14	22:00	21:04	19:49	18:35	16:34	16:14
19	08:46	07:51	06:45	06:29	05:29	05:03	05:28	06:20	07:16	08:12	08:12	08:54
	16:51	17:53	18:48	20:46	21:41	22:15	21:59	21:01	19:46	18:33	16:33	16:15
20	08:45	07:49	06:42	06:27	05:27	05:03	05:29	06:22	07:18	08:14	08:14	08:55
	16:53	17:55	18:50	20:48	21:42	22:15	21:58	20:59	19:44	18:31	16:32	16:15
21	08:44	07:47	06:40	06:24	05:26	05:03	05:31	06:24	07:20	08:16	08:16	08:56
	16:55	17:57	18:52	20:50	21:44	22:15	21:56	20:57	19:41	18:28	16:30	16:15
22	08:42	07:45	06:37	06:22	05:24	05:04	05:32	06:26	07:22	08:18	08:18	08:56
	16:57	17:59	18:53	20:52	21:45	22:15	21:55	20:55	19:39	18:26	16:29	16:16
23	08:41	07:43	06:35	06:20	05:23	05:04	05:34	06:28	07:23	08:20	08:20	08:57
	16:59	18:01	18:55	20:54	21:47	22:16	21:53	20:52	19:36	18:24	16:28	16:16
24	08:40	07:40	06:32	06:18	05:21	05:04	05:35	06:29	07:25	08:22	08:21	08:57
	17:00	18:03	18:57	20:56	21:49	22:16	21:52	20:50	19:34	18:22	16:26	16:17
25	08:38	07:38	06:30	06:15	05:20	05:04	05:37	06:31	07:27	08:24	08:23	08:57
	17:02	18:05	18:59	20:58	21:50	22:16	21:50	20:48	19:31	17:19	16:25	16:18
26	08:37	07:36	06:27	06:13	05:19	05:05	05:39	06:33	07:29	08:26	08:25	08:58
	17:04	18:07	19:01	20:59	21:52	22:16	21:49	20:45	19:29	17:17	16:24	16:18
27	08:35	07:33	06:25	06:11	05:17	05:05	05:40	06:35	07:31	08:27	08:27	08:58
	17:06	18:09	19:03	21:01	21:53	22:16	21:47	20:43	19:26	17:15	16:23	16:19
28	08:34	07:31	06:22	06:09	05:16	05:06	05:42	06:37	07:33	08:29	08:28	08:58
	17:08	18:11	19:05	21:03	21:54	22:15	21:46	20:40	19:24	17:13	16:22	16:20
29	08:32		07:20	06:07	05:15	05:06	05:43	06:38	07:34	08:31	08:30	08:58
	17:10		20:07	21:05	21:56	22:15	21:44	20:38	19:21	17:11	16:21	16:21
30	08:30		07:18	06:04	05:14	05:07	05:45	06:40	07:36	08:33	08:32	08:58
	17:12		20:09	21:07	21:57	22:15	21:42	20:36	19:19	17:09	16:20	16:22
31	08:29		07:15		05:13		05:47	06:42		07:35		08:58
	17:14		20:10		21:58		21:40	20:33		17:07		16:23
Potential sun hours	248	272	367	421	496	513	515	461	382	328	257	231
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)



## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: BY - H77  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June	
1	08:58 16:24	08:27 17:16	07:29 18:13	07:12 20:12	06:02 21:09	05:11 22:00	
2	08:58 16:25	08:25 17:18	07:26 18:15	07:10 20:14	06:00 21:11	05:10 22:01	
3	08:58 16:26	08:24 17:20	07:24 18:17	07:07 20:16	05:58 21:12	05:10 22:02	
4	08:58 16:27	08:22 17:22	07:21 18:19	07:05 20:18	05:56 21:14	20:19 (15) 05:09	
5	08:57 16:28	08:20 17:24	07:19 18:21	07:02 20:20	05:54 21:16	10 20:29 (15) 22:03	
6	08:57 16:30	08:18 17:26	07:17 18:23	07:00 20:22	05:52 21:18	15 20:31 (15) 22:05	
7	08:56 16:31	08:16 17:28	07:14 18:24	06:58 20:24	05:50 21:20	20 20:34 (15) 22:07	
8	08:56 16:33	08:14 17:30	07:12 18:26	06:55 20:25	05:48 21:22	22 20:35 (15) 22:08	
9	08:55 16:34	08:12 17:32	07:09 18:28	06:53 20:27	05:46 21:23	23 20:35 (15) 22:09	
10	08:55 16:36	08:10 17:34	07:07 18:30	06:50 20:29	19:28 (16) 19:41 (16)	05:44 21:25	24 20:35 (15) 22:09
11	08:54 16:37	08:08 17:36	07:04 18:32	06:48 20:31	19:26 (16) 19:43 (16)	05:42 21:27	24 20:36 (15) 22:10
12	08:53 16:39	08:06 17:38	07:02 18:34	06:45 20:33	19:25 (16) 19:45 (16)	05:40 21:29	25 20:36 (15) 22:11
13	08:52 16:40	08:04 17:40	07:00 18:36	06:43 20:35	19:23 (16) 19:45 (16)	05:38 21:31	25 20:36 (15) 22:12
14	08:51 16:42	08:02 17:42	06:57 18:38	06:41 20:37	19:22 (16) 19:46 (16)	05:37 21:32	26 20:37 (15) 22:12
15	08:50 16:44	08:00 17:44	06:55 18:40	06:38 20:39	19:21 (16) 19:47 (16)	05:35 21:34	26 20:37 (15) 22:14
16	08:49 16:45	07:58 17:46	06:52 18:42	06:36 20:41	19:20 (16) 19:47 (16)	05:33 21:36	26 20:37 (15) 22:14
17	08:48 16:47	07:56 17:49	06:50 18:44	06:33 20:42	19:19 (16) 19:47 (16)	05:32 21:37	25 20:36 (15) 22:14
18	08:47 16:49	07:54 17:51	06:47 18:46	06:31 20:44	19:19 (16) 19:47 (16)	05:30 21:39	24 20:36 (15) 22:14
19	08:46 16:51	07:51 17:53	06:45 18:48	06:29 20:46	19:19 (16) 19:47 (16)	05:28 21:41	23 20:35 (15) 22:15
20	08:45 16:53	07:49 17:55	06:42 18:50	06:26 20:48	19:18 (16) 19:46 (16)	05:27 21:42	24 20:36 (15) 22:15
21	08:44 16:54	07:47 17:57	06:40 18:51	06:24 20:50	19:19 (16) 19:46 (16)	05:25 21:44	22 20:35 (15) 22:15
22	08:42 16:56	07:45 17:59	06:37 18:53	06:22 20:52	19:19 (16) 19:45 (16)	05:24 21:46	21 20:34 (15) 22:16
23	08:41 16:58	07:42 18:01	06:35 18:55	06:20 20:54	19:20 (16) 19:45 (16)	05:22 21:47	20 20:34 (15) 22:16
24	08:40 17:00	07:40 18:03	06:32 18:57	06:17 20:56	19:21 (16) 19:44 (16)	05:21 21:49	19 20:34 (15) 22:16
25	08:38 17:02	07:38 18:05	06:30 18:59	06:15 20:58	19:21 (16) 19:42 (16)	05:20 21:50	17 20:33 (15) 22:16
26	08:37 17:04	07:36 18:07	06:27 19:01	06:13 20:59	19:22 (16) 19:41 (16)	05:18 21:52	16 20:33 (15) 22:16
27	08:35 17:06	07:33 18:09	06:25 19:03	06:11 21:01	19:23 (16) 19:39 (16)	05:17 21:53	13 20:18 (15) 22:16
28	08:34 17:08	07:31 18:11	06:22 19:05	06:08 21:03	19:26 (16) 19:37 (16)	05:16 21:55	11 20:19 (15) 22:16
29	08:32 17:10		07:20 20:07	06:06 21:05	05:15 21:56	7 20:28 (15)	05:06 22:15
30	08:30 17:12		07:17 20:08	06:04 21:07	05:14 21:57		05:07 22:15
31	08:29 17:14		07:15 20:10		05:12 21:59		
Potential sun hours	248	272	367	421	496	513	
Total, worst case				429	524		
Sun reduction				0.34	0.36		
Oper. time red.				1.00	1.00		
Wind dir. red.				0.59	0.62		
Total reduction				0.20	0.22		
Total, real				87	117		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: BY - H77  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	July	August	September	October	November	December
1	05:07 22:15	05:48 21:39	20:22 (15) 20:47 (15)	06:44 20:31	19:25 (16) 19:42 (16)	07:38 17:04
2	05:08 22:14	05:50 21:37	20:22 (15) 20:47 (15)	06:45 20:28	19:27 (16) 19:40 (16)	07:39 17:02
3	05:09 22:14	05:52 21:35	20:22 (15) 20:45 (15)	06:47 20:26	19:11 19:11	07:41 17:00
4	05:10 22:13	05:53 21:33	20:23 (15) 20:45 (15)	06:49 20:23	19:09 19:09	07:43 16:58
5	05:11 22:13	05:55 21:31	20:23 (15) 20:44 (15)	06:51 20:21	19:07 19:06	07:45 16:56
6	05:12 22:12	05:57 21:29	20:24 (15) 20:43 (15)	06:53 20:19	19:04 19:04	07:47 16:54
7	05:12 22:12	05:59 21:27	20:26 (15) 20:42 (15)	06:54 20:16	18:59 19:01	07:49 16:53
8	05:14 22:11	06:00 21:25	20:26 (15) 20:40 (15)	06:56 20:14	18:59 18:59	07:51 16:51
9	05:15 22:10	06:02 21:23	20:29 (15) 20:38 (15)	06:58 20:11	18:59 18:56	07:53 16:49
10	05:16 22:09	06:04 21:21	20:30 (15) 20:09	07:00 20:09	18:55 18:54	07:55 16:47
11	05:17 22:08	06:06 21:19	20:31 (15) 20:06	07:02 20:06	18:54 18:51	07:57 16:45
12	05:18 22:07	06:07 21:17	20:32 (15) 20:04	07:03 20:04	18:51 18:49	07:59 16:44
13	05:19 22:06	06:09 21:15	20:33 (15) 20:01	07:05 20:01	18:49 18:47	08:01 16:42
14	05:21 22:05	20:32 (15) 20:36 (15)	06:11 21:12	19:36 (16) 19:41 (16)	07:07 19:59	08:02 18:44
15	05:22 22:04	20:30 (15) 20:38 (15)	06:13 21:10	19:33 (16) 19:45 (16)	07:09 19:56	08:05 18:42
16	05:23 22:03	20:28 (15) 20:40 (15)	06:15 21:08	19:31 (16) 19:47 (16)	07:11 19:54	08:07 18:40
17	05:25 22:02	20:27 (15) 20:41 (15)	06:16 21:06	19:29 (16) 19:49 (16)	07:12 19:51	08:08 18:37
18	05:26 22:01	20:26 (15) 20:42 (15)	06:18 21:04	19:27 (16) 19:49 (16)	07:14 19:49	08:10 18:35
19	05:27 21:59	20:25 (15) 20:43 (15)	06:20 21:01	19:26 (16) 19:50 (16)	07:16 19:46	08:12 18:33
20	05:29 21:58	20:24 (15) 20:43 (15)	06:22 20:59	19:25 (16) 19:51 (16)	07:18 19:44	08:14 18:30
21	05:30 21:56	20:24 (15) 20:45 (15)	06:24 20:57	19:24 (16) 19:50 (16)	07:20 19:41	08:16 18:28
22	05:32 21:55	20:23 (15) 20:45 (15)	06:25 20:55	19:23 (16) 19:51 (16)	07:21 19:38	08:18 18:26
23	05:33 21:54	20:22 (15) 20:45 (15)	06:27 20:52	19:23 (16) 19:51 (16)	07:23 19:36	08:20 18:24
24	05:35 21:52	20:23 (15) 20:46 (15)	06:29 20:50	19:22 (16) 19:50 (16)	07:25 19:33	08:22 18:21
25	05:37 21:50	20:22 (15) 20:46 (15)	06:31 20:48	19:22 (16) 19:50 (16)	07:27 19:31	08:23 18:19
26	05:38 21:49	20:22 (15) 20:47 (15)	06:33 20:45	19:22 (16) 19:50 (16)	07:29 19:28	08:25 17:17
27	05:40 21:47	20:21 (15) 20:47 (15)	06:35 20:43	19:22 (16) 19:49 (16)	07:31 19:26	08:27 17:15
28	05:41 21:46	20:22 (15) 20:47 (15)	06:36 20:40	19:22 (16) 19:48 (16)	07:32 19:23	08:28 17:13
29	05:43 21:44	20:21 (15) 20:47 (15)	06:38 20:38	19:23 (16) 19:47 (16)	07:34 19:21	08:30 17:10
30	05:45 21:42	20:22 (15) 20:47 (15)	06:40 20:36	19:24 (16) 19:46 (16)	07:36 19:18	08:32 17:08
31	05:46 21:40	20:21 (15) 20:46 (15)	06:42 20:33	19:24 (16) 19:44 (16)	07:35 17:06	08:58 16:22
Potential sun hours	515	461	383	327	257	230
Total, worst case	356	584	30			
Sun reduction	0.27	0.27	0.29			
Oper. time red.	1.00	1.00	1.00			
Wind dir. red.	0.62	0.60	0.59			
Total reduction	0.16	0.16	0.17			
Total, real	58	96	5			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)



## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: CA - H79

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June				
1	08:59	15:29 (12)	08:27	07:29	07:12	06:02	05:12			
	16:24	16	15:45 (12)	17:16	18:13	20:12	21:09	22:00		
2	08:58	15:29 (12)	08:26	07:26	07:10	06:00	05:11			
	16:25	17	15:46 (12)	17:18	18:15	20:14	21:11	22:01		
3	08:58	15:30 (12)	08:24	08:52 (15)	07:24	07:07	05:58	05:10		
	16:26	18	15:48 (12)	17:20	1	08:53 (15)	18:17	20:16	21:13	22:02
4	08:58	15:29 (12)	08:22	08:50 (15)	07:22	07:05	05:56	05:09		
	16:27	20	15:49 (12)	17:22	4	08:54 (15)	18:19	20:18	21:14	22:04
5	08:57	15:30 (12)	08:20	08:48 (15)	07:19	07:03	05:54	05:08		
	16:29	21	15:51 (12)	17:24	7	08:55 (15)	18:21	20:20	21:16	22:05
6	08:57	15:30 (12)	08:18	08:46 (15)	07:17	07:00	05:52	05:07		
	16:30	22	15:52 (12)	17:26	10	08:56 (15)	18:23	20:22	21:18	22:06
7	08:57	15:30 (12)	08:16	08:44 (15)	07:14	06:58	05:50	05:07		
	16:31	23	15:53 (12)	17:28	12	08:56 (15)	18:25	20:24	21:20	22:07
8	08:56	15:31 (12)	08:14	08:42 (15)	07:12	06:55	05:48	05:06		
	16:33	24	15:55 (12)	17:30	15	08:57 (15)	18:27	20:26	21:22	22:08
9	08:55	15:30 (12)	08:12	08:40 (15)	07:10	06:53	05:46	05:05		
	16:34	26	15:56 (12)	17:32	17	08:57 (15)	18:28	20:27	21:24	22:09
10	08:55	15:31 (12)	08:10	08:37 (15)	07:07	06:50	05:44	05:05		
	16:36	25	15:56 (12)	17:34	19	08:56 (15)	18:30	20:29	21:25	22:10
11	08:54	15:31 (12)	08:08	08:35 (15)	07:05	06:48	05:42	05:04		
	16:37	26	15:57 (12)	17:36	21	08:56 (15)	18:32	20:31	21:27	22:10
12	08:53	15:31 (12)	08:06	08:33 (15)	07:02	06:45	05:40	05:04		
	16:39	26	15:57 (12)	17:38	23	08:56 (15)	18:34	20:33	21:29	22:11
13	08:52	15:31 (12)	08:04	08:32 (15)	07:00	06:43	05:39	05:04		
	16:40	27	15:58 (12)	17:40	23	08:55 (15)	18:36	20:35	21:31	22:12
14	08:52	15:32 (12)	08:02	08:33 (15)	06:57	06:41	05:37	05:03		
	16:42	27	15:59 (12)	17:42	22	08:55 (15)	18:38	20:37	21:32	22:13
15	08:51	15:32 (12)	08:00	08:34 (15)	06:55	06:38	05:35	05:03		
	16:44	27	15:59 (12)	17:45	19	08:53 (15)	18:40	20:39	21:34	22:13
16	08:50	15:32 (12)	07:58	08:35 (15)	06:52	06:36	05:33	05:03		
	16:45	27	15:59 (12)	17:47	17	08:52 (15)	18:42	20:41	21:36	22:14
17	08:49	09:20 (16)	07:56	08:37 (15)	06:50	06:34	05:32	05:03		
	16:47	30	15:59 (12)	17:49	13	08:50 (15)	18:44	20:43	21:38	22:14
18	08:47	09:19 (16)	07:54	08:42 (15)	06:47	06:31	05:30	05:03		
	16:49	32	16:00 (12)	17:51	4	08:46 (15)	18:46	20:44	21:39	22:15
19	08:46	09:17 (16)	07:52	06:45	06:29	05:28	05:03			
	16:51	32	15:59 (12)	17:53	18:48	20:46	21:41	22:15		
20	08:45	09:16 (16)	07:49	06:42	06:27	05:27	05:03			
	16:53	34	16:00 (12)	17:55	18:50	20:48	21:43	22:15		
21	08:44	09:14 (16)	07:47	06:40	06:24	05:25	05:03			
	16:54	35	15:59 (12)	17:57	18:52	20:50	21:44	22:16		
22	08:43	09:13 (16)	07:45	06:37	06:22	05:24	05:03			
	16:56	37	16:00 (12)	17:59	18:53	20:52	21:46	22:16		
23	08:41	09:11 (16)	07:43	06:35	06:20	05:22	05:03			
	16:58	38	15:59 (12)	18:01	18:55	20:54	21:47	22:16		
24	08:40	09:10 (16)	07:40	06:32	06:17	05:21	05:04			
	17:00	39	16:00 (12)	18:03	18:57	20:56	21:49	22:16		
25	08:38	09:08 (16)	07:38	06:30	06:15	05:20	05:04			
	17:02	39	15:59 (12)	18:05	18:59	20:58	21:50	22:16		
26	08:37	09:07 (16)	07:36	06:27	06:13	05:18	05:04			
	17:04	39	15:59 (12)	18:07	19:01	21:00	21:52	22:16		
27	08:35	09:06 (16)	07:33	06:25	06:11	05:17	05:05			
	17:06	37	15:58 (12)	18:09	19:03	21:01	21:53	22:16		
28	08:34	09:07 (16)	07:31	06:22	06:09	05:16	05:05			
	17:08	31	15:56 (12)	18:11	19:05	21:03	21:55	22:16		
29	08:32	09:08 (16)		07:20	06:06	05:15	05:06			
	17:10	24	15:54 (12)		20:07	21:05	21:56	22:16		
30	08:31	09:09 (16)		07:17	06:04	05:14	05:07			
	17:12	13	09:22 (16)		20:09	21:07	21:57	22:15		
31	08:29	09:12 (16)		07:15		05:13				
	17:14	9	09:21 (16)		20:10	21:59				
Potential sun hours	248		272	367	421	496	513			
Total, worst case	841		227							
Sun reduction	0.17		0.22							
Oper. time red.	1.00		1.00							
Wind dir. red.	0.63		0.63							
Total reduction	0.11		0.14							
Total, real	90		32							

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: CA - H79  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	July	August	September	October	November	December		
1	05:07 22:15	05:48 21:39	06:44 20:31	07:38 19:16	07:37 17:04	08:07 (15) 16:19	08:34 26	15:13 (12) 15:39 (12)
2	05:08 22:15	05:50 21:37	06:45 20:29	07:40 19:14	07:39 17:02	08:09 (15) 08:25 (15)	08:35 25	15:14 (12) 15:39 (12)
3	05:09 22:14	05:52 21:35	06:47 20:26	07:42 19:11	07:41 17:00	08:12 (15) 08:26 (15)	08:37 25	15:14 (12) 15:39 (12)
4	05:10 22:14	05:53 21:33	06:49 20:24	07:44 19:09	07:43 16:58	08:14 (15) 08:26 (15)	08:38 24	15:15 (12) 15:39 (12)
5	05:11 22:13	05:55 21:31	06:51 20:21	07:45 19:06	07:45 16:56	08:16 (15) 08:25 (15)	08:40 23	15:15 (12) 15:38 (12)
6	05:12 22:12	05:57 21:29	06:53 20:19	07:47 19:04	07:47 16:55	08:18 (15) 08:25 (15)	08:41 22	15:16 (12) 15:38 (12)
7	05:13 22:12	05:59 21:27	06:55 20:16	07:49 19:01	07:49 16:53	08:20 (15) 08:24 (15)	08:42 21	15:16 (12) 15:37 (12)
8	05:14 22:11	06:00 21:25	06:56 20:14	07:51 18:59	07:51 16:51	08:22 (15) 08:23 (15)	08:44 20	15:17 (12) 15:37 (12)
9	05:15 22:10	06:02 21:23	06:58 20:11	07:53 18:56	07:53 16:49	08:23 (15)	08:45 18	15:18 (12) 15:36 (12)
10	05:16 22:09	06:04 21:21	07:00 20:09	07:55 18:54	07:55 16:47		08:46 17	15:18 (12) 15:35 (12)
11	05:17 22:08	06:06 21:19	07:02 20:06	07:57 18:52	07:57 16:45	08:43 (16) 08:52 (16)	08:47 16	15:20 (12) 15:36 (12)
12	05:18 22:08	06:08 21:17	07:04 20:04	07:59 18:49	07:59 16:44	08:41 (16) 08:54 (16)	08:48 15	15:20 (12) 15:35 (12)
13	05:19 22:06	06:09 21:15	07:05 20:01	08:00 18:47	08:01 16:42	08:40 (16) 15:26 (12)	08:49 14	15:21 (12) 15:35 (12)
14	05:21 22:05	06:11 21:13	07:07 19:59	08:02 18:44	08:03 16:40	08:39 (16) 15:28 (12)	08:50 13	15:22 (12) 15:35 (12)
15	05:22 22:04	06:13 21:10	07:09 19:56	08:04 18:42	08:05 16:39	08:38 (16) 15:30 (12)	08:51 13	15:22 (12) 15:35 (12)
16	05:23 22:03	06:15 21:08	07:11 19:54	08:06 18:40	08:07 16:37	08:40 (16) 15:32 (12)	08:52 12	15:23 (12) 15:35 (12)
17	05:25 22:02	06:16 21:06	07:13 19:51	08:08 18:37	08:09 16:36	08:42 (16) 15:33 (12)	08:53 11	15:24 (12) 15:35 (12)
18	05:26 22:01	06:18 21:04	07:14 19:49	08:10 18:35	08:11 16:34	08:44 (16) 15:33 (12)	08:54 11	15:24 (12) 15:35 (12)
19	05:27 21:59	06:20 21:02	07:16 19:46	08:12 18:33	08:13 16:33	08:46 (16) 15:34 (12)	08:55 10	15:25 (12) 15:35 (12)
20	05:29 21:58	06:22 20:59	07:18 19:44	08:14 18:30	08:14 16:31	08:48 (16) 15:35 (12)	08:55 10	15:26 (12) 15:36 (12)
21	05:30 21:57	06:24 20:57	07:20 19:41	08:16 18:28	08:16 16:30	08:50 (16) 15:35 (12)	08:56 10	15:26 (12) 15:36 (12)
22	05:32 21:55	06:26 20:55	07:22 19:39	08:18 18:26	08:18 16:29	08:52 (16) 15:36 (12)	08:57 10	15:27 (12) 15:37 (12)
23	05:33 21:54	06:27 20:52	07:23 19:36	08:20 18:24	08:20 16:27	08:54 (16) 15:36 (12)	08:57 10	15:27 (12) 15:37 (12)
24	05:35 21:52	06:29 20:50	07:25 19:34	08:22 18:21	08:22 16:26	08:56 (16) 15:37 (12)	08:57 10	15:28 (12) 15:38 (12)
25	05:37 21:51	06:31 20:48	07:27 19:31	08:24 18:19	08:24 16:25	08:58 (16) 15:37 (12)	08:58 10	15:28 (12) 15:38 (12)
26	05:38 21:49	06:33 20:45	07:29 19:29	08:26 18:17	08:25 16:24	09:00 (16) 15:38 (12)	08:58 11	15:28 (12) 15:39 (12)
27	05:40 21:47	06:35 20:43	07:31 19:26	08:28 18:15	08:27 16:23	15:11 (12) 15:38 (12)	08:58 12	15:28 (12) 15:40 (12)
28	05:41 21:46	06:36 20:41	07:33 19:24	08:30 18:13	08:29 16:22	15:12 (12) 15:39 (12)	08:58 12	15:28 (12) 15:40 (12)
29	05:43 21:44	06:38 20:38	07:34 19:21	08:32 18:11	08:30 16:21	15:11 (12) 15:38 (12)	08:59 13	15:28 (12) 15:41 (12)
30	05:45 21:42	06:40 20:36	07:36 19:19	08:34 18:08	08:32 16:20	15:12 (12) 15:38 (12)	08:59 14	15:29 (12) 15:43 (12)
31	05:46 21:41	06:42 20:33	07:36 19:17	08:36 18:06	08:32 16:19	15:12 (12) 15:38 (12)	08:59 15	15:29 (12) 15:44 (12)
Potential sun hours	515	461	383	327	257		230	
Total, worst case				147	687		473	
Sun reduction				0.23	0.20		0.12	
Oper. time red.				1.00	1.00		1.00	
Wind dir. red.				0.63	0.63		0.62	
Total reduction				0.15	0.13		0.07	
Total, real				22	87		35	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: CB - H80  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June	
1	08:59 16:24	15:44 (12) 15:45 (12)	08:27 17:16	08:56 (15) 09:04 (15)	07:29 18:13	07:12 20:12	06:02 21:09
2	08:58 16:25	15:43 (12) 15:46 (12)	08:26 17:18	08:54 (15) 09:04 (15)	07:26 18:15	07:10 20:14	06:00 21:11
3	08:58 16:26	15:44 (12) 15:48 (12)	08:24 17:20	08:52 (15) 09:05 (15)	07:24 18:17	07:07 20:16	05:58 21:13
4	08:58 16:27	15:43 (12) 15:49 (12)	08:22 17:22	08:50 (15) 09:05 (15)	07:22 18:19	07:05 20:18	05:56 21:14
5	08:57 16:29	15:43 (12) 15:51 (12)	08:20 17:24	08:48 (15) 09:05 (15)	07:19 18:21	07:03 20:20	05:54 21:16
6	08:57 16:30	15:43 (12) 15:52 (12)	08:18 17:26	08:46 (15) 09:05 (15)	07:17 18:23	07:00 20:22	05:52 21:18
7	08:57 16:31	15:42 (12) 15:53 (12)	08:16 17:28	08:44 (15) 09:06 (15)	07:14 18:25	06:58 20:24	05:50 21:20
8	08:56 16:33	15:43 (12) 15:56 (12)	08:14 17:30	08:42 (15) 09:05 (15)	07:12 18:27	06:55 20:26	05:48 21:22
9	08:55 16:34	15:43 (12) 15:57 (12)	08:12 17:32	08:40 (15) 09:05 (15)	07:09 18:28	06:53 20:27	05:46 21:24
10	08:55 16:36	15:43 (12) 15:59 (12)	08:10 17:34	08:40 (15) 09:04 (15)	07:07 18:30	06:50 20:29	05:44 21:25
11	08:54 16:37	09:27 (16) 16:00 (12)	08:08 17:36	08:41 (15) 09:03 (15)	07:05 18:32	06:48 20:31	05:42 21:27
12	08:53 16:39	09:26 (16) 16:02 (12)	08:06 17:38	08:42 (15) 09:02 (15)	07:02 18:34	06:45 20:33	05:40 21:29
13	08:52 16:40	09:25 (16) 16:04 (12)	08:04 17:40	08:43 (15) 09:01 (15)	07:00 18:36	06:43 20:35	05:39 21:31
14	08:52 16:42	09:24 (16) 16:06 (12)	08:02 17:42	08:45 (15) 08:59 (15)	06:57 18:38	06:41 20:37	05:37 21:32
15	08:51 16:44	09:23 (16) 16:07 (12)	08:00 17:45	08:48 (15) 08:56 (15)	06:55 18:40	06:38 20:39	05:35 21:34
16	08:50 16:45	09:21 (16) 16:07 (12)	07:58 17:47	06:52 18:42	06:36 20:41	05:33 21:36	05:03 22:14
17	08:49 16:47	09:20 (16) 16:08 (12)	07:56 17:49	06:50 18:44	06:34 20:43	05:32 21:38	05:03 22:14
18	08:47 16:49	09:19 (16) 16:09 (12)	07:54 17:51	06:47 18:46	06:31 20:44	05:30 21:39	05:03 22:15
19	08:46 16:51	09:17 (16) 16:09 (12)	07:52 17:53	06:45 18:48	06:29 20:46	05:28 21:41	05:03 22:15
20	08:45 16:53	09:16 (16) 16:09 (12)	07:49 17:55	06:42 18:50	06:27 20:48	05:27 21:43	05:03 22:15
21	08:44 16:54	09:14 (16) 16:09 (12)	07:47 17:57	06:40 18:52	06:24 20:50	05:25 21:44	05:03 22:16
22	08:43 16:56	09:13 (16) 16:10 (12)	07:45 17:59	06:37 18:53	06:22 20:52	05:24 21:46	05:03 22:16
23	08:41 16:58	09:13 (16) 16:09 (12)	07:43 18:01	06:35 18:55	06:20 20:54	05:22 21:47	05:03 22:16
24	08:40 17:00	09:14 (16) 16:10 (12)	07:40 18:03	06:32 18:57	06:17 20:56	05:21 21:49	05:04 22:16
25	08:38 17:02	09:15 (16) 16:09 (12)	07:38 18:05	06:30 18:59	06:15 20:58	05:20 21:50	05:04 22:16
26	08:37 17:04	09:17 (16) 16:10 (12)	07:36 18:07	06:27 19:01	06:13 21:00	05:18 21:52	05:04 22:16
27	08:35 17:06	09:19 (16) 16:09 (12)	07:33 18:09	06:25 19:03	06:11 21:01	05:17 21:53	05:05 22:16
28	08:34 17:08	09:21 (16) 16:08 (12)	07:31 18:11	06:22 19:05	06:09 21:03	05:16 21:55	05:05 22:16
29	08:32 17:10	15:50 (12) 16:07 (12)		07:20 20:07	06:06 21:05	05:15 21:56	05:06 22:16
30	08:31 17:12	08:59 (15) 16:05 (12)		07:17 20:09	06:04 21:07	05:14 21:57	05:07 22:15
31	08:29 17:14	08:58 (15) 16:04 (12)		07:15 20:10		05:13 21:59	
Potential sun hours	248		272	367	421	496	513
Total, worst case	782		258				
Sun reduction	0.17		0.22				
Oper. time red.	1.00		1.00				
Wind dir. red.	0.63		0.63				
Total reduction	0.11		0.14				
Total, real	84		36				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: CB - H80  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	July	August	September	October	November	December
1	05:07	05:48	06:44	07:38	07:37	08:09 (15) 08:34 09:09 (16)
	22:15	21:39	20:31	19:16	17:04	24 08:33 (15) 16:19 21 15:42 (12)
2	05:08	05:50	06:45	07:40	07:39	08:09 (15) 08:35 09:11 (16)
	22:15	21:37	20:29	19:14	17:02	25 08:34 (15) 16:18 18 15:42 (12)
3	05:09	05:52	06:47	07:42	07:41	08:12 (15) 08:37 15:26 (12)
	22:14	21:35	20:26	19:11	17:00	23 08:35 (15) 16:17 14 15:40 (12)
4	05:10	05:53	06:49	07:44	07:43	08:14 (15) 08:38 15:27 (12)
	22:14	21:33	20:24	19:09	16:58	21 08:35 (15) 16:17 13 15:40 (12)
5	05:11	05:55	06:51	07:45	07:45	08:16 (15) 08:40 15:27 (12)
	22:13	21:31	20:21	19:06	16:56	19 08:35 (15) 16:16 11 15:38 (12)
6	05:12	05:57	06:53	07:47	07:47	08:18 (15) 08:41 15:29 (12)
	22:12	21:29	20:19	19:04	16:55	17 08:35 (15) 16:16 9 15:38 (12)
7	05:13	05:59	06:55	07:49	07:49	08:20 (15) 08:42 15:29 (12)
	22:12	21:27	20:16	19:01	16:53	15 08:35 (15) 16:15 8 15:37 (12)
8	05:14	06:00	06:56	07:51	07:51	08:22 (15) 08:44 15:31 (12)
	22:11	21:25	20:14	18:59	16:51	12 08:34 (15) 16:15 6 15:37 (12)
9	05:15	06:02	06:58	07:53	07:53	08:25 (15) 08:45 15:32 (12)
	22:10	21:23	20:11	18:56	16:49	10 08:35 (15) 16:14 4 15:36 (12)
10	05:16	06:04	07:00	07:55	07:55	08:27 (15) 08:46 15:33 (12)
	22:09	21:21	20:09	18:54	16:47	7 08:34 (15) 16:14 2 15:35 (12)
11	05:17	06:06	07:02	07:57	07:57	08:29 (15) 08:47 15:34 (12)
	22:08	21:19	20:06	18:52	16:45	14 15:35 (12) 16:14 2 15:36 (12)
12	05:18	06:07	07:04	07:59	07:59	08:31 (15) 08:48 15:36 (12)
	22:08	21:17	20:04	18:49	16:44	15 15:37 (12) 16:14 08:01 15:22 (12) 08:49
13	05:19	06:09	07:05	08:00	08:01	15:22 (12) 08:49 16:42 17 15:39 (12) 16:13
	22:06	21:15	20:01	18:47	16:42	17 15:39 (12) 16:13 08:03 08:53 (16) 08:50
14	05:21	06:11	07:07	08:02	08:03	08:53 (16) 08:50 16:40 26 15:40 (12) 16:13
	22:05	21:13	19:59	18:44	16:40	26 15:40 (12) 16:13 08:05 08:50 (16) 08:51
15	05:22	06:13	07:09	08:04	08:05	08:50 (16) 08:51 16:39 33 15:41 (12) 16:13
	22:04	21:10	19:56	18:42	16:39	33 15:41 (12) 16:13 08:07 08:50 (16) 08:52
16	05:23	06:15	07:11	08:06	08:07	08:50 (16) 08:52 16:37 38 15:43 (12) 16:13
	22:03	21:08	19:54	18:40	16:37	38 15:43 (12) 16:13 08:09 08:49 (16) 08:53
17	05:25	06:16	07:13	08:08	08:09	08:49 (16) 08:53 16:36 40 15:43 (12) 16:14
	22:02	21:06	19:51	18:37	16:36	40 15:43 (12) 16:14 08:11 08:48 (16) 08:54
18	05:26	06:18	07:14	08:10	08:11	08:48 (16) 08:54 16:34 43 15:44 (12) 16:14
	22:01	21:04	19:49	18:35	16:34	43 15:44 (12) 16:14 08:13 08:48 (16) 08:55
19	05:27	06:20	07:16	08:12	08:13	08:48 (16) 08:55 16:33 45 15:44 (12) 16:14
	21:59	21:02	19:46	18:33	16:33	45 15:44 (12) 16:14 08:14 08:48 (16) 08:55
20	05:29	06:22	07:18	08:14	08:14	08:48 (16) 08:55 16:31 46 15:45 (12) 16:14
	21:58	20:59	19:44	18:30	16:31	46 15:45 (12) 16:14 08:16 08:50 (16) 08:56
21	05:30	06:24	07:20	08:16	08:16	08:50 (16) 08:56 16:30 45 15:45 (12) 16:15
	21:57	20:57	19:41	18:28	16:30	45 15:45 (12) 16:15 08:18 08:52 (16) 08:57
22	05:32	06:26	07:22	08:18	08:18	08:52 (16) 08:57 16:29 42 15:45 (12) 16:15
	21:55	20:55	19:39	18:26	16:29	42 15:45 (12) 16:15 08:20 08:54 (16) 08:57
23	05:33	06:27	07:23	08:20	08:20	08:54 (16) 08:57 16:27 42 15:46 (12) 16:16
	21:54	20:52	19:36	18:24	16:27	42 15:46 (12) 16:16 08:22 08:56 (16) 08:57
24	05:35	06:29	07:25	08:22	08:22	08:56 (16) 08:57 16:26 40 15:46 (12) 16:16
	21:52	20:50	19:34	18:21	16:26	40 15:46 (12) 16:16 08:23 08:58 (16) 08:58
25	05:37	06:31	07:27	07:24	08:23	08:58 (16) 08:58 16:25 38 15:46 (12) 16:17
	21:51	20:48	19:31	17:19	16:25	38 15:46 (12) 16:17 08:25 09:00 (16) 08:58
26	05:38	06:33	07:29	07:26	08:25	09:00 (16) 08:58 16:24 36 15:46 (12) 16:18
	21:49	20:45	19:29	17:17	16:24	36 15:46 (12) 16:18 08:27 09:02 (16) 08:58
27	05:40	06:35	07:31	07:28	08:27	09:02 (16) 08:58 10 08:27 (15) 16:23 34 15:47 (12) 16:19
	21:47	20:43	19:26	17:15	16:23	34 15:47 (12) 16:19 08:29 09:04 (16) 08:58
28	05:41	06:36	07:33	07:30	08:29	09:04 (16) 08:58 16:22 31 15:46 (12) 16:19
	21:46	20:41	19:24	17:13	16:22	31 15:46 (12) 16:19 08:30 09:05 (16) 08:59
29	05:43	06:38	07:34	07:32	08:30	09:05 (16) 08:59 16:21 27 15:44 (12) 16:20
	21:44	20:38	19:21	17:11	16:21	27 15:44 (12) 16:20 08:32 09:07 (16) 08:59
30	05:45	06:40	07:36	07:34	08:31	09:07 (16) 08:59 16:20 24 15:43 (12) 16:21
	21:42	20:36	19:19	17:08	16:20	24 15:43 (12) 16:21 08:32 (15) 08:10 (15) 08:59
31	05:46	06:42	07:35	07:35	08:33	09:08 (16) 08:59 17:06 23 08:33 (15) 16:22
	21:41	20:33	19:17	17:06	17:06	23 08:33 (15) 16:22
Potential sun hours	515	461	383	327	257	230
Total, worst case				87	849	108
Sun reduction				0.23	0.20	0.12
Oper. time red.				1.00	1.00	1.00
Wind dir. red.				0.63	0.63	0.62
Total reduction				0.15	0.13	0.07
Total, real				13	107	8

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: CC - H81

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January	February	March	April	May	June
1	08:58 16:24	08:27 17:16	15:56 (16) 16:19 (16)	07:29 18:13	16:53 (15) 17:09 (15)	07:12 20:12
2	08:58 16:25	08:25 17:18	15:56 (16) 16:19 (16)	07:26 18:15	16:55 (15) 17:06 (15)	07:10 20:14
3	08:58 16:26	08:24 17:20	15:57 (16) 16:19 (16)	07:24 18:17		07:07 20:16
4	08:58 16:27	08:22 17:22	15:58 (16) 16:18 (16)	07:21 18:19		07:05 20:18
5	08:57 16:28	08:20 17:24	15:59 (16) 16:17 (16)	07:19 18:21		07:02 20:20
6	08:57 16:30	08:18 17:26	16:01 (16) 16:16 (16)	07:17 18:23		07:00 20:22
7	08:56 16:31	08:16 17:28	16:03 (16) 16:14 (16)	07:14 18:24		06:58 20:24
8	08:56 16:33	08:14 17:30		07:12 18:26		06:55 20:25
9	08:55 16:34	08:12 17:32		07:09 18:28		06:53 20:27
10	08:55 16:36	08:10 17:34		07:07 18:30		06:50 20:29
11	08:54 16:37	08:08 17:36		07:05 18:32		06:48 20:31
12	08:53 16:39	08:06 17:38		07:02 18:34		06:45 20:33
13	08:52 16:40	08:04 17:40	16:57 (15) 17:06 (15)	07:00 18:36		06:43 20:35
14	08:51 16:42	08:02 17:42	16:55 (15) 17:09 (15)	06:57 18:38		06:41 20:37
15	08:51 16:44	08:00 17:44	16:52 (15) 17:10 (15)	06:55 18:40		06:38 20:39
16	08:50 16:45	16:02 (16) 16:03 (16)	07:58 17:12 (15)	06:52 18:42		06:36 20:41
17	08:48 16:47	15:59 (16) 16:08 (16)	07:56 17:13 (15)	06:50 18:44		06:33 20:42
18	08:47 16:49	15:58 (16) 16:10 (16)	07:54 17:14 (15)	06:47 18:46		06:31 20:44
19	08:46 16:51	15:56 (16) 16:11 (16)	07:51 17:15 (15)	06:45 18:48		06:29 20:46
20	08:45 16:52	15:56 (16) 16:13 (16)	07:49 17:15 (15)	06:42 18:50		06:26 20:48
21	08:44 16:54	15:55 (16) 16:14 (16)	07:47 17:15 (15)	06:40 18:51		06:24 20:50
22	08:42 16:56	15:55 (16) 16:15 (16)	07:45 17:14 (15)	06:37 18:53		06:22 20:52
23	08:41 16:58	15:54 (16) 16:16 (16)	07:42 18:01	06:35 18:55		06:20 20:54
24	08:40 17:00	15:54 (16) 16:17 (16)	07:40 18:03	06:32 18:57		06:17 20:56
25	08:38 17:02	15:54 (16) 16:17 (16)	07:38 18:05	06:30 18:59		06:15 20:58
26	08:37 17:04	15:53 (16) 16:18 (16)	07:36 18:07	06:27 19:01		06:13 20:59
27	08:35 17:06	15:54 (16) 16:19 (16)	07:33 18:09	06:25 19:03		06:11 21:01
28	08:34 17:08	15:54 (16) 16:19 (16)	07:31 18:11	06:22 19:05		06:08 21:03
29	08:32 17:10	15:54 (16) 16:19 (16)		07:20 20:07		06:06 21:05
30	08:31 17:12	15:54 (16) 16:19 (16)		07:17 20:08		06:04 21:07
31	08:29 17:14	15:54 (16) 16:19 (16)		07:15 20:10		05:12 21:59
Potential sun hours	248	272	367	421	496	513
Total, worst case	311	492	527	577	646	673
Sun reduction	0.17	0.22	0.22	0.22	0.22	0.22
Oper. time red.	1.00	1.00	1.00	1.00	1.00	1.00
Wind dir. red.	0.61	0.59	0.58	0.58	0.58	0.58
Total reduction	0.10	0.13	0.13	0.13	0.13	0.13
Total, real	32	64	4	4	4	4

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: CC - H81

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	July	August	September	October	November	December
1	05:07	05:48	06:44	07:38	07:37	08:33
	22:15	21:39	20:31	19:16	17:04	16:19
2	05:08	05:50	06:45	07:40	07:39	08:35
	22:14	21:37	20:28	19:14	17:02	16:18
3	05:09	05:52	06:47	07:42	07:41	08:36
	22:14	21:35	20:26	19:11	17:00	16:17
4	05:10	05:53	06:49	07:43	07:43	08:38
	22:14	21:33	20:23	19:09	16:58	16:17
5	05:11	05:55	06:51	07:45	07:45	08:39
	22:13	21:31	20:21	19:06	16:56	16:16
6	05:11	05:57	06:53	07:47	07:47	08:41
	22:12	21:29	20:19	19:04	16:54	16:16
7	05:12	05:58	06:54	07:49	07:49	08:42
	22:12	21:27	20:16	19:01	16:53	16:15
8	05:13	06:00	06:56	07:51	07:51	08:43
	22:11	21:25	20:14	18:59	16:51	16:15
9	05:15	06:02	06:58	07:53	07:53	08:45
	22:10	21:23	20:11	18:56	16:49	16:14
10	05:16	06:04	07:00	07:55	07:55	08:46
	22:09	21:21	20:09	18:54	16:47	16:14
11	05:17	06:06	07:02	07:57	17:31 (15)	08:47
	22:08	21:19	20:06	18:51	7 17:38 (15)	16:14
12	05:18	06:07	07:03	07:58	17:27 (15)	08:48
	22:07	21:17	20:04	18:49	14 17:41 (15)	16:13
13	05:19	06:09	07:05	08:00	17:25 (15)	08:49
	22:06	21:15	20:01	18:47	18 17:43 (15)	16:13
14	05:21	06:11	07:07	08:02	17:23 (15)	08:50
	22:05	21:13	19:59	18:44	21 17:44 (15)	16:13
15	05:22	06:13	07:09	08:04	17:22 (15)	08:51
	22:04	21:10	19:56	18:42	23 17:45 (15)	16:13
16	05:23	06:15	07:11	08:06	17:21 (15)	08:52
	22:03	21:08	19:54	18:40	24 17:45 (15)	16:13
17	05:25	06:16	07:12	08:08	17:20 (15)	08:53
	22:02	21:06	19:51	18:37	26 17:46 (15)	16:14
18	05:26	06:18	07:14	08:10	17:19 (15)	08:54
	22:01	21:04	19:49	18:35	27 17:46 (15)	16:14
19	05:27	06:20	07:16	08:12	17:19 (15)	08:55
	21:59	21:01	19:46	18:33	27 17:46 (15)	16:14
20	05:29	06:22	07:18	08:14	17:19 (15)	08:55
	21:58	20:59	19:44	18:30	27 17:46 (15)	16:14
21	05:30	06:24	07:20	08:16	17:19 (15)	08:56
	21:57	20:57	19:41	18:28	26 17:45 (15)	16:15
22	05:32	06:25	07:21	08:18	17:19 (15)	08:56
	21:55	20:55	19:39	18:26	26 17:45 (15)	16:15
23	05:33	06:27	07:23	08:20	17:19 (15)	08:57
	21:54	20:52	19:36	18:24	25 17:44 (15)	16:16
24	05:35	06:29	07:25	08:22	17:19 (15)	08:57
	21:52	20:50	19:33	18:21	24 17:43 (15)	16:16
25	05:36	06:31	07:27	07:24	16:20 (15)	08:58
	21:51	20:48	19:31	17:19	22 16:42 (15)	16:17
26	05:38	06:33	07:29	07:26	16:21 (15)	08:58
	21:49	20:45	19:28	17:17	20 16:41 (15)	16:18
27	05:40	06:34	07:31	07:27	16:22 (15)	08:58
	21:47	20:43	19:26	17:15	17 16:39 (15)	16:18
28	05:41	06:36	07:32	07:29	16:25 (15)	08:58
	21:46	20:40	19:23	17:13	13 16:38 (15)	16:19
29	05:43	06:38	07:34	07:31	16:28 (15)	08:58
	21:44	20:38	19:21	17:10	7 16:35 (15)	16:20
30	05:45	06:40	07:36	07:33	08:32	08:59
	21:42	20:36	19:18	17:08	16:20	16:21
31	05:46	06:42		07:35		08:58
	21:40	20:33		17:06		16:22
Potential sun hours	515	461	383	327	257	230
Total, worst case				394	451	
Sun reduction				0.23	0.20	
Oper. time red.				1.00	1.00	
Wind dir. red.				0.58	0.61	
Total reduction				0.14	0.12	
Total, real				54	55	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: CD - H82  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June
1	08:58 16:24	08:27 17:16	15:51 (16) 16:08 (16)	07:29 18:13	07:12 20:12	06:02 21:09
2	08:58 16:25	08:25 17:18	15:53 (16) 16:07 (16)	07:26 18:15	07:10 20:14	06:00 21:11
3	08:58 16:26	08:24 17:20	15:55 (16) 16:05 (16)	07:24 18:17	07:07 20:16	05:58 21:13
4	08:58 16:27	08:22 17:22		07:21 18:19	07:05 20:18	05:56 21:14
5	08:57 16:28	08:20 17:24		07:19 18:21	07:02 20:20	05:54 21:16
6	08:57 16:30	08:18 17:26		07:17 18:23	07:00 20:22	05:52 21:18
7	08:56 16:31	08:16 17:28		07:14 18:24	06:58 20:24	05:50 21:20
8	08:56 16:33	08:14 17:30	16:50 (15) 16:56 (15)	07:12 18:26	06:55 20:25	05:48 21:22
9	08:55 16:34	15:52 (16) 17:32	08:12 16:46 (15)	07:09 18:28	06:53 20:27	05:46 21:23
10	08:55 16:36	15:49 (16) 17:34	08:10 16:44 (15)	07:07 18:30	06:50 20:29	05:44 21:25
11	08:54 16:37	15:57 (16) 17:36	17:01 (15) 16:43 (15)	07:05 18:32	06:48 20:31	05:42 21:27
12	08:53 16:39	15:48 (16) 17:38	20 17:03 (15)	18:32 18:34	20:31 20:33	21:27 21:29
13	08:52 16:40	15:47 (16) 17:40	22 17:04 (15)	18:34 18:36	20:33 20:35	21:29 21:31
14	08:51 16:42	15:46 (16) 17:42	24 17:05 (15)	18:36 18:38	20:35 20:37	21:31 21:32
15	08:51 16:44	15:45 (16) 17:44	25 17:06 (15)	18:38 18:40	20:37 20:39	21:32 21:34
16	08:50 16:45	15:45 (16) 17:46	27 17:06 (15)	18:42 18:44	20:41 20:42	21:36 21:37
17	08:48 16:47	15:45 (16) 17:48	27 17:06 (15)	18:44 18:46	20:42 20:44	21:37 21:39
18	08:47 16:49	15:45 (16) 17:51	28 17:07 (15)	18:44 18:46	20:42 20:44	21:37 21:39
19	08:46 16:51	15:44 (16) 17:53	27 17:06 (15)	18:45 18:48	20:29 20:46	05:28 21:41
20	08:45 16:52	15:45 (16) 17:55	26 17:06 (15)	18:48 18:50	05:27 20:48	05:03 21:42
21	08:44 16:54	15:44 (16) 17:57	26 17:06 (15)	18:51 18:53	05:25 20:50	05:03 21:44
22	08:42 16:56	15:45 (16) 17:59	26 17:06 (15)	18:51 18:53	05:24 20:52	05:03 21:46
23	08:41 16:58	15:45 (16) 18:01	24 17:04 (15)	18:53 18:55	05:22 20:54	05:03 21:47
24	08:40 17:00	15:45 (16) 18:03	21 17:03 (15)	18:55 18:57	05:21 20:56	05:04 21:49
25	08:38 17:02	15:45 (16) 18:05	19 17:02 (15)	18:57 18:59	05:20 20:58	05:04 21:50
26	08:37 17:04	15:45 (16) 18:07	16 17:00 (15)	18:59 19:01	05:18 20:59	05:04 21:52
27	08:35 17:06	15:47 (16) 18:09	9 16:57 (15)	19:01 19:03	05:17 21:01	05:05 21:53
28	08:34 17:08	15:47 (16) 18:11		19:05 19:07	05:16 21:03	05:05 21:55
29	08:32 17:10	15:47 (16) 18:13		19:09 19:11	05:15 21:05	05:06 21:57
30	08:31 17:12	15:48 (16) 18:15		19:13 19:15	05:14 21:07	05:07 21:59
31	08:29 17:14	15:49 (16) 18:17		19:17 19:19	05:14 21:09	05:07 22:01
Potential sun hours	248	272	367	421	496	513
Total, worst case	453	445				
Sun reduction	0.17	0.22				
Oper. time red.	1.00	1.00				
Wind dir. red.	0.62	0.58				
Total reduction	0.11	0.13				
Total, real	48	58				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: CD - H82  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	July	August	September	October	November	December	
1	05:07 22:15	05:48 21:39	06:44 20:31	07:38 19:16	07:37 17:04	16:14 (15) 16:19	08:33 11 15:41 (16)
2	05:08 22:14	05:50 21:37	06:45 20:28	07:40 19:14	07:39 17:02	16:16 (15) 16:28 (15)	08:35 8 15:39 (16)
3	05:09 22:14	05:51 21:35	06:47 20:26	07:42 19:11	07:41 17:00	16:19 (15) 16:24 (15)	08:36 3 15:37 (16)
4	05:10 22:14	05:53 21:33	06:49 20:23	07:43 19:09	07:43 16:58		08:38 16:17
5	05:11 22:13	05:55 21:31	06:51 20:21	07:45 19:06	07:45 16:56		08:39 16:16
6	05:11 22:12	05:57 21:29	06:53 20:19	07:47 19:04	07:47 16:54		08:41 16:16
7	05:12 22:12	05:58 21:27	06:54 20:16	07:49 19:01	07:49 16:53		08:42 16:15
8	05:13 22:11	06:00 21:25	06:56 20:14	07:51 18:59	07:51 16:51	15:25 (16) 10 15:35 (16)	08:43 16:15
9	05:15 22:10	06:02 21:23	06:58 20:11	07:53 18:56	07:53 16:49	15:22 (16) 15 15:37 (16)	08:45 16:14
10	05:16 22:09	06:04 21:21	07:00 20:09	07:55 18:54	07:55 16:47	15:22 (16) 17 15:39 (16)	08:46 16:14
11	05:17 22:08	06:06 21:19	07:02 20:06	07:57 18:51	07:57 16:45	15:21 (16) 19 15:40 (16)	08:47 16:14
12	05:18 22:07	06:07 21:17	07:03 20:04	07:58 18:49	07:59 16:44	15:20 (16) 21 15:41 (16)	08:48 16:13
13	05:19 22:06	06:09 21:15	07:05 20:01	08:00 18:47	08:01 16:42	15:19 (16) 23 15:42 (16)	08:49 16:13
14	05:21 22:05	06:11 21:13	07:07 19:59	08:02 18:44	08:03 16:40	15:19 (16) 23 15:42 (16)	08:50 16:13
15	05:22 22:04	06:13 21:10	07:09 19:56	08:04 18:42	08:05 17:24 (15) 2 17:26 (15)	15:19 (16) 24 15:43 (16)	08:51 16:13
16	05:23 22:03	06:15 21:08	07:11 19:54	08:06 18:40	08:07 17:31 (15) 12 17:31 (15)	15:18 (16) 25 15:43 (16)	08:52 16:13
17	05:25 22:02	06:16 21:06	07:12 19:51	08:08 18:37	08:09 17:16 (15) 17 17:33 (15)	15:19 (16) 25 15:44 (16)	08:53 16:14
18	05:26 22:01	06:18 21:04	07:14 19:49	08:10 18:35	08:11 17:14 (15) 20 17:34 (15)	15:19 (16) 25 15:44 (16)	08:54 16:14
19	05:27 21:59	06:20 21:01	07:16 19:46	08:12 18:33	08:12 17:13 (15) 22 17:35 (15)	15:20 (16) 24 15:44 (16)	08:55 16:14
20	05:29 21:58	06:22 20:59	07:18 19:44	08:14 18:30	08:14 17:11 (15) 25 17:36 (15)	15:20 (16) 24 15:44 (16)	08:55 16:14
21	05:30 21:57	06:24 20:57	07:20 19:41	08:16 18:28	08:16 17:11 (15) 25 17:36 (15)	15:20 (16) 24 15:44 (16)	08:56 16:15
22	05:32 21:55	06:25 20:55	07:21 19:39	08:18 18:26	08:18 17:10 (15) 26 17:36 (15)	15:21 (16) 23 15:44 (16)	08:56 16:15
23	05:33 21:54	06:27 20:52	07:23 19:36	08:20 18:24	08:20 17:09 (15) 27 17:36 (15)	15:21 (16) 23 15:44 (16)	08:57 16:16
24	05:35 21:52	06:29 20:50	07:25 19:33	08:22 18:21	08:22 17:09 (15) 27 17:36 (15)	15:22 (16) 22 15:44 (16)	08:57 16:16
25	05:36 21:51	06:31 20:48	07:27 19:31	08:24 17:19	08:23 16:09 (15) 27 16:36 (15)	15:23 (16) 21 15:44 (16)	08:58 16:17
26	05:38 21:49	06:33 20:45	07:29 19:28	08:26 17:17	08:25 16:09 (15) 27 16:36 (15)	15:24 (16) 20 15:44 (16)	08:58 16:18
27	05:40 21:47	06:34 20:43	07:31 19:26	08:27 17:15	08:27 16:09 (15) 26 16:35 (15)	15:25 (16) 19 15:44 (16)	08:58 16:18
28	05:41 21:46	06:36 20:40	07:32 19:23	08:29 17:13	08:29 16:10 (15) 25 16:35 (15)	15:25 (16) 17 15:42 (16)	08:58 16:19
29	05:43 21:44	06:38 20:38	07:34 19:21	08:31 17:10	08:30 16:11 (15) 23 16:34 (15)	15:27 (16) 15 15:42 (16)	08:58 16:20
30	05:45 21:42	06:40 20:36	07:36 19:18	08:33 17:08	08:32 16:12 (15) 21 16:33 (15)	15:28 (16) 14 15:42 (16)	08:59 16:21
31	05:46 21:40	06:42 20:33	07:35 17:06	08:35 16:32 (15)	08:35 16:12 (15) 20 16:32 (15)	08:59 16:22	08:59 16:22
Potential sun hours	515	461	383	327	257	230	
Total, worst case				372	506	22	
Sun reduction				0.23	0.20	0.12	
Oper. time red.				1.00	1.00	1.00	
Wind dir. red.				0.58	0.62	0.62	
Total reduction				0.14	0.12	0.07	
Total, real				51	62	2	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: CE - H83  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June												
1	08:58	08:27	07:29	07:12	06:02	05:12												
	16:24	17:16	18:13	20:12	21:09	22:00												
2	08:58	08:25	07:26	07:10	06:00	05:11												
	16:25	17:18	18:15	20:14	21:11	22:01												
3	08:58	08:24	07:24	07:07	05:58	05:10	8	20:32 (8)										
	16:26	17:20	18:17	20:16	21:12	22:02												
4	08:58	08:22	07:21	07:05	05:56	05:09	13	20:29 (8)										
	16:27	17:22	18:19	20:18	21:14	22:03												
5	08:57	08:20	07:19	07:03	05:54	05:08	17	20:42 (8)										
	16:29	17:24	18:21	20:20	21:16	22:04												
6	08:57	08:18	07:17	07:00	05:52	05:07	19	20:45 (8)										
	16:30	17:26	18:23	20:22	21:18	22:06												
7	08:56	08:16	07:14	06:58	05:50	05:07	21	20:26 (8)										
	16:31	17:28	18:25	20:24	21:20	22:07												
8	08:56	08:14	07:12	06:55	19:47 (7)	05:48	22	20:25 (8)										
	16:33	17:30	18:26	20:25	4 19:51 (7)	21:22												
9	08:55	08:12	07:09	06:53	19:43 (7)	05:46	24	20:47 (8)										
	16:34	17:32	18:28	20:27	12 19:55 (7)	21:23												
10	08:55	08:10	07:07	06:50	19:41 (7)	05:44	25	20:48 (8)										
	16:36	17:34	18:30	20:29	17 19:58 (7)	21:25												
11	08:54	08:08	07:05	06:48	19:38 (7)	05:42	26	20:49 (8)										
	16:37	17:36	18:32	20:31	20 19:58 (7)	21:27												
12	08:53	08:06	07:02	06:45	19:37 (7)	05:40	27	20:23 (8)										
	16:39	17:38	18:34	20:33	23 20:00 (7)	21:29												
13	08:52	08:04	07:00	06:43	19:36 (7)	05:39	26	20:49 (8)										
	16:40	17:40	18:36	20:35	24 20:00 (7)	21:31												
14	08:51	08:02	06:57	06:41	19:35 (7)	05:37	27	20:22 (8)										
	16:42	17:42	18:38	20:37	25 20:00 (7)	21:32												
15	08:50	08:00	06:55	06:38	19:35 (7)	05:35	27	20:49 (8)										
	16:44	17:45	18:40	20:39	26 20:01 (7)	21:34												
16	08:49	07:58	06:52	06:36	19:34 (7)	05:33	26	20:23 (8)										
	16:46	17:47	18:42	20:41	27 20:01 (7)	21:36												
17	08:48	07:56	06:50	06:34	19:33 (7)	05:32	1	20:49 (8)										
	16:47	17:49	18:44	20:42	27 20:00 (7)	21:37												
18	08:47	07:54	06:47	06:31	19:33 (7)	05:30	2	20:23 (8)										
	16:49	17:51	18:46	20:44	27 20:00 (7)	21:39												
19	08:46	07:51	06:45	06:29	19:34 (7)	05:28	3	20:49 (8)										
	16:51	17:53	18:48	20:46	26 20:00 (7)	21:41												
20	08:45	07:49	06:42	06:27	19:33 (7)	05:27	3	20:48 (8)										
	16:53	17:55	18:50	20:48	26 19:59 (7)	21:42												
21	08:44	07:47	06:40	06:24	19:34 (7)	05:25	3	20:25 (8)										
	16:55	17:57	18:51	20:50	24 19:58 (7)	21:44												
22	08:42	07:45	06:37	06:22	19:34 (7)	05:24	3	20:48 (8)										
	16:56	17:59	18:53	20:52	23 19:57 (7)	21:46												
23	08:41	07:42	06:35	06:20	19:35 (7)	05:22	3	20:25 (8)										
	16:58	18:01	18:55	20:54	21 19:56 (7)	21:47												
24	08:40	07:40	06:32	06:17	19:37 (7)	05:21	3	20:47 (8)										
	17:00	18:03	18:57	20:56	18 19:55 (7)	21:49												
25	08:38	07:38	06:30	06:15	19:38 (7)	05:20	3	20:26 (8)										
	17:02	18:05	18:59	20:58	15 19:53 (7)	21:50												
26	08:37	07:36	06:27	06:13	19:40 (7)	05:18	2	20:46 (8)										
	17:04	18:07	19:01	20:59	10 19:50 (7)	21:52												
27	08:35	07:33	06:25	06:11	05:17	20:30 (8)	2	20:29 (8)										
	17:06	18:09	19:03	21:01	14 21:53	20:44 (8)												
28	08:34	07:31	06:22	06:09	05:16	20:31 (8)	12	20:43 (8)										
	17:08	18:11	19:05	21:03	12 21:54	20:43 (8)												
29	08:32	07:29	06:20	06:06	05:15	20:33 (8)	9	20:28 (8)										
	17:10	07:20	20:07	21:05	9 21:56	20:42 (8)												
30	08:30	07:17	06:04	06:04	05:14	20:35 (8)	5	20:25 (8)										
	17:12	20:09	21:07	21:57	5 20:40 (8)	22:15												
31	08:29	07:15	06:05	06:05	05:13	20:36 (8)												
	17:14	20:10	21:08	21:59	21:59	22:15												
Potential sun hours	248	272	367	421	496	513												
Total, worst case				395	569	28												
Sun reduction				0.34	0.36	0.26												
Oper. time red.				1.00	1.00	1.00												
Wind dir. red.				0.59	0.62	0.64												
Total reduction				0.20	0.22	0.17												
Total, real				80	128	5												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: CE - H83

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	July	August	September	October	November	December	
1	05:07 22:15	05:48 21:39	20:33 (8) 20:31	06:44 20	19:37 (7) 19:57 (7)	07:38 17:04	07:37 16:19
2	05:08 22:14	05:50 21:37	20:34 (8) 20:59 (8)	06:45 20:28	19:39 (7) 19:56 (7)	07:40 19:14	08:35 16:18
3	05:09 22:14	05:52 21:35	20:33 (8) 20:58 (8)	06:47 20:26	19:41 (7) 19:53 (7)	07:42 19:11	08:36 16:18
4	05:10 22:13	05:53 21:33	20:34 (8) 20:58 (8)	06:49 20:23	19:44 (7) 19:48 (7)	07:44 19:09	08:38 16:17
5	05:11 22:13	05:55 21:31	20:35 (8) 20:58 (8)	06:51 20:21	19:45 19:06	07:45 16:56	08:39 16:16
6	05:12 22:12	05:57 21:29	20:35 (8) 20:56 (8)	06:53 20:19	19:47 19:04	07:47 16:55	08:41 16:16
7	05:13 22:12	05:59 21:27	20:37 (8) 20:55 (8)	06:54 20:16	19:49 19:01	07:49 16:53	08:42 16:15
8	05:14 22:11	06:00 21:25	20:38 (8) 20:54 (8)	06:56 20:14	19:51 18:59	07:51 16:51	08:43 16:15
9	05:15 22:10	06:02 21:23	20:39 (8) 20:51 (8)	06:58 20:11	19:53 18:56	07:53 16:49	08:45 16:14
10	05:16 22:09	06:04 21:21	20:43 (8) 20:48 (8)	07:00 20:09	19:55 18:54	07:55 16:47	08:46 16:14
11	05:17 22:08	06:06 21:19		07:02 20:06	19:57 18:52	07:57 16:45	08:47 16:14
12	05:18 22:07	06:08 21:17		07:03 20:04	19:58 18:49	07:59 16:44	08:48 16:14
13	05:19 22:06	06:09 21:15		07:05 20:01	19:59 18:47	08:01 16:42	08:49 16:14
14	05:21 22:05	20:42 (8) 20:50 (8)	06:11 21:12	07:07 19:59	19:59 18:44	08:02 16:40	08:50 16:14
15	05:22 22:04	20:40 (8) 20:51 (8)	06:13 21:10	07:09 19:56	19:56 18:42	08:03 16:39	08:51 16:14
16	05:23 22:03	20:39 (8) 20:52 (8)	06:15 21:08	07:11 19:54	19:54 18:40	08:06 16:37	08:52 16:14
17	05:25 22:02	20:38 (8) 20:53 (8)	06:17 21:06	19:47 (7) 19:58 (7)	07:12 19:51	08:08 18:37	08:53 16:14
18	05:26 22:00	20:38 (8) 20:55 (8)	06:18 21:04	19:44 (7) 19:59 (7)	07:14 19:49	08:10 18:35	08:54 16:14
19	05:28 21:59	20:37 (8) 20:56 (8)	06:20 21:01	19:42 (7) 20:01 (7)	07:16 19:46	08:12 18:33	08:54 16:14
20	05:29 21:58	20:36 (8) 20:56 (8)	06:22 20:59	19:41 (7) 20:02 (7)	07:18 19:44	08:14 18:30	08:55 16:15
21	05:30 21:56	20:36 (8) 20:57 (8)	06:24 20:57	19:39 (7) 20:02 (7)	07:20 19:41	08:16 18:28	08:56 16:15
22	05:32 21:55	20:35 (8) 20:57 (8)	06:26 20:55	19:38 (7) 20:03 (7)	07:22 19:39	08:18 18:26	08:56 16:15
23	05:34 21:54	20:35 (8) 20:59 (8)	06:27 20:52	19:38 (7) 20:03 (7)	07:23 19:36	08:20 18:24	08:57 16:16
24	05:35 21:52	20:34 (8) 20:59 (8)	06:29 20:50	19:37 (7) 20:04 (7)	07:25 19:34	08:22 18:21	08:57 16:17
25	05:37 21:50	20:33 (8) 20:58 (8)	06:31 20:48	19:36 (7) 20:03 (7)	07:27 19:31	07:24 17:19	08:58 16:17
26	05:38 21:49	20:33 (8) 20:59 (8)	06:33 20:45	19:36 (7) 20:03 (7)	07:29 19:29	07:25 17:17	08:58 16:18
27	05:40 21:47	20:33 (8) 20:59 (8)	06:35 20:43	19:36 (7) 20:03 (7)	07:31 19:26	07:27 17:15	08:58 16:19
28	05:42 21:46	20:33 (8) 21:00 (8)	06:36 20:40	19:35 (7) 20:02 (7)	07:32 19:24	07:29 17:13	08:58 16:20
29	05:43 21:44	20:34 (8) 21:00 (8)	06:38 20:38	19:36 (7) 20:01 (7)	07:34 19:21	07:31 17:11	08:58 16:20
30	05:45 21:42	20:33 (8) 21:00 (8)	06:40 20:36	19:36 (7) 20:00 (7)	07:36 19:19	07:33 17:09	08:58 16:21
31	05:47 21:40	20:34 (8) 21:00 (8)	06:42 20:33	19:37 (7) 20:00 (7)	19:19	07:35 17:06	08:58 16:22
Potential sun hours	515	461	382	53	328	257	231
Total, worst case	378	541	53				
Sun reduction	0.27	0.27	0.29				
Oper. time red.	1.00	1.00	1.00				
Wind dir. red.	0.62	0.60	0.59				
Total reduction	0.17	0.16	0.17				
Total, real	62	89	9				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: CF - H84

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June
1	08:58 16:24	08:27 17:16	16:39 (7) 16:43 (7)	07:29 18:13	17:08 (8) 17:34 (8)	07:12 20:12
2	08:58 16:25	08:25 17:18	16:35 (7) 16:46 (7)	07:26 18:15	17:07 (8) 17:34 (8)	07:10 20:14
3	08:58 16:26	08:24 17:20	16:34 (7) 16:48 (7)	07:24 18:17	17:08 (8) 17:34 (8)	07:07 20:16
4	08:58 16:27	08:22 17:22	16:32 (7) 16:50 (7)	07:21 18:19	17:07 (8) 17:32 (8)	07:05 20:18
5	08:57 16:29	08:20 17:24	16:32 (7) 16:51 (7)	07:19 18:21	17:08 (8) 17:32 (8)	07:03 20:20
6	08:57 16:30	08:18 17:26	16:31 (7) 16:52 (7)	07:17 18:23	17:09 (8) 17:30 (8)	07:00 20:22
7	08:56 16:31	08:16 17:28	16:30 (7) 16:53 (7)	07:14 18:25	17:10 (8) 17:29 (8)	06:58 20:24
8	08:56 16:33	08:14 17:30	16:30 (7) 16:53 (7)	07:12 18:26	17:12 (8) 17:27 (8)	06:55 20:26
9	08:55 16:34	08:12 17:32	16:29 (7) 16:53 (7)	07:09 18:28	17:15 (8) 17:24 (8)	06:53 20:27
10	08:55 16:36	08:10 17:34	16:29 (7) 16:53 (7)	07:07 18:30	06:50 20:29	05:44 21:25
11	08:54 16:37	08:08 17:36	16:29 (7) 16:53 (7)	07:05 18:32	06:48 20:31	05:42 21:27
12	08:53 16:39	08:06 17:38	16:30 (7) 16:53 (7)	07:02 18:34	06:45 20:33	05:40 21:29
13	08:52 16:40	08:04 17:40	16:31 (7) 16:53 (7)	07:00 18:36	06:43 20:35	05:39 21:31
14	08:51 16:42	08:02 17:42	16:31 (7) 16:52 (7)	06:57 18:38	06:41 20:37	05:37 21:32
15	08:50 16:44	08:00 17:45	16:31 (7) 16:51 (7)	06:55 18:40	06:38 20:39	05:35 21:34
16	08:49 16:45	07:58 17:47	16:33 (7) 16:50 (7)	06:52 18:42	06:36 20:41	05:33 21:36
17	08:48 16:47	07:56 17:49	16:35 (7) 16:48 (7)	06:50 18:44	06:34 20:42	05:32 21:37
18	08:47 16:49	07:54 17:51	16:38 (7) 16:46 (7)	06:47 18:46	06:31 20:44	05:30 21:39
19	08:46 16:51	07:51 17:53		06:45 18:48	06:29 20:46	05:28 21:41
20	08:45 16:53	07:49 17:55		06:42 18:50	06:27 20:48	05:27 21:42
21	08:44 16:54	07:47 17:57	17:17 (8) 17:27 (8)	06:40 18:51	06:24 20:50	05:25 21:44
22	08:42 16:56	07:45 17:59	17:13 (8) 17:29 (8)	06:37 18:53	06:22 20:52	05:24 21:46
23	08:41 16:58	07:42 18:01	17:12 (8) 17:31 (8)	06:35 18:55	06:20 20:54	05:22 21:47
24	08:40 17:00	07:40 18:03	17:11 (8) 17:33 (8)	06:32 18:57	06:17 20:56	05:21 21:49
25	08:38 17:02	07:38 18:05	17:09 (8) 17:33 (8)	06:30 18:59	06:15 20:58	05:20 21:50
26	08:37 17:04	07:36 18:07	17:09 (8) 17:34 (8)	06:27 19:01	06:13 20:59	05:18 21:52
27	08:35 17:06	07:33 18:09	17:08 (8) 17:34 (8)	06:25 19:03	06:11 21:01	05:17 21:53
28	08:34 17:08	07:31 18:11	17:08 (8) 17:34 (8)	06:22 19:05	06:09 21:03	05:16 21:55
29	08:32 17:10			07:20 20:07	06:06 21:05	05:15 21:56
30	08:30 17:12			07:17 20:09	06:04 21:07	05:14 21:57
31	08:29 17:14			07:15 20:10	05:13 21:09	21:07 (11) 21:59
Potential sun hours	248	272	367	421	496	513
Total, worst case		497		192	239	407
Sun reduction		0.22		0.22	0.34	0.36
Oper. time red.		1.00		1.00	1.00	1.00
Wind dir. red.		0.58		0.58	0.59	0.62
Total reduction		0.13		0.13	0.20	0.22
Total, real		64		25	48	80

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: CF - H84  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	July	August	September	October	November	December
1	05:07 22:15	21:13 (11) 21:29 (11)	05:48 20:35 (10)	06:44 20:31	19:57 (9) 20:01 (9)	07:38 19:16
2	05:08 22:14	21:13 (11) 21:30 (11)	05:50 20:56 (10)	06:45 20:28	07:40 19:14	07:39 17:02
3	05:09 22:14	21:13 (11) 21:31 (11)	05:52 20:55 (10)	06:47 20:26	07:42 19:11	07:41 17:00
4	05:10 22:13	21:13 (11) 21:30 (11)	05:53 20:55 (10)	06:49 20:24	07:44 19:09	07:43 17:54 (8)
5	05:11 22:13	21:13 (11) 21:30 (11)	05:55 20:55 (10)	06:51 20:21	07:45 19:06	07:45 18:03 (8)
6	05:12 22:12	21:13 (11) 21:31 (11)	05:57 20:54 (10)	06:53 20:19	07:47 19:04	07:47 18:05 (8)
7	05:13 22:12	21:13 (11) 21:31 (11)	05:59 20:54 (10)	06:54 20:16	07:49 19:01	07:49 18:06 (8)
8	05:14 22:11	21:14 (11) 21:31 (11)	06:00 20:54 (10)	06:56 20:14	07:51 18:59	07:51 18:07 (8)
9	05:15 22:10	21:14 (11) 21:31 (11)	06:02 20:52 (10)	06:58 20:11	07:53 18:56	07:53 18:07 (8)
10	05:16 22:09	21:14 (11) 21:31 (11)	06:04 20:50 (10)	07:00 20:09	07:55 18:54	07:55 18:08 (8)
11	05:17 22:08	21:14 (11) 21:31 (11)	06:06 20:48 (10)	07:02 20:06	07:57 18:52	07:57 18:08 (8)
12	05:18 22:07	21:14 (11) 21:31 (11)	06:08 21:17	07:03 20:04	07:59 18:49	07:59 18:08 (8)
13	05:19 22:06	21:15 (11) 21:31 (11)	06:09 21:15	07:05 20:01	08:00 18:47	08:01 18:07 (8)
14	05:21 22:05	21:16 (11) 21:31 (11)	06:11 21:12	07:07 19:59	08:02 18:44	08:03 18:07 (8)
15	05:22 22:04	21:16 (11) 21:30 (11)	06:13 21:10	07:09 19:56	08:04 18:42	08:05 18:07 (8)
16	05:23 22:03	21:16 (11) 21:28 (11)	06:15 21:08	07:11 19:54	08:06 18:40	08:07 18:06 (8)
17	05:25 22:02	21:17 (11) 21:27 (11)	06:17 21:06	07:12 19:51	08:08 18:37	08:09 18:05 (8)
18	05:26 22:01	21:18 (11) 21:27 (11)	06:18 21:04	07:14 19:49	08:10 18:35	08:11 18:04 (8)
19	05:28 21:59	21:19 (11) 21:25 (11)	06:20 21:01	07:16 19:46	08:12 18:33	08:12 18:02 (8)
20	05:29 21:58	21:20 (11) 21:24 (11)	06:22 20:59	07:18 19:44	08:14 18:30	08:14 18:00 (8)
21	05:30 21:56	21:20 (11) 20:57	06:24 19:53 (9)	07:20 19:41	08:16 18:28	08:16 17:48 (8)
22	05:32 21:55	21:20 (11) 20:55	06:26 19:52 (9)	07:22 19:39	08:18 18:26	08:18 16:29
23	05:34 21:54	21:20 (11) 20:52	06:27 19:52 (9)	07:23 19:36	08:20 18:24	08:20 16:27
24	05:35 21:52	20:42 (10) 20:48 (10)	06:29 20:50	07:25 19:34	08:22 18:21	08:22 17:06 (7)
25	05:37 21:50	20:40 (10) 20:50 (10)	06:31 20:48	07:27 19:31	08:24 17:19	08:23 16:18 (7)
26	05:38 21:49	20:39 (10) 20:52 (10)	06:33 20:45	07:29 19:29	08:26 17:17	08:25 16:20 (7)
27	05:40 21:47	20:37 (10) 20:52 (10)	06:35 20:43	07:31 19:26	08:27 17:15	08:27 16:20 (7)
28	05:41 21:46	20:37 (10) 20:53 (10)	06:36 20:40	07:32 19:24	08:29 17:13	08:28 16:22 (7)
29	05:43 21:44	20:36 (10) 20:53 (10)	06:38 20:38	07:34 19:21	08:30 17:11	08:30 16:22 (7)
30	05:45 21:42	20:35 (10) 20:54 (10)	06:40 20:36	07:36 19:19	08:33 17:08	08:32 16:23 (7)
31	05:47 21:40	20:35 (10) 20:55 (10)	06:42 20:33	07:39 20:05 (9)	08:35 17:06	08:35 16:23 (7)
Potential sun hours	515	461	382	328	257	231
Total, worst case	408	435	4	524	176	
Sun reduction	0.27	0.27	0.29	0.23	0.20	
Oper. time red.	1.00	1.00	1.00	1.00	1.00	
Wind dir. red.	0.62	0.60	0.59	0.58	0.58	
Total reduction	0.17	0.16	0.17	0.14	0.12	
Total, real	68	72	1	71	20	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: CG - H85  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June	July	August	September	October	November	December	
1	08:58 16:24	08:27 17:16	07:29 18:13	07:12 20:12	06:02 21:09	05:12 22:00	20:47 (1) 22:15 (1)	05:08 22:15 (1)	20:55 (1) 21:18 (1)	05:48 21:38	06:44 20:31	07:38 19:16	07:37 17:04
2	08:58 16:25	08:25 17:18	07:26 18:15	07:10 20:14	06:00 21:11	05:11 22:01	20:48 (1) 21:14 (1)	05:08 22:14	20:56 (1) 21:19 (1)	05:50 21:37	06:46 20:28	07:40 19:14	07:39 17:02
3	08:58 16:26	08:24 17:20	07:24 18:17	07:08 20:16	05:58 21:12	05:10 22:02	20:49 (1) 21:14 (1)	05:09 22:14	20:56 (1) 21:19 (1)	05:52 21:35	06:47 20:26	07:42 19:11	07:41 17:00
4	08:58 16:27	08:22 17:22	07:21 18:19	07:05 20:18	05:56 21:14	05:09 22:03	20:49 (1) 21:15 (1)	05:10 22:13	20:56 (1) 21:20 (1)	05:53 21:33	06:49 20:23	07:44 19:09	07:43 16:58
5	08:57 16:29	08:20 17:24	07:19 18:21	07:03 20:20	05:54 21:16	05:08 22:04	20:49 (1) 21:14 (1)	05:11 22:13	20:55 (1) 21:20 (1)	05:55 21:31	06:51 20:21	07:45 19:06	07:45 16:57
6	08:57 16:30	08:18 17:26	07:17 18:23	07:00 20:22	05:52 21:18	05:07 22:05	20:49 (1) 21:14 (1)	05:12 22:12	20:55 (1) 21:20 (1)	05:57 21:29	06:53 20:19	07:47 19:04	07:47 16:55
7	08:56 16:31	08:16 17:28	07:14 18:25	06:58 20:24	05:50 21:20	05:07 22:06	20:50 (1) 21:14 (1)	05:13 22:11	20:55 (1) 21:21 (1)	05:59 21:27	06:55 20:16	07:49 19:01	07:49 16:53
8	08:56 16:33	08:14 17:30	07:12 18:27	06:55 20:25	05:48 21:22	05:06 22:07	20:50 (1) 21:14 (1)	05:14 22:11	20:55 (1) 21:21 (1)	06:01 21:25	06:56 20:14	07:51 18:59	07:51 16:51
9	08:55 16:34	08:12 17:32	07:09 18:28	06:53 20:27	05:46 21:23	05:06 22:08	20:51 (1) 21:14 (1)	05:15 22:10	20:55 (1) 21:21 (1)	06:02 21:23	06:58 20:11	07:53 18:56	07:53 16:49
10	08:54 16:36	08:10 17:34	07:07 18:30	06:50 20:29	05:44 21:25	05:05 22:09	20:51 (1) 21:15 (1)	05:16 22:09	20:55 (1) 21:22 (1)	06:04 21:21	07:00 20:09	07:55 18:54	07:55 16:47
11	08:54 16:37	08:08 17:36	07:05 18:32	06:48 20:31	05:42 21:27	05:05 22:10	20:51 (1) 21:14 (1)	05:17 22:08	20:55 (1) 21:22 (1)	06:06 21:19	07:02 20:06	07:57 18:52	07:57 16:46
12	08:53 16:39	08:06 17:38	07:02 18:34	06:46 20:33	05:40 21:29	05:04 22:11	20:52 (1) 21:14 (1)	05:18 22:07	20:55 (1) 21:22 (1)	06:08 21:17	07:04 20:04	07:58 18:49	07:59 16:44
13	08:52 16:41	08:04 17:41	07:00 18:36	06:43 20:35	05:39 21:30	05:04 22:12	20:53 (1) 20:59 (1)	05:04 22:06	20:56 (1) 21:23 (1)	06:09 21:15	07:05 20:01	08:00 18:47	08:01 16:42
14	08:51 16:42	08:02 17:43	06:57 18:38	06:41 20:37	05:37 21:32	05:04 22:12	20:53 (1) 21:00 (1)	05:21 22:05	20:56 (1) 21:23 (1)	06:11 21:12	07:07 19:59	08:02 18:44	08:03 16:40
15	08:50 16:44	08:00 17:45	06:55 18:40	06:38 20:39	05:35 21:34	05:03 22:13	20:50 (1) 21:01 (1)	05:03 22:13	20:55 (1) 21:24 (1)	06:13 21:10	07:09 19:56	08:04 18:42	08:05 16:39
16	08:49 16:46	07:58 17:47	06:52 18:42	06:36 20:41	05:33 21:36	05:03 22:13	20:49 (1) 21:03 (1)	05:03 22:13	20:55 (1) 21:23 (1)	06:15 21:08	07:11 19:54	08:06 18:40	08:07 16:37
17	08:48 16:47	07:56 17:49	06:50 18:44	06:34 20:42	05:32 21:37	05:03 22:14	20:48 (1) 21:04 (1)	05:03 22:14	20:55 (1) 21:23 (1)	06:17 21:06	07:13 19:51	08:08 18:37	08:09 16:36
18	08:47 16:49	07:54 17:51	06:47 18:46	06:31 20:44	05:30 21:39	05:03 22:14	20:48 (1) 21:06 (1)	05:03 22:14	20:56 (1) 21:24 (1)	06:18 21:04	07:14 19:49	08:10 18:35	08:10 16:34
19	08:46 16:51	07:51 17:53	06:45 18:48	06:29 20:46	05:29 21:41	05:03 22:15	20:48 (1) 21:08 (1)	05:03 22:15	20:56 (1) 21:24 (1)	06:20 21:01	07:16 19:46	08:12 18:33	08:12 16:33
20	08:45 16:53	07:49 17:55	06:42 18:50	06:27 20:48	05:27 21:42	05:03 22:15	20:47 (1) 21:09 (1)	05:03 22:15	20:55 (1) 21:23 (1)	06:22 20:59	07:18 19:44	08:14 18:30	08:14 16:31
21	08:44 16:55	07:47 17:57	06:40 18:51	06:24 20:50	05:26 21:44	05:03 22:15	20:47 (1) 21:11 (1)	05:03 22:15	20:55 (1) 21:23 (1)	06:24 20:57	07:20 19:41	08:16 18:28	08:16 16:30
22	08:42 16:56	07:45 17:59	06:37 18:53	06:22 20:52	05:24 21:45	05:03 22:15	20:47 (1) 21:12 (1)	05:03 22:15	20:56 (1) 21:21 (1)	06:26 20:55	07:22 19:39	08:18 18:26	08:18 16:29
23	08:41 16:58	07:42 18:01	06:35 18:55	06:20 20:54	05:23 21:47	05:04 22:16	20:46 (1) 21:13 (1)	05:04 22:16	20:57 (1) 21:20 (1)	06:27 20:52	07:23 19:36	08:20 18:24	08:20 16:28
24	08:40 17:00	07:40 18:03	06:32 18:57	06:18 20:56	05:21 21:49	05:04 22:16	20:46 (1) 21:14 (1)	05:04 22:16	20:58 (1) 21:19 (1)	06:29 20:50	07:25 19:34	08:22 18:21	08:21 16:26
25	08:38 17:02	07:38 18:05	06:30 18:59	06:15 20:57	05:20 21:50	05:04 22:16	20:46 (1) 21:14 (1)	05:04 22:16	20:58 (1) 21:18 (1)	06:31 20:48	07:27 19:31	08:24 17:19	08:23 16:25
26	08:37 17:04	07:36 18:07	06:27 19:01	06:13 20:59	05:19 21:52	05:05 22:16	20:46 (1) 21:15 (1)	05:05 22:16	20:58 (1) 21:16 (1)	06:33 20:45	07:29 19:29	08:25 17:17	08:25 16:24
27	08:35 17:06	07:33 18:09	06:25 19:03	06:11 21:01	05:17 21:53	05:05 22:16	20:47 (1) 21:15 (1)	05:05 22:16	20:56 (1) 21:17 (1)	06:35 20:43	07:31 19:26	08:27 17:15	08:27 16:23
28	08:34 17:08	07:31 18:11	06:22 19:05	06:09 21:03	05:16 21:54	05:06 22:15	20:47 (1) 21:15 (1)	05:06 22:15	20:55 (1) 21:17 (1)	06:36 20:40	07:32 19:24	08:28 17:13	08:28 16:22
29	08:32 17:10	07:20 18:07	06:06 19:05	06:06 21:05	05:15 21:56	05:06 22:15	20:47 (1) 21:15 (1)	05:06 22:15	20:56 (1) 21:18 (1)	06:38 20:38	07:34 19:21	08:30 17:11	08:30 16:21
30	08:30 17:12	07:17 18:09	06:04 19:07	06:04 21:07	05:14 21:57	05:07 22:15	20:47 (1) 21:15 (1)	05:07 22:15	20:56 (1) 21:18 (1)	06:40 20:36	07:36 19:19	08:32 17:09	08:32 16:20
31	08:29 17:14	07:15 18:10	06:05 19:10	06:05 21:08	05:13 21:58	05:08 22:15	20:47 (1) 21:15 (1)	05:08 22:15	20:57 (1) 21:08 (1)	06:42 20:33	07:35 17:07	08:35 16:20	08:35 16:23
Potential sun hours	248	272	367	421	496	513	515	461	382	328	257	231	
Total, worst case					419	672	709						
Sun reduction					0.36	0.26	0.27						
Oper. time red.					1.00	1.00	1.00						
Wind dir. red.					0.63	0.63	0.63						
Total reduction					0.23	0.16	0.17						
Total, real					95	109	118						

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: CH - H86  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:58 16:24	08:27 17:16	07:29 18:13	07:13 20:12	06:02 21:09	05:12 22:00	05:08 22:15	05:48 21:38	06:44 20:31	07:38 19:16	07:37 17:05	08:33 16:19
2	08:58 16:25	08:25 17:18	07:26 18:15	07:10 20:14	06:00 21:11	05:11 22:01	05:09 22:14	05:50 21:37	06:46 20:28	07:40 19:14	07:39 17:03	08:35 16:19
3	08:58 16:26	08:24 17:20	07:24 18:17	07:08 20:16	05:58 21:12	05:10 22:02	05:09 22:14	05:52 21:35	06:47 20:26	07:42 19:11	07:41 17:01	08:36 16:18
4	08:58 16:28	08:22 17:22	07:22 18:19	07:05 20:18	05:56 21:14	05:09 22:03	05:10 22:13	05:54 21:33	06:49 20:24	07:44 19:09	07:43 16:59	08:38 16:17
5	08:57 16:29	08:20 17:24	07:19 18:21	07:03 20:20	05:54 21:16	05:08 22:04	05:11 22:13	05:55 21:31	06:51 20:21	07:45 19:06	07:45 16:57	08:39 16:17
6	08:57 16:30	08:18 17:26	07:17 18:23	07:00 20:22	05:52 21:18	05:08 22:05	05:12 22:12	05:57 21:29	06:53 20:19	07:47 19:04	07:47 16:55	08:41 16:16
7	08:56 16:32	08:16 17:28	07:14 18:25	06:58 20:24	05:50 21:20	05:07 22:06	05:13 22:11	05:59 21:27	06:55 20:16	07:49 19:01	07:49 16:53	08:42 16:16
8	08:56 16:33	08:14 17:30	07:12 18:27	06:55 20:26	05:48 21:22	05:06 22:07	05:14 22:11	06:01 21:25	06:56 20:14	07:51 18:59	07:51 16:51	08:43 16:15
9	08:55 16:34	08:12 17:32	07:09 18:29	06:53 20:27	05:46 21:23	05:06 22:08	05:15 22:10	06:02 21:23	06:58 20:11	07:53 18:57	07:53 16:49	08:45 16:15
10	08:54 16:36	08:10 17:34	07:07 18:30	06:50 20:29	05:44 21:25	05:05 22:09	05:16 22:09	06:04 21:21	07:00 20:09	07:55 18:54	07:55 16:47	08:46 16:14
11	08:54 16:38	08:08 17:37	07:05 18:32	06:48 20:31	05:42 21:27	05:05 22:10	05:17 22:08	06:06 21:19	07:02 20:06	07:57 18:52	07:57 16:46	08:47 16:14
12	08:53 16:39	08:06 17:39	07:02 18:34	06:46 20:33	05:41 21:29	05:04 22:11	05:19 22:07	06:08 21:17	07:04 20:04	07:59 18:49	07:59 16:44	08:48 16:14
13	08:52 16:41	08:04 17:41	07:00 18:36	06:43 20:35	05:39 21:30	05:04 22:12	05:20 22:06	06:10 21:15	07:05 20:01	08:00 18:47	08:01 16:42	08:49 16:14
14	08:51 16:42	08:02 17:43	06:57 18:38	06:41 20:37	05:37 21:32	05:04 22:12	05:21 22:05	06:11 21:12	07:07 19:59	08:02 18:45	08:03 16:41	08:50 16:14
15	08:50 16:44	08:00 17:45	06:55 18:40	06:38 20:39	05:35 21:34	05:03 22:13	05:22 22:04	06:13 21:10	07:09 19:56	08:04 18:42	08:05 16:39	08:51 16:14
16	08:49 16:46	07:58 17:47	06:52 18:42	06:36 20:41	05:34 21:36	05:03 22:13	05:24 22:03	06:15 21:08	07:11 19:54	08:06 18:40	08:07 16:37	08:52 16:14
17	08:48 16:48	07:56 17:49	06:50 18:44	06:34 20:42	05:32 21:37	05:03 22:14	05:25 22:02	06:17 21:06	07:13 19:51	08:08 18:37	08:09 16:36	08:53 16:14
18	08:47 16:49	07:54 17:51	06:47 18:46	06:31 20:44	05:30 21:39	05:03 22:14	05:26 22:00	06:19 21:04	07:14 19:49	08:10 18:35	08:10 16:34	08:54 16:14
19	08:46 16:51	07:51 17:53	06:45 18:48	06:29 20:46	05:29 21:41	05:03 22:15	05:28 21:59	06:20 21:01	07:16 19:46	08:12 18:33	08:12 16:33	08:54 16:15
20	08:45 16:53	07:49 17:55	06:42 18:50	06:27 20:48	05:27 21:42	05:03 22:15	05:29 21:58	06:22 20:59	07:18 19:44	08:14 18:31	08:14 16:32	08:55 16:15
21	08:44 16:55	07:47 17:57	06:40 18:52	06:24 20:50	05:26 21:44	05:03 22:15	05:31 21:56	06:24 20:57	07:20 19:41	08:16 18:28	08:16 16:30	08:56 16:15
22	08:42 16:57	07:45 17:59	06:37 18:53	06:22 20:52	05:24 21:45	05:04 22:15	05:32 21:55	06:26 20:55	07:22 19:39	08:18 18:26	08:18 16:29	08:56 16:16
23	08:41 16:59	07:42 18:01	06:35 18:55	06:20 20:54	05:23 21:47	05:04 22:16	05:34 21:53	06:28 20:52	07:23 19:36	08:20 18:24	08:20 16:28	08:57 16:16
24	08:40 17:00	07:40 18:03	06:32 18:57	06:18 20:56	05:21 21:49	05:04 22:16	05:35 21:52	06:29 20:50	07:25 19:34	08:22 18:22	08:21 16:26	08:57 16:17
25	08:38 17:02	07:38 18:05	06:30 18:59	06:15 20:58	05:20 21:50	05:04 22:16	05:37 21:50	06:31 20:48	07:27 19:31	07:24 17:19	08:23 16:25	08:57 16:17
26	08:37 17:04	07:36 18:07	06:29 19:01	06:13 20:59	05:19 21:51	05:05 22:16	05:39 21:49	06:33 20:45	07:29 19:29	07:25 17:17	08:25 16:24	08:58 16:18
27	08:35 17:06	07:33 18:09	06:25 19:03	06:11 21:01	05:17 21:53	05:05 22:16	05:40 21:47	06:35 20:43	07:31 19:26	07:27 17:15	08:27 16:23	08:58 16:19
28	08:34 17:08	07:31 18:11	06:22 19:05	06:09 21:03	05:16 21:54	05:06 22:15	05:42 21:45	06:37 20:40	07:33 19:24	07:29 17:13	08:28 16:22	08:58 16:20
29	08:32 17:10	07:29 18:07	06:20 19:01	06:07 21:05	05:15 21:56	05:06 22:15	05:43 21:44	06:38 20:38	07:34 19:21	07:31 17:11	08:30 16:21	08:58 16:21
30	08:30 17:12	07:27 18:04	06:17 19:01	06:04 21:07	05:14 21:57	05:07 22:15	05:45 21:42	06:40 20:36	07:36 19:19	07:33 17:09	08:32 16:20	08:58 16:22
31	08:29 17:14	07:25 18:10	06:15 19:05	06:03 21:09	05:13 21:58	05:07 22:15	05:47 21:40	06:42 20:33	07:35 17:07	07:35 16:23	08:58 16:23	08:58 16:23
Potential sun hours	248	272	367	421	496	513	515	461	382	328	257	231
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: CI - H87

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:58	08:27	07:29	07:13	06:02	05:12	05:08	05:49	06:44	07:38	07:37	08:33
	16:24	17:16	18:13	20:12	21:09	22:00	22:15	21:39	20:31	19:16	17:05	16:19
2	08:58	08:25	07:26	07:10	06:00	05:11	05:09	05:50	06:46	07:40	07:39	08:35
	16:25	17:18	18:15	20:14	21:11	22:01	22:14	21:37	20:28	19:14	17:03	16:19
3	08:58	08:24	07:24	07:08	05:58	05:10	05:09	05:52	06:47	07:42	07:41	08:36
	16:26	17:20	18:17	20:16	21:12	22:02	22:14	21:35	20:26	19:11	17:01	16:18
4	08:58	08:22	07:22	07:05	05:56	05:09	05:10	05:54	06:49	07:44	07:43	08:38
	16:28	17:22	18:19	20:18	21:14	22:03	22:13	21:33	20:24	19:09	16:59	16:17
5	08:57	08:20	07:19	07:03	05:54	05:08	05:11	05:55	06:51	07:46	07:45	08:39
	16:29	17:24	18:21	20:20	21:16	22:04	22:13	21:31	20:21	19:06	16:57	16:17
6	08:57	08:18	07:17	07:00	05:52	05:08	05:12	05:57	06:53	07:47	07:47	08:41
	16:30	17:26	18:23	20:22	21:18	22:05	22:12	21:29	20:19	19:04	16:55	16:16
7	08:56	08:16	07:14	06:58	05:50	05:07	05:13	05:59	06:55	07:49	07:49	08:42
	16:32	17:28	18:25	20:24	21:20	22:06	22:11	21:27	20:16	19:01	16:53	16:16
8	08:56	08:14	07:12	06:55	05:48	05:06	05:14	06:01	06:56	07:51	07:51	08:43
	16:33	17:30	18:27	20:26	21:22	22:07	22:11	21:25	20:14	18:59	16:51	16:15
9	08:55	08:12	07:10	06:53	05:46	05:06	05:15	06:02	06:58	07:53	07:53	08:45
	16:35	17:33	18:29	20:27	21:23	22:08	22:10	21:23	20:11	18:57	16:49	16:15
10	08:55	08:10	07:07	06:51	05:44	05:05	05:16	06:04	07:00	07:55	07:55	08:46
	16:36	17:35	18:31	20:29	21:25	22:09	22:09	21:21	20:09	18:54	16:47	16:14
11	08:54	08:08	07:05	06:48	05:43	05:05	05:17	06:06	07:02	07:57	07:57	08:47
	16:38	17:37	18:32	20:31	21:27	22:10	22:08	21:19	20:06	18:52	16:46	16:14
12	08:53	08:06	07:02	06:46	05:41	05:04	05:19	06:08	07:04	07:59	07:59	08:48
	16:39	17:39	18:34	20:33	21:29	22:11	22:07	21:17	20:04	18:49	16:44	16:14
13	08:52	08:04	07:00	06:43	05:39	05:04	05:20	06:10	07:05	08:00	08:01	08:49
	16:41	17:41	18:36	20:35	21:31	22:12	22:06	21:15	20:01	18:47	16:42	16:14
14	08:51	08:02	06:57	06:41	05:37	05:04	05:21	06:11	07:07	08:02	08:03	08:50
	16:42	17:43	18:38	20:37	21:32	22:12	22:05	21:13	19:59	18:45	16:41	16:14
15	08:50	08:00	06:55	06:39	05:35	05:04	05:22	06:13	07:09	08:04	08:05	08:51
	16:44	17:45	18:40	20:39	21:34	22:13	22:04	21:10	19:56	18:42	16:39	16:14
16	08:49	07:58	06:52	06:36	05:34	05:03	05:24	06:15	07:11	08:06	08:07	08:52
	16:46	17:47	18:42	20:41	21:36	22:13	22:03	21:08	19:54	18:40	16:37	16:14
17	08:48	07:56	06:50	06:34	05:32	05:03	05:25	06:17	07:13	08:08	08:09	08:53
	16:48	17:49	18:44	20:43	21:37	22:14	22:02	21:06	19:51	18:38	16:36	16:14
18	08:47	07:54	06:47	06:31	05:30	05:03	05:26	06:19	07:14	08:10	08:11	08:54
	16:49	17:51	18:46	20:44	21:39	22:14	22:00	21:04	19:49	18:35	16:34	16:14
19	08:46	07:51	06:45	06:29	05:29	05:03	05:28	06:20	07:16	08:12	08:12	08:54
	16:51	17:53	18:48	20:46	21:41	22:15	21:59	21:01	19:46	18:33	16:33	16:15
20	08:45	07:49	06:42	06:27	05:27	05:03	05:29	06:22	07:18	08:14	08:14	08:55
	16:53	17:55	18:50	20:48	21:42	22:15	21:58	20:59	19:44	18:31	16:32	16:15
21	08:44	07:47	06:40	06:25	05:26	05:03	05:31	06:24	07:20	08:16	08:16	08:56
	16:55	17:57	18:52	20:50	21:44	22:15	21:56	20:57	19:41	18:28	16:30	16:15
22	08:42	07:45	06:37	06:22	05:24	05:04	05:32	06:26	07:22	08:18	08:18	08:56
	16:57	17:59	18:54	20:52	21:45	22:16	21:55	20:55	19:39	18:26	16:29	16:16
23	08:41	07:43	06:35	06:20	05:23	05:04	05:34	06:28	07:24	08:20	08:20	08:57
	16:59	18:01	18:55	20:54	21:47	22:16	21:53	20:52	19:36	18:24	16:28	16:16
24	08:40	07:40	06:32	06:18	05:21	05:04	05:35	06:29	07:25	08:22	08:22	08:57
	17:00	18:03	18:57	20:56	21:49	22:16	21:52	20:50	19:34	18:22	16:27	16:17
25	08:38	07:38	06:30	06:15	05:20	05:05	05:37	06:31	07:27	08:24	08:23	08:58
	17:02	18:05	18:59	20:58	21:50	22:16	21:50	20:48	19:31	17:19	16:25	16:18
26	08:37	07:36	06:27	06:13	05:19	05:05	05:39	06:33	07:29	08:26	08:25	08:58
	17:04	18:07	19:01	20:59	21:52	22:16	21:49	20:45	19:29	17:17	16:24	16:18
27	08:35	07:33	06:25	06:11	05:18	05:05	05:40	06:35	07:31	08:28	08:27	08:58
	17:06	18:09	19:03	21:01	21:53	22:16	21:47	20:43	19:26	17:15	16:23	16:19
28	08:34	07:31	06:23	06:09	05:16	05:06	05:42	06:37	07:33	08:29	08:28	08:58
	17:08	18:11	19:05	21:03	21:54	22:15	21:46	20:41	19:24	17:13	16:22	16:20
29	08:32		07:20	06:07	05:15	05:07	05:43	06:38	07:34	08:31	08:30	08:58
	17:10		20:07	21:05	21:56	22:15	21:44	20:38	19:21	17:11	16:21	16:21
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	17:12		20:09	21:07	21:57	22:15	21:42	20:36	19:19	17:09	16:20	16:22
31	08:29		07:15		05:13		05:47	06:42		07:35		08:58
	17:14		20:11		21:58		21:40	20:33		17:07		16:23
Potential sun hours	248	272	367	421	496	513	515	461	382	328	257	231
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)



SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: CJ - H88 Sunshine probability S (Average daily sunshine hours) [BELMULLET] Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

Operational time

Table with 17 columns: N, NNE, NE, ENE, E, ESE, SE, SSE, S, SSW, SW, WSW, W, WNW, NW, NNW, Sum. Values range from 263 to 8,760.

Main calendar table with columns for months (January to June) and rows for each day (1 to 31). Columns show sun rise, sun set, and operational times for various directions (N, NE, E, SE, S, SW, W, WNW, NW, NNW, Sum). Summary rows include Total, worst case, Sun reduction, Oper. time red., Wind dir. red., Total reduction, and Total, real.

Table layout: For each day in each month the following matrix apply

Matrix layout for each day in month: Day in month, Sun rise (hh:mm), Sun set (hh:mm), Minutes with flicker, First time (hh:mm) with flicker, Last time (hh:mm) with flicker, (WTG causing flicker first time), (WTG causing flicker last time).

## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: CJ - H88  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	July	August	September	October	November	December			
1	05:07 22:15	21:02 (14) 21:16 (14)	05:48 21:39	06:44 20:31	19:32 (10) 19:44 (10)	07:38 19:16	07:37 17:04	16:25 (8) 16:32 (8)	08:33 16:19
2	05:08 22:14	21:02 (14) 21:17 (14)	05:50 21:37	06:45 20:28	19:31 (10) 19:45 (10)	07:40 19:14	07:39 17:02	16:35 16:18	08:35 16:18
3	05:09 22:14	21:03 (14) 21:18 (14)	05:52 21:35	06:47 20:26	19:30 (10) 19:46 (10)	07:42 19:11	07:41 17:00	16:36 16:18	08:36 16:18
4	05:10 22:13	21:02 (14) 21:17 (14)	05:53 21:33	06:49 20:23	19:29 (10) 19:45 (10)	07:44 19:09	07:43 16:58	16:38 16:17	08:38 16:17
5	05:11 22:13	21:02 (14) 21:18 (14)	05:55 21:31	06:51 20:21	19:29 (10) 19:45 (10)	07:45 19:06	07:45 16:56	16:39 16:16	08:39 16:16
6	05:12 22:12	21:02 (14) 21:18 (14)	05:57 21:29	06:53 20:19	19:29 (10) 19:45 (10)	07:47 19:04	07:47 16:54	16:41 16:16	08:41 16:16
7	05:13 22:12	21:02 (14) 21:19 (14)	05:59 21:27	06:54 20:16	19:29 (10) 19:44 (10)	07:49 19:01	07:49 16:53	16:42 16:15	08:42 16:15
8	05:14 22:11	21:02 (14) 21:19 (14)	06:00 21:25	06:56 20:14	19:29 (10) 19:42 (10)	07:51 18:59	07:51 16:51	16:43 16:15	08:43 16:15
9	05:15 22:10	21:02 (14) 21:19 (14)	06:02 21:23	06:58 20:11	19:31 (10) 19:40 (10)	07:53 18:56	07:53 16:49	16:44 16:14	08:45 16:14
10	05:16 22:09	21:02 (14) 21:20 (14)	06:04 21:21	07:00 20:09	19:34 (10) 19:37 (10)	07:55 18:54	07:55 16:47	16:45 16:14	08:46 16:14
11	05:17 22:08	21:02 (14) 21:20 (14)	06:06 21:19	07:02 20:06	19:34 (10) 19:37 (10)	18:54 18:54	07:57 16:45	16:46 16:14	08:47 16:14
12	05:18 22:07	21:02 (14) 21:20 (14)	06:07 21:17	07:03 20:04	19:34 (10) 19:37 (10)	18:54 18:54	07:59 16:44	16:47 16:14	08:48 16:14
13	05:19 22:06	21:02 (14) 21:20 (14)	06:09 21:15	07:05 20:01	19:34 (10) 19:37 (10)	18:54 18:54	08:01 16:42	16:48 16:13	08:49 16:13
14	05:21 22:05	21:03 (14) 21:21 (14)	06:11 21:12	07:07 19:59	19:34 (10) 19:37 (10)	18:54 18:44	08:03 16:40	16:49 16:13	08:50 16:13
15	05:22 22:04	21:03 (14) 21:20 (14)	06:13 21:10	07:09 19:56	19:34 (10) 19:37 (10)	18:44 18:44	08:05 16:39	16:50 16:13	08:51 16:13
16	05:23 22:03	21:03 (14) 21:20 (14)	06:15 21:08	07:11 19:54	19:34 (10) 19:37 (10)	18:46 18:40	08:07 16:37	16:51 16:14	08:52 16:14
17	05:25 22:02	21:04 (14) 21:20 (14)	06:16 21:06	07:12 19:51	19:34 (10) 19:37 (10)	18:40 18:37	08:09 16:36	16:52 16:14	08:53 16:14
18	05:26 22:01	21:05 (14) 21:20 (14)	06:18 21:04	07:14 19:49	19:34 (10) 19:37 (10)	18:37 18:35	08:11 16:34	16:53 16:14	08:54 16:14
19	05:27 21:59	21:05 (14) 21:19 (14)	06:20 21:01	07:16 19:46	19:34 (10) 19:37 (10)	18:35 18:32	08:12 16:33	16:54 16:14	08:54 16:14
20	05:29 21:58	21:05 (14) 21:19 (14)	06:22 20:59	07:18 19:44	19:34 (10) 19:37 (10)	18:34 18:30	08:14 16:31	16:55 16:14	08:55 16:14
21	05:30 21:56	21:07 (14) 21:18 (14)	06:24 20:57	07:20 19:41	19:34 (10) 19:37 (10)	18:30 18:28	08:16 17:25 (8)	16:56 16:30	08:56 16:15
22	05:32 21:55	21:07 (14) 21:17 (14)	06:26 20:55	07:22 19:39	19:34 (10) 19:37 (10)	18:28 18:26	17:23 (8) 17:36 (8)	16:57 16:29	08:56 16:15
23	05:33 21:54	21:09 (14) 21:15 (14)	06:27 20:52	07:23 19:36	19:34 (10) 19:37 (10)	18:26 18:24	17:22 (8) 17:37 (8)	16:58 16:27	08:57 16:16
24	05:35 21:52	21:11 (14) 20:50	06:29 20:50	07:25 19:34	19:34 (10) 19:37 (10)	18:24 18:21	17:21 (8) 17:37 (8)	16:59 16:26	08:57 16:16
25	05:37 21:50	21:12 (14) 20:48	06:31 20:48	07:27 19:31	19:34 (10) 19:37 (10)	18:22 17:19	17:20 (8) 16:37 (8)	16:20 (8) 16:25	08:58 16:17
26	05:38 21:49	21:13 (14) 20:45	06:33 20:45	07:29 19:28	19:34 (10) 19:37 (10)	18:20 17:17	16:20 (8) 16:37 (8)	16:26 (8) 16:24	08:58 16:18
27	05:40 21:47	21:14 (14) 20:43	06:35 20:43	07:31 19:26	19:34 (10) 19:37 (10)	18:18 17:15	16:20 (8) 16:37 (8)	16:27 (8) 16:23	08:58 16:19
28	05:41 21:46	21:15 (14) 20:40	06:36 20:40	07:32 19:23	19:34 (10) 19:37 (10)	18:16 17:13	16:21 (8) 16:38 (8)	16:28 (8) 16:22	08:58 16:19
29	05:43 21:44	21:16 (14) 20:38	06:38 20:38	07:34 19:21	19:34 (10) 19:37 (10)	18:14 17:11	16:21 (8) 16:37 (8)	16:29 (8) 16:21	08:58 16:20
30	05:45 21:42	21:17 (14) 20:36	06:40 20:36	07:36 19:19	19:34 (10) 19:37 (10)	18:12 17:08	16:22 (8) 16:36 (8)	16:32 (8) 16:20	08:58 16:21
31	05:46 21:40	21:18 (14) 20:33	06:42 20:33	19:35 (10) 19:43 (10)	19:34 (10) 19:37 (10)	18:10 17:06	16:33 (8) 16:34 (8)	16:21 (8) 16:22	08:58 16:22
Potential sun hours	515	461	383	328	257	231			
Total, worst case	352	8	130	163	7				
Sun reduction	0.27	0.27	0.29	0.23	0.20				
Oper. time red.	1.00	1.00	1.00	1.00	1.00				
Wind dir. red.	0.63	0.59	0.59	0.58	0.58				
Total reduction	0.17	0.16	0.17	0.14	0.12				
Total, real	59	1	22	22	1				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: CK - H89  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January	February	March	April	May	June
1	08:58 16:24	08:27 17:16	07:29 18:13	07:12 20:12	19:06 (7) 06:02	19:52 (8) 05:12
2	08:58 16:25	08:25 17:18	07:26 18:15	07:10 20:14	19:06 (7) 19:31 (7)	06:00 21:09
3	08:58 16:26	08:24 17:20	07:24 18:17	07:07 20:16	19:05 (7) 19:29 (7)	05:58 21:12
4	08:58 16:27	08:22 17:22	07:21 18:19	07:05 20:18	19:06 (7) 19:29 (7)	05:56 21:14
5	08:57 16:29	08:20 17:24	07:19 18:21	07:03 20:20	19:07 (7) 19:28 (7)	05:54 21:16
6	08:57 16:30	08:18 17:26	07:17 18:23	07:00 20:22	19:08 (7) 19:26 (7)	05:52 21:18
7	08:56 16:31	08:16 17:28	07:14 18:25	06:58 20:24	19:10 (7) 19:24 (7)	05:50 21:20
8	08:56 16:33	08:14 17:30	07:12 18:26	06:55 20:25	19:12 (7) 19:20 (7)	05:48 21:22
9	08:55 16:34	08:12 17:32	07:09 18:28	06:53 20:27	05:46 21:23	05:05 22:08
10	08:55 16:36	08:10 17:34	07:07 18:30	06:50 20:29	05:44 21:25	05:05 22:09
11	08:54 16:37	08:08 17:36	07:05 18:32	06:48 20:31	05:42 21:27	05:04 22:10
12	08:53 16:39	08:06 17:38	07:02 18:34	06:45 20:33	05:40 21:29	05:04 22:11
13	08:52 16:40	08:04 17:40	07:00 18:36	06:43 20:35	05:39 21:31	05:04 22:12
14	08:51 16:42	08:02 17:42	06:57 18:38	06:41 20:37	05:37 21:32	05:03 22:12
15	08:50 16:44	08:00 17:45	06:55 18:40	06:38 20:39	20:01 (8) 20:08 (8)	05:35 21:34
16	08:49 16:46	07:58 17:47	06:52 18:42	06:36 20:41	19:57 (8) 20:10 (8)	05:33 21:36
17	08:48 16:47	07:56 17:49	06:50 18:44	06:34 20:42	19:55 (8) 20:12 (8)	05:32 21:37
18	08:47 16:49	07:54 17:51	06:47 18:46	06:31 20:44	19:53 (8) 20:13 (8)	05:30 21:39
19	08:46 16:51	07:51 17:53	06:45 18:48	06:29 20:46	19:52 (8) 20:14 (8)	05:28 21:41
20	08:45 16:53	07:49 17:55	06:42 18:50	06:27 20:48	19:51 (8) 20:14 (8)	05:27 21:42
21	08:44 16:55	07:47 17:57	06:40 18:51	06:24 20:50	19:50 (8) 20:15 (8)	05:25 21:44
22	08:42 16:56	07:45 17:59	06:37 18:53	06:22 20:52	19:50 (8) 20:15 (8)	05:24 21:46
23	08:41 16:58	07:42 18:01	06:35 18:55	06:20 20:54	19:50 (8) 20:15 (8)	05:22 21:47
24	08:40 17:00	07:40 18:03	06:32 18:57	06:17 20:56	19:49 (8) 20:15 (8)	05:21 21:49
25	08:38 17:02	07:38 18:05	06:30 18:59	06:15 20:58	19:49 (8) 20:15 (8)	05:20 21:50
26	08:37 17:04	07:36 18:07	06:27 19:01	06:13 20:59	19:49 (8) 20:14 (8)	05:18 21:52
27	08:35 17:06	07:33 18:09	06:25 19:03	06:11 21:01	19:49 (8) 20:13 (8)	05:17 21:53
28	08:34 17:08	07:31 18:11	06:22 19:05	06:09 21:03	19:49 (8) 20:13 (8)	05:16 21:54
29	08:32 17:10	07:29 18:11	06:20 19:07	06:06 21:05	19:50 (8) 20:12 (8)	05:15 21:56
30	08:30 17:12	07:27 18:12	06:17 19:09	06:04 21:07	19:51 (8) 20:11 (8)	05:14 21:57
31	08:29 17:14	07:25 18:14	06:15 19:11	06:02 21:09	19:52 (8) 20:10 (8)	05:13 21:58
Potential sun hours	248	272	367	421	496	513
Total, worst case			163	502	182	452
Sun reduction			0.22	0.34	0.36	0.26
Oper. time red.			1.00	1.00	1.00	1.00
Wind dir. red.			0.59	0.59	0.62	0.63
Total reduction			0.13	0.20	0.22	0.16
Total, real			21	102	41	73

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: CK - H89

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	July	August	September	October	November	December							
1	05:07	21:10 (9)	05:48	06:44	07:38	08:33							
	22:15	15	21:25 (9)	21:39	20:31	19:16	17:04	16:19					
2	05:08	21:10 (9)	05:50	06:45	07:40	08:35							
	22:14	16	21:26 (9)	21:37	20:28	19:14	17:02	16:18					
3	05:09	21:11 (9)	05:52	06:47	07:42	08:36							
	22:14	16	21:27 (9)	21:35	20:26	19:11	17:00	16:18					
4	05:10	21:10 (9)	05:53	06:49	19:09 (7)	07:44	07:43	08:38					
	22:13	16	21:26 (9)	21:33	20:23	8	19:17 (7)	19:09	16:58	16:17			
5	05:11	21:10 (9)	05:55	06:51	19:06 (7)	07:45	07:45	08:39					
	22:13	17	21:27 (9)	21:31	20:21	14	19:20 (7)	19:06	16:56	16:16			
6	05:12	21:10 (9)	05:57	06:53	19:04 (7)	07:47	07:47	08:41					
	22:12	17	21:27 (9)	21:29	20:19	18	19:22 (7)	19:04	16:55	16:16			
7	05:13	21:10 (9)	05:59	06:54	19:03 (7)	07:49	07:49	08:42					
	22:12	17	21:27 (9)	21:27	20:16	20	19:23 (7)	19:01	16:53	16:15			
8	05:14	21:10 (9)	06:00	06:56	19:01 (7)	07:51	07:51	08:43					
	22:11	18	21:28 (9)	21:25	20:14	22	19:23 (7)	18:59	16:51	16:15			
9	05:15	21:10 (9)	06:02	20:08 (8)	06:58	19:00 (7)	07:53	07:53	08:45				
	22:10	18	21:28 (9)	21:23	4	20:12 (8)	20:11	23	19:23 (7)	18:56	16:49	16:14	
10	05:16	21:10 (9)	06:04	20:04 (8)	07:00	18:59 (7)	07:55	07:55	08:46				
	22:09	18	21:28 (9)	21:21	12	20:16 (8)	20:09	25	19:24 (7)	18:54	16:47	16:14	
11	05:17	21:11 (9)	06:06	20:01 (8)	07:02	18:59 (7)	07:57	07:57	08:47				
	22:08	17	21:28 (9)	21:19	16	20:17 (8)	20:06	25	19:24 (7)	18:52	16:45	16:14	
12	05:18	21:11 (9)	06:08	20:00 (8)	07:03	18:58 (7)	07:58	07:59	08:48				
	22:07	17	21:28 (9)	21:17	18	20:18 (8)	20:04	25	19:23 (7)	18:49	16:44	16:14	
13	05:19	21:11 (9)	06:09	19:59 (8)	07:05	18:58 (7)	08:00	08:01	08:49				
	22:06	17	21:28 (9)	21:15	21	20:20 (8)	20:01	25	19:23 (7)	18:47	16:42	16:14	
14	05:21	21:12 (9)	06:11	19:58 (8)	07:07	18:58 (7)	08:02	08:03	08:50				
	22:05	17	21:29 (9)	21:12	23	20:21 (8)	19:59	24	19:22 (7)	18:44	16:40	16:13	
15	05:22	21:12 (9)	06:13	19:57 (8)	07:09	18:58 (7)	08:04	08:05	08:51				
	22:04	17	21:29 (9)	21:10	23	20:20 (8)	19:56	23	19:21 (7)	18:42	16:39	16:14	
16	05:23	21:12 (9)	06:15	19:56 (8)	07:11	18:58 (7)	08:06	08:07	08:52				
	22:03	16	21:28 (9)	21:08	25	20:21 (8)	19:54	21	19:19 (7)	18:40	16:37	16:14	
17	05:25	21:12 (9)	06:17	19:56 (8)	07:12	18:59 (7)	08:08	08:09	08:53				
	22:02	15	21:27 (9)	21:06	25	20:21 (8)	19:51	19	19:18 (7)	18:37	16:36	16:14	
18	05:26	21:13 (9)	06:18	19:55 (8)	07:14	19:00 (7)	08:10	08:11	08:54				
	22:00	14	21:27 (9)	21:04	26	20:21 (8)	19:49	16	19:16 (7)	18:35	16:34	16:14	
19	05:28	21:14 (9)	06:20	19:55 (8)	07:16	19:02 (7)	08:12	08:12	08:54				
	21:59	11	21:25 (9)	21:01	26	20:21 (8)	19:46	12	19:14 (7)	18:33	16:33	16:14	
20	05:29	21:14 (9)	06:22	19:55 (8)	07:18	08:14	08:14	08:14	08:55				
	21:58	10	21:24 (9)	20:59	26	20:21 (8)	19:44	26	20:21 (8)	19:44	18:30	16:31	16:15
21	05:30	21:16 (9)	06:24	19:54 (8)	07:20	08:16	08:16	08:16	08:56				
	21:56	7	21:23 (9)	20:57	26	20:20 (8)	19:41	18:28	16:30	16:15			
22	05:32	21:16 (9)	06:26	19:55 (8)	07:22	08:18	08:18	08:18	08:56				
	21:55	5	21:21 (9)	20:55	24	20:19 (8)	19:39	18:26	16:29	16:15			
23	05:34	21:19 (9)	06:27	19:55 (8)	07:23	08:20	08:20	08:20	08:57				
	21:54	2	21:21 (9)	20:52	24	20:19 (8)	19:36	18:24	16:27	16:16			
24	05:35		06:29	19:56 (8)	07:25	08:22	08:22	08:22	08:57				
	21:52		20:50	22	20:18 (8)	19:34	18:21	16:26	16:17				
25	05:37		06:31	19:56 (8)	07:27	07:24	08:23	08:23	08:58				
	21:50		20:48	20	20:16 (8)	19:31	17:19	16:25	16:17				
26	05:38		06:33	19:58 (8)	07:29	07:25	08:25	08:25	08:58				
	21:49		20:45	17	20:15 (8)	19:29	17:17	16:24	16:18				
27	05:40		06:35	20:00 (8)	07:31	07:27	08:27	08:27	08:58				
	21:47		20:43	13	20:13 (8)	19:26	17:15	16:23	16:19				
28	05:42		06:36	20:02 (8)	07:32	07:29	08:28	08:28	08:58				
	21:46		20:40	6	20:08 (8)	19:24	17:13	16:22	16:20				
29	05:43		06:38		07:34	07:31	08:30	08:30	08:58				
	21:44		20:38		19:21	17:11	16:21	16:20	16:20				
30	05:45		06:40		07:36	07:33	08:32	08:32	08:58				
	21:42		20:36		19:19	17:09	16:20	16:21	16:21				
31	05:47		06:42			07:35			08:58				
	21:40		20:33			17:06			16:22				
Potential sun hours	515		461		382		328		257		231		
Total, worst case		333		397		320							
Sun reduction		0.27		0.27		0.29							
Oper. time red.		1.00		1.00		1.00							
Wind dir. red.		0.63		0.59		0.59							
Total reduction		0.17		0.16		0.17							
Total, real		56		65		55							

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: CL - H90  
 Assumptions for shadow calculations Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January	February	March	April	May	June	July	August	September	October	November	December	
1	08:58 16:24	08:27 17:16	07:29 18:13	07:12 20:12	06:02 21:09	05:12 22:00	05:08 22:15	05:48 21:38	06:44 20:31	07:38 19:16	07:37 17:04	08:33 16:19	
2	08:58 16:25	08:25 17:18	07:26 18:15	07:10 20:14	06:00 21:11	05:11 22:01	05:08 22:14	05:50 21:37	06:46 20:28	07:40 19:14	07:39 17:02	08:35 16:18	
3	08:58 16:26	08:24 17:20	07:24 18:17	07:08 20:16	05:58 21:12	05:10 22:02	05:09 22:14	05:52 21:35	06:47 20:26	07:42 19:11	07:41 17:00	08:36 16:18	
4	08:58 16:27	08:22 17:22	07:21 18:19	07:05 20:18	05:56 21:14	05:09 22:03	05:10 22:13	05:54 21:33	06:49 20:23	07:44 19:09	07:43 16:58	08:38 16:17	
5	08:57 16:29	08:20 17:24	07:19 18:21	07:03 20:20	05:54 21:16	05:08 22:04	05:11 22:13	05:55 21:31	06:51 20:21	07:45 19:06	07:45 16:57	08:39 16:16	
6	08:57 16:30	08:18 17:26	07:17 18:23	07:00 20:22	05:52 21:18	05:07 22:05	05:12 22:12	05:57 21:29	06:53 20:19	07:47 19:04	07:47 16:55	08:41 16:16	
7	08:56 16:31	08:16 17:28	07:14 18:25	06:58 20:24	05:50 21:20	05:07 22:06	05:13 22:11	05:59 21:27	06:55 20:16	07:49 19:01	07:49 16:53	08:42 16:15	
8	08:56 16:33	08:14 17:30	07:12 18:27	06:55 20:25	05:48 21:22	05:06 22:07	05:14 22:11	06:01 21:25	06:56 20:14	07:51 18:59	07:51 16:51	08:43 16:15	
9	08:55 16:34	08:12 17:32	07:09 18:28	06:53 20:27	05:46 21:23	05:06 22:08	05:15 22:10	06:02 21:23	06:58 20:11	07:53 18:56	07:53 16:49	08:45 16:15	
10	08:54 16:36	08:10 17:34	07:07 18:30	06:50 20:29	05:44 21:25	05:05 22:09	05:16 22:09	06:04 21:21	07:00 20:09	07:55 18:54	07:55 16:47	08:46 16:14	
11	08:54 16:37	08:08 17:36	07:05 18:32	06:48 20:31	05:42 21:27	05:05 22:10	05:17 22:08	06:06 21:19	07:02 20:06	07:57 18:52	07:57 16:46	08:47 16:14	
12	08:53 16:39	08:06 17:38	07:02 18:34	06:46 20:33	05:41 21:29	05:04 22:11	05:18 22:07	06:08 21:17	07:04 20:04	07:58 18:49	07:59 16:44	08:48 16:14	
13	08:52 16:41	08:04 17:41	07:00 18:36	06:43 20:35	05:39 21:30	05:04 22:12	05:20 22:06	06:09 21:15	07:05 20:01	08:00 18:47	08:01 16:42	08:49 16:14	
14	08:51 16:42	08:02 17:43	06:57 18:38	06:41 20:37	05:37 21:32	05:04 22:12	05:21 22:05	06:11 21:12	07:07 19:59	08:02 18:44	08:03 16:40	08:50 16:14	
15	08:50 16:44	08:00 17:45	06:55 17:11 (2) 18:40	06:38 20:39	05:35 21:34	05:03 22:13	05:22 22:04	06:13 21:10	07:09 19:56	08:04 18:42	08:05 16:39	08:51 16:14	
16	08:49 16:46	07:58 17:47	06:52 17:10 (2) 18:42	18:14 (4) 06:36	05:33 21:36	05:03 22:13	05:23 22:03	06:15 21:08	07:11 19:54	08:06 18:40	08:07 16:37	08:52 16:14	
17	08:48 16:47	07:56 17:49	06:50 17:10 (2) 18:44	18:13 (4) 06:34	05:32 21:37	05:03 22:14	05:25 22:02	06:17 21:06	07:13 19:51	08:08 18:37	08:09 16:36	08:53 16:14	
18	08:47 16:49	07:54 17:51	06:47 17:10 (2) 18:46	18:11 (4) 06:31	05:30 21:39	05:03 22:14	05:26 22:00	06:18 21:04	07:14 19:49	08:10 18:35	08:10 16:34	08:54 16:14	
19	08:46 16:51	07:51 17:53	06:45 17:24 (2) 18:48	18:11 (4) 06:29	05:29 21:41	05:03 22:15	05:28 21:59	06:20 21:01	07:16 19:46	19:04 (4) 08:12	18:35 17:45 (2)	08:12 16:33	08:54 16:14
20	08:45 16:53	07:49 17:55	06:42 17:10 (2) 18:50	18:10 (4) 06:27	05:27 21:42	05:03 22:15	05:29 21:58	06:22 20:59	07:18 19:44	19:09 (4) 08:14	18:33 17:43 (2)	08:14 16:15	08:55 16:15
21	08:44 16:55	07:47 17:57	06:40 17:11 (2) 18:51	18:10 (4) 06:24	05:26 21:44	05:03 22:15	05:31 21:56	06:24 20:57	07:20 19:41	18:56 (4) 08:16	17:41 (2) 17:55 (2)	08:16 16:30	08:56 16:15
22	08:42 16:56	07:45 17:59	06:37 17:12 (2) 18:53	18:10 (4) 06:22	05:24 21:45	05:03 22:15	05:32 21:58	06:26 20:55	07:22 19:39	18:55 (4) 08:18	17:41 (2) 17:56 (2)	08:18 16:29	08:56 16:16
23	08:41 16:58	07:42 18:01	06:35 17:15 (2) 18:55	18:11 (4) 06:20	05:23 21:47	05:04 22:16	05:34 21:53	06:27 20:52	07:23 19:36	18:54 (4) 08:20	17:40 (2) 17:53 (2)	08:20 16:28	08:57 16:16
24	08:40 17:00	07:40 18:03	06:32 17:10 (2) 18:54	18:12 (4) 06:18	05:21 21:49	05:04 22:16	05:35 21:52	06:29 20:50	07:25 19:34	18:54 (4) 08:22	17:40 (2) 17:51 (2)	08:21 16:17	08:57 16:17
25	08:38 17:02	07:38 18:05	06:30 17:15 (2) 18:59	18:15 (4) 06:15	05:20 21:50	05:04 22:16	05:37 21:50	06:31 20:48	07:27 19:31	18:55 (4) 07:24	16:40 (2) 16:48 (2)	08:23 16:25	08:57 16:17
26	08:37 17:04	07:36 18:07	06:27 17:10 (2) 19:01	18:19 (4) 06:13	05:19 21:52	05:05 22:16	05:38 21:49	06:33 20:45	07:29 19:29	18:54 (4) 07:25	16:40 (2) 16:46 (2)	08:25 16:24	08:58 16:18
27	08:35 17:06	07:33 18:09	06:25 17:10 (2) 19:03	06:11 21:01	05:17 21:53	05:05 22:16	05:40 21:47	06:35 20:43	07:31 19:26	18:55 (4) 07:27	16:41 (2) 16:44 (2)	08:27 16:23	08:58 16:19
28	08:34 17:08	07:31 18:11	06:22 19:05	06:09 21:03	05:16 21:54	05:06 22:15	05:42 21:45	06:36 20:40	07:32 19:24	18:57 (4) 07:29	17:15 17:13	08:28 16:22	08:58 16:20
29	08:32 17:10		07:20 20:07	06:06 21:05	05:15 21:56	05:06 22:15	05:43 21:44	06:38 20:38	07:34 19:21	07:31 17:11	08:30 16:21	08:58 16:21	
30	08:30 17:12		07:17 20:09	06:04 21:07	05:14 21:57	05:07 22:15	05:45 21:42	06:40 20:36	07:36 19:19	07:33 17:09	08:32 16:20	08:58 16:22	
31	08:29 17:14		07:15 20:10	05:13 21:58	05:07 22:16	05:08 22:16	05:47 21:40	06:42 20:33	07:36 19:19	07:35 17:07	08:33 16:23	08:58 16:23	
Potential sun hours	248	272	367	421	496	513	515	461	382	328	257	231	
Total, worst case		93	92			5			93				
Sun reduction		0.22	0.22			0.26			0.29		0.23		
Oper. time red.		1.00	1.00			1.00			1.00		1.00		
Wind dir. red.		0.58	0.58			0.65			0.58		0.58		
Total reduction		0.13	0.13			0.17			0.17		0.14		
Total, real		12	12			1			16		12		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)



### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Assumptions for shadow calculations

Shadow receptor: CM - H91

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:59 16:24	08:27 17:16	08:56 (5) 18:13	07:29 18:13	06:02 21:09	05:12 22:00	05:08 22:15	05:48 21:39	06:44 20:31	07:38 19:16	07:38 08:09 (5)	08:34 16:19
2	08:58 16:25	08:26 17:18	08:54 (5) 18:15	07:26 20:14	06:00 21:11	05:11 22:01	05:08 22:15	05:50 21:37	06:46 20:29	07:40 19:14	07:40 08:09 (5)	08:35 16:19
3	08:58 16:26	08:24 17:20	08:52 (5) 18:17	07:24 20:16	06:08 21:13	05:10 22:02	05:09 22:14	05:52 21:35	06:47 20:26	07:42 19:11	07:42 08:28 (5)	08:37 16:18
4	08:58 16:28	08:22 17:22	08:50 (5) 18:19	07:22 20:18	06:05 21:15	05:09 22:04	05:10 22:14	05:54 21:33	06:49 20:24	07:44 19:09	07:43 08:28 (5)	08:38 16:17
5	08:57 16:29	08:20 17:24	08:48 (5) 18:21	07:19 20:20	06:03 21:16	05:08 22:05	05:11 22:13	05:55 21:31	06:51 20:21	07:46 19:06	07:45 08:29 (5)	08:40 16:17
6	08:57 16:30	08:18 17:26	08:46 (5) 18:23	07:17 20:22	06:00 21:18	05:08 22:06	05:12 22:12	05:57 21:29	06:53 20:19	07:47 19:04	07:47 08:29 (5)	08:41 16:16
7	08:57 16:32	08:16 17:28	08:44 (5) 18:25	07:14 20:24	06:58 21:20	05:50 22:07	05:07 22:12	05:13 21:27	05:59 20:16	06:55 19:01	06:55 08:29 (5)	08:42 16:15
8	08:56 16:33	09:30 (6) 17:30	08:14 18:27	07:12 20:26	06:55 21:22	05:48 22:08	05:14 22:11	06:01 21:25	06:56 20:14	07:51 18:59	07:51 08:29 (5)	08:44 16:15
9	08:55 16:34	09:29 (6) 17:32	08:13 18:29	07:10 20:28	06:53 21:24	05:46 22:09	05:15 22:10	06:02 21:23	06:58 20:11	07:53 18:57	07:53 08:29 (5)	08:45 16:15
10	08:55 16:36	09:28 (6) 17:35	08:11 18:31	07:07 20:29	06:51 21:25	05:45 22:10	05:16 22:09	06:04 21:21	07:00 20:09	07:55 18:54	07:55 08:27 (5)	08:46 16:14
11	08:54 16:37	09:27 (6) 17:37	08:09 18:33	07:05 20:31	06:48 21:27	05:42 22:10	05:17 22:08	06:06 21:19	07:02 20:06	07:57 18:52	07:57 08:29 (5)	08:47 16:14
12	08:53 16:39	09:26 (6) 17:39	08:06 18:34	07:02 20:33	06:46 21:29	05:41 22:11	05:18 22:07	06:08 21:17	07:04 20:04	07:59 18:49	07:59 08:29 (5)	08:48 16:14
13	08:52 16:41	09:25 (6) 17:41	08:04 18:36	07:00 20:35	06:43 21:31	05:39 22:12	05:04 22:06	06:10 21:15	07:06 20:01	08:01 18:47	08:01 08:53 (6)	08:49 16:14
14	08:52 16:42	09:24 (6) 17:43	08:02 18:38	07:00 20:37	06:41 21:32	05:37 22:13	05:04 22:05	06:11 21:13	07:07 19:59	08:02 18:45	08:03 08:50 (6)	08:50 16:14
15	08:51 16:44	09:23 (6) 17:45	08:00 18:40	07:00 20:39	06:55 21:34	05:35 22:13	05:03 22:04	06:13 21:10	07:09 19:56	08:04 18:42	08:05 08:49 (6)	08:51 16:14
16	08:50 16:46	09:21 (6) 17:47	07:58 18:42	06:52 20:41	06:36 21:36	05:34 22:14	05:24 22:03	06:15 21:08	07:11 19:54	08:06 18:40	08:07 08:49 (6)	08:52 16:14
17	08:49 16:47	09:20 (6) 17:49	07:56 18:44	06:50 20:43	06:34 21:38	05:32 22:14	05:25 22:02	06:17 21:06	07:13 19:51	08:08 18:38	08:09 08:48 (6)	08:53 16:14
18	08:47 16:49	09:19 (6) 17:51	07:54 18:46	06:47 20:45	06:31 21:39	05:30 22:15	05:26 22:01	06:19 21:04	07:15 19:49	08:10 18:35	08:11 08:47 (6)	08:54 16:14
19	08:46 16:51	09:17 (6) 17:53	07:52 18:48	06:45 20:46	06:29 21:41	05:29 22:15	05:03 21:59	06:20 21:02	07:16 19:46	08:12 18:33	08:13 08:47 (6)	08:55 16:14
20	08:45 16:53	09:16 (6) 17:55	07:49 18:50	06:42 20:48	06:27 21:43	05:27 22:15	05:03 21:58	06:22 20:59	07:18 19:44	08:14 18:31	08:14 09:11 (6)	08:55 16:15
21	08:44 16:55	09:14 (6) 17:57	07:47 18:52	06:40 20:50	06:24 21:44	05:26 22:16	05:03 21:57	06:24 20:57	07:20 19:41	08:16 18:28	08:16 08:50 (6)	08:56 16:15
22	08:43 16:57	09:13 (6) 17:59	07:45 18:54	06:38 20:52	06:22 21:46	05:24 22:16	05:03 21:55	06:32 20:55	07:22 19:39	08:18 18:26	08:18 08:52 (6)	08:56 16:16
23	08:41 16:58	09:12 (6) 18:01	07:43 18:55	06:35 20:54	06:20 21:47	05:23 22:16	05:04 21:54	06:28 20:52	07:24 19:36	08:20 18:24	08:20 08:54 (6)	08:57 16:16
24	08:40 17:00	09:11 (6) 18:03	07:40 18:03	06:33 18:03	06:18 21:49	05:21 22:16	05:35 21:52	06:29 20:50	07:25 19:34	08:22 18:22	08:22 08:56 (6)	08:57 16:17
25	08:38 17:02	09:14 (6) 18:05	07:38 18:05	06:30 18:05	06:15 21:50	05:20 22:16	05:04 21:51	06:31 20:48	07:27 19:31	08:24 18:19	08:24 08:58 (6)	08:58 16:17
26	08:37 17:04	09:15 (6) 18:07	07:36 18:07	06:28 19:01	06:13 21:00	05:19 21:52	05:05 21:49	06:33 20:45	07:29 19:29	08:25 18:17	08:25 09:00 (6)	08:58 16:18
27	08:35 17:06	09:17 (6) 18:09	07:33 18:09	06:25 19:03	06:11 21:01	05:17 21:53	05:05 22:16	06:35 20:43	07:31 19:26	08:27 18:15	08:27 09:15 (6)	08:58 16:19
28	08:34 17:08	09:19 (6) 18:11	07:31 18:11	06:23 19:05	06:09 21:03	05:16 21:55	05:06 22:16	06:37 21:46	07:33 19:24	08:29 18:13	08:29 09:15 (6)	08:58 16:20
29	08:32 17:10	09:21 (6) 18:11	07:29 18:11	06:20 20:07	06:07 21:05	05:15 21:56	05:06 22:16	06:43 21:44	07:35 19:21	08:30 18:11	08:30 09:14 (6)	08:59 16:21
30	08:31 17:12	09:22 (6) 18:11	07:28 18:11	06:19 20:09	06:04 21:07	05:14 21:57	05:07 22:15	06:40 21:42	07:34 19:19	08:31 18:08	08:31 08:21 (5)	08:59 16:22
31	08:29 17:14	09:23 (6) 18:11	07:27 18:11	06:18 20:09	06:04 21:07	05:14 21:59	05:07 22:15	06:40 21:41	07:34 18:07	08:32 18:04	08:32 08:24 (5)	08:59 16:23
Potential sun hours	248	272	367	421	496	513	515	461	382	328	20	257
Total, worst case	313	128									407	16
Sun reduction	0.17	0.22									0.23	0.12
Oper. time red.	1.00	1.00									1.00	1.00
Wind dir. red.	0.66	0.63									0.63	0.66
Total reduction	0.11	0.14									0.15	0.08
Total, real	35	18									3	1

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)



**SHADOW - Calendar**

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: CN - H92  
 Assumptions for shadow calculations  
 Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

**Operational time**

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:58 16:24	08:27 17:16	07:29 18:13	07:12 20:12	06:02 21:09	05:12 22:00	05:08 22:15	05:48 21:39	06:44 20:31	07:38 19:16	07:37 17:04	16:16 (1) 16:19
2	08:58 16:25	08:25 17:18	07:26 18:15	07:10 20:14	06:00 21:11	05:11 22:01	05:08 22:14	05:50 21:37	06:45 20:28	07:40 19:14	07:39 17:02	16:16 (1) 16:18
3	08:58 16:26	08:24 17:20	07:24 18:17	07:07 20:16	05:58 21:12	05:10 22:02	05:09 22:14	05:52 21:35	06:47 20:26	07:42 19:11	07:41 17:00	16:17 (1) 16:18
4	08:58 16:27	08:22 17:22	07:21 18:19	07:05 20:18	05:56 21:14	05:09 22:03	05:10 22:13	05:53 21:33	06:49 20:24	07:44 19:09	07:43 16:58	16:18 (1) 16:17
5	08:57 16:29	08:20 17:24	07:19 18:21	07:03 20:20	05:54 21:16	05:08 22:04	05:11 22:13	05:55 21:31	06:51 20:21	07:45 19:06	07:45 16:56	16:19 (1) 16:16
6	08:57 16:30	08:18 17:26	07:17 18:23	07:00 20:22	05:52 21:18	05:07 22:06	05:12 22:12	05:57 21:29	06:53 20:19	07:47 19:04	07:47 16:55	16:21 (1) 16:16
7	08:56 16:31	08:16 17:28	07:14 18:25	06:58 20:24	05:50 21:20	05:07 22:07	05:13 22:11	05:59 21:27	06:55 20:16	07:49 19:01	07:49 16:53	16:22 (1) 16:16
8	08:56 16:33	08:14 17:30	07:12 18:27	06:55 20:25	05:48 21:22	05:06 22:08	05:14 22:11	06:00 21:25	06:56 20:14	07:51 18:59	07:51 16:51	16:15 16:15
9	08:55 16:34	08:12 17:32	07:09 18:28	06:53 20:27	05:46 21:23	05:06 22:08	05:15 22:10	06:02 21:23	06:58 20:11	07:53 18:56	07:53 16:49	16:15 16:14
10	08:55 16:36	08:10 17:34	07:07 18:30	06:50 20:29	05:44 21:25	05:05 22:09	05:16 22:09	06:04 21:21	07:00 20:09	07:55 18:54	07:55 16:47	16:14 16:14
11	08:54 16:37	08:08 17:36	07:05 18:32	06:48 20:31	05:42 21:27	05:05 22:10	05:17 22:08	06:06 21:19	07:02 20:06	07:57 18:52	07:57 16:45	16:14 16:14
12	08:53 16:39	08:06 17:38	07:02 18:34	06:46 20:33	05:40 21:29	05:04 22:11	05:18 22:07	06:08 21:17	07:04 20:04	07:59 18:49	07:59 16:44	16:14 16:14
13	08:52 16:41	08:04 17:40	07:00 18:36	06:43 20:35	05:39 21:30	05:04 22:12	05:20 22:06	06:09 21:15	07:05 20:01	08:00 18:47	08:01 16:42	16:14 16:14
14	08:51 16:42	08:02 17:43	06:57 18:38	06:41 20:37	05:37 21:32	05:03 22:12	05:21 22:05	06:11 21:12	07:07 19:59	08:02 18:44	08:03 16:40	16:14 16:14
15	08:50 16:44	08:00 17:45	06:55 18:40	06:38 20:39	05:35 21:34	05:03 22:13	05:22 22:04	06:13 21:10	07:09 19:56	08:04 18:42	08:05 16:39	16:14 16:14
16	08:49 16:46	07:58 17:47	06:52 18:42	06:36 20:41	05:33 21:36	05:03 22:13	05:23 22:03	06:15 21:08	07:11 19:54	08:06 18:40	08:07 16:37	16:14 16:14
17	08:48 16:47	07:56 17:49	06:50 18:44	06:34 20:42	05:32 21:37	05:03 22:14	05:25 22:02	06:17 21:06	07:13 19:51	08:08 18:37	08:09 16:36	16:14 16:14
18	08:47 16:49	07:54 17:51	06:47 18:46	06:31 20:44	05:30 21:39	05:03 22:14	05:26 22:00	06:18 21:04	07:14 19:49	08:10 18:35	08:11 16:34	16:14 16:14
19	08:46 16:51	07:51 17:53	06:45 18:48	06:29 20:46	05:29 21:41	05:03 22:15	05:28 21:59	06:20 21:01	07:16 19:46	08:12 18:33	08:12 16:33	16:14 16:14
20	08:45 16:53	07:49 17:55	06:42 18:50	06:27 20:48	05:27 21:42	05:03 22:15	05:29 21:58	06:22 20:59	07:18 19:44	08:14 18:30	17:27 (1) 17:32 (1)	16:14 16:31
21	08:44 16:55	07:47 17:57	06:40 18:51	06:24 20:50	05:25 21:44	05:03 22:15	05:31 21:56	06:24 20:57	07:20 19:41	08:16 18:28	5 12	16:15 16:30
22	08:42 16:56	07:45 17:59	06:37 18:53	06:22 20:52	05:24 21:45	05:03 22:16	05:32 21:55	06:26 20:55	07:22 19:39	08:18 18:26	12 17	16:15 16:29
23	08:41 16:58	07:42 18:01	06:35 18:55	06:20 20:54	05:23 21:47	05:04 22:16	05:34 21:54	06:27 20:52	07:23 19:36	08:20 18:24	17 19	16:16 16:27
24	08:40 17:00	07:40 18:03	06:32 18:57	06:17 20:56	05:21 21:49	05:04 22:16	05:35 21:52	06:29 20:50	07:25 19:34	08:22 18:21	19 22	16:16 16:26
25	08:38 17:02	07:38 18:05	06:30 18:59	06:15 20:58	05:20 21:50	05:04 22:16	05:37 21:50	06:31 20:48	07:27 19:31	07:24 17:19	22 24	16:16 (1) 16:25
26	08:37 17:04	07:36 18:07	06:27 19:01	06:13 20:59	05:19 21:52	05:05 22:16	05:38 21:49	06:33 20:45	07:29 19:29	07:25 17:17	24 24	16:16 (1) 16:24
27	08:35 17:06	07:33 18:09	06:25 19:03	06:11 21:01	05:17 21:53	05:05 22:16	05:40 21:47	06:35 20:43	07:31 19:26	07:27 17:15	24 25	16:15 (1) 16:23
28	08:34 17:08	07:31 18:11	06:22 19:05	06:09 21:03	05:16 21:54	05:06 22:16	05:42 21:46	06:36 20:40	07:32 19:24	07:29 17:13	25 25	16:16 (1) 16:21
29	08:32 17:10	07:30 18:10	06:20 20:07	06:06 21:05	05:15 21:56	05:06 22:15	05:43 21:44	06:38 20:38	07:34 19:21	07:31 17:11	25 25	16:15 (1) 16:21
30	08:30 17:12	07:30 20:09	06:19 21:07	06:04 21:07	05:14 21:57	05:07 22:15	05:45 21:42	06:40 20:36	07:36 19:19	07:33 17:09	22 22	16:15 (1) 16:20
31	08:29 17:14	07:30 20:10	06:18 21:08	06:03 21:07	05:13 21:58	05:08 22:15	05:47 21:40	06:42 20:33	07:35 17:06	16:15 (1) 17:06	20	16:15 (1) 16:22
Potential sun hours	248	272	367	421	496	513	515	461	382	328	240	231
Total, worst case			292								58	
Sun reduction		0.22								0.23	0.20	
Oper. time red.		1.00								1.00	1.00	
Wind dir. red.		0.58								0.58	0.58	
Total reduction		0.13								0.14	0.12	
Total, real		38								33	7	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: CP - H94  
 Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:59 16:24	08:27 17:16	07:29 18:13	07:54 (6) 20:13	07:13 21:09	06:02 22:00	05:12 22:15	05:08 21:39	05:48 20:31	06:44 19:16	07:38 08:05 (5)	07:38 17:05
2	08:58 16:25	08:26 17:18	07:26 18:15	07:51 (6) 20:14	07:10 21:11	06:00 22:01	05:11 22:15	05:08 21:37	05:50 20:29	06:46 19:14	07:40 08:07 (5)	07:40 17:03
3	08:58 16:26	08:24 17:20	07:24 18:17	07:49 (6) 20:16	07:08 21:13	05:58 22:02	05:10 22:14	05:09 21:35	05:52 20:26	06:48 19:11	07:42 08:09 (5)	07:42 17:01
4	08:58 16:28	08:22 17:22	07:22 18:19	07:46 (6) 20:18	07:05 21:15	05:56 22:04	05:09 22:14	05:10 21:33	05:54 20:24	06:49 19:09	07:44 08:10 (5)	07:43 16:59
5	08:57 16:29	08:20 17:24	07:19 18:21	07:44 (6) 20:20	07:03 21:16	05:54 22:05	05:08 22:23	05:11 21:31	05:55 20:21	06:51 19:06	07:46 08:12 (5)	07:45 16:57
6	08:57 16:30	08:18 17:26	07:17 18:23	07:42 (6) 20:22	07:00 21:18	05:52 22:06	05:08 22:12	05:12 21:29	05:57 20:19	06:53 19:04	07:47 08:14 (5)	07:47 16:55
7	08:57 16:32	08:16 17:28	07:14 18:25	07:39 (6) 20:24	06:58 21:20	05:50 22:07	05:07 22:12	05:13 21:27	05:59 20:16	06:55 19:01	07:49 08:16 (6)	07:49 16:53
8	08:56 16:33	08:14 17:30	07:12 18:27	07:37 (5) 20:26	06:55 21:22	05:48 22:08	05:06 22:11	05:14 21:25	06:01 20:14	06:57 18:59	07:51 08:18 (6)	07:51 16:51
9	08:55 16:34	08:13 17:33	07:10 18:29	07:34 (5) 20:28	06:53 21:24	05:46 22:09	05:06 22:10	05:15 21:23	06:02 20:11	06:58 18:57	07:53 08:20 (6)	07:53 16:49
10	08:55 16:36	08:11 17:35	07:07 18:31	07:32 (5) 20:29	06:51 21:25	05:44 22:10	05:05 22:09	05:16 21:21	06:04 20:09	07:00 18:54	07:55 08:22 (6)	07:55 16:47
11	08:54 16:38	08:09 17:37	07:05 18:33	07:29 (5) 20:31	06:48 21:27	05:42 22:10	05:07 22:08	05:17 21:19	06:06 20:06	07:02 18:52	07:57 08:24 (6)	07:57 16:46
12	08:53 16:39	08:06 17:39	07:02 18:34	07:27 (5) 20:33	06:46 21:29	05:41 22:11	05:04 22:07	05:18 21:17	06:08 20:04	07:04 18:59	07:59 08:26 (6)	07:59 16:44
13	08:52 16:41	08:04 17:41	07:00 18:36	07:24 (5) 20:35	06:43 21:31	05:39 22:12	05:04 22:06	05:20 21:15	06:10 20:01	07:06 18:47	08:01 08:28 (6)	08:01 16:42
14	08:52 16:42	08:02 17:43	06:57 18:38	07:22 (5) 20:37	06:41 21:32	05:37 22:13	05:04 22:05	05:21 21:13	06:11 20:09	07:07 18:59	08:03 08:35 (6)	08:03 16:41
15	08:51 16:44	08:00 17:45	06:55 18:40	07:20 (5) 20:39	06:39 21:34	05:35 22:13	05:03 22:04	05:22 21:10	06:13 20:06	07:09 18:56	08:04 08:32 (6)	08:05 16:39
16	08:50 16:46	07:58 17:47	06:52 18:42	07:22 (5) 20:41	06:36 21:36	05:34 22:14	05:03 22:03	05:24 21:08	06:15 20:08	07:11 18:54	08:06 08:06	08:07 16:37
17	08:49 16:48	07:56 17:49	06:50 18:44	07:23 (5) 20:43	06:34 21:38	05:32 22:14	05:03 22:02	05:25 21:06	06:17 20:06	07:13 18:51	08:08 08:38	08:09 16:36
18	08:47 16:49	07:54 17:51	06:47 18:46	07:27 (5) 20:45	06:31 21:39	05:30 22:15	05:03 22:01	05:26 21:04	06:19 20:09	07:15 18:52	08:10 08:35	08:11 16:34
19	08:46 16:51	07:52 17:53	06:45 18:48	07:31 (5) 20:46	06:29 21:41	05:29 22:15	05:03 21:59	05:28 21:02	06:20 20:06	07:16 18:56	08:12 08:33	08:13 16:33
20	08:45 16:53	07:49 17:55	06:43 18:50	06:27 20:48	05:27 21:43	05:03 22:15	05:29 21:58	06:22 20:59	07:18 19:44	08:14 18:31	08:14 08:14	08:14 16:32
21	08:44 16:55	07:47 17:57	06:40 18:52	06:40 20:50	05:26 21:44	05:03 22:16	05:31 21:57	06:24 20:57	07:20 19:41	08:20 18:28	08:16 08:16	08:16 16:30
22	08:43 16:57	07:45 17:59	06:38 18:54	06:22 20:52	05:24 21:46	05:03 22:16	05:32 21:55	06:26 20:55	07:22 19:39	08:18 18:26	08:18 08:18	08:18 16:29
23	08:41 16:59	07:43 18:01	06:35 18:55	06:20 20:54	05:23 21:47	05:04 22:16	05:34 21:54	06:28 20:52	07:24 19:36	08:20 18:24	08:20 08:20	08:20 16:28
24	08:40 17:00	07:40 18:03	06:33 18:57	06:18 20:56	05:21 21:49	05:04 22:16	05:35 21:52	06:29 20:50	07:25 19:34	08:22 18:22	08:22 08:22	08:22 16:17
25	08:38 17:02	07:38 18:05	06:30 18:59	06:15 20:58	05:20 21:50	05:04 22:16	05:37 21:51	06:31 20:48	07:27 19:31	07:24 18:19	08:23 08:23	08:23 16:25
26	08:37 17:04	07:36 18:07	06:28 19:01	06:13 21:00	05:19 21:52	05:05 22:16	05:39 21:49	06:33 20:45	07:29 19:29	08:06 (5) 08:16 (5)	07:26 17:17	08:25 16:24
27	08:35 17:06	07:33 18:09	06:25 19:03	06:11 21:01	05:17 21:53	05:05 22:16	05:40 21:47	06:35 20:43	07:31 19:26	08:03 (5) 08:17 (5)	07:28 17:15	08:27 16:23
28	08:34 17:08	07:31 18:11	06:23 19:05	07:56 (6) 20:23	06:09 21:03	05:16 21:55	05:06 22:16	05:42 20:41	06:37 19:24	07:33 18:17	08:01 (5) 08:15 (5)	07:30 17:10
29	08:32 17:10	07:29 18:08	06:20 19:07	06:07 21:05	05:15 21:56	05:06 22:16	05:43 21:44	06:38 20:38	07:35 19:21	08:01 (5) 08:19 (5)	07:32 17:11	08:30 16:21
30	08:31 17:12	07:28 18:09	06:18 19:09	06:05 21:07	05:14 21:57	05:07 22:15	05:45 21:42	06:40 20:36	07:36 19:19	08:03 (5) 08:19 (5)	07:34 17:09	08:32 16:20
31	08:29 17:14	07:25 18:14	06:15 19:11	07:15 21:01	05:13 21:59	05:13 22:15	05:47 21:41	06:42 20:33	07:36 19:07	08:03 (5) 08:19 (5)	07:36 17:07	08:59 16:23
Potential sun hours	248	272	367	421	496	513	515	461	382	328	257	231
Total, worst case			9	344					75		277	
Sun reduction			0.22	0.22					0.29		0.23	
Oper. time red.			1.00	1.00					1.00		1.00	
Wind dir. red.			0.61	0.60					0.59		0.60	
Total reduction			0.13	0.13					0.17		0.14	
Total, real			1	46					13		39	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: CQ - H95  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:58	08:27	07:29	07:13	06:02	05:12	05:08	05:49	06:44	07:38	07:37	08:33
	16:24	17:16	18:13	20:12	21:09	22:00	22:15	21:39	20:31	19:16	17:05	16:19
2	08:58	08:25	07:26	07:10	06:00	05:11	05:09	05:50	06:46	07:40	07:39	08:35
	16:25	17:18	18:15	20:14	21:11	22:01	22:14	21:37	20:28	19:14	17:03	16:19
3	08:58	08:24	07:24	07:08	05:58	05:10	05:09	05:52	06:47	07:42	07:41	08:36
	16:26	17:20	18:17	20:16	21:12	22:02	22:14	21:35	20:26	19:11	17:01	16:18
4	08:58	08:22	07:22	07:05	05:56	05:09	05:10	05:54	06:49	07:44	07:43	08:38
	16:28	17:22	18:19	20:18	21:14	22:03	22:13	21:33	20:24	19:09	16:59	16:17
5	08:57	08:20	07:19	07:03	05:54	05:08	05:11	05:55	06:51	07:45	07:45	08:39
	16:29	17:24	18:21	20:20	21:16	22:04	22:13	21:31	20:21	19:06	16:57	16:17
6	08:57	08:18	07:17	07:00	05:52	05:08	05:12	05:57	06:53	07:47	07:47	08:41
	16:30	17:26	18:23	20:22	21:18	22:05	22:12	21:29	20:19	19:04	16:55	16:16
7	08:56	08:16	07:14	06:58	05:50	05:07	05:13	05:59	06:55	07:49	07:49	08:42
	16:32	17:28	18:25	20:24	21:20	22:06	22:11	21:27	20:16	19:01	16:53	16:16
8	08:56	08:14	07:12	06:55	05:48	05:06	05:14	06:01	06:56	07:51	07:51	08:43
	16:33	17:30	18:27	20:26	21:22	22:07	22:11	21:25	20:14	18:59	16:51	16:15
9	08:55	08:12	07:10	06:53	05:46	05:06	05:15	06:02	06:58	07:53	07:53	08:45
	16:35	17:33	18:29	20:27	21:23	22:08	22:10	21:23	20:11	18:57	16:49	16:15
10	08:55	08:10	07:07	06:51	05:44	05:05	05:16	06:04	07:00	07:55	07:55	08:46
	16:36	17:35	18:31	20:29	21:25	22:09	22:09	21:21	20:09	18:54	16:47	16:14
11	08:54	08:08	07:05	06:48	05:43	05:05	05:17	06:06	07:02	07:57	07:57	08:47
	16:38	17:37	18:32	20:31	21:27	22:10	22:08	21:19	20:06	18:52	16:46	16:14
12	08:53	08:06	07:02	06:46	05:41	05:04	05:19	06:08	07:04	07:59	07:59	08:48
	16:39	17:39	18:34	20:33	21:29	22:11	22:07	21:17	20:04	18:49	16:44	16:14
13	08:52	08:04	07:00	06:43	05:39	05:04	05:20	06:10	07:05	08:00	08:01	08:49
	16:41	17:41	18:36	20:35	21:31	22:12	22:06	21:15	20:01	18:47	16:42	16:14
14	08:51	08:02	06:57	06:41	05:37	05:04	05:21	06:11	07:07	08:02	08:03	08:50
	16:42	17:43	18:38	20:37	21:32	22:12	22:05	21:12	19:59	18:45	16:41	16:14
15	08:50	08:00	06:55	06:39	05:35	05:04	05:22	06:13	07:09	08:04	08:05	08:51
	16:44	17:45	18:40	20:39	21:34	22:13	22:04	21:10	19:56	18:42	16:39	16:14
16	08:49	07:58	06:52	06:36	05:34	05:03	05:24	06:15	07:11	08:06	08:07	08:52
	16:46	17:47	18:42	20:41	21:36	22:13	22:03	21:08	19:54	18:40	16:37	16:14
17	08:48	07:56	06:50	06:34	05:32	05:03	05:25	06:17	07:13	08:08	08:09	08:53
	16:48	17:49	18:44	20:43	21:37	22:14	22:02	21:06	19:51	18:38	16:36	16:14
18	08:47	07:54	06:47	06:31	05:30	05:03	05:26	06:19	07:14	08:10	08:11	08:54
	16:49	17:51	18:46	20:44	21:39	22:14	22:00	21:04	19:49	18:35	16:34	16:14
19	08:46	07:51	06:45	06:29	05:29	05:03	05:28	06:20	07:16	08:12	08:12	08:54
	16:51	17:53	18:48	20:46	21:41	22:15	21:59	21:01	19:46	18:33	16:33	16:15
20	08:45	07:49	06:42	06:27	05:27	05:03	05:29	06:22	07:18	08:14	08:14	08:55
	16:53	17:55	18:50	20:48	21:42	22:15	21:58	20:59	19:44	18:31	16:32	16:15
21	08:44	07:47	06:40	06:25	05:26	05:03	05:31	06:24	07:20	08:16	08:16	08:56
	16:55	17:57	18:52	20:50	21:44	22:15	21:56	20:57	19:41	18:28	16:30	16:15
22	08:42	07:45	06:37	06:22	05:24	05:04	05:32	06:26	07:22	08:18	08:18	08:56
	16:57	17:59	18:54	20:52	21:45	22:16	21:55	20:55	19:39	18:26	16:29	16:16
23	08:41	07:43	06:35	06:20	05:23	05:04	05:34	06:28	07:23	08:20	08:20	08:57
	16:59	18:01	18:55	20:54	21:47	22:16	21:53	20:52	19:36	18:24	16:28	16:16
24	08:40	07:40	06:32	06:18	05:21	05:04	05:35	06:29	07:25	08:22	08:22	08:57
	17:00	18:03	18:57	20:56	21:49	22:16	21:52	20:50	19:34	18:22	16:27	16:17
25	08:38	07:38	06:30	06:15	05:20	05:05	05:37	06:31	07:27	08:24	08:23	08:57
	17:02	18:05	18:59	20:58	21:50	22:16	21:50	20:48	19:31	17:19	16:25	16:18
26	08:37	07:36	06:27	06:13	05:19	05:05	05:39	06:33	07:29	08:26	08:25	08:58
	17:04	18:07	19:01	20:59	21:52	22:16	21:49	20:45	19:29	17:17	16:24	16:18
27	08:35	07:33	06:25	06:11	05:18	05:05	05:40	06:35	07:31	08:28	08:27	08:58
	17:06	18:09	19:03	21:01	21:53	22:16	21:47	20:43	19:26	17:15	16:23	16:19
28	08:34	07:31	06:23	06:09	05:16	05:06	05:42	06:37	07:33	08:29	08:28	08:58
	17:08	18:11	19:05	21:03	21:54	22:15	21:46	20:41	19:24	17:13	16:22	16:20
29	08:32		07:20	06:07	05:15	05:07	05:43	06:38	07:34	08:31	08:30	08:58
	17:10		20:07	21:05	21:56	22:15	21:44	20:38	19:21	17:11	16:21	16:21
30	08:30		07:18	06:05	05:14	05:07	05:45	06:40	07:36	08:33	08:32	08:58
	17:12		20:09	21:07	21:57	22:15	21:42	20:36	19:19	17:09	16:20	16:22
31	08:29		07:15		05:13		05:47	06:42		07:35		08:58
	17:14		20:11		21:58		21:40	20:33		17:07		16:23
Potential sun hours	248	272	367	421	496	513	515	461	382	328	257	231
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)



## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: CR - H96  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June		
1	08:59 16:24	08:27 17:16	07:29 18:13	07:13 20:12	07:37 (11) 21:09	06:02 16 06:28 (13)	05:12 22:00	05:43 (12) 9 05:52 (12)
2	08:58 16:25	08:26 17:18	07:26 18:15	07:10 20:14	07:34 (11) 21:11	06:00 18 06:44 (13)	05:11 22:01	05:42 (12) 11 05:53 (12)
3	08:58 16:26	08:24 17:20	07:24 18:17	07:08 20:16	07:32 (11) 21:13	05:58 19 06:43 (13)	05:10 22:02	05:41 (12) 12 05:53 (12)
4	08:58 16:27	08:22 17:22	07:22 18:19	07:05 20:18	07:29 (11) 21:15	05:56 18 06:43 (13)	05:09 22:04	05:41 (12) 14 05:55 (12)
5	08:58 16:29	08:20 17:24	07:19 18:21	07:03 20:20	07:27 (11) 21:16	05:54 16 06:42 (13)	05:08 22:05	05:40 (12) 15 05:55 (12)
6	08:57 16:30	08:18 17:26	07:17 18:23	07:00 20:22	07:24 (11) 21:18	05:52 14 06:41 (13)	05:07 22:06	05:39 (12) 16 05:55 (12)
7	08:57 16:31	08:16 17:28	07:14 18:25	06:58 20:24	07:22 (11) 21:20	05:50 11 06:39 (13)	05:07 22:07	05:39 (12) 17 05:56 (12)
8	08:56 16:33	08:14 17:30	07:12 18:27	06:55 20:26	07:19 (11) 21:22	05:48 4 06:35 (13)	05:06 22:08	05:38 (12) 18 05:56 (12)
9	08:55 16:34	08:13 17:32	07:10 18:29	06:53 20:28	07:19 (11) 21:24	05:46 22:09	05:06 22:09	05:38 (12) 19 05:57 (12)
10	08:55 16:36	08:11 17:34	07:07 18:31	06:50 20:29	07:21 (11) 21:25	05:44 22:10	05:05 22:10	05:38 (12) 19 05:57 (12)
11	08:54 16:37	08:09 17:36	07:05 18:32	06:48 20:31	07:22 (11) 21:27	05:42 21:27	05:05 22:10	05:37 (12) 20 05:57 (12)
12	08:53 16:39	08:06 17:39	07:02 18:34	06:46 20:33	07:31 (11) 21:29	05:40 21:29	05:04 22:11	05:37 (12) 21 05:58 (12)
13	08:52 16:41	08:04 17:41	07:00 18:36	06:43 20:35	07:24 (10) 21:31	05:39 21:31	05:04 22:12	05:37 (12) 21 05:58 (12)
14	08:52 16:42	08:02 17:43	06:57 18:38	06:41 20:37	07:25 (10) 21:32	05:37 21:32	05:03 22:13	05:37 (12) 22 05:59 (12)
15	08:51 16:44	08:00 17:45	06:55 18:40	06:38 20:39	07:35 (10) 21:34	05:35 21:34	05:03 22:13	05:36 (12) 22 05:58 (12)
16	08:50 16:46	07:58 17:47	06:52 18:42	06:36 20:41	06:52 (14) 21:36	05:33 21:36	05:03 22:14	05:36 (12) 23 05:59 (12)
17	08:49 16:47	07:56 17:49	06:50 18:44	06:34 20:43	06:56 (14) 21:38	05:32 21:38	05:03 22:14	05:36 (12) 23 05:59 (12)
18	08:48 16:49	07:54 17:51	06:47 18:46	06:31 20:45	06:58 (14) 21:39	05:30 21:39	05:03 22:15	05:36 (12) 23 05:59 (12)
19	08:46 16:51	07:52 17:53	06:45 18:48	06:29 20:46	06:54 (14) 21:41	05:29 21:41	05:03 22:15	05:36 (12) 23 05:59 (12)
20	08:45 16:53	07:49 17:55	06:42 18:50	06:27 20:48	06:52 (14) 21:43	05:27 21:43	05:03 22:15	05:37 (12) 23 06:00 (12)
21	08:44 16:55	07:47 17:57	06:40 18:52	06:24 20:50	06:49 (14) 21:44	05:25 21:44	05:03 22:16	05:37 (12) 23 06:00 (12)
22	08:43 16:56	07:45 17:59	06:37 18:54	06:22 20:52	06:47 (14) 21:46	05:24 21:46	05:03 22:16	05:37 (12) 23 06:00 (12)
23	08:41 16:58	07:43 18:01	06:35 18:55	06:20 20:54	06:45 (14) 21:47	05:23 21:47	05:04 22:16	05:37 (12) 23 06:00 (12)
24	08:40 17:00	07:40 18:03	06:32 18:57	06:18 20:56	06:43 (13) 21:49	05:21 21:49	05:04 22:16	05:38 (12) 23 06:01 (12)
25	08:38 17:02	07:38 18:05	06:30 18:59	06:15 20:58	06:41 (13) 21:50	05:20 21:50	05:04 22:16	05:38 (12) 23 06:01 (12)
26	08:37 17:04	07:36 18:07	06:27 19:01	06:13 21:00	06:39 (13) 21:52	05:19 21:52	05:05 22:16	05:38 (12) 23 06:01 (12)
27	08:35 17:06	07:33 18:09	06:25 19:03	06:11 21:01	06:37 (13) 21:53	05:17 21:53	05:05 22:16	05:39 (12) 22 06:01 (12)
28	08:34 17:08	07:31 18:11	06:23 19:05	06:09 21:03	06:34 (13) 21:55	05:16 21:55	05:06 22:16	05:39 (12) 22 06:01 (12)
29	08:32 17:10	07:29 18:13	06:20 19:07	06:07 21:05	06:32 (13) 21:56	05:15 21:56	05:06 22:16	05:40 (12) 22 06:02 (12)
30	08:31 17:12	07:27 18:15	06:18 19:09	06:04 21:07	06:30 (13) 21:57	05:14 21:57	05:07 22:15	05:41 (12) 21 06:02 (12)
31	08:29 17:14	07:25 18:17	06:15 19:11	06:02 21:09	06:28 (13) 21:59	05:13 21:59	05:07 22:15	05:41 (12) 21 06:02 (12)
Potential sun hours	248	272	367	421	496	513	596	
Total, worst case		66	67	234	135	596		
Sun reduction		0.22	0.22	0.34	0.36	0.26		
Oper. time red.		1.00	1.00	1.00	1.00	1.00		
Wind dir. red.		0.62	0.59	0.58	0.58	0.58		
Total reduction		0.14	0.13	0.20	0.21	0.15		
Total, real		9	9	47	28	90		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: CR - H96  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	July	August	September	October	November	December				
1	05:08	05:41 (12)	05:48	06:44	07:21 (11)	07:38	08:05 (10)	07:38	08:34	
	22:15	20 06:01 (12)	21:39	20:31	9 07:30 (11)	19:16	12 08:17 (10)	17:05	16:19	
2	05:08	05:42 (12)	05:50	06:46	07:18 (11)	07:40	08:07 (10)	07:40	08:35	
	22:15	20 06:02 (12)	21:37	20:29	14 07:32 (11)	19:14	11 08:18 (10)	17:02	16:18	
3	05:09	05:43 (12)	05:52	06:47	07:17 (11)	07:42	08:09 (10)	07:42	08:37	
	22:14	19 06:02 (12)	21:35	20:26	17 07:34 (11)	19:11	10 08:19 (10)	17:00	16:18	
4	05:10	05:44 (12)	05:54	06:49	07:17 (11)	07:44	08:10 (10)	07:43	08:38	
	22:14	18 06:02 (12)	21:33	20:24	18 07:35 (11)	19:09	8 08:18 (10)	16:59	16:17	
5	05:11	05:44 (12)	05:55	06:40 (13)	06:51	07:18 (11)	07:46	08:12 (10)	07:45	08:40
	22:13	17 06:01 (12)	21:31	7 06:47 (13)	20:21	17 07:35 (11)	19:06	6 08:18 (10)	16:57	16:16
6	05:12	05:45 (12)	05:57	06:37 (13)	06:53	07:20 (11)	07:47	08:14 (10)	07:47	08:41
	22:12	16 06:01 (12)	21:29	12 06:49 (13)	20:19	15 07:35 (11)	19:04	3 08:17 (10)	16:55	16:16
7	05:13	05:46 (12)	05:59	06:36 (13)	06:55	07:22 (11)	07:49	08:16 (10)	07:49	08:42
	22:12	15 06:01 (12)	21:27	15 06:51 (13)	20:16	13 07:35 (11)	19:01	1 08:17 (10)	16:53	16:15
8	05:14	05:47 (12)	06:01	06:35 (13)	06:56	07:24 (11)	07:51		07:51	08:44
	22:11	14 06:01 (12)	21:25	17 06:52 (13)	20:14	11 07:35 (11)	18:59		16:51	16:15
9	05:15	05:48 (12)	06:02	06:34 (13)	06:58	07:25 (11)	07:53		07:53	08:45
	22:10	13 06:01 (12)	21:23	18 06:52 (13)	20:11	9 07:34 (11)	18:57		16:49	16:15
10	05:16	05:49 (12)	06:04	06:34 (13)	07:00	07:27 (11)	07:55		07:55	08:46
	22:09	12 06:01 (12)	21:21	19 06:53 (13)	20:09	7 07:34 (11)	18:54		16:47	16:14
11	05:17	05:50 (12)	06:06	06:36 (13)	07:02	07:29 (11)	07:57		07:57	08:47
	22:08	10 06:00 (12)	21:19	18 06:54 (13)	20:06	4 07:33 (11)	18:52		16:46	16:14
12	05:18	05:51 (12)	06:08	06:37 (13)	07:04	07:31 (11)	07:59		07:59	08:48
	22:08	9 06:00 (12)	21:17	16 06:53 (13)	20:04	1 07:32 (11)	18:49		16:44	16:14
13	05:20	05:53 (12)	06:09	06:39 (13)	07:05		08:01		08:01	08:49
	22:07	7 06:00 (12)	21:15	14 06:53 (13)	20:01		18:47		16:42	16:14
14	05:21	05:54 (12)	06:11	06:41 (13)	07:07		08:02		08:03	08:50
	22:05	5 05:59 (12)	21:13	12 06:53 (13)	19:59		18:45		16:40	16:14
15	05:22	05:55 (12)	06:13	06:42 (13)	07:09		08:04		08:05	08:51
	22:04	2 05:57 (12)	21:11	10 06:52 (13)	19:56		18:42		16:39	16:14
16	05:23		06:15	06:44 (13)	07:11		08:06	08:39 (9)	08:07	08:52
	22:03		21:08	8 06:52 (13)	19:54		18:40	7 08:46 (9)	16:37	16:14
17	05:25		06:17	06:46 (13)	07:13		08:08	08:36 (9)	08:09	08:53
	22:02		21:06	6 06:52 (13)	19:51		18:37	13 08:49 (9)	16:36	16:14
18	05:26		06:18	06:47 (13)	07:14		08:10	08:38 (9)	08:11	08:54
	22:01		21:04	3 06:50 (13)	19:49		18:35	12 08:50 (9)	16:34	16:14
19	05:28		06:20	06:50 (14)	07:16		08:12	08:40 (9)	08:13	08:55
	21:59		21:02	8 06:58 (14)	19:46		18:33	11 08:51 (9)	16:33	16:14
20	05:29		06:22	06:51 (14)	07:18		08:14	08:42 (9)	08:15	08:55
	21:58		20:59	9 07:00 (14)	19:44		18:31	9 08:51 (9)	16:31	16:15
21	05:31		06:24	06:53 (14)	07:20		08:16	08:44 (9)	08:16	08:56
	21:57		20:57	8 07:01 (14)	19:41		18:28	7 08:51 (9)	16:30	16:15
22	05:32		06:26	06:54 (14)	07:22		08:18	08:46 (9)	08:18	08:57
	21:55		20:55	7 07:01 (14)	19:39		18:26	5 08:51 (9)	16:29	16:15
23	05:34		06:27	06:56 (14)	07:24		08:20	08:48 (9)	08:20	08:57
	21:54		20:52	5 07:01 (14)	19:36		18:24	3 08:51 (9)	16:27	16:16
24	05:35		06:29	06:58 (14)	07:25		08:22		08:22	08:57
	21:52		20:50	3 07:01 (14)	19:34		18:22		16:26	16:17
25	05:37		06:31	06:59 (14)	07:27		07:24		08:24	08:58
	21:51		20:48	1 07:00 (14)	19:31		17:19		16:25	16:17
26	05:38		06:33		07:29		07:26		08:25	08:58
	21:49		20:45		19:29		17:17		16:24	16:18
27	05:40		06:35		07:31		07:28		08:27	08:58
	21:47		20:43		19:26		17:15		16:23	16:19
28	05:42		06:37		07:33		07:30		08:29	08:59
	21:46		20:41		19:24		17:13		16:22	16:20
29	05:43		06:38		07:34		08:06 (10)	07:32	08:30	08:59
	21:44		20:38		19:21	7 08:13 (10)	17:11		16:21	16:20
30	05:45		06:40		07:36		08:04 (10)	07:34	08:32	08:59
	21:42		20:36		19:19	12 08:16 (10)	17:09		16:20	16:21
31	05:47		06:42				07:36			08:59
	21:41		20:33				17:07			16:22
Potential sun hours	515		461		383		328		257	231
Total, worst case		197		216		154		118		
Sun reduction		0.27		0.27		0.29		0.23		
Oper. time red.		1.00		1.00		1.00		1.00		
Wind dir. red.		0.58		0.58		0.58		0.61		
Total reduction		0.16		0.16		0.17		0.14		
Total, real		31		34		26		17		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: CS - H97  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January	February	March	April	May	June
1	08:58	08:27	07:29	07:12	06:02	05:12
	16:24	17:16	18:13	20:12	21:09	22:00
2	08:58	08:25	07:26	07:10	06:00	05:11
	16:25	17:18	18:15	20:14	21:11	22:01
3	08:58	08:24	07:24	07:07	05:58	05:10
	16:26	17:20	18:17	20:16	21:12	22:02
4	08:58	08:22	07:21	07:05	19:41 (10)	05:09
	16:27	17:22	18:19	20:18	7 19:48 (10)	22:03
5	08:57	08:20	07:19	07:02	19:39 (10)	05:08
	16:29	17:24	18:21	20:20	11 19:50 (10)	22:05
6	08:57	08:18	07:17	07:00	19:37 (10)	05:07
	16:30	17:26	18:23	20:22	14 19:51 (10)	22:06
7	08:56	08:16	07:14	06:58	19:36 (10)	05:07
	16:31	17:28	18:24	20:24	15 19:51 (10)	22:07
8	08:56	08:14	07:12	06:55	19:35 (10)	05:06
	16:33	17:30	18:26	20:25	16 19:51 (10)	22:08
9	08:55	08:12	07:09	06:53	19:35 (10)	05:05
	16:34	17:32	18:28	20:27	16 19:51 (10)	22:09
10	08:55	08:10	07:07	06:50	19:34 (10)	05:04
	16:36	17:34	18:30	20:29	16 19:50 (10)	22:09
11	08:54	08:08	07:05	06:48	19:35 (10)	05:04
	16:37	17:36	18:32	20:31	14 19:49 (10)	22:10
12	08:53	08:06	17:01 (8)	07:02	19:36 (10)	05:04
	16:39	17:38	6 17:07 (8)	18:34	13 19:49 (10)	22:11
13	08:52	08:04	16:59 (8)	07:00	19:37 (10)	05:04
	16:40	17:40	11 17:10 (8)	18:36	9 19:46 (10)	22:12
14	08:51	08:02	16:58 (8)	06:57	19:40 (10)	05:03
	16:42	17:42	13 17:11 (8)	18:38	3 19:43 (10)	22:12
15	08:50	08:00	16:56 (8)	06:55	05:35	05:03
	16:44	17:44	15 17:11 (8)	18:40	21:34	22:13
16	08:49	07:58	16:56 (8)	06:52	05:33	05:03
	16:45	17:47	16 17:12 (8)	18:42	20:41	22:14
17	08:48	07:56	16:56 (8)	06:50	05:32	05:03
	16:47	17:49	17 17:13 (8)	18:44	20:42	22:14
18	08:47	07:54	16:56 (8)	06:47	05:30	05:03
	16:49	17:51	17 17:13 (8)	18:46	20:44	22:14
19	08:46	07:51	16:55 (8)	06:45	05:28	05:03
	16:51	17:53	17 17:12 (8)	18:48	20:46	22:15
20	08:45	07:49	16:56 (8)	06:42	05:27	05:03
	16:53	17:55	16 17:12 (8)	18:50	20:48	22:15
21	08:44	07:47	16:57 (8)	06:40	05:25	05:03
	16:54	17:57	14 17:11 (8)	18:51	21:44	22:15
22	08:42	07:45	16:57 (8)	06:37	05:24	05:03
	16:56	17:59	13 17:10 (8)	18:53	20:52	22:16
23	08:41	07:42	17:00 (8)	06:35	05:22	05:03
	16:58	18:01	8 17:08 (8)	18:55	20:54	22:16
24	08:40	07:40	06:32	06:17	05:21	05:04
	17:00	18:03	18:57	20:56	21:49	22:16
25	08:38	07:38	06:30	06:15	05:20	05:04
	17:02	18:05	18:59	20:58	21:50	22:16
26	08:37	07:36	06:27	06:13	05:18	05:04
	17:04	18:07	19:01	20:59	21:52	22:16
27	08:35	07:33	06:25	06:11	05:17	05:05
	17:06	18:09	19:03	21:01	21:53	22:16
28	08:34	07:31	06:22	06:09	05:16	05:05
	17:08	18:11	19:05	21:03	21:54	22:16
29	08:32		07:20	06:06	05:15	05:06
	17:10		20:07	21:05	21:56	22:15
30	08:30		07:17	06:04	05:14	05:07
	17:12		20:08	21:07	21:57	22:15
31	08:29		07:15		05:13	
	17:14		20:10		21:59	17 21:14 (14)
Potential sun hours	248	272	367	421	496	513
Total, worst case		163		134	144	428
Sun reduction		0.22		0.34	0.36	0.26
Oper. time red.		1.00		1.00	1.00	1.00
Wind dir. red.		0.58		0.59	0.63	0.63
Total reduction		0.13		0.20	0.23	0.16
Total, real		21		27	33	69

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: CS - H97  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	July	August	September	October	November	December
1	05:07 22:15	21:03 (14) 21:18 (14)	05:48 21:39	06:44 20:31	19:34 (10) 19:48 (10)	07:38 17:04
2	05:08 22:14	21:04 (14) 21:19 (14)	05:50 21:37	06:45 20:28	19:33 (10) 19:49 (10)	07:40 17:02
3	05:09 22:14	21:04 (14) 21:19 (14)	05:52 21:35	06:47 20:26	19:33 (10) 19:49 (10)	07:42 17:00
4	05:10 22:13	21:03 (14) 21:19 (14)	05:53 21:33	06:49 20:23	19:32 (10) 19:48 (10)	07:44 16:58
5	05:11 22:13	21:03 (14) 21:19 (14)	05:55 21:31	06:51 20:21	19:32 (10) 19:47 (10)	07:45 16:56
6	05:12 22:12	21:04 (14) 21:20 (14)	05:57 21:29	06:53 20:19	19:33 (10) 19:47 (10)	07:47 16:54
7	05:13 22:12	21:04 (14) 21:20 (14)	05:59 21:27	06:54 20:16	19:34 (10) 19:45 (10)	07:49 16:53
8	05:14 22:11	21:04 (14) 21:20 (14)	06:00 21:25	06:56 20:14	19:35 (10) 19:42 (10)	07:51 16:51
9	05:15 22:10	21:04 (14) 21:21 (14)	06:02 21:23	06:58 20:11	19:33 (10) 18:56	07:53 16:49
10	05:16 22:09	21:04 (14) 21:21 (14)	06:04 21:21	07:00 20:09	18:55 18:54	07:55 16:47
11	05:17 22:08	21:04 (14) 21:21 (14)	06:06 21:19	07:02 20:06	18:52 18:52	07:57 16:45
12	05:18 22:07	21:04 (14) 21:21 (14)	06:07 21:17	07:03 20:04	18:58 18:49	07:59 16:44
13	05:19 22:06	21:04 (14) 21:21 (14)	06:09 21:15	07:05 20:01	18:00 18:47	08:01 16:42
14	05:21 22:05	21:05 (14) 21:22 (14)	06:11 21:12	07:07 19:59	18:02 18:44	08:03 16:40
15	05:22 22:04	21:05 (14) 21:21 (14)	06:13 21:10	07:09 19:56	18:04 18:42	08:05 16:39
16	05:23 22:03	21:05 (14) 21:21 (14)	06:15 21:08	07:11 19:54	18:06 18:40	08:07 16:37
17	05:25 22:02	21:06 (14) 21:21 (14)	06:16 21:06	07:12 19:51	18:08 18:37	08:09 16:36
18	05:26 22:01	21:07 (14) 21:21 (14)	06:18 21:04	07:14 19:49	18:10 18:35	17:34 (8) 17:37 (8)
19	05:27 21:59	21:07 (14) 21:20 (14)	06:20 21:01	07:16 19:46	18:12 18:33	17:30 (8) 17:40 (8)
20	05:29 21:58	21:08 (14) 21:19 (14)	06:22 20:59	07:18 19:44	18:14 18:30	17:28 (8) 17:41 (8)
21	05:30 21:56	21:09 (14) 21:19 (14)	06:24 20:57	07:20 19:41	18:16 18:28	17:27 (8) 17:42 (8)
22	05:32 21:55	21:11 (14) 21:17 (14)	06:25 20:55	07:22 19:39	18:18 18:26	17:26 (8) 17:42 (8)
23	05:33 21:54	06:27 20:52	07:23 19:36	18:20 18:24	17:25 (8) 17:43 (8)	16:29 16:27
24	05:35 21:52	06:29 20:50	07:25 19:34	18:22 18:21	17:25 (8) 17:43 (8)	16:28 16:26
25	05:37 21:50	06:31 20:48	07:27 19:31	18:24 17:19	16:25 (8) 16:42 (8)	16:23 16:25
26	05:38 21:49	06:33 20:45	07:29 19:28	18:25 17:17	16:25 (8) 16:42 (8)	16:25 16:24
27	05:40 21:47	06:35 20:43	07:31 19:26	18:27 17:15	16:26 (8) 16:41 (8)	16:24 16:23
28	05:41 21:46	06:36 20:40	07:32 19:23	18:29 17:13	16:27 (8) 16:40 (8)	16:28 16:22
29	05:43 21:44	06:38 20:38	19:40 (10) 19:44 (10)	07:34 19:21	17:31 17:11	16:29 (8) 16:39 (8)
30	05:45 21:42	06:40 20:36	19:37 (10) 19:47 (10)	07:36 19:19	17:33 17:08	16:32 (8) 16:36 (8)
31	05:46 21:40	06:42 20:33	19:36 (10) 19:48 (10)	07:35 17:06	17:08 17:06	16:20 16:22
Potential sun hours	515	461	383	328	257	231
Total, worst case	328	26	109	169		
Sun reduction	0.27	0.27	0.29	0.23		
Oper. time red.	1.00	1.00	1.00	1.00		
Wind dir. red.	0.63	0.59	0.59	0.58		
Total reduction	0.17	0.16	0.17	0.14		
Total, real	55	4	19	23		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: CT - H98

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June
1	08:58 16:24	08:27 17:16	15:55 (16) 16:03 (16)	07:29 18:13	07:12 20:12	06:02 21:09
2	08:58 16:25	08:25 17:18		07:26 18:15	07:10 20:14	06:00 21:11
3	08:58 16:26	08:24 17:20		07:24 18:17	07:07 20:16	05:58 21:13
4	08:58 16:27	08:22 17:22		07:21 18:19	07:05 20:18	05:56 21:14
5	08:57 16:28	08:20 17:24	16:46 (15) 16:50 (15)	07:19 18:21	07:02 20:20	05:54 21:16
6	08:57 16:30	08:18 17:26	16:42 (15) 16:54 (15)	07:17 18:22	07:00 20:22	05:52 21:18
7	08:56 16:31	15:50 (16) 15:51 (16)	08:16 17:28	16:41 (15) 16:56 (15)	07:14 18:24	06:58 20:24
8	08:56 16:33	15:47 (16) 15:54 (16)	08:14 17:30	16:39 (15) 16:58 (15)	07:12 18:26	06:55 20:25
9	08:55 16:34	15:47 (16) 15:57 (16)	08:12 17:32	16:37 (15) 16:58 (15)	07:09 18:28	06:53 20:27
10	08:55 16:36	15:46 (16) 15:58 (16)	08:10 17:34	16:37 (15) 16:59 (15)	07:07 18:30	06:50 20:29
11	08:54 16:37	15:45 (16) 16:00 (16)	08:08 17:36	16:36 (15) 17:00 (15)	07:05 18:32	06:48 20:31
12	08:53 16:39	15:45 (16) 16:01 (16)	08:06 17:38	16:36 (15) 17:00 (15)	07:02 18:34	06:45 20:33
13	08:52 16:40	15:44 (16) 16:02 (16)	08:04 17:40	16:36 (15) 17:01 (15)	07:00 18:36	06:43 20:35
14	08:51 16:42	15:44 (16) 16:03 (16)	08:02 17:42	16:36 (15) 17:01 (15)	06:57 18:38	06:41 20:37
15	08:51 16:44	15:43 (16) 16:03 (16)	08:00 17:44	16:35 (15) 17:01 (15)	06:55 18:40	06:38 20:39
16	08:50 16:45	15:44 (16) 16:04 (16)	07:58 17:46	16:36 (15) 17:01 (15)	06:52 18:42	06:36 20:41
17	08:48 16:47	15:44 (16) 16:05 (16)	07:56 17:48	16:36 (15) 17:00 (15)	06:50 18:44	06:33 20:42
18	08:47 16:49	15:44 (16) 16:06 (16)	07:54 17:51	16:37 (15) 17:00 (15)	06:47 18:46	06:31 20:44
19	08:46 16:51	15:44 (16) 16:06 (16)	07:51 17:53	16:37 (15) 16:59 (15)	06:45 18:48	06:29 20:46
20	08:45 16:52	15:44 (16) 16:07 (16)	07:49 17:55	16:38 (15) 16:58 (15)	06:42 20:48	06:27 21:42
21	08:44 16:54	15:44 (16) 16:07 (16)	07:47 17:57	16:40 (15) 16:57 (15)	06:40 18:51	06:24 20:50
22	08:42 16:56	15:44 (16) 16:08 (16)	07:45 17:59	16:42 (15) 16:54 (15)	06:37 18:53	06:22 20:52
23	08:41 16:58	15:44 (16) 16:08 (16)	07:42 18:01	16:46 (15) 16:50 (15)	06:35 18:55	06:20 20:54
24	08:40 17:00	15:45 (16) 16:08 (16)	07:40 18:03	06:32 18:57	06:17 20:56	05:21 21:49
25	08:38 17:02	15:45 (16) 16:08 (16)	07:38 18:05	06:30 18:59	06:15 20:58	05:20 21:50
26	08:37 17:04	15:46 (16) 16:08 (16)	07:36 18:07	06:27 19:01	06:13 20:59	05:18 21:52
27	08:35 17:06	15:47 (16) 16:08 (16)	07:33 18:09	06:25 19:03	06:11 21:01	05:17 21:53
28	08:34 17:08	15:48 (16) 16:07 (16)	07:31 18:11	06:22 19:05	06:08 21:03	05:16 21:55
29	08:32 17:10	15:49 (16) 16:07 (16)		07:20 20:07	06:06 21:05	05:15 21:56
30	08:31 17:12	15:50 (16) 16:06 (16)		07:17 20:08	06:04 21:07	05:13 21:57
31	08:29 17:14	15:51 (16) 16:04 (16)		07:15 20:10	05:12 21:09	05:12 21:59
Potential sun hours	248	272	367	421	496	513
Total, worst case	451	372				
Sun reduction	0.17	0.22				
Oper. time red.	1.00	1.00				
Wind dir. red.	0.62	0.58				
Total reduction	0.11	0.13				
Total, real	48	48				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: CT - H98  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	July	August	September	October	November	December
1	05:07	05:48	06:44	07:38	07:37	16:07 (15) 08:33 15:27 (16)
	22:15	21:39	20:31	19:16	17:04	21 16:28 (15) 16:19 15:42 (16)
2	05:08	05:50	06:45	07:40	07:39	16:07 (15) 08:35 15:28 (16)
	22:14	21:37	20:28	19:13	17:02	20 16:27 (15) 16:18 15:40 (16)
3	05:09	05:51	06:47	07:42	07:41	16:08 (15) 08:36 15:30 (16)
	22:14	21:35	20:26	19:11	17:00	18 16:26 (15) 16:17 15:40 (16)
4	05:10	05:53	06:49	07:43	07:43	16:10 (15) 08:38 15:32 (16)
	22:14	21:33	20:23	19:09	16:58	15 16:25 (15) 16:17 15:39 (16)
5	05:11	05:55	06:51	07:45	07:45	16:12 (15) 08:39 15:34 (16)
	22:13	21:31	20:21	19:06	16:56	11 16:23 (15) 16:16 15:37 (16)
6	05:11	05:57	06:53	07:47	07:47	08:41
	22:12	21:29	20:19	19:04	16:54	16:16
7	05:12	05:58	06:54	07:49	07:49	08:42
	22:12	21:27	20:16	19:01	16:53	16:15
8	05:13	06:00	06:56	07:51	07:51	08:43
	22:11	21:25	20:14	18:59	16:51	16:15
9	05:15	06:02	06:58	07:53	07:53	08:45
	22:10	21:23	20:11	18:56	16:49	16:14
10	05:16	06:04	07:00	07:55	07:55	15:25 (16) 08:46
	22:09	21:21	20:09	18:54	16:47	9 15:34 (16) 16:14
11	05:17	06:06	07:02	07:57	07:57	15:23 (16) 08:47
	22:08	21:19	20:06	18:51	16:45	13 15:36 (16) 16:14
12	05:18	06:07	07:03	07:58	07:59	15:21 (16) 08:48
	22:07	21:17	20:04	18:49	16:44	17 15:38 (16) 16:13
13	05:19	06:09	07:05	08:00	08:01	15:20 (16) 08:49
	22:06	21:15	20:01	18:47	16:42	19 15:39 (16) 16:13
14	05:21	06:11	07:07	08:02	08:03	15:20 (16) 08:50
	22:05	21:13	19:59	18:44	16:40	19 15:39 (16) 16:13
15	05:22	06:13	07:09	08:04	08:05	15:19 (16) 08:51
	22:04	21:10	19:56	18:42	16:39	21 15:40 (16) 16:13
16	05:23	06:15	07:11	08:06	08:07	15:19 (16) 08:52
	22:03	21:08	19:54	18:40	16:37	22 15:41 (16) 16:13
17	05:25	06:16	07:12	08:08	08:09	15:19 (16) 08:53
	22:02	21:06	19:51	18:37	16:36	23 15:42 (16) 16:14
18	05:26	06:18	07:14	08:10	08:11	15:19 (16) 08:54
	22:01	21:04	19:49	18:35	16:34	23 15:42 (16) 16:14
19	05:27	06:20	07:16	08:12	8 17:15 (15) 08:12	15:19 (16) 08:55
	21:59	21:01	19:46	18:33	8 17:23 (15) 16:33	24 15:43 (16) 16:14
20	05:29	06:22	07:18	08:14	17:12 (15) 08:14	15:19 (16) 08:55
	21:58	20:59	19:44	18:30	14 17:26 (15) 16:31	24 15:43 (16) 16:14
21	05:30	06:24	07:20	08:16	17:10 (15) 08:16	15:20 (16) 08:56
	21:57	20:57	19:41	18:28	18 17:28 (15) 16:30	23 15:43 (16) 16:15
22	05:32	06:25	07:21	08:18	17:08 (15) 08:18	15:20 (16) 08:56
	21:55	20:55	19:39	18:26	21 17:29 (15) 16:28	23 15:43 (16) 16:15
23	05:33	06:27	07:23	08:20	17:07 (15) 08:20	15:21 (16) 08:57
	21:54	20:52	19:36	18:24	22 17:29 (15) 16:27	22 15:43 (16) 16:16
24	05:35	06:29	07:25	08:22	17:06 (15) 08:22	15:21 (16) 08:57
	21:52	20:50	19:33	18:21	24 17:30 (15) 16:26	22 15:43 (16) 16:16
25	05:36	06:31	07:27	07:24	16:06 (15) 08:23	15:22 (16) 08:58
	21:51	20:48	19:31	17:19	24 16:30 (15) 16:25	21 15:43 (16) 16:17
26	05:38	06:33	07:29	07:26	16:05 (15) 08:25	15:23 (16) 08:58
	21:49	20:45	19:28	17:17	25 16:30 (15) 16:24	20 15:43 (16) 16:18
27	05:40	06:34	07:31	07:27	16:05 (15) 08:27	15:24 (16) 08:58
	21:47	20:43	19:26	17:15	25 16:30 (15) 16:23	19 15:43 (16) 16:18
28	05:41	06:36	07:32	07:29	16:06 (15) 08:29	15:24 (16) 08:58
	21:46	20:40	19:23	17:13	25 16:31 (15) 16:22	18 15:42 (16) 16:19
29	05:43	06:38	07:34	07:31	16:06 (15) 08:30	15:25 (16) 08:58
	21:44	20:38	19:21	17:10	24 16:30 (15) 16:21	17 15:42 (16) 16:20
30	05:45	06:40	07:36	07:33	16:06 (15) 08:32	15:26 (16) 08:59
	21:42	20:36	19:18	17:08	24 16:30 (15) 16:20	16 15:42 (16) 16:21
31	05:46	06:42	07:35	07:35	16:06 (15) 08:59	08:59
	21:40	20:33	17:06	23 16:29 (15) 16:22	16:22	
Potential sun hours	515	461	383	327	257	230
Total, worst case				277	500	47
Sun reduction				0.23	0.20	0.12
Oper. time red.				1.00	1.00	1.00
Wind dir. red.				0.58	0.61	0.62
Total reduction				0.14	0.12	0.07
Total, real				38	61	3

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

6289 Tirawley WF 16 no. turbine windfarm at Tirawley, Co. Mayo

Jennings O'Donovan
Finisklin Business Park
F91 RHH9 Sligo
+353719161416
kfeeney / kfeeney@jodireland.com

Calculated:
13/04/2026 12:06/4.2.285

SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: CU - H99

Sunshine probability S (Average daily sunshine hours) [BELMULLET]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum
263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

Table with columns for months (January to December) and rows for days (1 to 31). Includes sunrise/sunset times, shadow reduction percentages, and operational time reduction. Summary row at the bottom shows total potential sun hours (248) and total reduction (20%).

Table layout: For each day in each month the following matrix apply

Matrix with 4 columns: Day in month, Sun rise (hh:mm), Sun set (hh:mm), Minutes with flicker, First time (hh:mm) with flicker, Last time (hh:mm) with flicker, (WTG causing flicker first time), (WTG causing flicker last time).



## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: CV - H100  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January	February	March	April	May	June
1	08:58 16:24	08:27 17:16	07:29 18:13	07:12 20:12	18:53 (16) 06:02	19:44 (15) 05:11
2	08:58 16:25	08:25 17:18	07:26 18:15	07:10 20:14	18:53 (16) 06:00	19:52 (15) 05:10
3	08:58 16:26	08:24 17:20	07:24 18:17	07:07 20:16	18:52 (16) 05:58	05:10 22:02
4	08:58 16:27	08:22 17:22	07:21 18:19	07:05 20:18	18:53 (16) 05:56	05:09 22:03
5	08:57 16:28	08:20 17:24	07:19 18:21	07:02 20:20	18:53 (16) 05:54	05:08 22:05
6	08:57 16:30	08:18 17:26	07:17 18:22	07:00 20:22	18:54 (16) 05:52	05:07 22:06
7	08:56 16:31	08:16 17:28	07:14 18:24	06:58 20:24	18:56 (16) 05:50	05:06 22:07
8	08:56 16:33	08:14 17:30	07:12 18:26	06:55 20:25	18:58 (16) 05:48	05:06 22:08
9	08:55 16:34	08:12 17:32	07:09 18:28	06:53 20:27	06:53 21:23	05:05 22:09
10	08:55 16:36	08:10 17:34	07:07 18:30	06:50 20:29	06:50 21:25	05:05 22:09
11	08:54 16:37	08:08 17:36	07:04 18:32	06:48 20:31	06:48 21:27	05:04 22:10
12	08:53 16:39	08:06 17:38	07:02 18:34	06:45 20:33	06:45 21:29	05:04 22:11
13	08:52 16:40	08:04 17:40	07:00 18:36	06:43 20:35	06:43 21:31	05:04 22:12
14	08:51 16:42	08:02 17:42	06:57 18:38	06:41 20:37	06:41 21:32	05:03 22:12
15	08:50 16:44	08:00 17:44	06:55 18:40	06:38 20:39	19:48 (15) 05:35	05:03 22:13
16	08:49 16:45	07:58 17:46	06:52 18:42	06:36 20:41	19:55 (15) 05:33	05:03 22:14
17	08:48 16:47	07:56 17:48	06:50 18:44	06:33 20:42	19:57 (15) 05:32	05:03 22:14
18	08:47 16:49	07:54 17:51	06:47 18:46	06:31 20:44	19:42 (15) 05:30	05:03 22:14
19	08:46 16:51	07:51 17:53	06:45 18:48	06:29 20:46	19:58 (15) 05:28	05:03 22:15
20	08:45 16:53	07:49 17:55	06:42 18:50	06:26 20:48	20:01 (15) 05:27	05:03 22:15
21	08:44 16:54	07:47 17:57	06:40 18:51	06:24 20:50	20:00 (15) 05:25	05:03 22:15
22	08:42 16:56	07:45 17:59	06:37 18:53	06:22 20:52	19:38 (15) 05:24	05:03 22:16
23	08:41 16:58	07:42 18:01	06:35 18:55	06:20 20:54	20:01 (15) 05:22	05:03 22:16
24	08:40 17:00	07:40 18:03	06:32 18:57	06:17 20:56	20:01 (15) 05:21	05:04 22:16
25	08:38 17:02	07:38 18:05	06:30 18:59	18:02 (16) 06:15	20:01 (15) 05:20	05:04 22:16
26	08:37 17:04	07:36 18:07	06:27 19:01	17:59 (16) 06:13	19:59 (15) 05:18	05:04 22:16
27	08:35 17:06	07:33 18:09	06:25 19:03	17:58 (16) 06:11	19:59 (15) 05:17	05:05 22:16
28	08:34 17:08	07:31 18:11	06:22 19:05	17:56 (16) 06:08	19:58 (15) 05:16	05:05 22:16
29	08:32 17:10	07:29 18:13	06:20 19:07	18:17 (16) 06:06	19:39 (15) 05:15	05:06 22:15
30	08:30 17:12	07:27 18:15	06:17 19:09	18:54 (16) 06:04	19:40 (15) 05:14	05:07 22:15
31	08:29 17:14	07:25 18:17	06:15 19:11	18:54 (16) 06:02	19:55 (15) 05:12	22:15 21:59
Potential sun hours	248	272	367	421	496	513
Total, worst case			134	459	8	
Sun reduction			0.22	0.34	0.36	
Oper. time red.			1.00	1.00	1.00	
Wind dir. red.			0.58	0.59	0.59	
Total reduction			0.13	0.20	0.21	
Total, real			17	92	2	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Real Case Shadow receptor: CV - H100

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

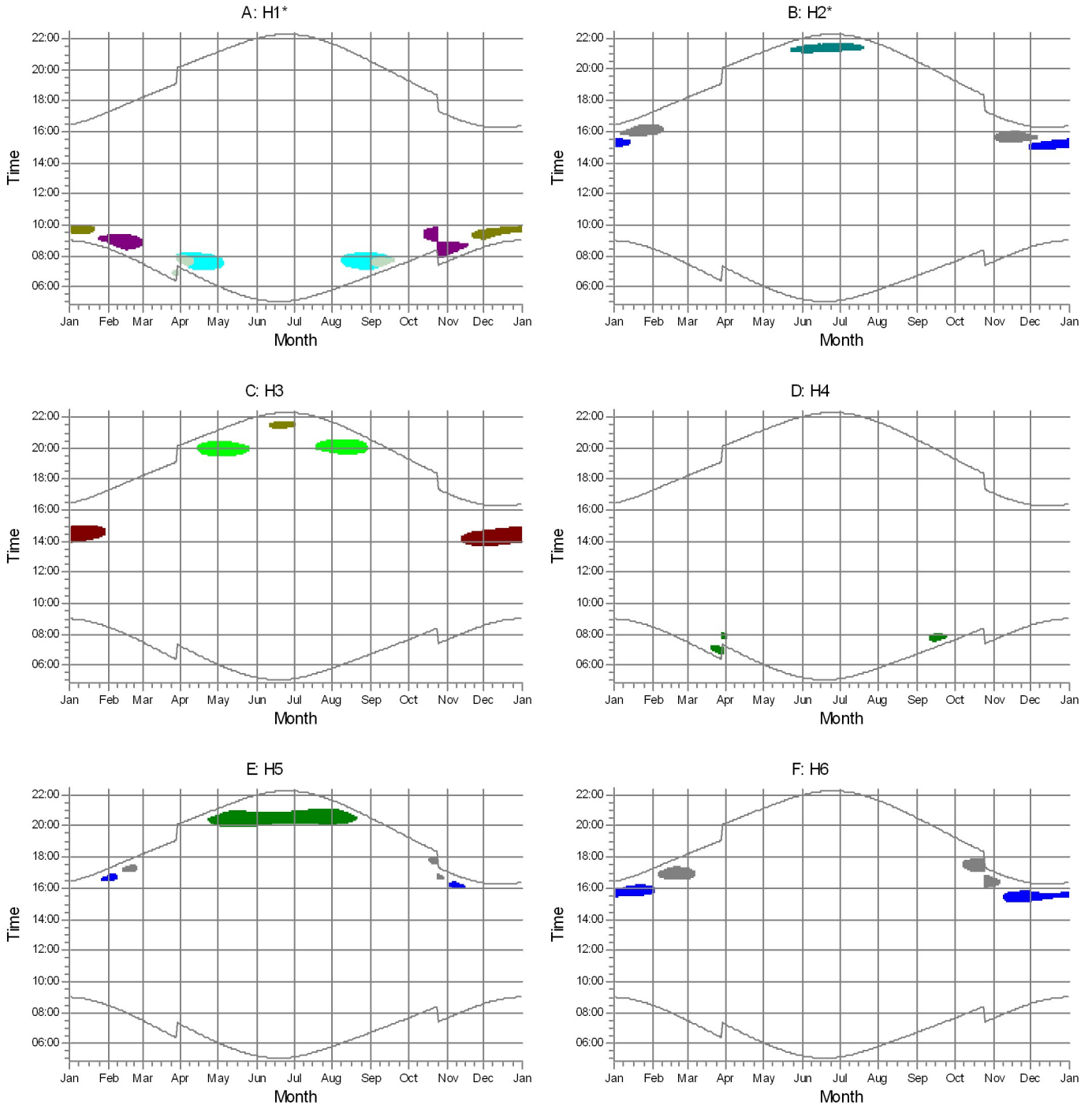
	July	August	September	October	November	December		
1	05:07 22:15	05:48 21:39	06:44 20:31	07:38 19:16	07:37 17:04	08:33 16:19		
2	05:08 22:14	05:50 21:37	06:45 20:28	07:40 19:13	07:39 17:02	08:35 16:18		
3	05:09 22:14	05:52 21:35	06:47 20:26	07:42 19:11	07:41 17:00	08:36 16:17		
4	05:10 22:13	05:53 21:33	06:49 20:23	18:55 (16) 19:05 (16)	07:43 19:09	07:43 16:58	08:38 16:17	
5	05:11 22:13	05:55 21:31	06:51 20:21	18:52 (16) 19:07 (16)	07:45 19:06	07:45 16:56	08:39 16:16	
6	05:11 22:12	05:57 21:29	06:53 20:19	18:51 (16) 19:09 (16)	07:47 19:04	07:47 16:54	08:41 16:16	
7	05:12 22:12	05:59 21:27	06:54 20:16	18:49 (16) 19:10 (16)	07:49 19:01	07:49 16:53	08:42 16:15	
8	05:14 22:11	06:00 21:25	06:56 20:14	18:47 (16) 19:09 (16)	07:51 18:59	07:51 16:51	08:43 16:15	
9	05:15 22:10	06:02 21:23	06:58 20:11	18:47 (16) 19:10 (16)	07:53 18:56	07:53 16:49	08:45 16:14	
10	05:16 22:09	06:04 21:21	07:00 20:09	18:46 (16) 19:10 (16)	07:55 18:54	07:55 16:47	08:46 16:14	
11	05:17 22:08	06:06 21:19	07:02 20:06	18:46 (16) 19:10 (16)	07:57 18:51	07:57 16:45	08:47 16:14	
12	05:18 22:07	06:07 21:17	19:51 (15) 20:01 (15)	07:03 20:04	18:45 (16) 19:09 (16)	07:58 18:49	07:59 16:44	08:48 16:13
13	05:19 22:06	06:09 21:15	19:50 (15) 20:03 (15)	07:05 20:01	18:45 (16) 19:09 (16)	08:00 18:47	08:01 16:42	08:49 16:13
14	05:21 22:05	06:11 21:12	19:47 (15) 20:04 (15)	07:07 19:59	18:45 (16) 19:08 (16)	08:02 18:44	08:03 16:40	08:50 16:13
15	05:22 22:04	06:13 21:10	19:46 (15) 20:05 (15)	07:09 19:56	18:46 (16) 19:07 (16)	08:04 18:42	08:05 16:39	08:51 16:13
16	05:23 22:03	06:15 21:08	19:46 (15) 20:06 (15)	07:11 19:54	18:46 (16) 19:05 (16)	08:06 18:40	08:07 16:37	08:52 16:13
17	05:25 22:02	06:16 21:06	19:44 (15) 20:06 (15)	07:12 19:51	18:47 (16) 19:03 (16)	08:08 18:37	08:09 16:36	08:53 16:14
18	05:26 22:01	06:18 21:04	19:44 (15) 20:06 (15)	07:14 19:49	18:49 (16) 19:01 (16)	08:10 18:35	08:11 16:34	08:54 16:14
19	05:27 21:59	06:20 21:01	19:43 (15) 20:06 (15)	07:16 19:46	18:53 (16) 18:56 (16)	08:12 18:33	08:12 16:33	08:55 16:14
20	05:29 21:58	06:22 20:59	19:43 (15) 20:07 (15)	07:18 19:44	18:56 (16) 18:30	08:14 18:30	08:14 16:31	08:55 16:14
21	05:30 21:56	06:24 20:57	19:43 (15) 20:06 (15)	07:20 19:41	18:36 18:28	08:16 18:18	08:16 16:30	08:56 16:15
22	05:32 21:55	06:25 20:55	19:43 (15) 20:05 (15)	07:21 19:38	18:28 18:26	08:18 18:26	08:18 16:29	08:56 16:15
23	05:33 21:54	06:27 20:52	19:43 (15) 20:05 (15)	07:23 19:36	18:20 18:24	08:20 18:24	08:20 16:27	08:57 16:16
24	05:35 21:52	06:29 20:50	19:43 (15) 20:03 (15)	07:25 19:33	18:22 18:21	08:22 18:21	08:22 16:26	08:57 16:16
25	05:37 21:50	06:31 20:48	19:44 (15) 20:02 (15)	07:27 19:31	18:24 17:19	08:23 18:25	08:23 16:25	08:58 16:17
26	05:38 21:49	06:33 20:45	19:45 (15) 20:01 (15)	07:29 19:28	18:25 17:17	08:25 18:24	08:25 16:24	08:58 16:18
27	05:40 21:47	06:34 20:43	19:47 (15) 19:59 (15)	07:31 19:26	18:27 17:15	08:27 18:23	08:27 16:23	08:58 16:18
28	05:41 21:46	06:36 20:40	19:49 (15) 19:55 (15)	07:32 19:23	18:29 17:13	08:28 18:22	08:28 16:22	08:58 16:19
29	05:43 21:44	06:38 20:38	19:55 (15) 19:21	07:34 19:18	17:13 17:08	18:22 18:20	16:22 16:20	16:19 16:20
30	05:45 21:42	06:40 20:36	19:59 (15) 19:18	07:36 19:18	17:15 17:08	18:23 18:20	16:23 16:20	16:18 16:21
31	05:46 21:40	06:42 20:33	19:55 (15) 19:18	07:37 19:18	17:16 17:06	18:24 18:20	16:24 16:20	16:19 16:22
Potential sun hours	515	461	383	299	327	257	230	
Total, worst case		309		299				
Sun reduction		0.27		0.29				
Oper. time red.		1.00		1.00				
Wind dir. red.		0.59		0.58				
Total reduction		0.16		0.17				
Total, real		50		51				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar, graphical

Calculation: Tirawley Shadow Flicker Real Case

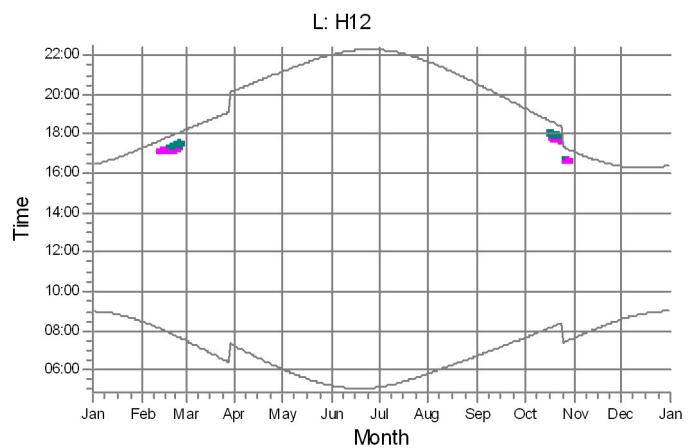
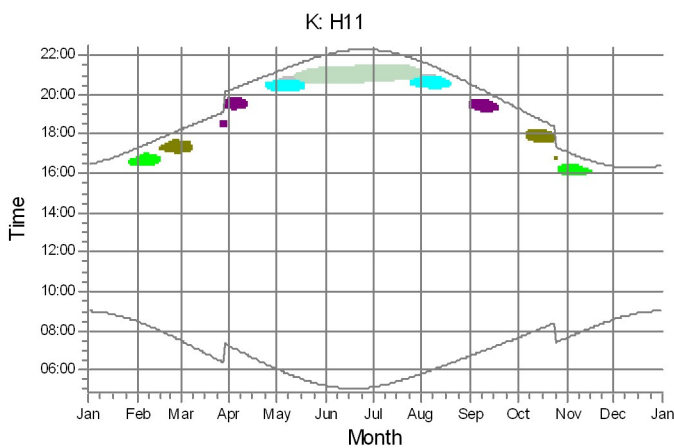
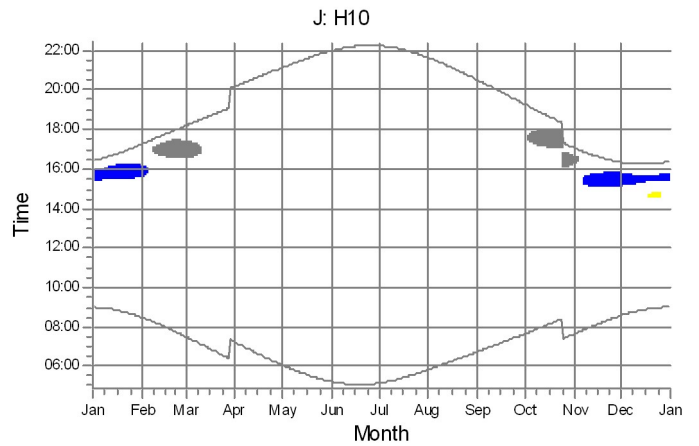
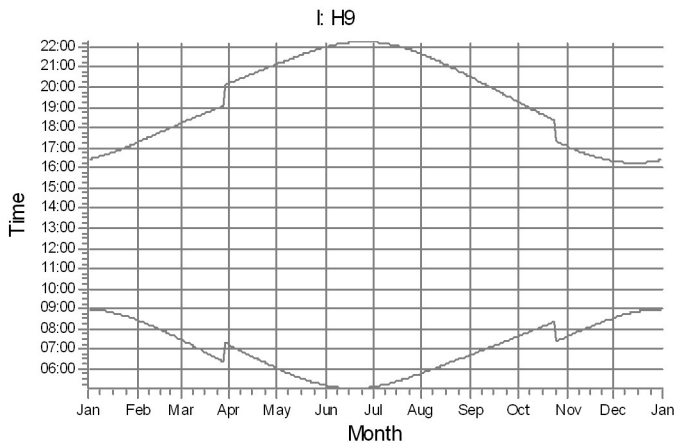
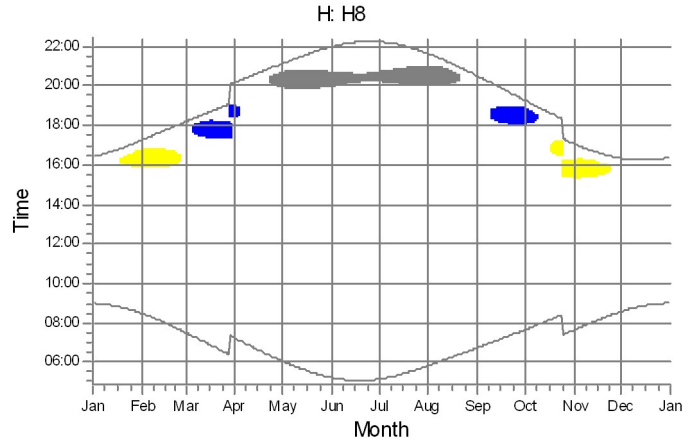
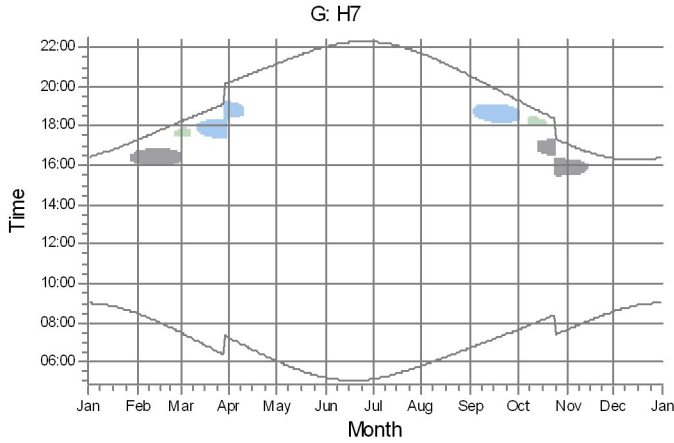


### WTGs










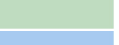





## SHADOW - Calendar, graphical

Calculation: Tirawley Shadow Flicker Real Case

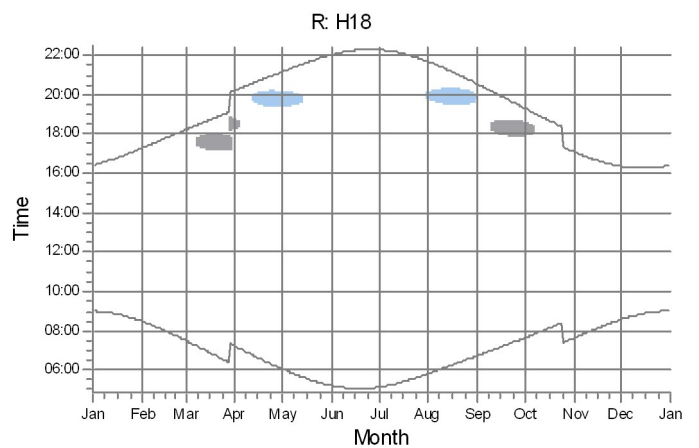
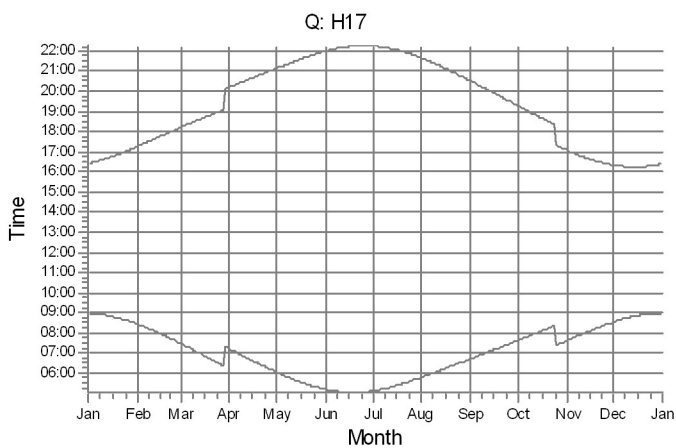
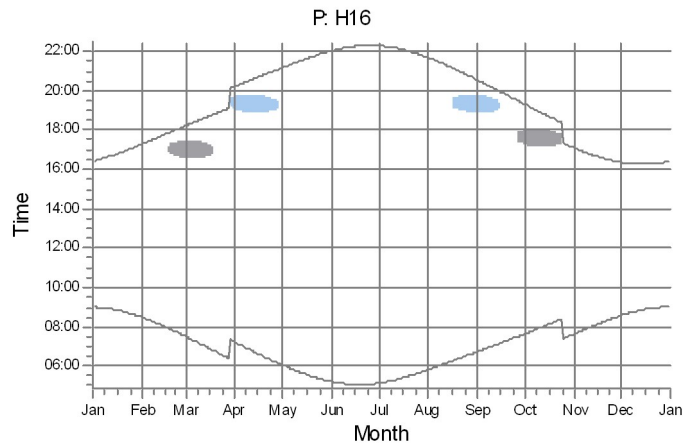
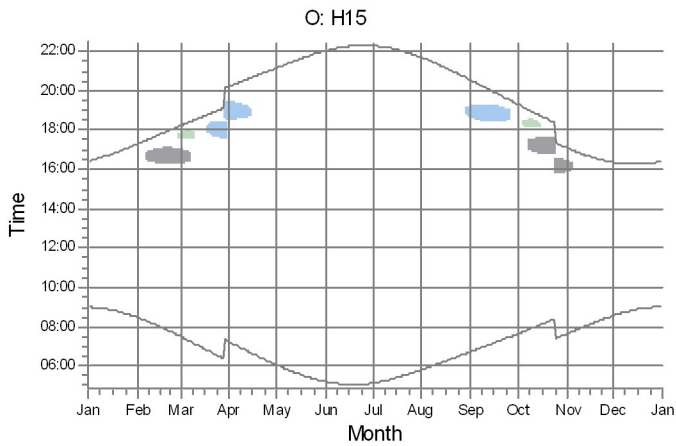
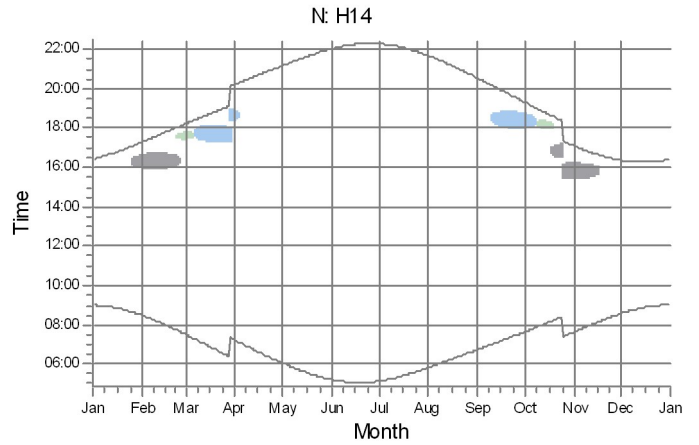
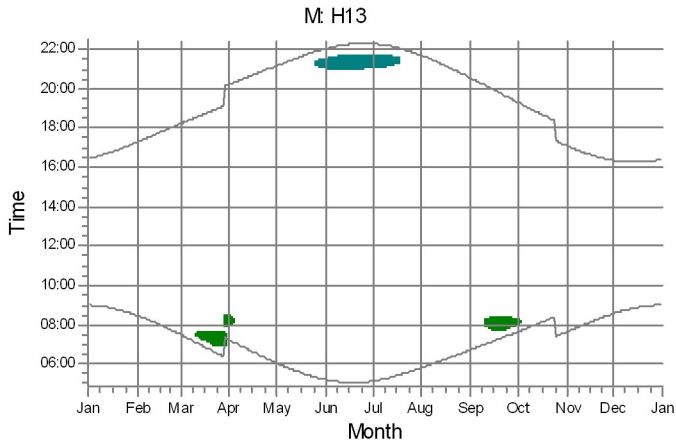


### WTGs

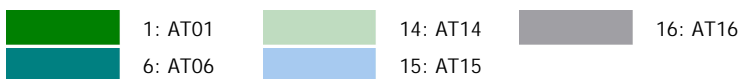
	2: AT02		6: AT06		12: AT12		16: AT16
	3: AT03		9: AT09		13: AT13		
	4: AT04		10: AT10		14: AT14		
	5: AT05		11: AT11		15: AT15		

## SHADOW - Calendar, graphical

Calculation: Tirawley Shadow Flicker Real Case

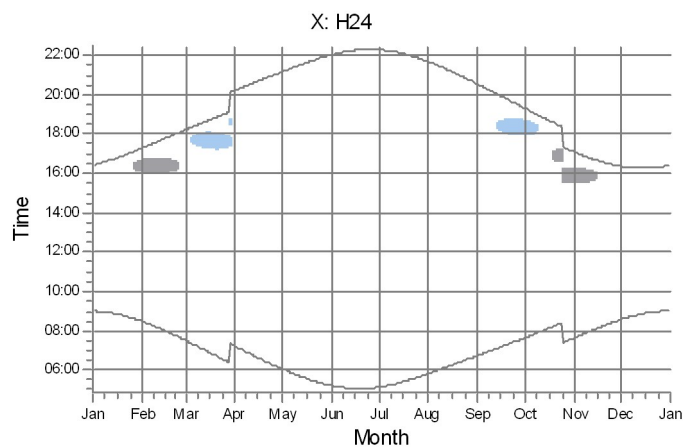
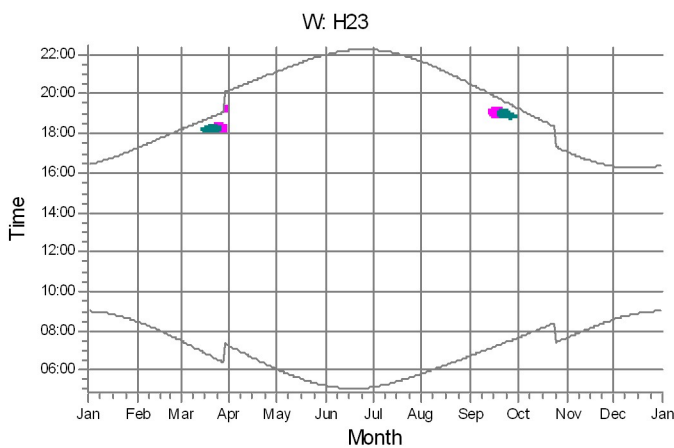
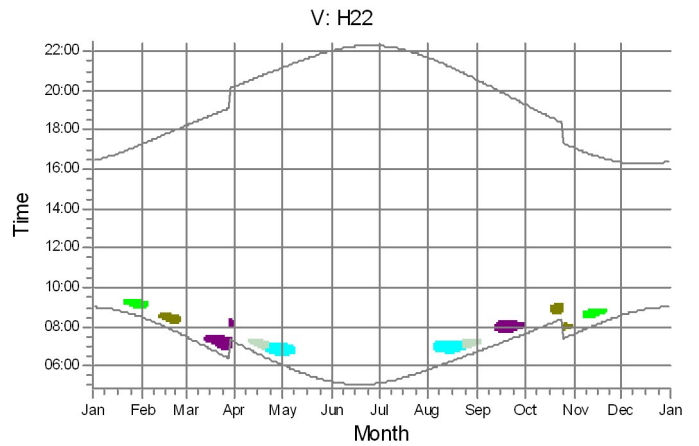
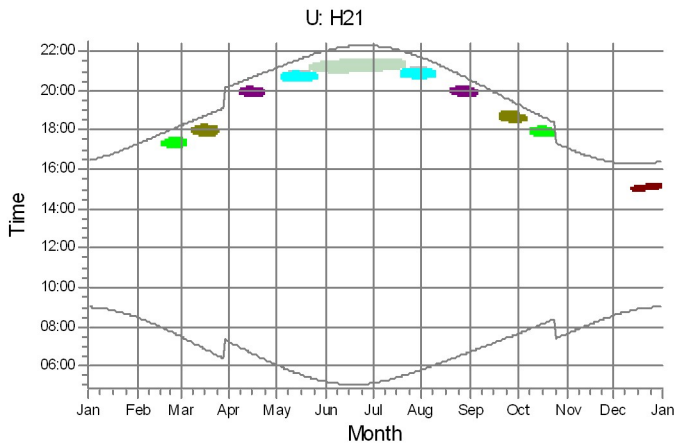
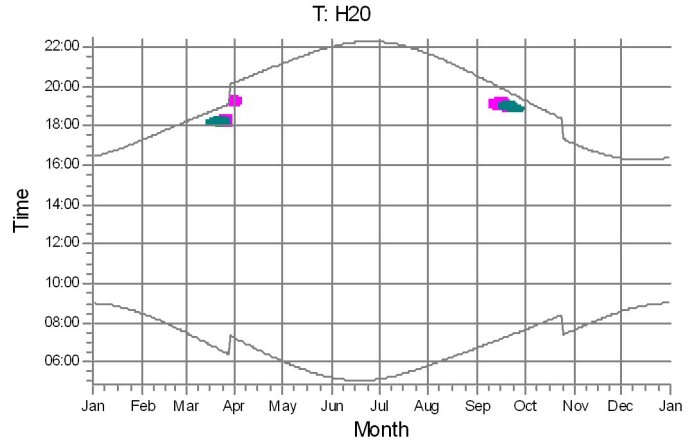
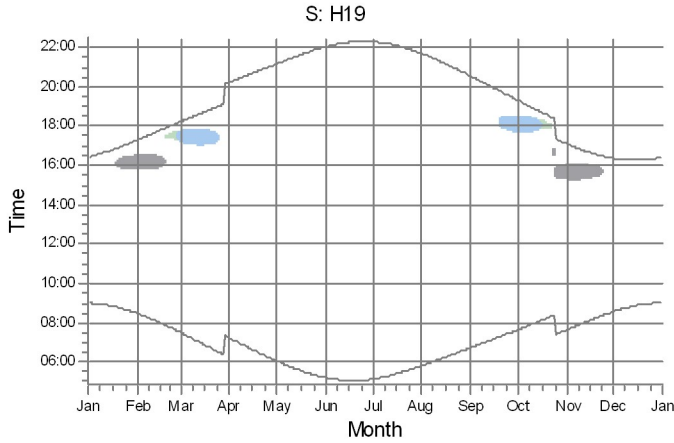


WTGs














## SHADOW - Calendar, graphical

Calculation: Tirawley Shadow Flicker Real Case

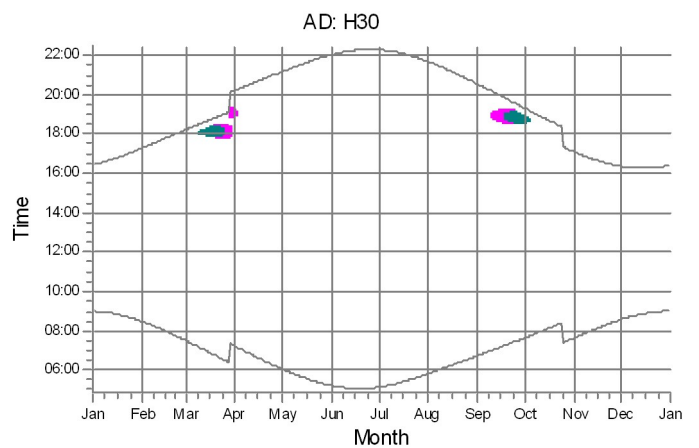
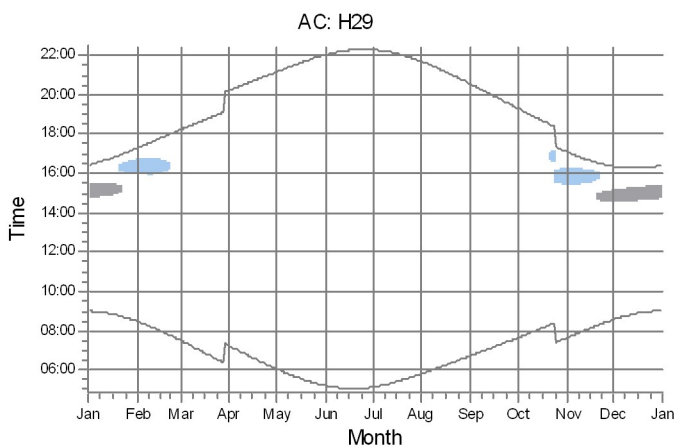
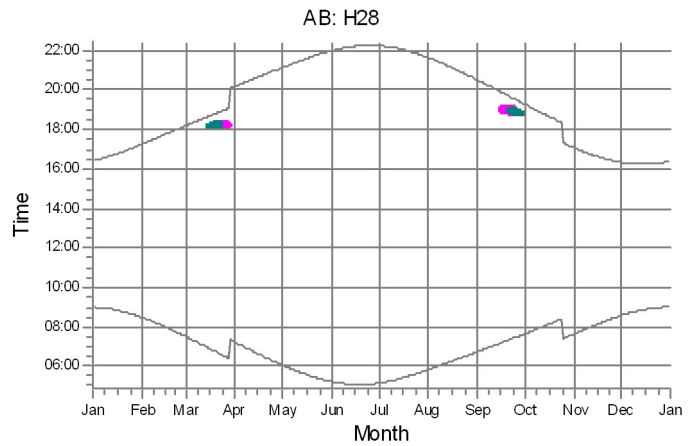
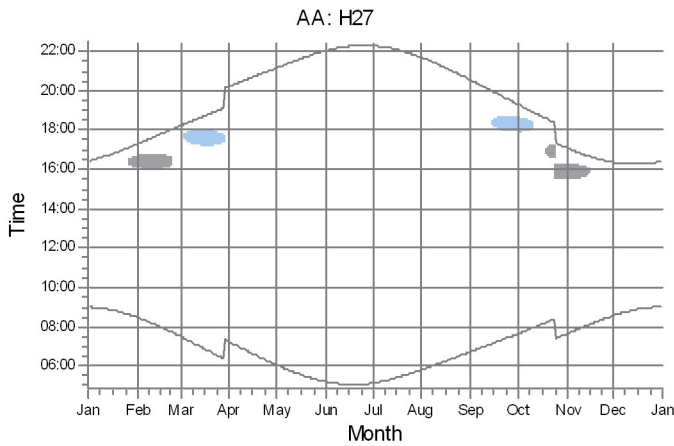
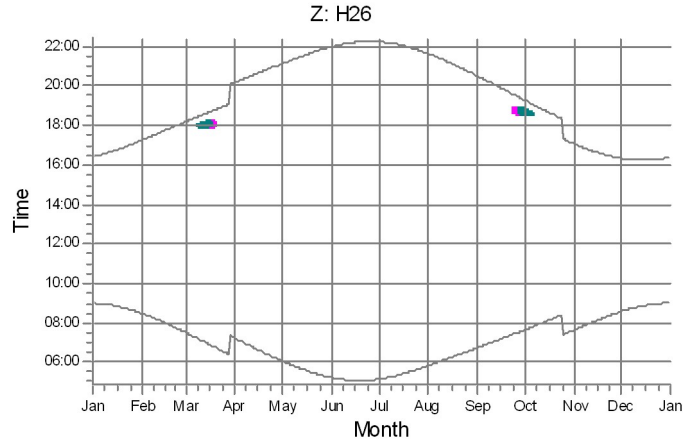
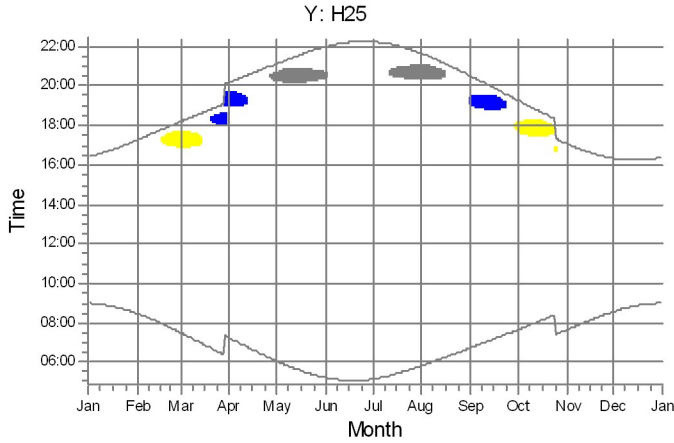


### WTGs

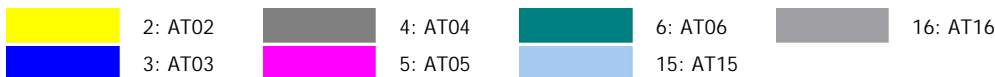
 5: AT05	 9: AT09	 12: AT12	 15: AT15
 6: AT06	 10: AT10	 13: AT13	 16: AT16
 8: AT08	 11: AT11	 14: AT14	

## SHADOW - Calendar, graphical

Calculation: Tirawley Shadow Flicker Real Case



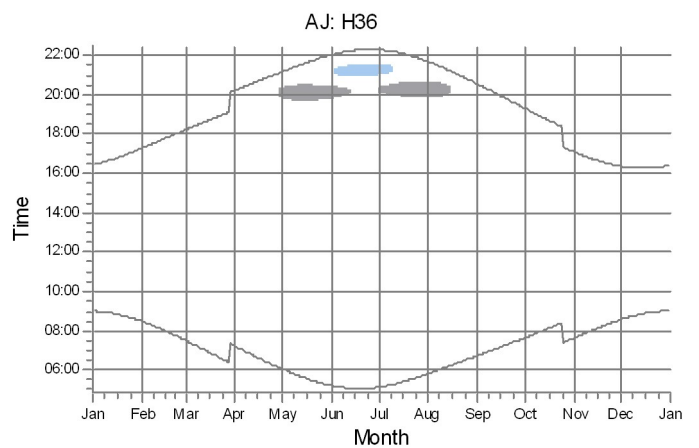
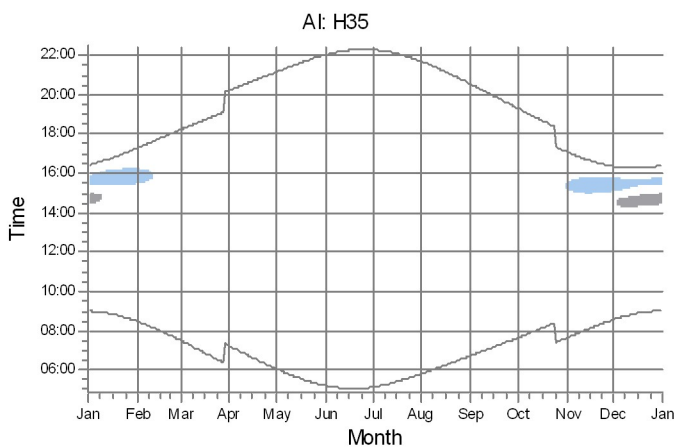
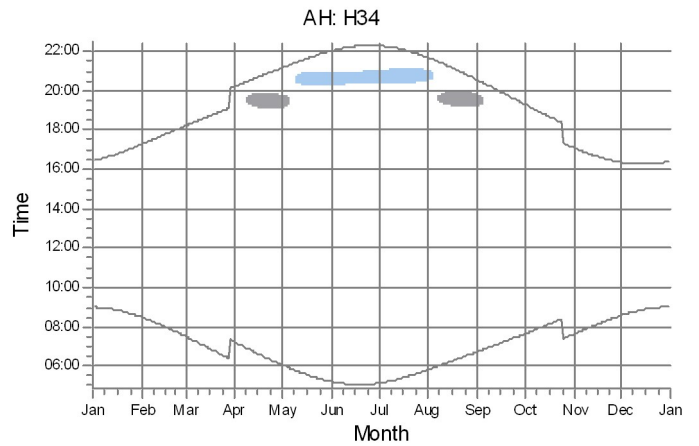
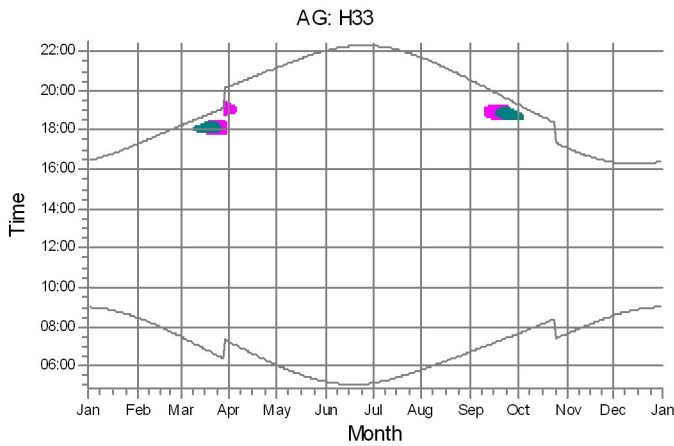
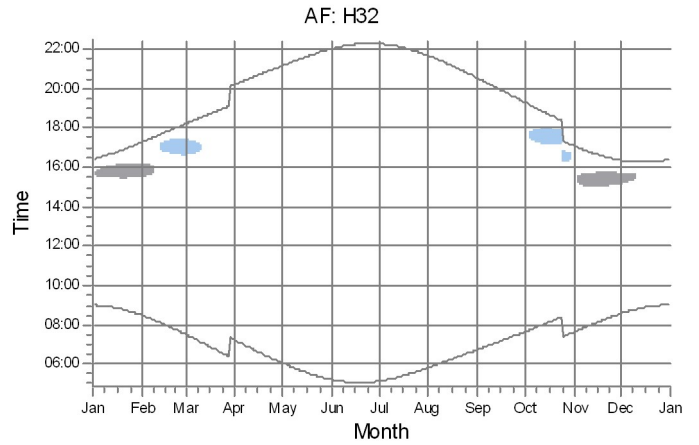
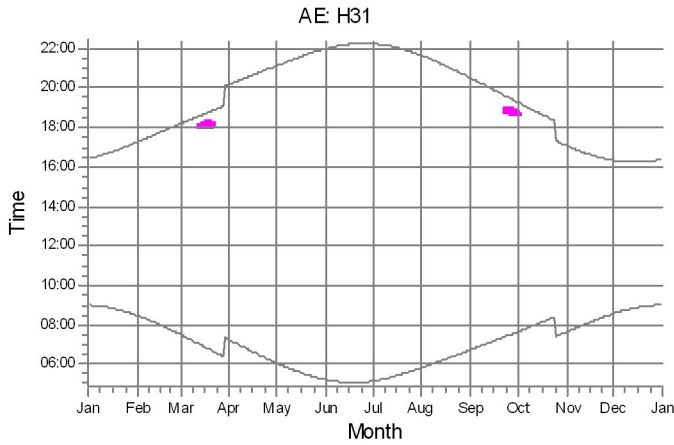
### WTGs



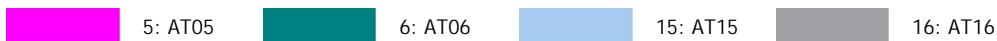


## SHADOW - Calendar, graphical

Calculation: Tirawley Shadow Flicker Real Case

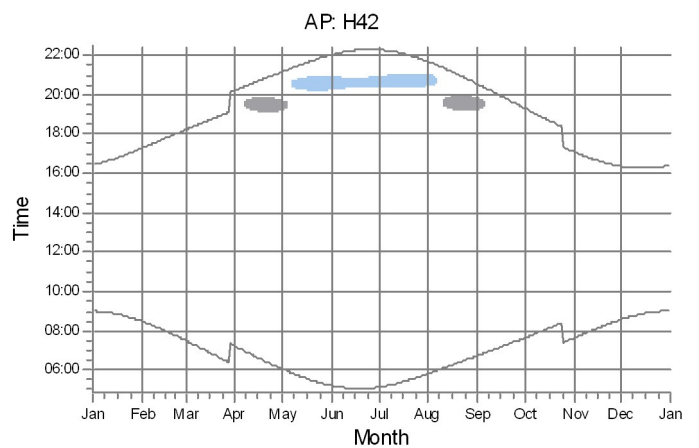
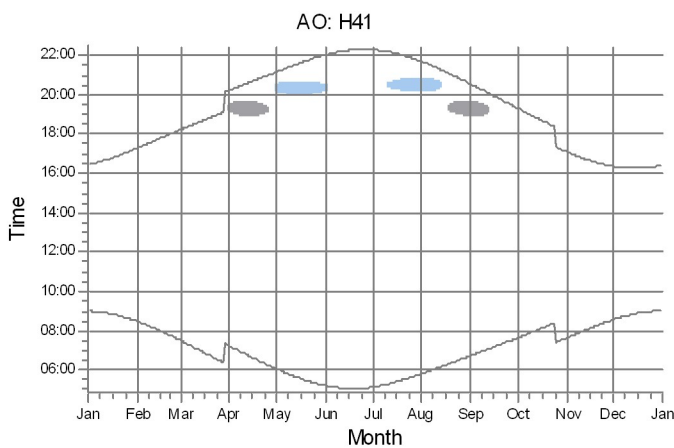
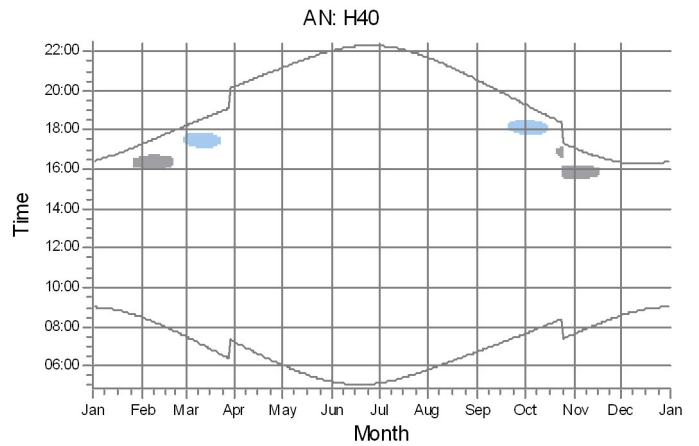
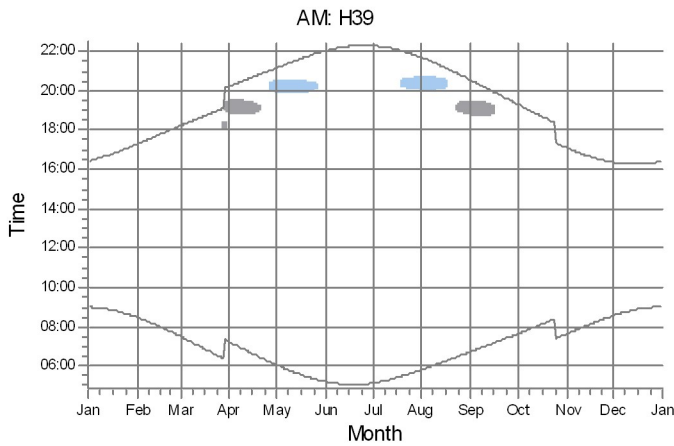
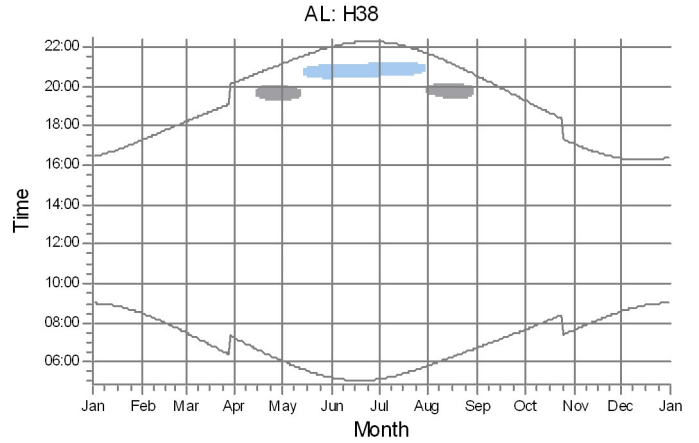
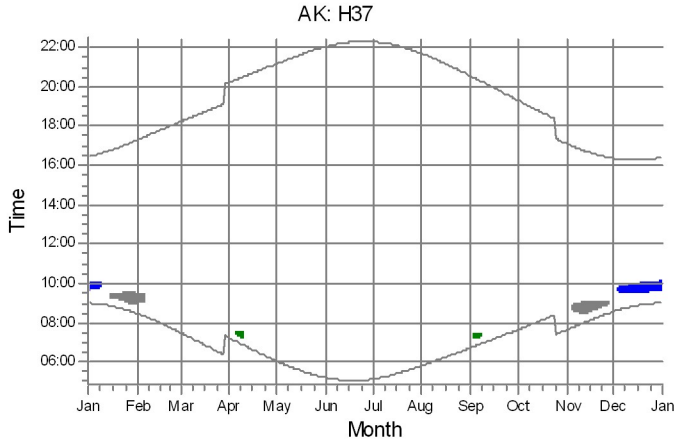


WTGs

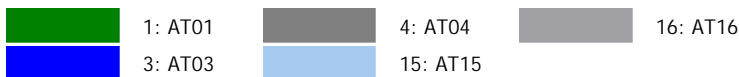


## SHADOW - Calendar, graphical

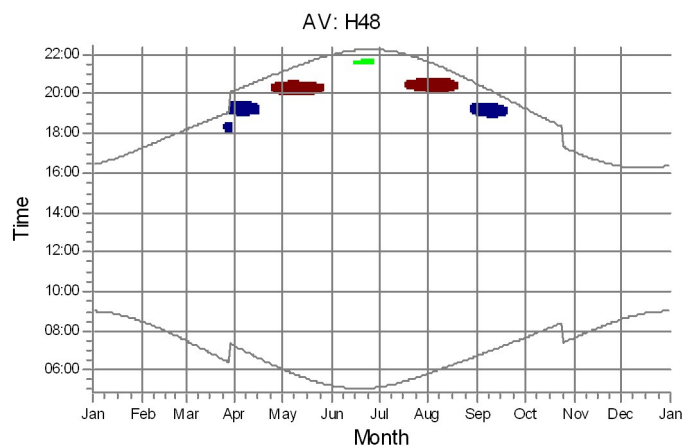
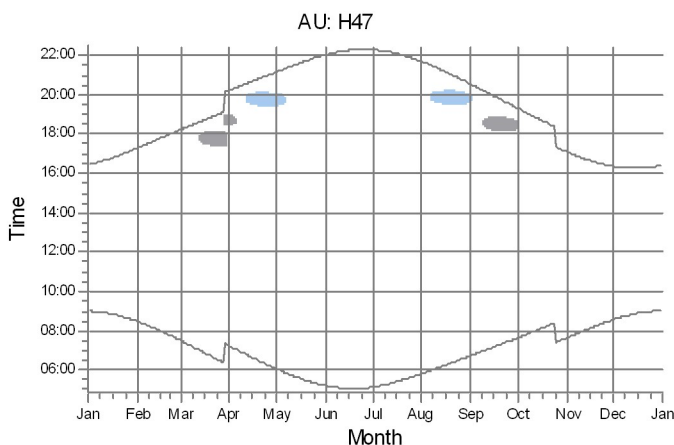
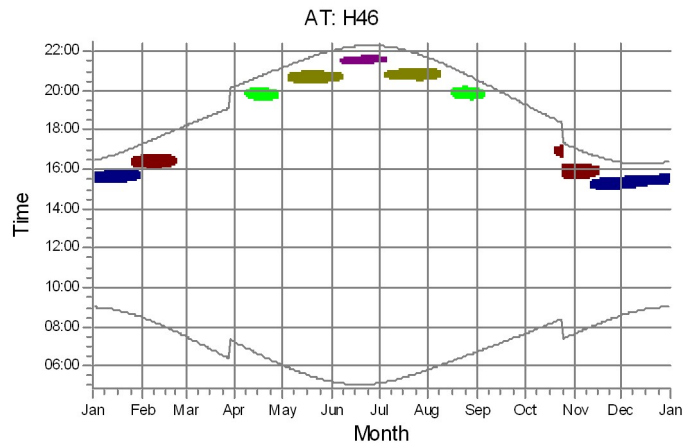
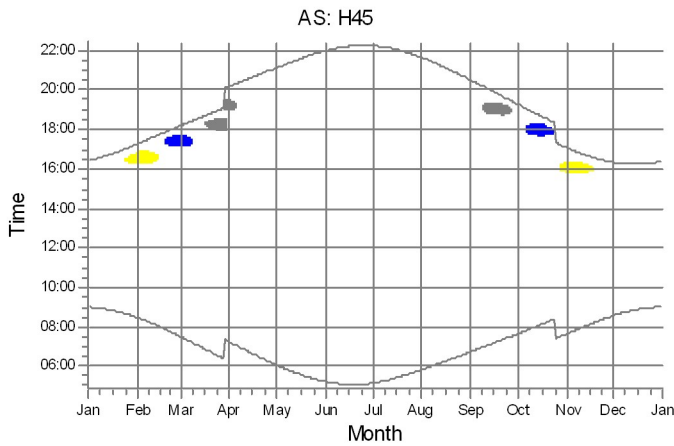
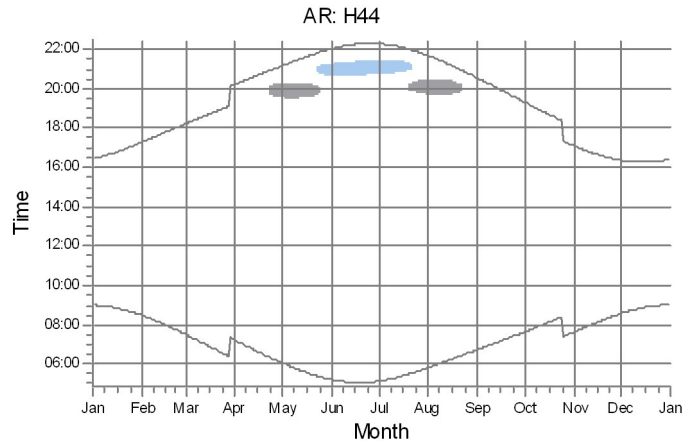
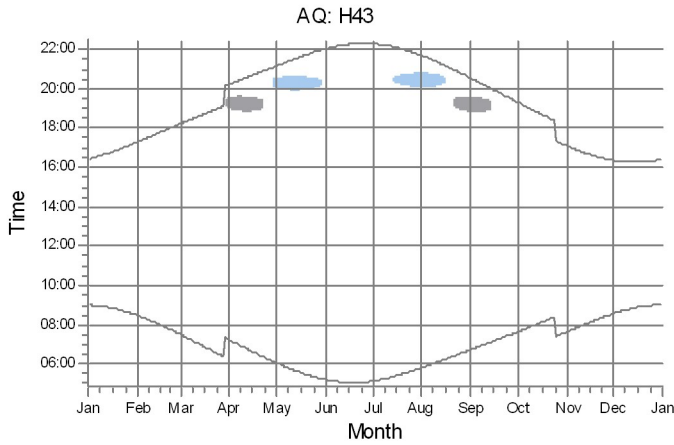
Calculation: Tirawley Shadow Flicker Real Case





WTGs



**SHADOW - Calendar, graphical**  
 Calculation: Tirawley Shadow Flicker Real Case

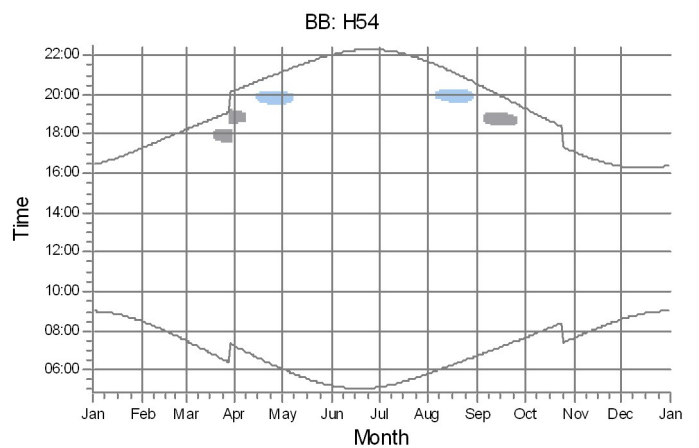
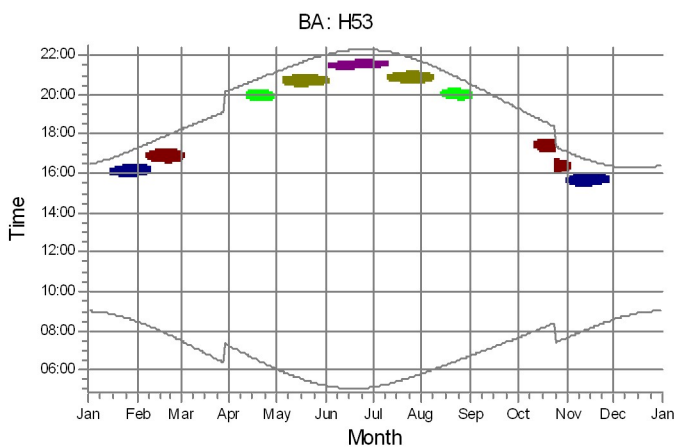
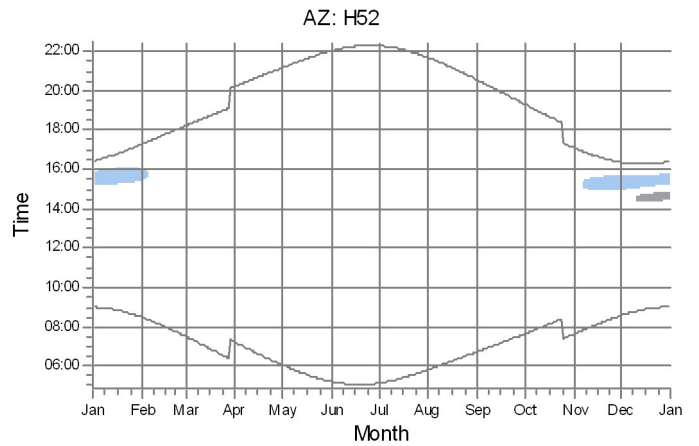
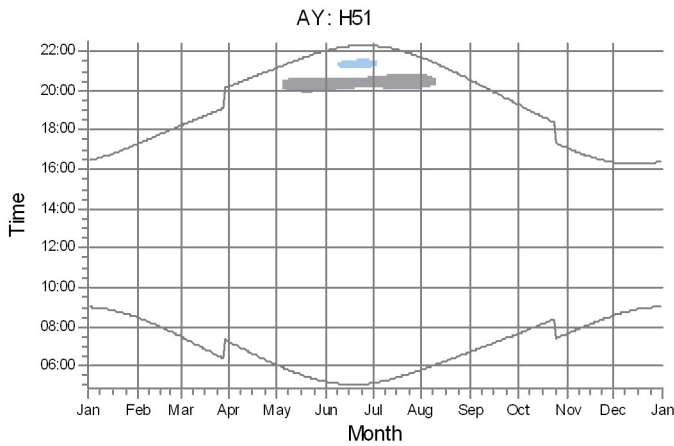
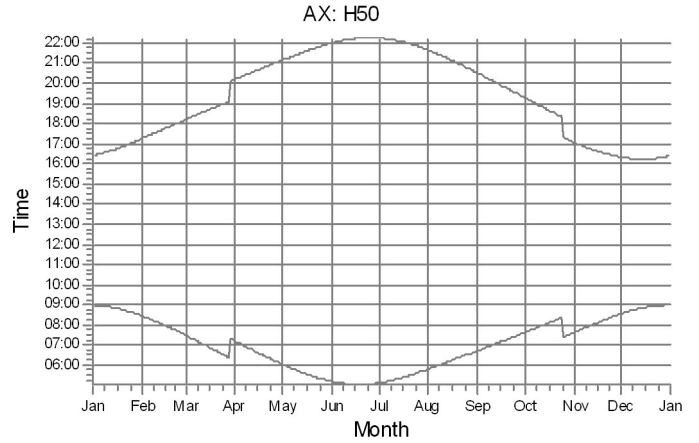
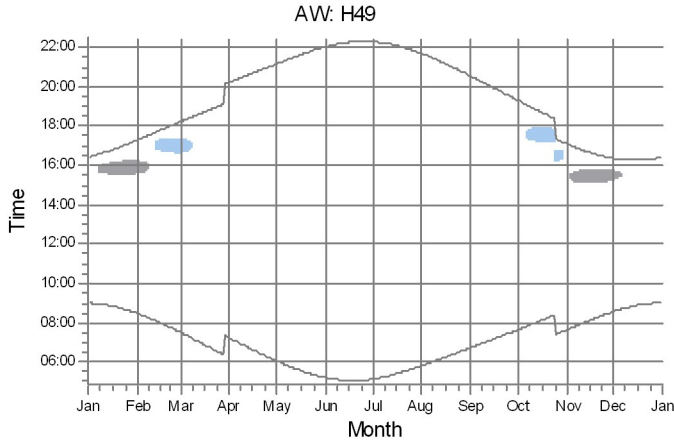


WTGs

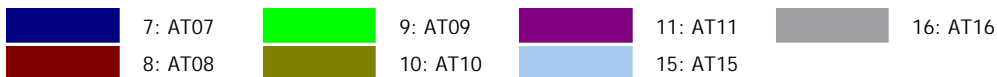
 2: AT02	 7: AT07	 10: AT10	 16: AT16
 3: AT03	 8: AT08	 11: AT11	
 4: AT04	 9: AT09	 15: AT15	

## SHADOW - Calendar, graphical

Calculation: Tirawley Shadow Flicker Real Case

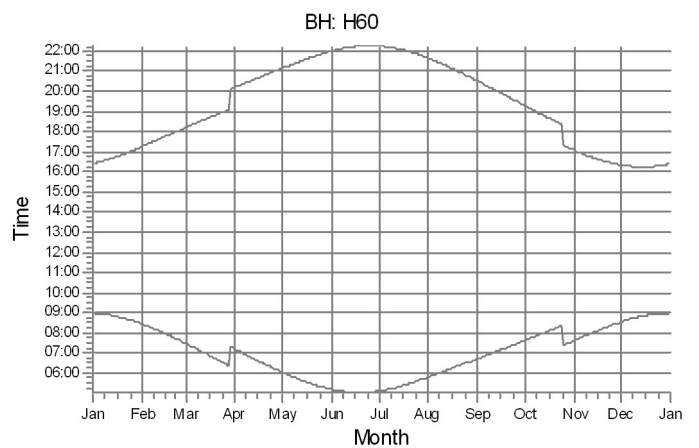
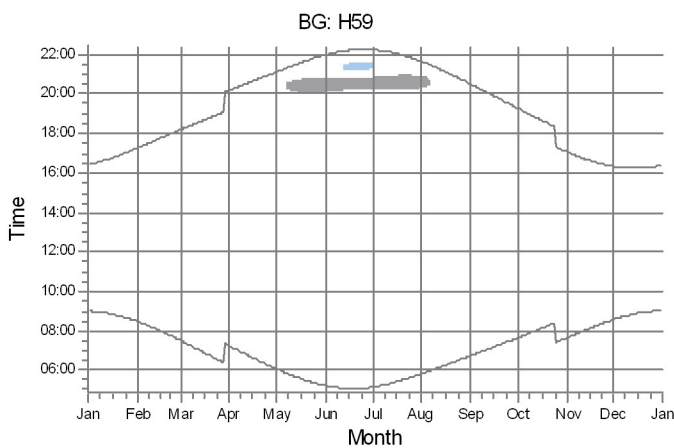
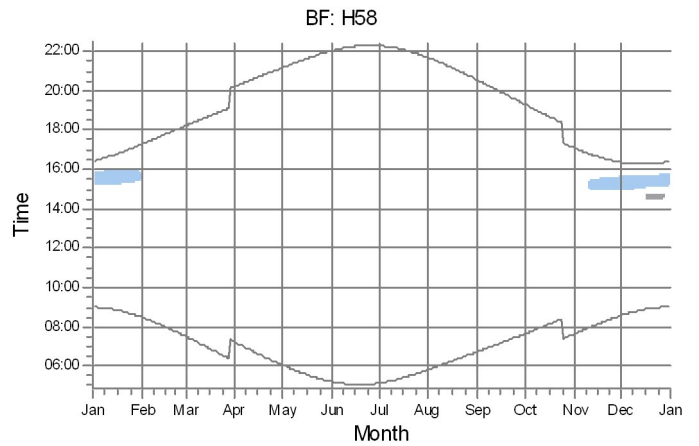
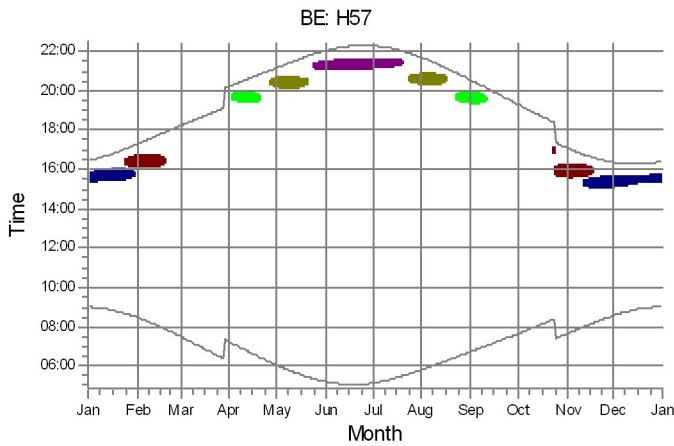
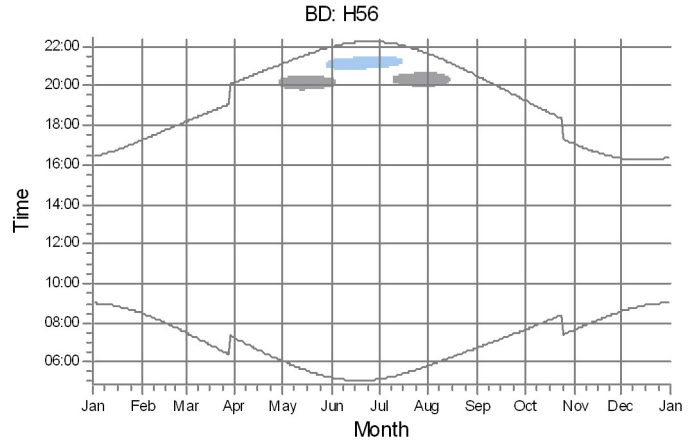
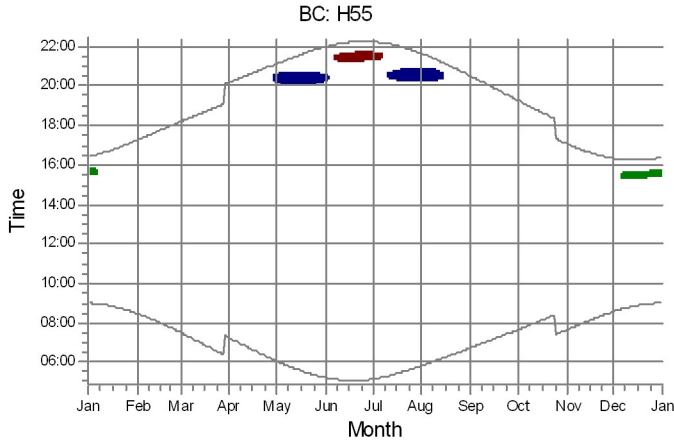


### WTGs



## SHADOW - Calendar, graphical

Calculation: Tirawley Shadow Flicker Real Case

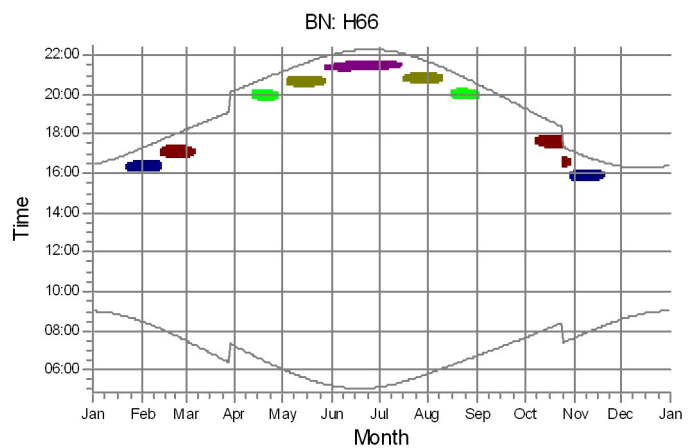
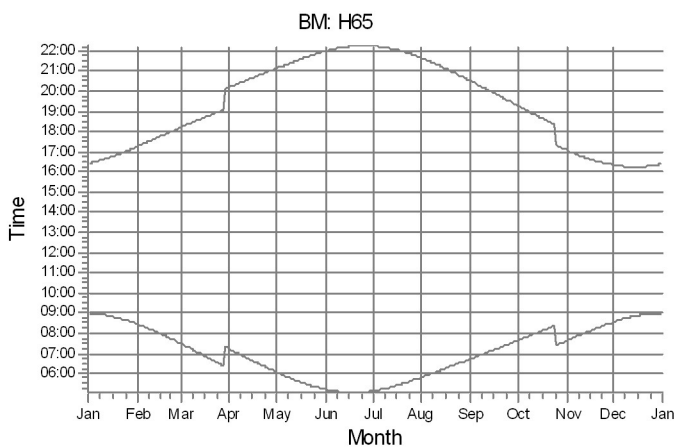
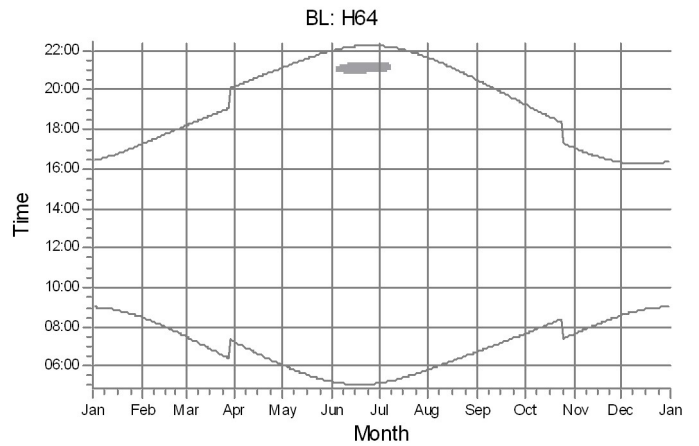
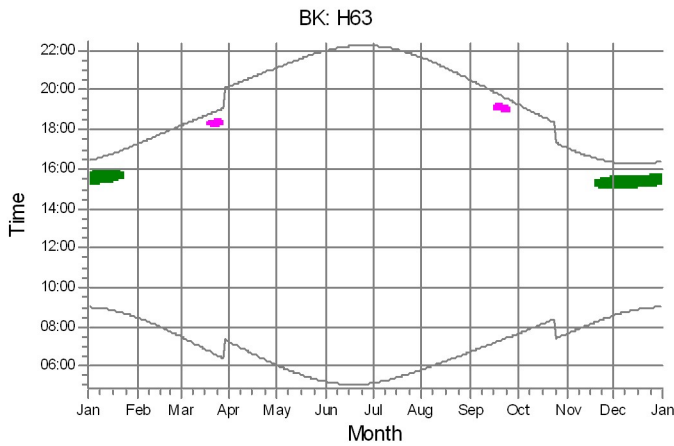
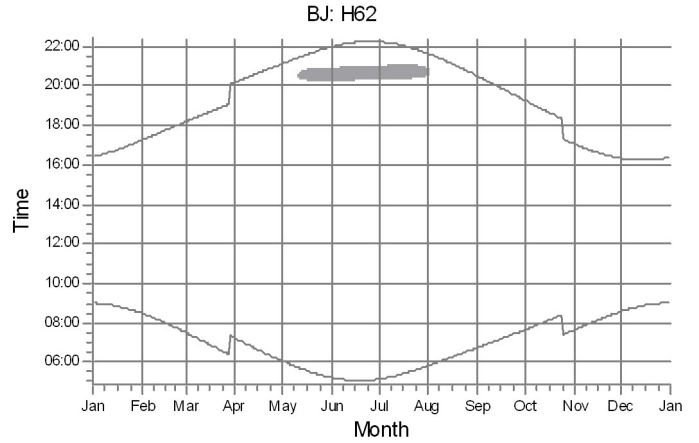
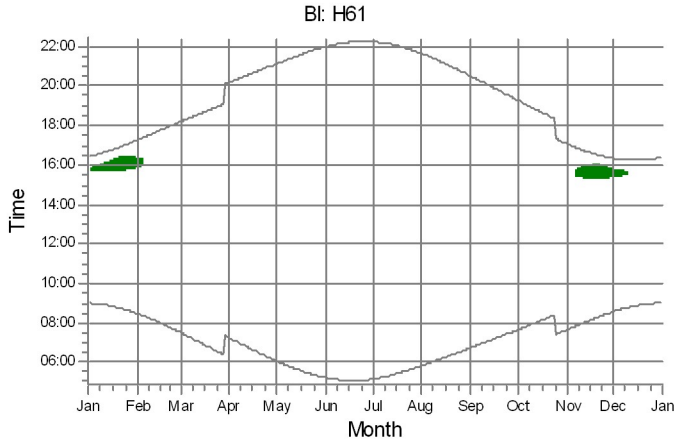


### WTGs









 1: AT01	 8: AT08	 10: AT10	 15: AT15
 7: AT07	 9: AT09	 11: AT11	 16: AT16

## SHADOW - Calendar, graphical

Calculation: Tirawley Shadow Flicker Real Case



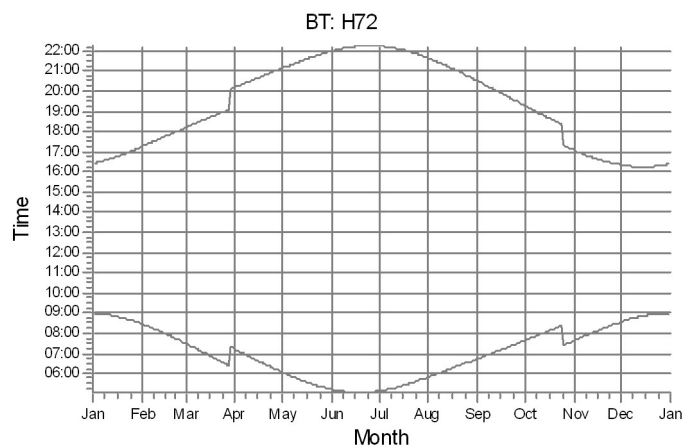
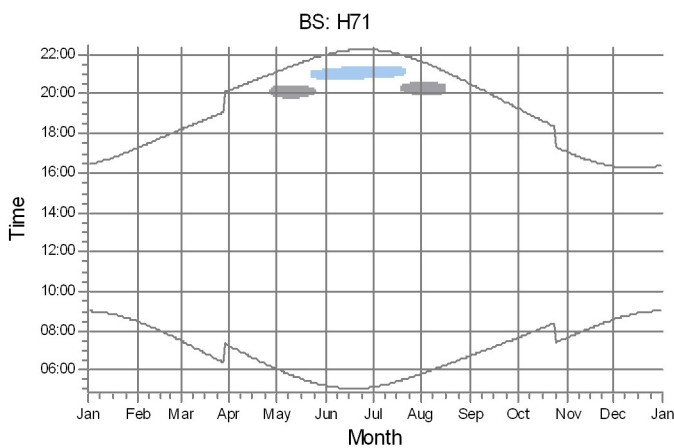
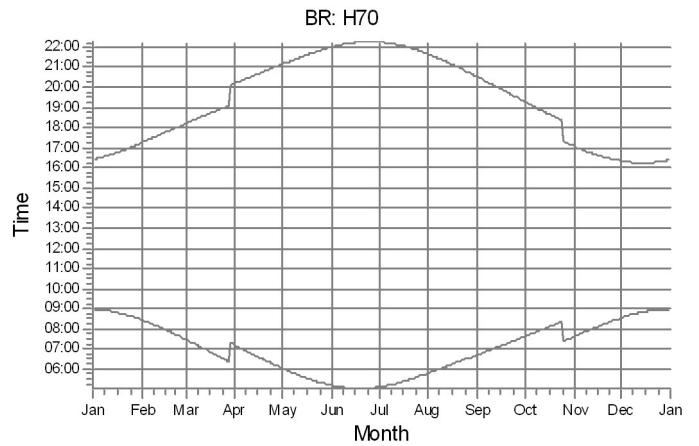
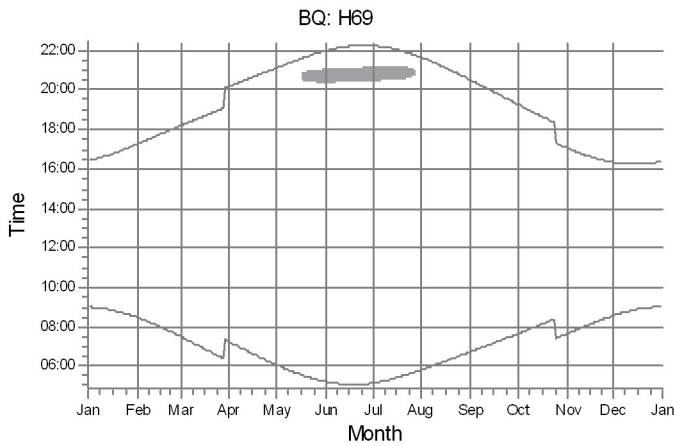
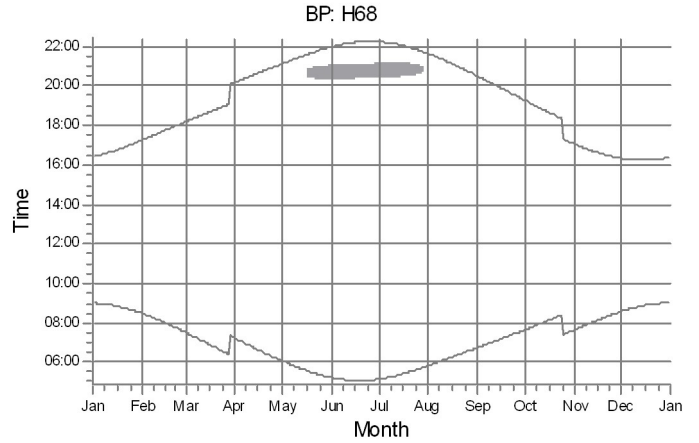
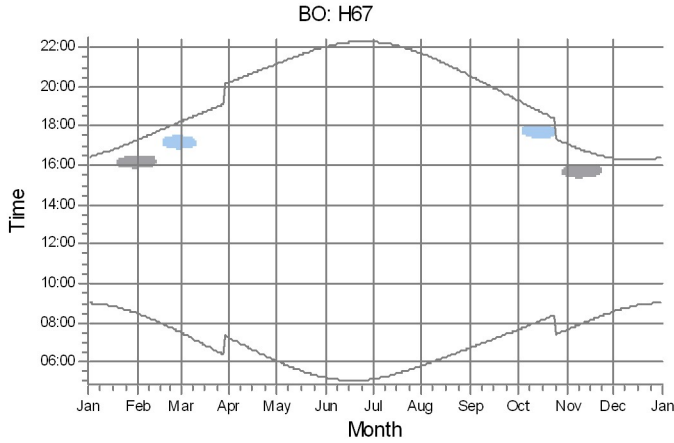
### WTGs

	1: AT01		7: AT07		9: AT09		11: AT11
	5: AT05		8: AT08		10: AT10		16: AT16

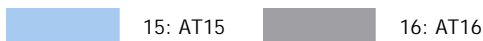


## SHADOW - Calendar, graphical

Calculation: Tirawley Shadow Flicker Real Case

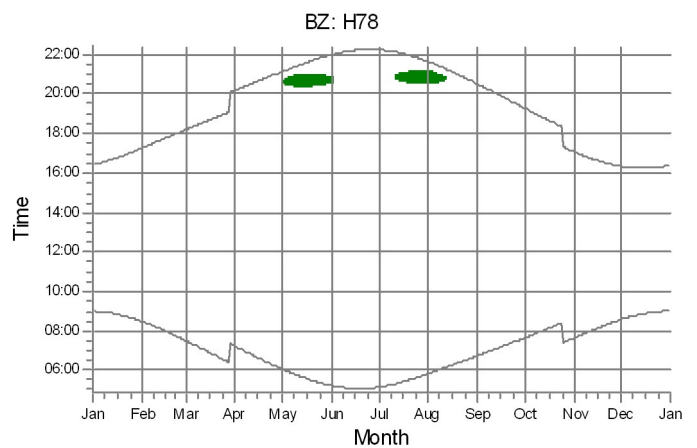
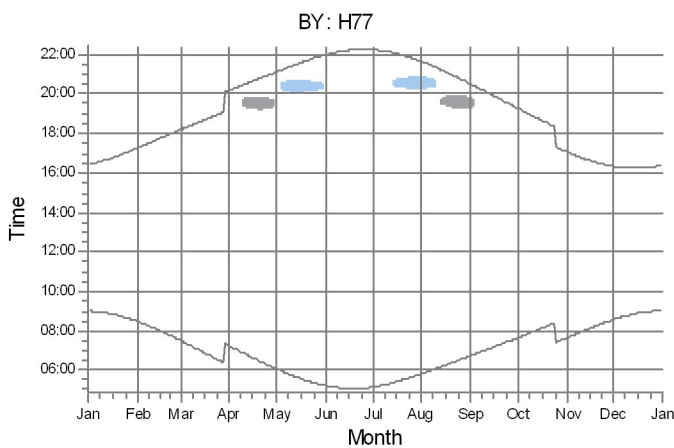
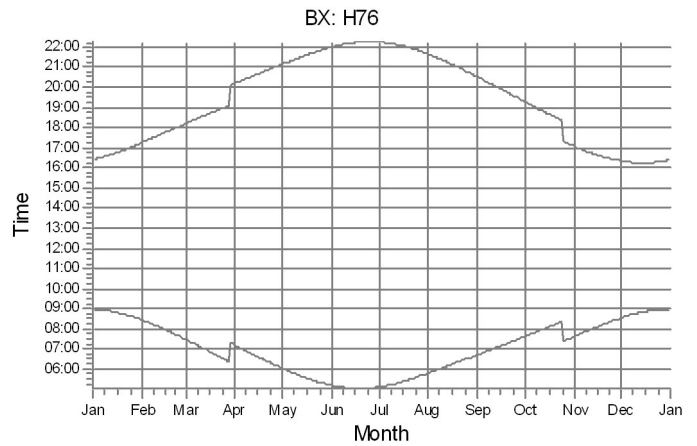
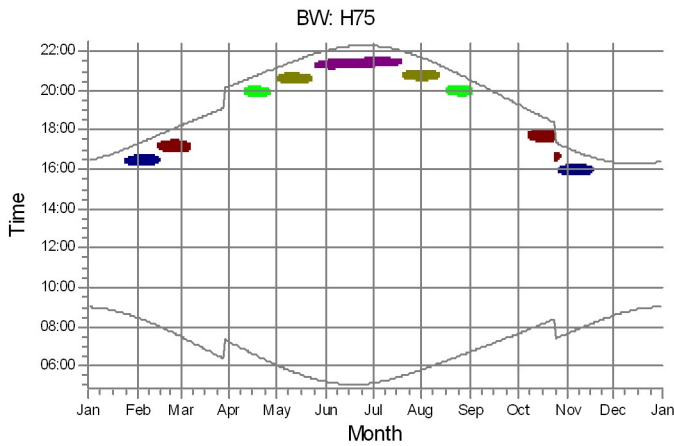
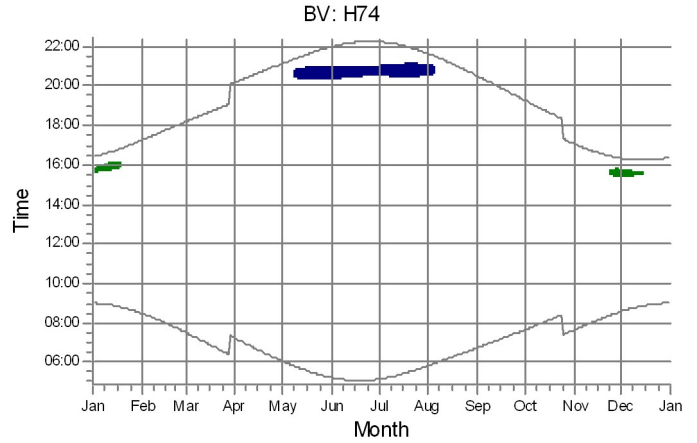
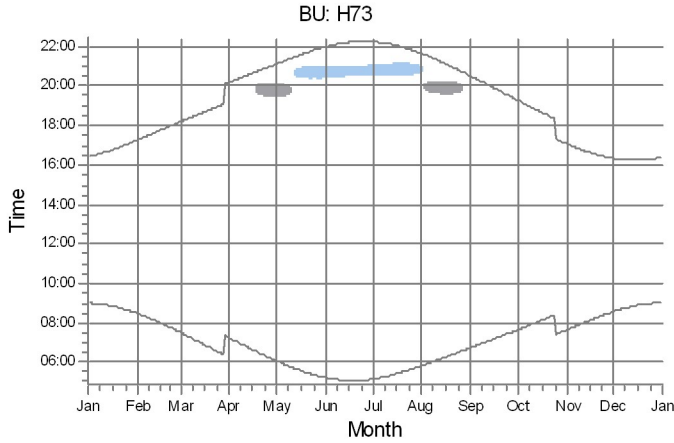


WTGs



## SHADOW - Calendar, graphical

Calculation: Tirawley Shadow Flicker Real Case

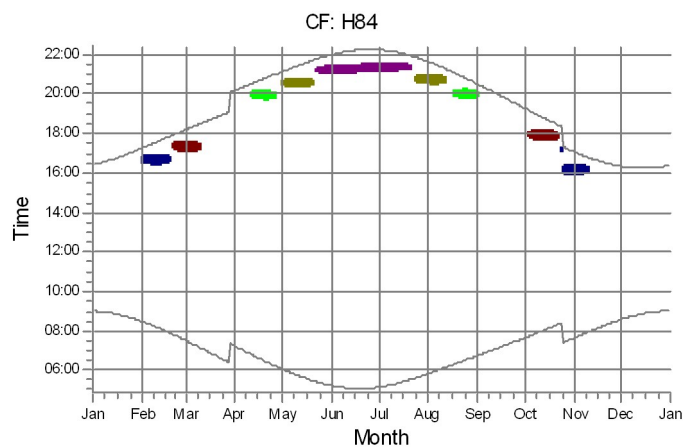
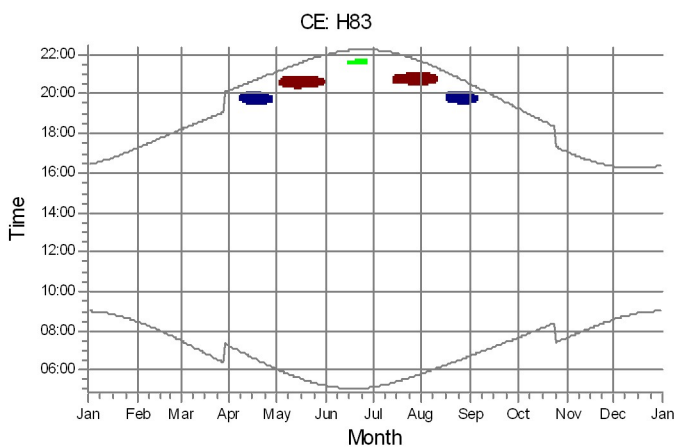
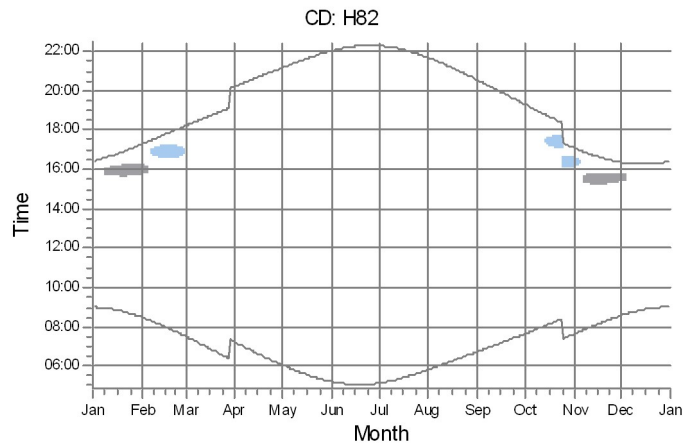
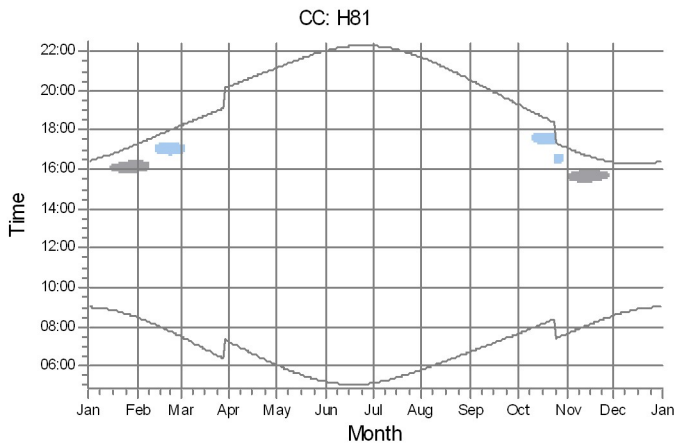
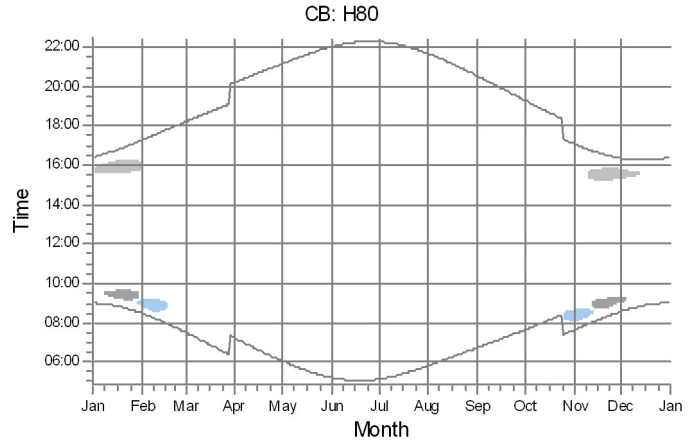
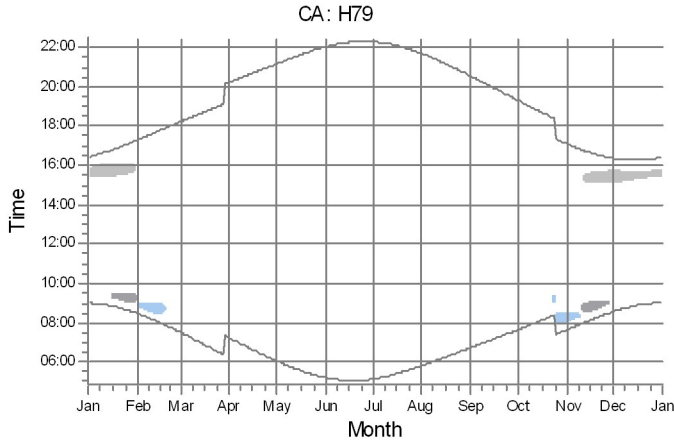


### WTGs

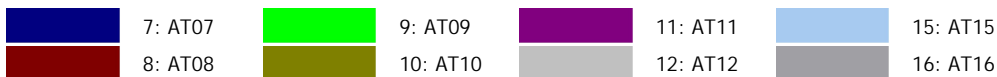
 1: AT01	 8: AT08	 10: AT10	 15: AT15
 7: AT07	 9: AT09	 11: AT11	 16: AT16

## SHADOW - Calendar, graphical

Calculation: Tirawley Shadow Flicker Real Case

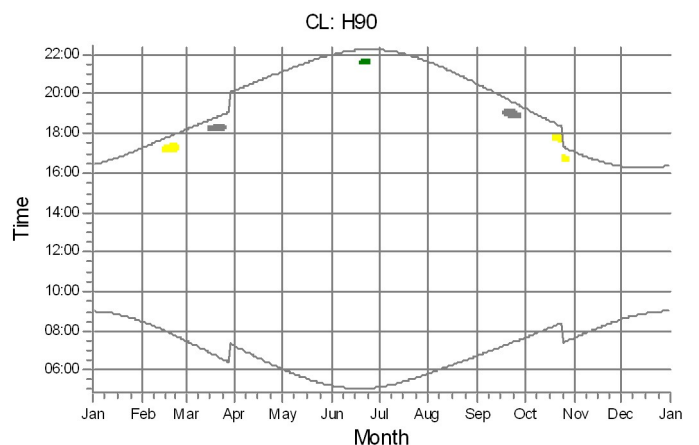
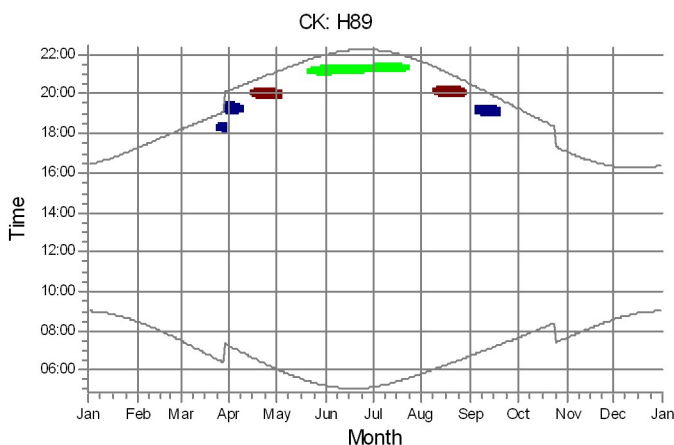
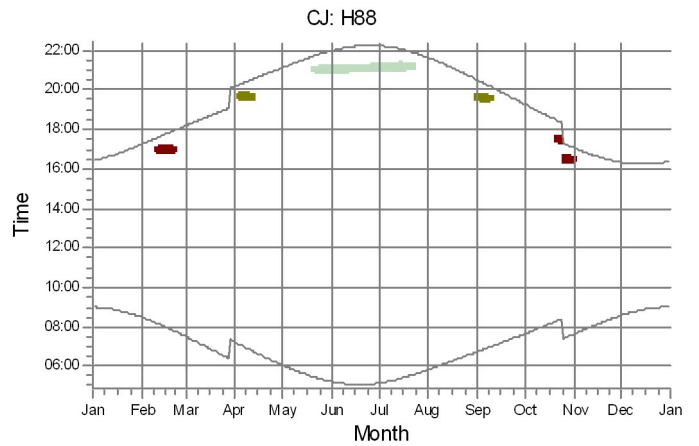
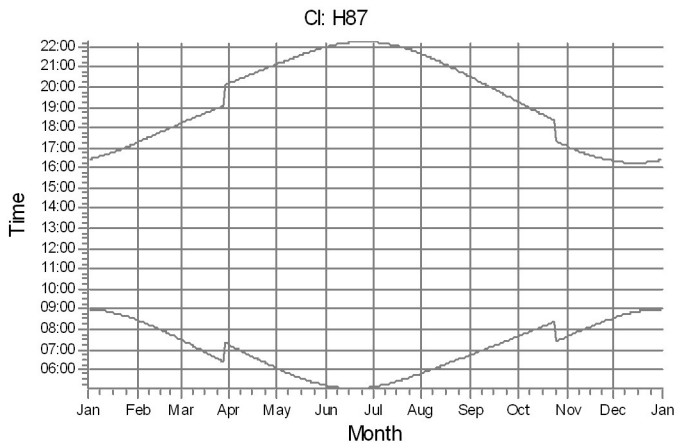
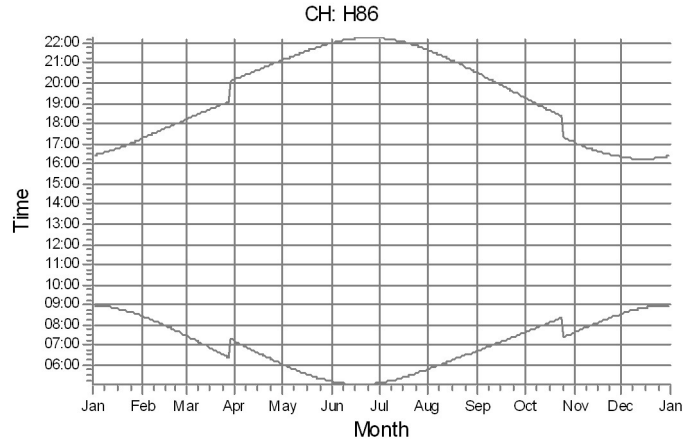
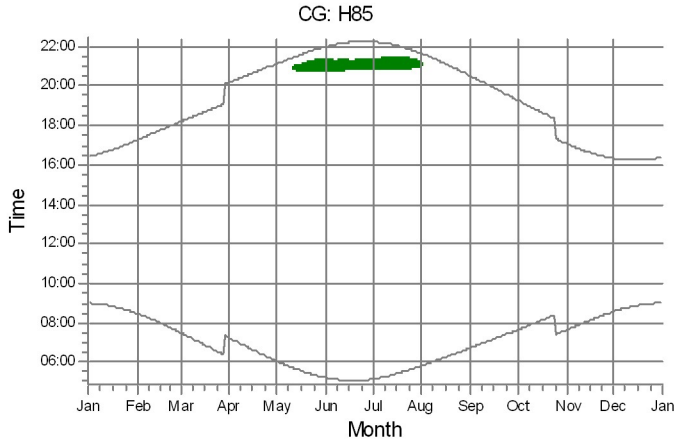


WTGs











## SHADOW - Calendar, graphical

Calculation: Tirawley Shadow Flicker Real Case

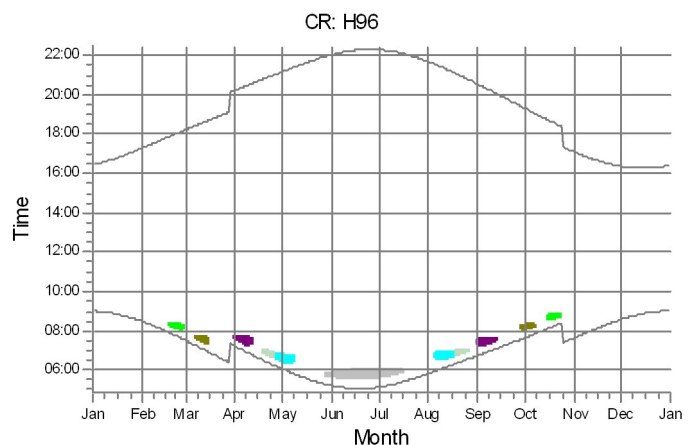
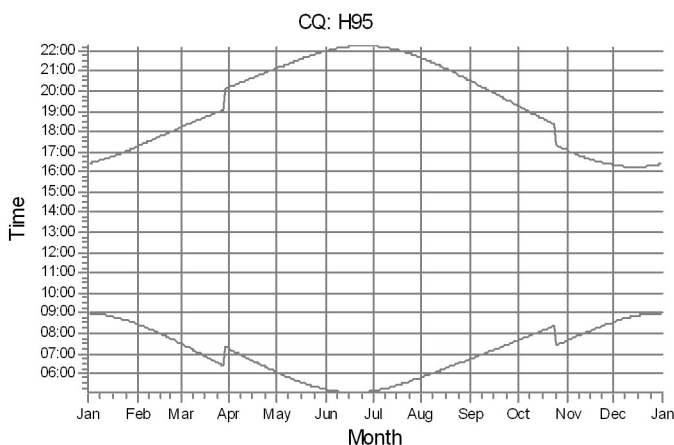
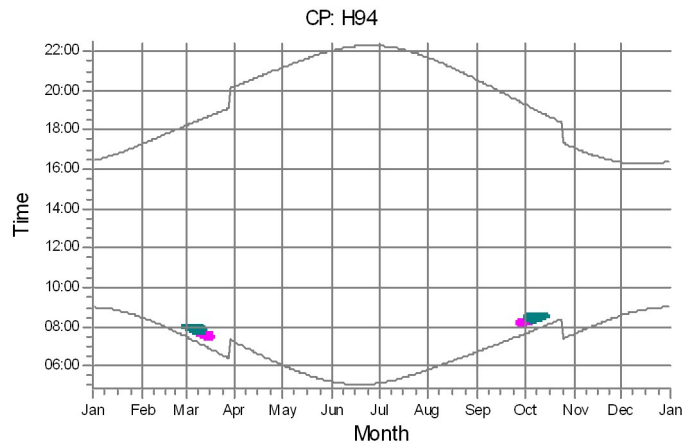
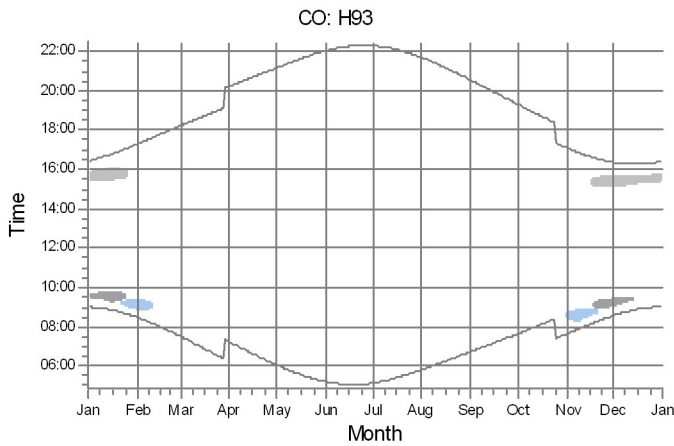
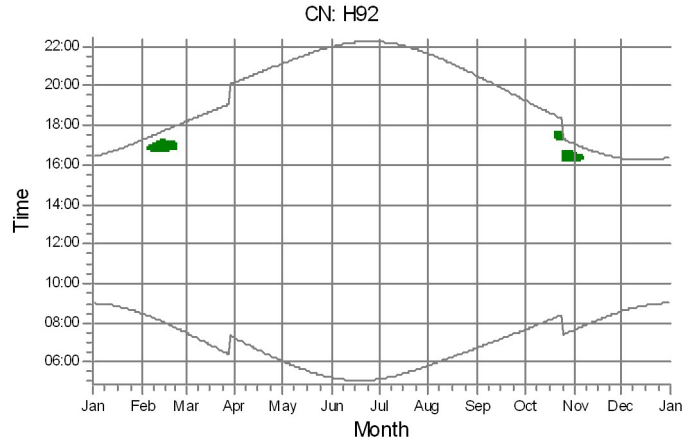
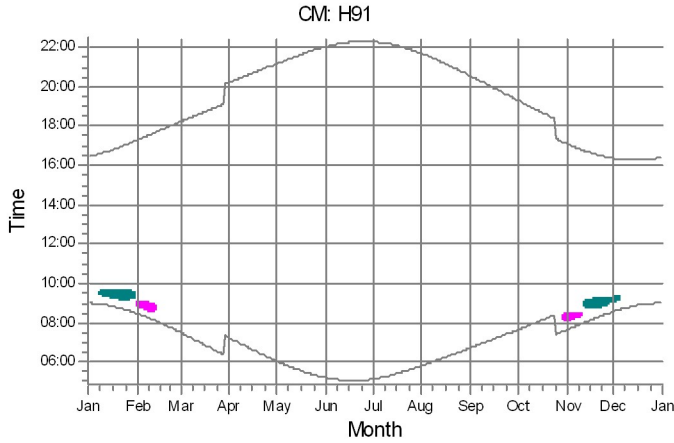


### WTGs




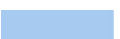







	1: AT01		4: AT04		8: AT08		10: AT10
	2: AT02		7: AT07		9: AT09		14: AT14

## SHADOW - Calendar, graphical

Calculation: Tirawley Shadow Flicker Real Case

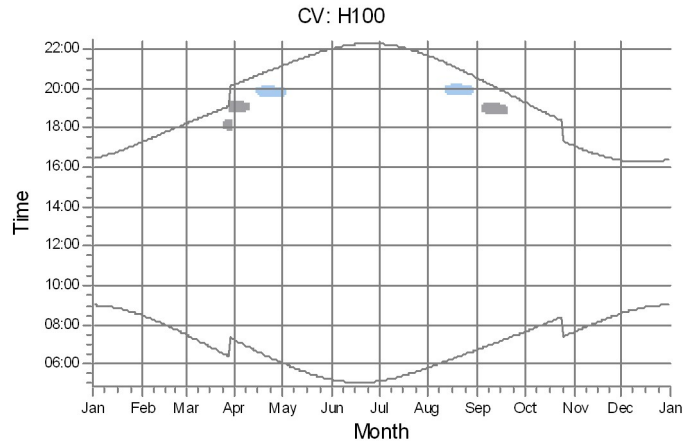
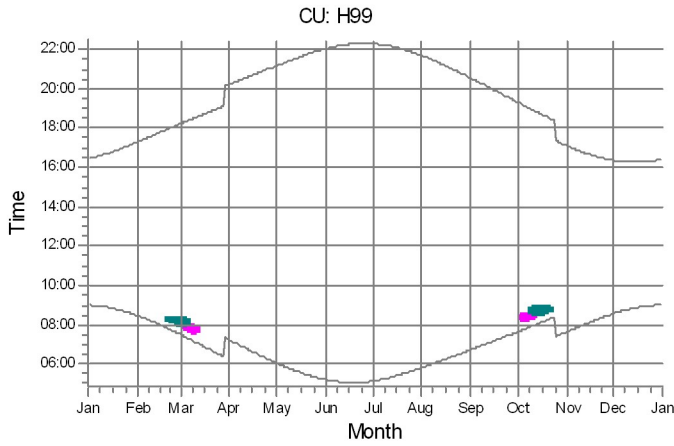
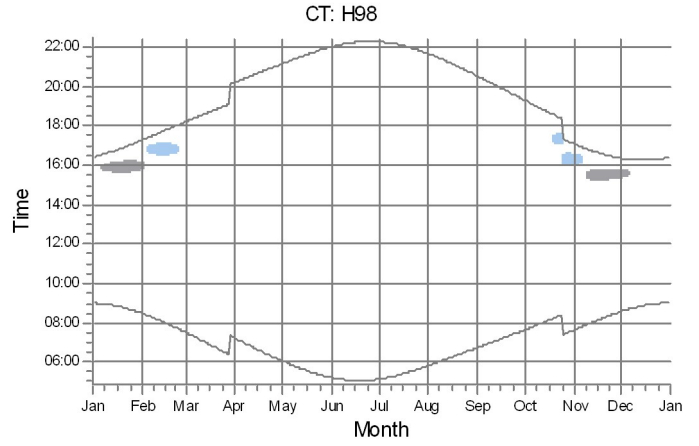
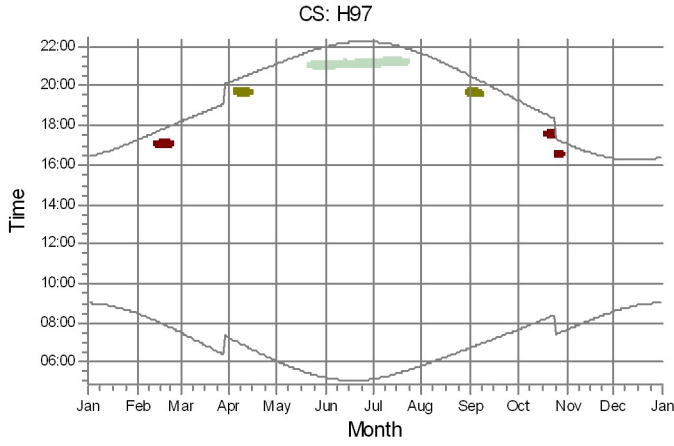


### WTGs








 1: AT01	 9: AT09	 12: AT12	 15: AT15
 5: AT05	 10: AT10	 13: AT13	 16: AT16
 6: AT06	 11: AT11	 14: AT14	

## SHADOW - Calendar, graphical

Calculation: Tirawley Shadow Flicker Real Case



### WTGs

	5: AT05		8: AT08		14: AT14		16: AT16
	6: AT06		10: AT10		15: AT15		



### SHADOW - Calendar per WTG

Calculation: Tirawley Shadow Flicker Real Case WTG: 1 - AT01  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January		February		March		April		May		June	
1	08:58	15:17-15:45/28	08:27	15:57-16:17/20	07:29	07:12	08:04-08:21/17	06:02	20:07-20:38/31	05:12	20:06-21:15/69	
	16:24		17:16		18:13	20:12		21:09		22:00		
2	08:58	15:18-15:47/29	08:25	16:00-16:16/16	07:26	07:10	08:09-08:16/7	06:00	20:06-20:40/34	05:11	20:06-21:14/68	
	16:25		17:18		18:15	20:14		21:11		22:01		
3	08:58	15:18-15:48/30	08:24	16:03-16:14/11	07:24	07:08		05:58	20:05-20:41/36	05:10	20:07-21:14/67	
	16:26		17:20		18:17	20:16		21:12		22:02		
4	08:58	15:19-15:49/30	08:22		07:22	07:05		05:56	20:04-20:43/39	05:09	20:08-21:15/67	
	16:27		17:22		18:19	20:18		21:14		22:03		
5	08:57	15:19-15:50/31	08:20	16:51-16:53/2	07:19	07:03	07:27-07:29/2	05:54	20:04-20:46/42	05:08	20:49-21:14/25	
	16:29		17:24		18:21	20:20		21:16		22:04	20:08-20:48/40	
6	08:57	15:20-15:52/32	08:18	16:50-16:55/5	07:17	07:00	07:24-07:28/4	05:52	20:03-20:47/44	05:08	20:49-21:14/25	
	16:30		17:26		18:23	20:22		21:18		22:06	20:08-20:48/40	
7	08:56	15:21-15:54/33	08:16	16:49-16:58/9	07:14	06:58	07:22-07:27/5	05:50	20:02-20:49/47	05:07	20:50-21:14/24	
	16:31		17:28		18:25	20:24		21:20		22:07	20:09-20:48/39	
8	08:56	15:21-15:55/34	08:14	16:47-16:59/12	07:12	06:55	07:20-07:26/6	05:48	20:02-20:50/48	05:06	20:50-21:14/24	
	16:33		17:30		18:27	20:26		21:22		22:08	20:10-20:48/38	
9	08:55	15:21-15:56/35	08:12	16:46-17:01/15	07:09	06:53	07:17-07:23/6	05:46	20:01-20:52/51	05:06	20:51-21:14/23	
	16:34		17:32		18:29	20:27		21:23		22:08	20:11-20:48/37	
10	08:55	15:23-15:59/36	08:10	16:46-17:04/18	07:07	06:50		05:44	20:02-20:54/52	05:05	20:51-21:15/24	
	16:36		17:34		18:30	20:29		21:25		22:09	20:11-20:48/37	
11	08:54	15:23-16:01/38	08:08	16:46-17:06/20	07:05	06:48	07:22-07:30/1	05:42	20:01-20:55/54	05:05	20:51-21:14/23	
	16:37		17:36		18:32	20:31		21:27		22:10	20:11-20:48/37	
12	08:53	15:24-16:02/38	08:06	16:46-17:08/22	07:02	06:46	07:26-07:32/6	05:41	20:00-20:57/57	05:04	20:52-21:14/22	
	16:39		17:39		18:34	20:33		21:29		22:11	20:12-20:48/36	
13	08:52	15:25-16:04/39	08:04	16:46-17:11/25	07:00	06:43	07:24-07:33/9	05:39	20:01-20:59/58	05:04	20:52-21:15/23	
	16:41		17:41		18:36	20:35		21:31		22:12	20:13-20:48/35	
14	08:51	15:25-16:05/40	08:02	16:46-17:12/26	06:57	06:41	07:21-07:34/13	05:37	20:01-21:00/59	05:04	20:53-21:15/22	
	16:42		17:43		18:38	20:37		21:32		22:12	20:14-20:48/34	
15	08:50	15:26-16:07/41	08:00	16:46-17:11/25	06:55	06:38	07:19-07:35/16	05:35	20:00-21:01/61	05:03	20:53-21:14/21	
	16:44		17:45		18:40	20:39		21:34		22:13	20:13-20:47/34	
16	08:49	15:27-16:10/43	07:58	16:46-17:10/24	06:52	06:36	07:16-07:35/19	05:34	20:01-21:03/62	05:03	20:53-21:14/21	
	16:46		17:47		18:42	20:41		21:36		22:13	20:14-20:47/33	
17	08:48	15:28-16:12/44	07:56	16:47-17:10/23	06:50	06:34	07:14-07:36/22	05:32	20:00-21:04/64	05:03	20:53-21:14/21	
	16:47		17:49		18:44	20:43		21:37		22:14	20:14-20:47/33	
18	08:47	15:30-16:14/44	07:54	16:48-17:09/21	06:47	06:31	07:11-07:36/25	05:30	20:01-21:06/65	05:03	20:54-21:14/20	
	16:49		17:51		18:46	20:44		21:39		22:14	20:14-20:47/33	
19	08:46	15:31-16:15/44	07:51	16:49-17:08/19	06:45	06:29	07:09-07:36/27	05:29	20:01-21:08/67	05:03	21:37-21:38/1 20:15-20:48/33	
	16:51		17:53		18:48	20:46		21:41		22:15	20:54-21:14/20	
20	08:45	15:33-16:18/45	07:49	16:51-17:06/15	06:42	06:27	07:06-07:36/30	05:27	20:01-21:09/68	05:03	21:38-21:39/1 20:16-20:49/33	
	16:53		17:55		18:50	20:48		21:42		22:15	20:55-21:15/20	
21	08:44	15:34-16:19/45	07:47	16:53-17:04/11	06:40	06:24	07:04-07:36/32	05:26	20:02-21:11/69	05:03	21:38-21:39/1 20:16-20:49/33	
	16:55		17:57		18:52	20:50		21:44		22:15	20:55-21:15/20	
22	08:42	15:38-15:47/9	07:45		06:37	06:22	07:01-07:35/34	05:24	20:02-21:12/70	05:03	21:38-21:39/1 20:16-20:49/33	
	16:57	15:49-16:21/32	17:59		18:53	20:52		21:46		22:16	20:55-21:15/20	
23	08:41	15:49-16:21/32	07:43		06:35	06:20	06:59-07:35/36	05:23	20:02-21:13/71	05:04	21:38-21:39/1 20:16-20:49/33	
	16:58		18:01		18:55	20:54		21:47		22:16	20:55-21:15/20	
24	08:40	15:50-16:22/32	07:40		06:32	06:18	06:56-07:34/38	05:21	20:02-21:14/72	05:04	20:56-21:16/20	
	17:00		18:03		18:57	20:56		21:49		22:16	20:16-20:49/33	
25	08:38	15:51-16:21/30	07:38		06:30	06:15	06:54-07:33/39	05:20	20:03-21:14/71	05:04	20:56-21:16/20	
	17:02		18:05		18:59	20:58		21:50		22:16	20:16-20:49/33	
26	08:37	15:51-16:21/30	07:36		06:27	06:13	06:51-07:32/41	05:19	20:03-21:15/72	05:05	20:55-21:16/21	
	17:04		18:07		19:01	20:59		21:52		22:16	20:16-20:49/33	
27	08:35	15:52-16:21/29	07:33		06:25	06:11	06:49-07:31/42	05:17	20:04-21:15/71	05:05	20:56-21:17/21	
	17:06		18:09		19:03	21:01		21:53		22:16	20:16-20:50/34	
28	08:34	15:53-16:21/28	07:31		06:22	06:09	06:46-07:29/43	05:16	20:04-21:15/71	05:06	20:55-21:17/22	
	17:08		18:11		19:05	21:03		21:54		22:16	20:16-20:50/34	
29	08:32	15:54-16:20/26			07:20	06:07	07:45-08:28/43	05:15	20:05-21:15/70	05:06	20:56-21:18/22	
	17:10				20:07	21:05		21:56		22:15	20:16-20:51/35	
30	08:30	15:55-16:19/24			07:17	06:04	07:46-08:26/40	05:14	20:05-21:15/70	05:07	20:56-21:18/22	
	17:12				20:09	21:07	20:08-20:36/28	21:57		22:15	20:16-20:52/36	
31	08:29	15:56-16:18/22			07:15	06:02	08:02-08:24/22	05:13	20:06-21:15/69			
	17:14				20:10	21:09		21:59				
Potential sun hours	248		272		367	421		496		513		
Sum of minutes with flicker	1073	339	588	167	1815	1751						

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker

### SHADOW - Calendar per WTG

Calculation: Tirawley Shadow Flicker Real Case WTG: 1 - AT01  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	July		August		September		October		November		December	
1	05:08	20:55-21:18/23	05:48	20:11-21:06/55	06:44		07:38	08:05-08:12/7	07:37	16:16-16:33/17	08:33	15:06-15:43/37
	22:15	20:16-20:52/36	21:39		20:31		19:16		17:05		16:19	
2	05:08	20:56-21:19/23	05:50	20:11-21:05/54	06:46		07:40	08:07-08:10/3	07:39	16:16-16:30/14	08:35	15:05-15:41/36
	22:14	20:16-20:52/36	21:37		20:28		19:14		17:02		16:18	
3	05:09	20:56-21:19/23	05:52	20:11-21:03/52	06:47	07:15-07:21/6	07:42		07:41	16:17-16:28/11	08:36	15:05-15:41/36
	22:14	20:16-20:53/37	21:35		20:26		19:11		17:00		16:18	
4	05:10	20:56-21:20/24	05:54	20:12-21:01/49	06:49	07:17-07:23/6	07:44		07:43	16:18-16:27/9	08:38	15:06-15:40/34
	22:13	20:16-20:54/38	21:33		20:24		19:09		16:59		16:17	
5	05:11	20:55-21:20/25	05:55	20:12-21:00/48	06:51	07:18-07:23/5	07:45		07:45	16:19-16:25/6	08:39	15:06-15:39/33
	22:13	20:15-20:53/38	21:31		20:21		19:06		16:57		16:16	
6	05:12	20:55-21:20/25	05:57	20:12-20:57/45	06:53	07:20-07:24/4	07:47		07:47	16:21-16:22/1	08:41	15:06-15:39/33
	22:12	20:15-20:54/39	21:29		20:19		19:04		16:55		16:16	
7	05:13	20:15-21:21/66	05:59	20:13-20:56/43	06:55	07:22-07:24/2	07:49		07:49		08:42	15:06-15:38/32
	22:12		21:27		20:16		19:01		16:53		16:15	
8	05:14	20:15-21:21/66	06:01	20:14-20:55/41	06:56		07:51		07:51	15:32-15:44/12	08:43	15:07-15:38/31
	22:11		21:25		20:14		18:59		16:51		16:15	
9	05:15	20:14-21:21/67	06:02	20:13-20:52/39	06:58		07:53		07:53	15:30-15:46/16	08:45	15:07-15:37/30
	22:10		21:23		20:11		18:56		16:49		16:15	
10	05:16	20:14-21:22/68	06:04	20:14-20:50/36	07:00	08:03-08:08/5	07:55		07:55	15:29-15:49/20	08:46	15:07-15:36/29
	22:09		21:21		20:09		18:54		16:47		16:14	
11	05:17	20:14-21:22/68	06:06	20:16-20:49/33	07:02	07:58-08:13/15	07:57		07:57	15:27-15:50/23	08:47	15:07-15:35/28
	22:08		21:19		20:06		18:52		16:46		16:14	
12	05:18	20:13-21:22/69	06:08	20:16-20:46/30	07:04	07:55-08:16/21	07:59		07:59	15:26-15:51/25	08:48	15:09-15:36/27
	22:07		21:17		20:04	07:41-07:50/9	18:49		16:44		16:14	
13	05:20	20:14-21:23/69	06:09	20:17-20:44/27	07:05	07:52-08:17/25	08:00		08:01	15:25-15:52/27	08:49	15:09-15:36/27
	22:06		21:15		20:01	07:37-07:51/14	18:47		16:42		16:14	
14	05:21	20:14-21:23/69	06:11	20:18-20:43/25	07:07	07:35-08:18/43	08:02		08:03	15:25-15:52/27	08:50	15:09-15:35/26
	22:05		21:13		19:59		18:44		16:41		16:14	
15	05:22	20:13-21:23/70	06:13	20:19-20:40/21	07:09	07:36-08:20/44	08:04		08:05	15:24-15:53/29	08:51	15:10-15:35/25
	22:04		21:10		19:56		18:42		16:39		16:14	
16	05:24	20:13-21:23/70	06:15	20:21-20:38/17	07:11	07:38-08:21/43	08:06		08:07	15:24-15:54/30	08:52	15:10-15:35/25
	22:03		21:08		19:54		18:40		16:37		16:14	
17	05:25	20:13-21:23/70	06:17	20:23-20:36/13	07:13	07:39-08:20/41	08:08		08:09	15:24-15:54/30	08:53	15:10-15:35/25
	22:02		21:06		19:51		18:37		16:36		16:14	
18	05:26	20:13-21:24/71	06:18	20:25-20:34/9	07:14	07:41-08:21/40	08:10		08:11	15:24-15:56/32	08:54	15:11-15:35/24
	22:00		21:04		19:49		18:35		16:34		16:14	
19	05:28	20:12-21:24/72	06:20	20:31-20:32/1	07:16	07:43-08:21/38	08:12		08:12	15:24-15:56/32	08:54	15:12-15:36/24
	21:59		21:01		19:46		18:33		16:33		16:14	
20	05:29	20:12-21:23/71	06:22		07:18	07:45-08:21/36	08:14	17:27-17:32/5	08:14	15:13-15:22/9	08:55	15:12-15:36/24
	21:58		20:59		19:44		18:31		16:31	15:24-15:56/32	16:15	
21	05:31	20:12-21:23/71	06:24		07:20	07:46-08:21/35	08:16	17:23-17:35/12	08:16	15:10-15:56/46	08:56	15:12-15:36/24
	21:56		20:57		19:41		18:28		16:30		16:15	
22	05:32	20:11-21:21/70	06:26		07:22	07:48-08:20/32	08:18	17:20-17:37/17	08:18	15:09-15:54/45	08:56	15:13-15:37/24
	21:55		20:55		19:39		18:26		16:29		16:16	
23	05:34	20:12-21:20/68	06:27		07:23	07:50-08:20/30	08:20	17:19-17:38/19	08:20	15:08-15:53/45	08:57	15:13-15:37/24
	21:54		20:52		19:36		18:24		16:28		16:16	
24	05:35	20:11-21:19/68	06:29		07:25	07:52-08:20/28	08:22	17:17-17:39/22	08:22	15:07-15:51/44	08:57	15:13-15:37/24
	21:52		20:50		19:34		18:22		16:26		16:17	
25	05:37	20:12-21:18/66	06:31		07:27	07:54-08:19/25	07:24	16:16-16:40/24	08:23	15:07-15:50/43	08:58	15:15-15:39/24
	21:50		20:48		19:31		17:19		16:25		16:17	
26	05:38	20:11-21:16/65	06:33		07:29	07:55-08:18/23	07:26	16:16-16:40/24	08:25	15:06-15:49/43	08:58	15:15-15:39/24
	21:49		20:45		19:29		17:17		16:24		16:18	
27	05:40	20:12-21:15/63	06:35		07:31	07:57-08:17/20	07:28	16:15-16:40/25	08:27	15:05-15:47/42	08:58	15:15-15:40/25
	21:47		20:43		19:26		17:15		16:23		16:19	
28	05:42	20:11-21:13/62	06:37		07:33	07:59-08:16/17	07:29	16:16-16:41/25	08:28	15:05-15:45/40	08:58	15:16-15:41/25
	21:46		20:41		19:24		17:13		16:22		16:20	
29	05:43	20:11-21:12/61	06:38		07:34	08:01-08:15/14	07:31	16:15-16:40/25	08:30	15:05-15:45/40	08:58	15:16-15:42/26
	21:44		20:38		19:21		17:11		16:21		16:21	
30	05:45	20:11-21:10/59	06:40		07:36	08:03-08:14/11	07:33	16:15-16:37/22	08:32	15:05-15:44/39	08:58	15:17-15:43/26
	21:42		20:36		19:19		17:09		16:20		16:22	
31	05:47	20:11-21:08/57	06:42				07:35	16:15-16:35/20			08:58	15:17-15:44/27
	21:40		20:33				17:07				16:23	
Potential sun hours	515		461		382		328		257		231	
Sum of minutes with flicker	2043		638		632		250		829		859	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker



### SHADOW - Calendar per WTG

Calculation: Tirawley Shadow Flicker Real Case WTG: 2 - AT02  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January	February	March	April	May	June
1	08:58 16:24	08:27 15:58-16:43/45 17:16	07:29 17:00-17:38/38 18:13	07:13 20:12	06:02 21:09	05:12 22:00
2	08:58 16:25	08:25 15:58-16:46/48 17:18	07:26 16:59-17:37/38 18:15	07:10 20:14	06:00 21:11	05:11 22:01
3	08:58 16:26	08:24 15:58-16:48/50 17:20	07:24 16:59-17:37/38 18:17	07:08 20:16	05:58 21:12	05:10 22:02
4	08:58 16:28	08:22 15:58-16:48/50 17:22	07:22 16:59-17:36/37 18:19	07:05 20:18	05:56 21:14	05:09 22:03
5	08:57 16:29	08:20 15:57-16:48/51 17:24	07:19 16:59-17:36/37 18:21	07:03 20:20	05:54 21:16	05:08 22:04
6	08:57 16:30	08:18 15:57-16:48/51 17:26	07:17 16:59-17:35/36 18:23	07:00 20:22	05:52 21:18	05:08 22:06
7	08:56 16:32	08:16 15:57-16:48/51 17:28	07:14 17:00-17:34/34 18:25	06:58 20:24	05:50 21:20	05:07 22:07
8	08:56 16:33	08:14 15:57-16:46/49 17:30	07:12 17:00-17:33/33 18:27	06:55 20:26	05:48 21:22	05:06 22:07
9	08:55 16:34	08:12 15:57-16:46/49 17:32	07:10 17:02-17:32/30 18:29	06:53 20:27	05:46 21:23	05:06 22:08
10	08:55 16:36	08:10 15:57-16:45/48 17:35	07:07 17:03-17:30/27 18:31	06:50 20:29	05:44 21:25	05:05 22:09
11	08:54 16:38	08:08 15:58-16:44/46 17:37	07:05 17:05-17:28/23 18:32	06:48 20:31	05:42 21:27	05:05 22:10
12	08:53 16:39	08:06 15:58-16:43/45 17:39	07:02 17:06-17:25/19 18:34	06:46 20:33	05:41 21:29	05:04 22:11
13	08:52 16:41	08:04 15:59-16:43/44 17:41	07:00 17:10-17:22/12 18:36	06:43 20:35	05:39 21:31	05:04 22:12
14	08:51 16:42	08:02 15:59-16:43/44 17:43	06:57 18:38	06:41 20:37	05:37 21:32	05:04 22:12
15	08:50 16:44	08:00 17:11-17:15/4 17:45	06:55 18:40	06:38 20:39	05:35 21:34	05:03 22:13
16	08:49 16:46	07:58 17:10-17:17/7 17:47	06:52 18:42	06:36 20:41	05:34 21:36	05:03 22:13
17	08:48 16:48	07:56 17:10-17:20/10 17:49	06:50 18:44	06:34 20:43	05:32 21:37	05:03 22:14
18	08:47 16:49	07:54 17:10-17:22/12 17:51	06:47 18:46	06:31 20:44	05:30 21:39	05:03 22:14
19	08:46 16:10-16:16/6 16:51	07:51 17:08-17:24/16 17:53	06:45 18:48	06:29 20:46	05:29 21:41	05:03 22:15
20	08:45 16:08-16:18/10 16:53	07:49 17:06-17:26/20 17:55	06:42 18:50	06:27 20:48	05:27 21:42	05:03 22:15
21	08:44 16:06-16:20/14 16:55	07:47 17:05-17:29/24 17:57	06:40 18:52	06:24 20:50	05:26 21:44	05:03 22:15
22	08:42 16:05-16:22/17 16:57	07:45 17:03-17:30/27 17:59	06:37 18:53	06:22 20:52	05:24 21:46	05:04 22:16
23	08:41 16:03-16:24/21 16:59	07:43 17:03-17:33/30 18:01	06:35 18:55	06:20 20:54	05:23 21:47	05:04 22:16
24	08:40 16:03-16:27/24 17:00	07:40 17:02-17:35/33 18:03	06:32 18:57	06:18 20:56	05:21 21:49	05:04 22:16
25	08:38 16:02-16:28/26 17:02	07:38 17:01-17:37/36 18:05	06:30 18:59	06:15 20:58	05:20 21:50	05:04 22:16
26	08:37 16:01-16:30/29 17:04	07:36 17:00-17:37/37 18:07	06:27 19:01	06:13 20:59	05:19 21:52	05:05 22:16
27	08:35 16:01-16:33/32 17:06	07:33 16:59-17:37/38 18:09	06:25 19:03	06:11 21:01	05:17 21:53	05:05 22:16
28	08:34 16:00-16:35/35 17:08	07:31 16:59-17:38/39 18:11	06:22 19:05	06:09 21:03	05:16 21:54	05:06 22:16
29	08:32 15:59-16:37/38 17:10		07:20 20:07	06:07 21:05	05:15 21:56	05:06 22:15
30	08:30 15:59-16:39/40 17:12		07:18 20:09	06:04 21:07	05:14 21:57	05:07 22:15
31	08:29 15:58-16:41/43 17:14		07:15 20:10		05:13 21:58	
Potential sun hours	248	272	367	421	496	513
Sum of minutes with flicker	335	1313	402	0	0	0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker

### SHADOW - Calendar per WTG

Calculation: Tirawley Shadow Flicker Real Case WTG: 2 - AT02  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	July	August	September	October	November	December
1	05:08 22:15	05:48 21:39	06:44 20:31	07:38 19:16	17:48-18:04/16 17:05	07:37 16:19
2	05:08 22:14	05:50 21:37	06:46 20:28	07:40 19:14	17:44-18:05/21 17:03	07:39 16:19
3	05:09 22:14	05:52 21:35	06:47 20:26	07:42 19:11	17:41-18:07/26 17:01	07:41 16:18
4	05:10 22:13	05:54 21:33	06:49 20:24	07:44 19:09	17:40-18:08/28 16:59	07:43 16:17
5	05:11 22:13	05:55 21:31	06:51 20:21	07:45 19:06	17:38-18:09/31 16:57	07:45 16:17
6	05:12 22:12	05:57 21:29	06:53 20:19	07:47 19:04	17:37-18:10/33 16:55	07:47 16:16
7	05:13 22:11	05:59 21:27	06:55 20:16	07:49 19:01	17:36-18:11/35 16:53	07:49 16:15
8	05:14 22:11	06:01 21:25	06:56 20:14	07:51 18:59	17:35-18:11/36 16:51	07:51 16:15
9	05:15 22:10	06:02 21:23	06:58 20:11	07:53 18:57	17:34-18:11/37 16:49	07:53 16:15
10	05:16 22:09	06:04 21:21	07:00 20:09	07:55 18:54	17:34-18:11/37 16:47	07:55 16:14
11	05:17 22:08	06:06 21:19	07:02 20:06	07:57 18:52	17:33-18:11/38 16:46	07:57 16:14
12	05:19 22:07	06:08 21:17	07:04 20:04	07:59 18:49	17:33-18:11/38 16:44	07:59 16:14
13	05:20 22:06	06:10 21:15	07:05 20:01	08:00 18:47	17:33-18:11/38 16:42	08:01 16:14
14	05:21 22:05	06:11 21:13	07:07 19:59	08:02 18:45	17:33-18:11/38 16:41	08:03 16:14
15	05:22 22:04	06:13 21:10	07:09 19:56	08:04 18:42	17:33-18:10/37 16:39	08:05 16:14
16	05:24 22:03	06:15 21:08	07:11 19:54	08:06 18:40	17:33-18:09/36 16:37	08:07 16:14
17	05:25 22:02	06:17 21:06	07:13 19:51	08:08 18:38	17:33-18:08/35 16:36	08:09 16:14
18	05:26 22:00	06:19 21:04	07:14 19:49	08:10 18:35	17:34-18:05/31 16:34	08:11 16:14
19	05:28 21:59	06:20 21:01	07:16 19:46	08:12 18:33	17:34-18:03/29 16:33	08:12 16:14
20	05:29 21:58	06:22 20:59	07:18 19:44	08:14 18:31	17:35-18:01/26 16:32	08:14 16:15
21	05:31 21:56	06:24 20:57	07:20 19:41	08:16 18:28	17:36-17:58/22 16:30	08:16 16:15
22	05:32 21:55	06:26 20:55	07:22 19:39	08:18 18:26	17:37-17:56/19 16:29	08:18 16:16
23	05:34 21:54	06:28 20:52	07:23 19:36	08:20 18:24	17:39-17:53/14 16:28	08:20 16:16
24	05:35 21:52	06:29 20:50	07:25 19:34	08:22 18:22	17:40-17:51/11 16:26	08:22 16:17
25	05:37 21:50	06:31 20:48	07:27 19:31	07:24 17:19	16:40-16:48/8 15:30-16:10/40	08:23 16:25
26	05:39 21:49	06:33 20:45	07:29 19:29	07:26 17:17	16:40-16:46/6 15:29-16:11/42	08:25 16:24
27	05:40 21:47	06:35 20:43	07:31 19:26	07:28 17:15	16:41-16:44/3 15:29-16:11/42	08:27 16:23
28	05:42 21:46	06:37 20:41	07:33 19:24	07:29 17:13	15:29-16:13/44 16:22	08:28 16:20
29	05:43 21:44	06:38 20:38	07:34 19:21	07:31 17:11	15:28-16:13/45 16:21	08:30 16:21
30	05:45 21:42	06:40 20:36	07:36 19:19	07:33 17:09	15:28-16:13/45 16:20	08:32 16:22
31	05:47 21:40	06:42 20:33		07:35 17:07	15:27-16:14/47	08:58 16:23
Potential sun hours	515	461	382	328	257	231
Sum of minutes with flicker	0	0	8	1230	830	20

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker

## SHADOW - Calendar per WTG

Calculation: Tirawley Shadow Flicker Real Case WTG: 3 - AT03  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January	February	March	April	May	June
1	08:58 09:44-10:01/17 15:04-15:26/22 16:24 15:32-15:45/13	08:27 15:44-16:05/21 17:16 16:33-16:43/10	07:29 17:13-17:38/25 18:13	07:13 19:02-19:37/35 20:12 18:32-18:53/21	06:02 21:09	05:12 22:00
2	08:58 09:45-10:01/16 15:05-15:27/22 16:25 15:33-15:47/14	08:25 15:47-16:04/17 17:18 16:34-16:46/12	07:26 17:13-17:37/24 18:15	07:10 19:02-19:37/35 20:14 18:36-18:50/14	06:00 21:11	05:11 22:01
3	08:58 09:46-10:01/15 15:05-15:26/21 16:26 15:32-15:48/16	08:24 15:50-16:01/11 17:20 16:35-16:49/14	07:24 17:14-17:36/22 18:17	07:08 19:03-19:37/34 20:16	05:58 21:12	05:10 22:02
4	08:58 09:47-10:01/14 15:06-15:27/21 16:28 15:33-15:50/17	08:22 16:36-16:50/14 17:22	07:22 17:14-17:34/20 18:19	07:05 19:02-19:35/33 20:18	05:56 21:14	05:09 22:03
5	08:57 09:48-10:00/12 15:07-15:27/20 16:29 15:32-15:51/19	08:20 16:37-16:49/12 17:24	07:19 17:16-17:33/17 18:21	07:03 19:03-19:35/32 20:20	05:54 21:16	05:08 22:04
6	08:57 09:50-10:00/10 15:08-15:27/19 16:30 15:33-15:53/20	08:18 16:38-16:48/10 17:26	07:17 17:17-17:31/14 18:23 17:43-17:55/12	07:00 19:03-19:33/30 20:22	05:52 21:18	05:08 22:06
7	08:56 09:51-09:59/8 15:09-15:27/18 16:32 15:33-15:54/21	08:16 16:41-16:46/5 17:28	07:14 17:21-17:27/6 18:25 17:40-17:58/18	06:58 19:04-19:32/28 20:24	05:50 21:20	05:07 22:07
8	08:56 09:54-09:57/3 15:10-15:26/16 16:33 15:33-15:55/22	08:14 17:30	07:12 17:36-17:59/23 18:27	06:55 19:04-19:30/26 20:26	05:48 21:22	05:06 22:08
9	08:55 15:33-15:57/24 16:34 15:11-15:26/15	08:12 17:32	07:10 17:35-18:02/27 18:29	06:53 19:06-19:29/23 20:27	05:46 21:23	05:06 22:08
10	08:55 15:34-15:59/25 16:36 15:13-15:26/13	08:10 17:35	07:07 17:32-18:03/31 18:31	06:50 19:08-19:27/19 20:29	05:44 21:25	05:05 22:09
11	08:54 15:34-16:01/27 16:38 15:15-15:25/10	08:08 17:37	07:05 17:31-18:05/34 18:32	06:48 19:10-19:24/14 20:31	05:42 21:27	05:05 22:10
12	08:53 15:34-16:03/29 16:39 15:17-15:23/6	08:06 17:39	07:02 17:29-18:07/38 18:34	06:46 20:33	05:41 21:29	05:04 22:11
13	08:52 15:34-16:05/31 16:41	08:04 17:41	07:00 17:29-18:08/39 18:36	06:43 20:35	05:39 21:31	05:04 22:12
14	08:51 15:33-16:05/32 16:42	08:02 17:43	06:57 17:27-18:08/41 18:38	06:41 20:37	05:37 21:32	05:04 22:12
15	08:50 15:33-16:06/33 16:44	08:00 17:45	06:55 17:27-18:09/42 18:40	06:38 20:39	05:35 21:34	05:03 22:13
16	08:49 15:34-16:07/33 16:46	07:58 17:47	06:52 17:26-18:09/43 18:42	06:36 20:41	05:34 21:36	05:03 22:13
17	08:48 15:34-16:08/34 16:48	07:56 17:49	06:50 17:25-18:10/45 18:44	06:34 20:43	05:32 21:37	05:03 22:14
18	08:47 15:34-16:08/34 16:49	07:54 17:51	06:47 17:24-18:09/45 18:46	06:31 20:44	05:30 21:39	05:03 22:14
19	08:46 15:35-16:08/33 16:51	07:51 17:22-17:24/2 17:53	06:45 17:25-18:09/44 18:48	06:29 20:46	05:29 21:41	05:03 22:15
20	08:45 15:35-16:09/34 16:53	07:49 17:19-17:26/7 17:55	06:42 17:24-18:09/45 18:50	06:27 20:48	05:27 21:42	05:03 22:15
21	08:44 15:35-16:09/34 16:55	07:47 17:18-17:29/11 17:57	06:40 18:18-18:25/7 18:52 17:24-18:09/45	06:24 20:50	05:26 21:44	05:03 22:15
22	08:42 15:36-16:09/33 16:57	07:45 17:16-17:30/14 17:59	06:37 18:14-18:26/12 18:53 17:24-18:08/44	06:22 20:52	05:24 21:46	05:04 22:16
23	08:41 15:36-16:09/33 16:59	07:43 17:15-17:33/18 18:01	06:35 18:12-18:29/17 18:55 17:24-18:08/44	06:20 20:54	05:23 21:47	05:04 22:16
24	08:40 15:37-16:10/33 17:00	07:40 17:14-17:35/21 18:03	06:32 18:09-18:30/21 18:57 17:24-18:06/42	06:18 20:56	05:21 21:49	05:04 22:16
25	08:38 15:37-16:09/32 17:02	07:38 17:13-17:37/24 18:05	06:30 18:08-18:32/24 18:59 17:25-18:06/41	06:15 20:58	05:20 21:50	05:04 22:16
26	08:37 15:38-16:09/31 17:04	07:36 17:13-17:38/25 18:07	06:27 18:06-18:34/28 19:01 17:25-18:04/39	06:13 20:59	05:19 21:52	05:05 22:16
27	08:35 15:39-16:09/30 17:06	07:33 17:12-17:38/26 18:09	06:25 18:06-18:36/30 19:03 17:26-18:04/38	06:11 21:01	05:17 21:53	05:05 22:16
28	08:34 15:40-16:09/29 17:08 16:34-16:35/1	07:31 17:13-17:38/25 18:11	06:22 18:04-18:37/33 19:05 17:26-18:02/36	06:09 21:03	05:16 21:54	05:06 22:16
29	08:32 15:41-16:08/27 17:10 16:34-16:37/3		07:20 19:04-19:38/34 20:07 18:28-19:01/33	06:07 21:05	05:15 21:56	05:06 22:15
30	08:31 15:42-16:07/25 17:12 16:33-16:39/6		07:18 19:03-19:37/34 20:09 18:28-18:58/30	06:04 21:07	05:14 21:57	05:07 22:15
31	08:29 15:43-16:06/23 17:14 16:33-16:41/8		07:15 19:03-19:38/35 20:10 18:31-18:57/26		05:13 21:58	
Potential sun hours	248	272	367	421	496	513
Sum of minutes with flicker	1157	299	1348	344	0	0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker

### SHADOW - Calendar per WTG

Calculation: Tirawley Shadow Flicker Real Case WTG: 3 - AT03  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	July	August	September	October	November	December
1	05:08 22:15	05:48 21:39	06:44 20:31	19:09-19:23/14 19:16	07:38 17:05	18:09-18:48/39 16:19 14:57-15:07/10
2	05:08 22:14	05:50 21:37	06:46 20:28	19:06-19:25/19 19:14	07:40 17:03	18:10-18:45/35 16:19 14:55-15:08/13
3	05:09 22:14	05:52 21:35	06:47 20:26	19:04-19:27/23 19:11	07:42 17:01	18:10-18:42/32 16:18 14:55-15:10/15
4	05:10 22:13	05:54 21:33	06:49 20:24	19:02-19:28/26 19:09	07:43 16:59	16:10-16:16/6 16:17 15:18-15:40/22
5	05:11 22:13	05:55 21:31	06:51 20:21	19:00-19:28/28 19:06	07:45 16:57	16:08-16:18/10 16:17 15:18-15:39/21
6	05:12 22:12	05:57 21:29	06:53 20:19	18:59-19:29/30 19:04	07:47 16:55	18:14-18:35/21 16:16 15:19-15:39/20
7	05:13 22:11	05:59 21:27	06:55 20:16	18:58-19:30/32 19:01	07:49 16:53	17:55-18:05/10 16:15 15:20-15:38/18
8	05:14 22:11	06:01 21:25	06:56 20:14	18:57-19:30/33 18:59	07:51 16:51	17:52-18:08/16 16:05-16:18/13
9	05:15 22:10	06:02 21:23	06:58 20:11	18:56-19:30/34 18:57	07:53 16:49	17:50-18:09/19 16:04-16:16/12
10	05:16 22:09	06:04 21:21	07:00 20:09	18:55-19:30/35 18:54	07:55 16:47	17:49-18:10/21 16:05-16:15/10
11	05:17 22:08	06:06 21:19	07:02 20:06	18:55-19:30/35 18:52	07:57 16:46	17:48-18:11/23 16:05-16:13/8
12	05:18 22:07	06:08 21:17	07:04 20:04	18:54-19:29/35 18:49	07:59 16:44	17:47-18:11/24 16:05-16:11/6
13	05:20 22:06	06:10 21:15	07:05 20:01	18:54-19:29/35 18:47	08:00 16:42	17:46-18:11/25 16:05-16:09/4
14	05:21 22:05	06:11 21:13	07:07 19:59	18:54-19:28/34 18:45	08:02 16:41	17:46-18:11/25 16:06-16:07/1
15	05:22 22:04	06:13 21:10	07:09 19:56	18:54-19:28/34 18:42	08:04 16:39	17:45-18:11/26 15:11-15:41/30
16	05:24 22:03	06:15 21:08	07:11 19:54	18:54-19:25/31 18:40	08:06 16:37	17:45-18:10/25 15:10-15:42/32
17	05:25 22:02	06:17 21:06	07:13 19:51	18:55-19:23/28 18:38	08:08 16:36	17:46-18:08/22 15:11-15:44/33
18	05:26 22:00	06:19 21:04	07:14 19:49	18:55-19:20/25 18:35	08:10 16:34	17:46-18:05/19 15:11-15:44/33
19	05:28 21:59	06:20 21:01	07:16 19:46	18:56-19:18/22 18:33	08:12 16:33	17:47-18:03/16 15:11-15:44/33
20	05:29 21:58	06:22 20:59	07:18 19:44	18:58-19:16/18 18:31	08:14 16:32	17:47-18:01/14 15:11-15:44/33
21	05:31 21:56	06:24 20:57	07:20 19:41	18:59-19:12/13 18:28	08:16 16:30	17:49-17:58/9 15:11-15:45/34
22	05:32 21:55	06:26 20:55	07:22 19:39	19:01-19:10/9 18:26	08:18 16:29	17:50-17:56/6 15:11-15:45/34
23	05:34 21:54	06:28 20:52	07:23 19:36	18:08-18:53/45 18:24	08:20 16:28	15:12-15:45/33 15:12-15:46/34
24	05:35 21:52	06:29 20:50	07:25 19:34	18:08-18:53/45 18:22	08:22 16:26	15:12-15:46/34 15:12-15:46/34
25	05:37 21:50	06:31 20:48	07:27 19:31	18:08-18:53/45 17:19	08:23 16:25	15:12-15:46/34 15:13-15:46/33
26	05:39 21:49	06:33 20:45	07:29 19:29	18:07-18:51/44 17:17	08:25 16:24	15:13-15:46/33 15:13-15:45/32
27	05:40 21:47	06:35 20:43	07:31 19:26	18:07-18:51/44 17:15	08:27 16:23	15:13-15:45/32 15:13-15:46/33
28	05:42 21:46	06:37 20:41	07:33 19:24	18:07-18:50/43 17:13	08:28 16:22	15:13-15:46/33 15:14-15:45/31
29	05:43 21:44	06:38 20:38	07:34 19:21	18:08-18:50/42 17:11	08:30 16:21	15:14-15:45/31 15:15-15:44/29
30	05:45 21:42	06:40 20:36	07:36 19:19	18:08-18:49/41 17:09	08:32 16:20	15:15-15:44/29 14:59-15:04/5
31	05:47 21:40	06:42 20:33		17:07		
Potential sun hours	515	461	382	328	257	231
Sum of minutes with flicker	0	0	1391	504	777	1554

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker



### SHADOW - Calendar per WTG

Calculation: Tirawley Shadow Flicker Real Case WTG: 4 - AT04  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June
1	08:58 16:24	08:27 09:04-09:27/23 17:16 15:53-16:23/30	07:29 16:41-17:21/40 18:13	07:13 19:04-19:23/19 20:12	06:02 20:01-20:38/37 21:09	05:12 20:05-20:39/34 22:00
2	08:58 16:25	08:25 09:04-09:26/22 17:18 15:54-16:22/28	07:26 16:41-17:19/38 18:15	07:10 19:06-19:21/15 20:14	06:00 20:00-20:40/40 21:11	05:11 20:05-20:38/33 22:01
3	08:58 16:26	08:24 09:06-09:25/19 17:20 15:55-16:21/26	07:24 16:42-17:18/36 18:17	07:08 19:09-19:18/9 20:16	05:58 19:59-20:41/42 21:13	05:10 20:07-20:39/32 22:02
4	08:58 16:28	08:22 09:07-09:23/16 17:22 15:56-16:21/25	07:22 16:42-17:17/35 18:19	07:05 20:18	05:56 19:59-20:44/45 21:14	05:09 20:07-20:38/31 22:03
5	08:57 16:29	08:20 09:10-09:21/11 17:24 15:58-16:19/21	07:19 16:44-17:16/32 18:21	07:03 20:20	05:54 19:59-20:46/47 21:16	05:08 20:08-20:37/29 22:04
6	08:57 16:30	08:18 16:52-16:55/3 17:26 16:00-16:18/18	07:17 16:45-17:13/28 18:23	07:00 20:22	05:52 19:58-20:47/49 21:18	05:08 20:09-20:37/28 22:06
7	08:56 15:52-15:54/2 16:32	08:16 16:49-16:58/9 17:28 16:02-16:16/14	07:14 16:47-17:12/25 18:25	06:58 20:24	05:50 19:57-20:49/52 21:20	05:07 20:10-20:36/26 22:07
8	08:56 15:51-15:55/4 16:33	08:14 16:46-17:00/14 17:30 16:07-16:11/4	07:12 16:49-17:09/20 18:27	06:55 20:26	05:48 19:57-20:49/52 21:22	05:06 20:11-20:37/26 22:08
9	08:55 15:51-15:57/6 16:34	08:12 16:44-17:01/17 17:32	07:10 16:53-17:05/12 18:29	06:53 20:27	05:46 19:56-20:49/53 21:23	05:06 20:11-20:36/25 22:08
10	08:55 15:51-15:59/8 16:36	08:10 16:43-17:04/21 17:34	07:07 18:31	06:50 20:29	05:44 19:57-20:50/53 21:25	05:05 20:12-20:36/24 22:09
11	08:54 15:51-16:01/10 16:37	08:08 16:42-17:06/24 17:37	07:05 18:32	06:48 20:31	05:42 19:57-20:49/52 21:27	05:05 20:12-20:35/23 22:10
12	08:53 15:50-16:03/13 16:39	08:06 16:41-17:08/27 17:39	07:02 18:34	06:46 20:33	05:41 19:56-20:49/53 21:29	05:04 20:13-20:35/22 22:11
13	08:52 15:50-16:04/14 16:41	08:04 16:40-17:11/31 17:41	07:00 18:36	06:43 20:35	05:39 19:57-20:49/52 21:31	05:04 20:14-20:35/21 22:12
14	08:51 15:49-16:05/16 16:42	08:02 16:40-17:13/33 17:43	06:57 18:38	06:41 20:37	05:37 19:56-20:49/53 21:32	05:04 20:15-20:34/19 22:12
15	08:50 15:49-16:07/18 16:44	08:00 16:38-17:15/37 17:45	06:55 18:40	06:38 20:39	05:35 19:56-20:48/52 21:34	05:03 20:15-20:33/18 22:13
16	08:49 09:21-09:22/1 16:46 15:49-16:10/21	07:58 16:38-17:17/39 17:47	06:52 18:14-18:15/1 18:42	06:36 20:41	05:34 19:57-20:48/51 21:36	05:03 20:16-20:33/17 22:13
17	08:48 09:20-09:23/3 16:47 15:49-16:12/23	07:56 16:38-17:20/42 17:49	06:50 18:13-18:17/4 18:44	06:34 20:43	05:32 19:56-20:48/52 21:37	05:03 20:16-20:33/17 22:14
18	08:47 09:19-09:24/5 16:49 15:50-16:14/24	07:54 16:38-17:22/44 17:51	06:47 18:11-18:19/8 18:46	06:31 20:44	05:30 19:57-20:48/51 21:39	05:03 20:17-20:33/16 22:14
19	08:46 09:17-09:25/8 16:51 15:49-16:16/27	07:51 16:37-17:24/47 17:53	06:45 18:09-18:21/12 18:48	06:29 20:46	05:29 19:58-20:48/50 21:41	05:03 20:17-20:33/16 22:15
20	08:45 09:16-09:26/10 16:53 15:49-16:18/29	07:49 16:37-17:26/49 17:55	06:42 18:07-18:22/15 18:50	06:27 20:48	05:27 19:58-20:47/49 21:42	05:03 20:19-20:34/15 22:15
21	08:44 09:14-09:26/12 16:55 15:49-16:20/31	07:47 16:37-17:25/48 17:57	06:40 18:06-18:25/19 18:52	06:24 20:50	05:26 19:58-20:46/48 21:44	05:03 20:19-20:34/15 22:15
22	08:42 09:13-09:27/14 16:57 15:49-16:22/33	07:45 16:37-17:23/46 17:59	06:37 18:04-18:26/22 18:53	06:22 20:52	05:24 19:59-20:46/47 21:46	05:03 20:19-20:34/15 22:16
23	08:41 09:11-09:27/16 16:58 15:49-16:22/33	07:43 16:37-17:23/46 18:01	06:35 18:04-18:29/25 18:55	06:20 20:21-20:23/2 20:54	05:23 19:59-20:45/46 21:47	05:04 20:18-20:34/16 22:16
24	08:40 09:10-09:28/18 17:00 15:50-16:23/33	07:40 16:38-17:23/45 18:03	06:32 18:02-18:30/28 18:57	06:18 20:14-20:26/12 20:56	05:21 20:00-20:45/45 21:49	05:04 20:19-20:35/16 22:16
25	08:38 09:08-09:28/20 17:02 15:50-16:23/33	07:38 16:38-17:22/44 18:05	06:30 18:02-18:30/28 18:59	06:15 20:11-20:28/17 20:58	05:20 20:00-20:44/44 21:50	05:04 20:19-20:35/16 22:16
26	08:37 09:06-09:27/21 17:04 15:49-16:23/34	07:36 16:39-17:22/43 18:07	06:27 18:02-18:29/27 19:01	06:13 20:09-20:30/21 20:59	05:19 20:01-20:43/42 21:52	05:05 20:18-20:35/17 22:16
27	08:35 09:05-09:28/23 17:06 15:50-16:24/34	07:33 16:39-17:21/42 18:09	06:25 18:02-18:29/27 19:03	06:11 20:07-20:32/25 21:01	05:17 20:02-20:43/41 21:53	05:05 20:18-20:36/18 22:16
28	08:34 09:03-09:28/25 17:08 15:51-16:23/32	07:31 16:40-17:21/41 18:11	06:22 18:01-18:28/27 19:05	06:09 20:05-20:33/28 21:03	05:16 20:02-20:42/40 21:54	05:06 20:19-20:37/18 22:16
29	08:32 09:01-09:28/27 17:10 15:51-16:23/32		07:20 19:02-19:28/26 20:07	06:07 20:03-20:35/32 21:05	05:15 20:03-20:41/38 21:56	05:06 20:18-20:37/19 22:15
30	08:31 09:01-09:27/26 17:12 15:51-16:23/32		07:18 19:02-19:26/24 20:09	06:04 20:02-20:36/34 21:07	05:14 20:04-20:40/36 21:57	05:07 20:18-20:39/21 22:15
31	08:29 09:02-09:27/25 17:14 15:52-16:22/30		07:15 19:03-19:25/22 20:11		05:13 20:04-20:39/35 21:59	
Potential sun hours	248	272	367	421	496	513
Sum of minutes with flicker	826	1049	581	214	1447	643

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker

## SHADOW - Calendar per WTG

Calculation: Tirawley Shadow Flicker Real Case WTG: 4 - AT04  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	July		August		September		October		November		December		
1	05:08	20:17-20:39/22	05:48	20:06-20:59/53	06:44		07:38		07:37	16:12-16:33/21	08:33	15:33-15:43/10	
	22:15		21:39		20:31		19:16		17:05		16:19		
2	05:08	20:17-20:40/23	05:50	20:07-21:00/53	06:46		07:40		07:39	16:14-16:31/17	08:35	15:33-15:41/8	
	22:14		21:37		20:28		19:14		17:03		16:19		
3	05:09	20:17-20:41/24	05:52	20:07-21:00/53	06:47		07:42		07:41	16:15-16:28/13	08:36	15:35-15:41/6	
	22:14		21:35		20:26		19:11		17:01	15:35-15:41/6	16:18		
4	05:10	20:16-20:42/26	05:54	20:07-20:59/52	06:49		07:44	17:34-17:39/5	07:43	16:19-16:27/8	08:38	15:36-15:40/4	
	22:13		21:33		20:24		19:09		16:59	15:32-15:46/14	16:17		
5	05:11	20:16-20:42/26	05:55	20:07-20:59/52	06:51		07:45	17:28-17:44/16	07:45	08:43-08:47/4	15:29-15:48/19	08:39	15:37-15:39/2
	22:13		21:31		20:21		19:06		16:57	16:22-16:25/3	16:17		
6	05:12	20:15-20:42/27	05:57	20:07-20:57/50	06:53		07:47	17:24-17:47/23	07:47	08:39-08:51/12	08:41		
	22:12		21:29		20:19		19:04		16:55	15:27-15:49/22	16:16		
7	05:13	20:15-20:43/28	05:59	20:08-20:56/48	06:55		07:49	17:22-17:49/27	07:49	08:37-08:53/16	08:42		
	22:12		21:27		20:16		19:01		16:53	15:26-15:50/24	16:15		
8	05:14	20:14-20:44/30	06:01	20:08-20:54/46	06:56		07:51	17:20-17:50/30	07:51	08:35-08:55/20	08:43		
	22:11		21:25		20:14		18:59		16:51	15:25-15:51/26	16:15		
9	05:15	20:14-20:45/31	06:02	20:08-20:52/44	06:58	19:03-19:11/8	07:53	17:18-17:51/33	07:53	08:35-08:57/22	08:45		
	22:10		21:23		20:11		18:57		16:49	15:24-15:52/28	16:15		
10	05:16	20:13-20:45/32	06:04	20:09-20:50/41	07:00	19:00-19:14/14	07:55	17:17-17:52/35	07:55	08:34-08:58/24	08:46		
	22:09		21:21		20:09		18:54		16:47	15:24-15:54/30	16:14		
11	05:17	20:13-20:46/33	06:06	20:10-20:49/39	07:02	18:57-19:16/19	07:57	17:15-17:53/38	07:57	08:34-08:59/25	08:47		
	22:08		21:19		20:06		18:52		16:46	15:24-15:54/30	16:14		
12	05:18	20:13-20:48/35	06:08	20:10-20:46/36	07:04	18:55-19:16/21	07:59	17:14-17:53/39	07:59	08:33-08:59/26	08:48		
	22:07		21:17		20:04		18:49		16:44	15:23-15:55/32	16:14		
13	05:20	20:12-20:48/36	06:10	20:11-20:44/33	07:05	18:54-19:17/23	08:00	17:13-17:54/41	08:01	08:33-09:00/27	08:49		
	22:06		21:15		20:01		18:47		16:42	15:23-15:55/32	16:14		
14	05:21	20:12-20:48/36	06:11	20:12-20:43/31	07:07	18:53-19:18/25	08:02	17:13-17:54/41	08:03	08:35-09:00/25	08:50		
	22:05		21:13		19:59		18:45		16:41	15:23-15:55/32	16:14		
15	05:22	20:11-20:50/39	06:13	20:12-20:40/28	07:09	18:52-19:18/26	08:04	17:11-17:54/43	08:05	08:37-09:00/23	08:51		
	22:04		21:10		19:56		18:42		16:39	15:22-15:55/33	16:14		
16	05:24	20:10-20:51/41	06:15	20:14-20:38/24	07:11	18:50-19:18/28	08:06	17:10-17:54/44	08:07	08:39-09:00/21	08:52		
	22:03		21:08		19:54		18:40		16:37	15:22-15:56/34	16:14		
17	05:25	20:11-20:53/42	06:17	20:16-20:36/20	07:13	18:50-19:18/28	08:08	17:10-17:54/44	08:09	08:42-09:02/20	08:53		
	22:02		21:06		19:51		18:38		16:36	15:22-15:56/34	16:14		
18	05:26	20:10-20:53/43	06:19	20:17-20:34/17	07:14	18:50-19:17/27	08:10	17:09-17:54/45	08:11	08:44-09:02/18	08:54		
	22:00		21:04		19:49		18:35		16:34	15:24-15:57/33	16:14		
19	05:28	20:09-20:54/45	06:20	20:21-20:32/11	07:16	18:50-19:17/27	08:12	17:08-17:54/46	08:12	08:46-09:02/16	08:54		
	21:59		21:01		19:46		18:33		16:33	15:24-15:57/33	16:14		
20	05:29	20:10-20:55/45	06:22		07:18	18:50-19:16/26	08:14	17:08-17:55/47	08:14	08:48-09:02/14	08:55		
	21:58		20:59		19:44		18:31		16:32	15:24-15:57/33	16:15		
21	05:31	20:09-20:56/47	06:24		07:20	18:49-19:12/23	08:16	17:07-17:56/49	08:16	08:50-09:02/12	08:56		
	21:56		20:57		19:41		18:28		16:30	15:25-15:56/31	16:15		
22	05:32	20:08-20:56/48	06:26		07:22	18:50-19:10/20	08:18	17:07-17:56/49	08:18	08:52-09:02/10	08:56		
	21:55		20:55		19:39		18:26		16:29	15:25-15:54/29	16:16		
23	05:34	20:09-20:57/48	06:28		07:23	18:51-19:08/17	08:20	17:07-17:53/46	08:20	08:54-09:02/8	08:57		
	21:54		20:52		19:36		18:24		16:28	15:26-15:53/27	16:16		
24	05:35	20:08-20:57/49	06:29		07:25	18:52-19:05/13	08:22	17:07-17:51/44	08:22	08:56-09:02/6	08:57		
	21:52		20:50		19:34		18:22		16:26	15:27-15:51/24	16:17		
25	05:37	20:08-20:58/50	06:31		07:27	18:54-19:03/9	07:24	16:07-16:48/41	08:23	08:58-09:01/3	08:58		
	21:50		20:48		19:31		17:19		16:25	15:27-15:50/23	16:17		
26	05:39	20:07-20:58/51	06:33		07:29	18:54-19:00/6	07:26	16:07-16:46/39	08:25	09:00-09:01/1	08:58		
	21:49		20:45		19:29		17:17		16:24	15:28-15:49/21	16:18		
27	05:40	20:08-20:59/51	06:35		07:31	18:55-18:57/2	07:28	16:08-16:44/36	08:27	15:28-15:47/19	08:58		
	21:47		20:43		19:26		17:15		16:23		16:19		
28	05:42	20:07-20:59/52	06:37		07:33		07:30	16:09-16:42/33	08:28	15:29-15:46/17	08:58		
	21:46		20:41		19:24		17:13		16:22		16:20		
29	05:43	20:07-21:00/53	06:38		07:34		07:31	16:10-16:40/30	08:30	15:30-15:45/15	08:58		
	21:44		20:38		19:21		17:11		16:21		16:21		
30	05:45	20:07-20:59/52	06:40		07:36		07:33	16:11-16:37/26	08:32	15:31-15:44/13	08:58		
	21:42		20:36		19:19		17:09		16:20		16:22		
31	05:47	20:07-21:00/53	06:42				07:35	16:11-16:35/24			08:58		
	21:40		20:33				17:07				16:23		
Potential sun hours	515		461		382		328		257		231		
Sum of minutes with flicker	1218		731		362		1014		1129		30		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker

## SHADOW - Calendar per WTG

Calculation: Tirawley Shadow Flicker Real Case WTG: 5 - AT05  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January	February	March	April	May	June
1	08:58 16:24	08:27 17:16	08:56-08:58/2 18:13	07:29 18:13	07:13 20:12	18:53-19:25/32 21:09
2	08:58 16:25	08:25 17:18	08:54-08:59/5 18:15	07:26 18:15	07:10 20:14	18:55-19:23/28 21:11
3	08:58 16:26	08:24 17:20	08:52-08:59/7 18:17	07:24 18:17	07:08 20:16	19:01-19:05/4 19:08-19:21/13
4	08:58 16:28	08:22 17:22	08:50-08:59/9 18:19	07:22 18:19	07:05 20:18	19:12-19:15/3 21:14
5	08:57 16:29	08:20 17:24	08:48-08:59/11 18:21	07:19 18:21	07:03 20:20	05:54 21:16
6	08:57 16:30	08:18 17:26	08:46-08:59/13 18:23	07:17 18:23	07:00 20:22	05:52 21:18
7	08:56 16:32	08:16 17:28	08:44-08:59/15 18:25	07:14 18:25	06:58 20:24	05:50 21:20
8	08:56 16:33	08:14 17:30	08:42-08:58/16 18:27	07:12 18:27	06:55 20:26	05:48 21:22
9	08:55 16:34	08:12 17:32	08:40-08:57/17 18:29	07:10 17:58-18:01/3	06:53 20:28	05:46 21:24
10	08:55 16:36	08:10 17:34	08:40-08:55/15 18:31	07:07 17:56-18:03/7	06:50 20:29	05:44 21:25
11	08:54 16:37	08:08 17:37	08:42-08:54/12 17:05-17:06/1	07:05 18:32	07:29-07:50/21 17:56-18:05/9	06:48 20:31
12	08:53 16:39	08:06 17:39	08:45-08:51/6 17:05-17:08/3	07:02 18:34	07:42-07:47/5 07:27-07:40/13	17:54-18:07/13 20:33
13	08:52 16:41	08:04 17:41	17:04-17:11/7 18:36	07:00 17:54-18:09/15	07:24-07:39/15 17:54-18:09/15	06:43 20:35
14	08:51 16:42	08:02 17:43	17:04-17:13/9 18:38	06:57 17:54-18:11/7	07:22-07:39/17 17:54-18:11/7	06:41 20:37
15	08:51 16:44	08:00 17:45	17:03-17:15/12 18:40	06:55 17:54-18:13/19	07:20-07:38/18 17:54-18:13/19	06:38 20:39
16	08:50 16:46	07:58 17:47	17:03-17:17/14 18:42	06:52 17:53-18:15/22	07:22-07:37/15 17:53-18:15/22	06:36 20:41
17	08:48 16:47	07:56 17:49	17:04-17:19/15 18:44	06:50 17:52-18:17/25	07:23-07:34/11 17:52-18:17/25	06:34 20:43
18	08:47 16:49	07:54 17:51	17:04-17:22/18 18:46	06:47 17:50-18:19/29	07:27-07:31/4 17:50-18:19/29	06:31 20:44
19	08:46 16:51	07:52 17:53	17:04-17:23/19 18:48	06:45 17:50-18:21/31	17:50-18:21/31	06:29 20:46
20	08:45 16:53	07:49 17:55	17:04-17:26/22 18:50	06:42 18:50	17:49-18:22/33	06:27 20:48
21	08:44 16:55	07:47 17:57	17:05-17:28/23 18:52	06:40 18:52	17:49-18:25/36	06:24 20:50
22	08:42 16:57	07:45 17:59	17:06-17:27/21 18:54	06:37 18:54	17:48-18:26/38	06:22 20:52
23	08:41 16:58	07:43 18:01	17:07-17:26/19 18:55	06:35 18:55	17:48-18:29/41	06:20 20:54
24	08:40 17:00	07:40 18:03	17:10-17:25/15 18:57	06:32 18:57	17:47-18:30/43	06:18 20:56
25	08:38 17:02	07:38 18:05	17:12-17:21/9 18:59	06:30 18:59	17:48-18:32/44	06:15 20:58
26	08:37 17:04	07:36 18:07	17:12-17:21/9 19:01	06:27 19:01	17:47-18:31/44	06:13 21:00
27	08:35 17:06	07:33 18:09	17:12-17:21/9 19:03	06:25 19:03	17:48-18:31/43	06:11 21:01
28	08:34 17:08	07:31 18:11	17:12-17:21/9 19:05	06:22 19:05	17:48-18:30/42	06:09 21:03
29	08:32 17:10		17:12-17:21/9 20:07	07:20 20:07	18:49-19:29/40	06:07 21:05
30	08:31 17:12		17:12-17:21/9 20:09	07:18 20:09	18:50-19:28/38	06:04 21:07
31	08:29 17:14		17:12-17:21/9 20:11	07:15 20:11	18:51-19:27/36	05:13 21:59
Potential sun hours	248	272	367	421	496	513
Sum of minutes with flicker	0	335	906	80	0	0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker

### SHADOW - Calendar per WTG

Calculation: Tirawley Shadow Flicker Real Case WTG: 5 - AT05  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	July	August	September	October	November	December	
1	05:08 22:15	05:48 21:39	06:44 20:31	07:38 19:16	08:05-08:19/14 18:34-18:48/14	07:37 17:05	08:09-08:25/16 16:19
2	05:08 22:14	05:50 21:37	06:46 20:29	07:40 19:14	08:07-08:28/21 18:34-18:45/11	07:39 17:03	08:09-08:26/17 16:19
3	05:09 22:14	05:52 21:35	06:47 20:26	07:42 19:11	08:09-08:30/21 18:34-18:42/8	07:41 17:01	08:12-08:28/16 16:18
4	05:10 22:13	05:54 21:33	06:49 20:24	07:44 19:09	08:10-08:30/20 18:35-18:40/5	07:43 16:59	08:14-08:28/14 16:17
5	05:11 22:13	05:55 21:31	06:51 20:21	07:46 19:06	08:12-08:31/19 18:36-18:37/1	07:45 16:57	08:16-08:29/13 16:16
6	05:12 22:12	05:57 21:29	06:53 20:19	07:47 19:04	08:14-08:31/17 18:37-18:38/1	07:47 16:55	08:18-08:29/11 16:16
7	05:13 22:12	05:59 21:27	06:55 20:16	07:49 19:01	08:16-08:31/15 18:38-18:39/1	07:49 16:53	08:20-08:29/9 16:15
8	05:14 22:11	06:01 21:25	06:56 20:14	07:51 18:59	08:18-08:31/13 18:40-18:41/1	07:51 16:51	08:22-08:29/7 16:15
9	05:15 22:10	06:02 21:23	06:58 20:11	07:53 18:57	08:20-08:31/11 18:42-18:43/1	07:53 16:49	08:25-08:29/4 16:15
10	05:16 22:09	06:04 21:21	07:00 20:09	07:55 18:54	08:22-08:30/8 18:44-18:45/1	07:55 16:47	08:27-08:29/2 16:14
11	05:17 22:08	06:06 21:19	07:02 20:06	07:57 18:52	08:24-08:29/5 18:46-18:47/1	07:57 16:46	08:29-08:29/1 16:14
12	05:18 22:07	06:08 21:17	07:04 20:04	07:59 18:49	08:26-08:28/2 18:48-18:49/1	07:59 16:44	08:30-08:30/1 16:14
13	05:20 22:06	06:09 21:15	07:05 20:01	08:01 18:47	08:28-08:29/1 18:50-18:51/1	08:01 16:42	08:31-08:31/1 16:14
14	05:21 22:05	06:11 21:13	07:07 19:59	08:02 18:45	08:30-08:31/1 18:52-18:53/1	08:03 16:41	08:32-08:32/1 16:14
15	05:22 22:04	06:13 21:10	07:09 19:56	08:04 18:42	08:32-08:33/1 18:54-18:55/1	08:05 16:39	08:33-08:33/1 16:14
16	05:24 22:03	06:15 21:08	07:11 19:54	08:06 18:40	08:34-08:35/1 18:56-18:57/1	08:07 16:37	08:34-08:34/1 16:14
17	05:25 22:02	06:17 21:06	07:13 19:51	08:08 18:37	08:36-08:37/1 18:58-18:59/1	08:09 16:36	08:35-08:35/1 16:14
18	05:26 22:01	06:18 21:04	07:14 19:49	08:10 18:35	08:38-08:39/1 19:00-19:01/1	08:11 16:34	08:36-08:36/1 16:14
19	05:28 21:59	06:20 21:02	07:16 19:46	08:12 18:33	08:40-08:41/1 19:02-19:03/1	08:13 16:33	08:37-08:37/1 16:14
20	05:29 21:58	06:22 20:59	07:18 19:44	08:14 18:31	08:42-08:43/1 19:04-19:05/1	08:14 16:32	08:38-08:38/1 16:15
21	05:31 21:57	06:24 20:57	07:20 19:41	08:16 18:28	08:44-08:45/1 19:06-19:07/1	08:16 16:30	08:39-08:39/1 16:15
22	05:32 21:55	06:26 20:55	07:22 19:39	08:18 18:26	08:46-08:47/1 19:08-19:09/1	08:18 16:29	08:40-08:40/1 16:16
23	05:34 21:54	06:28 20:52	07:23 19:36	08:20 18:24	08:48-08:49/1 19:10-19:11/1	08:20 16:28	08:41-08:41/1 16:16
24	05:35 21:52	06:29 20:50	07:25 19:34	08:22 18:22	08:50-08:51/1 19:12-19:13/1	08:22 16:26	08:42-08:42/1 16:17
25	05:37 21:51	06:31 20:48	07:27 19:31	08:24 17:19	08:52-08:53/1 19:14-19:15/1	08:24 16:25	08:43-08:43/1 16:17
26	05:38 21:49	06:33 20:45	07:29 19:29	08:26 17:17	08:54-08:55/1 19:16-19:17/1	08:25 16:24	08:44-08:44/1 16:18
27	05:40 21:47	06:35 20:43	07:31 19:26	08:28 17:15	08:56-08:57/1 19:18-19:19/1	08:27 16:23	08:45-08:45/1 16:19
28	05:42 21:46	06:37 20:41	07:33 19:24	08:30 17:13	08:58-08:59/1 19:20-19:21/1	08:29 16:22	08:46-08:46/1 16:20
29	05:43 21:44	06:38 20:38	07:34 19:21	08:32 17:11	09:00-09:01/1 19:22-19:23/1	08:30 16:21	08:47-08:47/1 16:21
30	05:45 21:42	06:40 20:36	07:36 19:19	08:34 17:09	09:02-09:03/1 19:24-19:25/1	08:32 16:20	08:48-08:48/1 16:22
31	05:47 21:40	06:42 20:33		08:36 17:07	09:04-09:05/1 19:26-19:27/1		08:50-08:50/1 16:23
Potential sun hours	515	461	382	328	257	231	
Sum of minutes with flicker	0	0	790	431	109	0	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker

## SHADOW - Calendar per WTG

Calculation: Tirawley Shadow Flicker Real Case WTG: 6 - AT06  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June
1	08:58 16:24	08:27 17:16	07:29 07:54-08:22/28 18:13	07:13 20:12	06:02 21:09	05:12 21:04-21:25/21 22:00
2	08:58 16:25	08:25 17:18	07:26 07:51-08:20/29 18:15	07:10 20:14	06:00 21:11	05:11 21:03-21:26/23 22:01
3	08:58 16:26	08:24 17:20	07:24 07:49-08:19/30 18:17	07:08 20:16	05:58 21:13	05:10 21:03-21:26/23 22:02
4	08:58 16:28	08:22 17:22	07:22 07:46-08:17/31 18:19	07:05 20:18	05:56 21:14	05:09 21:03-21:28/25 22:03
5	08:57 16:29	08:20 17:24	07:19 07:44-08:14/30 18:21	07:03 20:20	05:54 21:16	05:08 21:02-21:29/27 22:05
6	08:57 16:30	08:18 17:26	07:17 07:42-08:05/23 18:23	07:00 20:22	05:52 21:18	05:08 21:03-21:30/27 22:06
7	08:56 16:32	08:16 17:28	07:14 07:39-08:04/25 18:25	06:58 20:24	05:50 21:20	05:07 21:02-21:31/29 22:07
8	08:56 09:30-09:32/2 16:33	08:14 17:30	07:12 07:40-08:03/23 18:27	06:55 20:26	05:48 21:22	05:06 21:01-21:31/30 22:08
9	08:55 09:29-09:32/3 16:34	08:12 17:32	07:10 07:40-08:02/22 18:29	06:53 20:28	05:46 21:24	05:06 21:02-21:32/30 22:09
10	08:55 09:28-09:33/5 16:36	08:10 17:34	07:07 07:41-08:01/20 18:31	06:50 20:29	05:44 21:25	05:05 21:02-21:34/32 22:09
11	08:54 09:27-09:33/6 16:37	08:08 17:37	07:05 07:42-07:59/17 18:32	06:48 20:31	05:42 21:27	05:05 21:01-21:33/32 22:10
12	08:53 09:26-09:34/8 16:39	08:06 17:39	07:02 07:44-07:57/13 18:34	06:46 20:33	05:41 21:29	05:04 21:02-21:34/32 22:11
13	08:52 09:25-09:34/9 16:41	08:04 17:41	07:00 07:49-07:51/2 18:36	06:43 20:35	05:39 21:31	05:04 21:02-21:35/33 22:12
14	08:51 09:24-09:35/11 16:42	08:02 17:43	06:57 17:55-18:11/16 18:38	06:41 20:37	05:37 21:32	05:04 21:02-21:35/33 22:12
15	08:51 09:23-09:36/13 16:44	08:00 17:45	06:55 17:54-18:13/19 18:40	06:38 20:39	05:35 21:34	05:03 21:01-21:35/34 22:13
16	08:50 09:21-09:35/14 16:46	07:58 17:47	06:52 17:53-18:15/22 18:42	06:36 20:41	05:34 21:36	05:03 21:02-21:35/33 22:14
17	08:48 09:20-09:36/16 16:47	07:56 17:18-17:19/1 17:49	06:50 17:53-18:17/24 18:44	06:34 20:43	05:32 21:37	05:03 21:02-21:35/33 22:14
18	08:47 09:19-09:36/17 16:49	07:54 17:18-17:22/4 17:51	06:47 17:53-18:19/26 18:46	06:31 20:44	05:30 21:39	05:03 21:02-21:36/34 22:15
19	08:46 09:17-09:36/19 16:51	07:52 08:17-08:18/1 17:53	06:45 17:53-18:21/28 18:48	06:29 20:46	05:29 21:41	05:03 21:02-21:36/34 22:15
20	08:45 09:16-09:36/20 16:53	07:49 08:15-08:20/5 17:55	06:42 17:53-18:22/29 18:50	06:27 20:48	05:27 21:42	05:03 21:03-21:37/34 22:15
21	08:44 09:14-09:36/22 16:55	07:47 08:13-08:21/8 17:57	06:40 17:54-18:25/31 18:52	06:24 20:50	05:26 21:44	05:03 21:03-21:37/34 22:15
22	08:43 09:13-09:36/23 16:57	07:45 08:10-08:22/12 17:59	06:37 17:54-18:25/31 18:54	06:22 20:52	05:24 21:46	05:03 21:03-21:37/34 22:16
23	08:41 09:12-09:36/24 16:58	07:43 08:08-08:22/14 18:01	06:35 17:56-18:25/29 18:55	06:20 20:54	05:23 21:47	05:04 21:03-21:37/34 22:16
24	08:40 09:13-09:36/23 17:00	07:40 08:06-08:23/17 18:03	06:32 17:57-18:23/26 18:57	06:18 20:56	05:21 21:13-21:15/2 21:49	05:04 21:04-21:38/34 22:16
25	08:38 09:14-09:35/21 17:02	07:38 08:03-08:23/20 18:05	06:30 18:00-18:22/22 18:59	06:15 20:58	05:20 21:12-21:16/4 21:50	05:04 21:04-21:37/33 22:16
26	08:37 09:15-09:34/19 17:04	07:36 08:01-08:23/22 18:07	06:27 18:06-18:19/13 19:01	06:13 21:00	05:19 21:11-21:18/7 21:52	05:05 21:04-21:37/33 22:16
27	08:35 09:17-09:34/17 17:06	07:33 07:59-08:23/24 18:09	06:25 18:09-18:17/8 19:03	06:11 21:01	05:17 21:10-21:19/9 21:53	05:05 21:05-21:38/33 22:16
28	08:34 09:19-09:32/13 17:08	07:31 07:56-08:22/26 18:11	06:23 19:05	06:09 21:03	05:16 21:08-21:20/12 21:55	05:06 21:04-21:37/33 22:16
29	08:32 09:21-09:29/8 17:10		07:20 20:07	06:07 21:05	05:15 21:07-21:21/14 21:56	05:06 21:05-21:38/33 22:15
30	08:31 17:12		07:18 20:09	06:04 21:07	05:14 21:06-21:23/17 21:57	05:07 21:06-21:38/32 22:15
31	08:29 17:14		07:15 20:11		05:13 21:05-21:24/19 21:59	
Potential sun hours	248	272	367	421	496	513
Sum of minutes with flicker	313	239	658	0	84	932

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker

## SHADOW - Calendar per WTG

Calculation: Tirawley Shadow Flicker Real Case WTG: 6 - AT06  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	July	August	September	October	November	December
1	05:08 21:06-21:38/32 22:15	05:48 21:39	06:44 20:31	07:38 08:25-08:34/9 19:16 18:36-18:48/12	07:37 17:05	08:33 09:09-09:15/6 16:19
2	05:08 21:06-21:38/32 22:14	05:50 21:37	06:46 20:31	07:40 08:22-08:37/15 19:14 18:36-18:45/9	07:39 17:03	08:35 09:11-09:16/5 16:19
3	05:09 21:07-21:38/31 22:14	05:52 21:35	06:47 20:26	07:42 08:20-08:38/18 19:11 18:35-18:42/7	07:41 17:01	08:36 09:12-09:15/3 16:18
4	05:10 21:08-21:38/30 22:14	05:54 21:33	06:49 20:24	07:44 08:18-08:38/20 19:09 18:35-18:40/5	07:43 16:59	08:38 09:14-09:16/2 16:17
5	05:11 21:07-21:36/29 22:13	05:55 21:31	06:51 20:21	07:46 08:16-08:39/23 19:06 18:36-18:37/1	07:45 16:57	08:39 16:16
6	05:12 21:08-21:36/28 22:12	05:57 21:29	06:53 20:19	07:47 08:16-08:39/23 19:04	07:47 16:55	08:41 16:16
7	05:13 21:08-21:35/27 22:12	05:59 21:27	06:55 20:16	07:49 08:16-08:40/24 19:01	07:49 16:53	08:42 16:15
8	05:14 21:09-21:35/26 22:11	06:01 21:25	06:56 20:14	07:51 08:41-08:47/6 18:59 08:18-08:40/22	07:51 16:51	08:43 16:15
9	05:15 21:10-21:34/24 22:10	06:02 21:23	06:58 20:11	07:53 08:20-08:51/31 18:57	07:53 16:49	08:45 16:15
10	05:16 21:10-21:33/23 22:09	06:04 21:21	07:00 20:09	07:55 08:22-08:52/30 18:54	07:55 16:47	08:46 16:14
11	05:17 21:11-21:33/22 22:08	06:06 21:19	07:02 20:06	07:57 08:24-08:54/30 18:52	07:57 16:46	08:47 16:14
12	05:18 21:13-21:33/20 22:07	06:08 21:17	07:04 20:04	07:59 08:26-08:54/28 18:49	07:59 16:44	08:48 16:14
13	05:20 21:14-21:32/18 22:06	06:10 21:15	07:05 20:01	08:01 08:28-08:55/27 18:47	08:01 08:53-09:01/8 16:42	08:49 16:14
14	05:21 21:15-21:31/16 22:05	06:11 21:13	07:07 19:59	08:02 08:30-08:55/25 18:45	08:03 08:50-09:04/14 16:41	08:50 16:14
15	05:22 21:16-21:29/13 22:04	06:13 21:10	07:09 19:56	08:04 08:32-08:55/23 18:42	08:05 08:49-09:06/17 16:39	08:51 16:14
16	05:24 21:17-21:28/11 22:03	06:15 21:08	07:11 18:59-19:04/5 19:54	08:06 08:34-08:55/21 18:40 17:55-18:04/9	08:07 08:49-09:08/19 16:37	08:52 16:14
17	05:25 21:20-21:28/8 22:02	06:17 21:06	07:13 18:55-19:07/12 19:51	08:08 08:36-08:55/19 18:38 17:53-18:06/13	08:09 08:48-09:09/21 16:36	08:53 16:14
18	05:26 21:21-21:26/5 22:01	06:19 21:04	07:14 18:49-19:09/20 19:49	08:10 08:38-08:54/16 17:51 17:51-18:05/14	08:11 08:47-09:10/23 16:34	08:54 16:14
19	05:28 21:22-21:25/3 21:59	06:20 21:02	07:16 18:45-19:10/25 19:46	08:12 08:40-08:54/14 18:33 17:50-18:03/13	08:13 08:47-09:11/24 16:33	08:55 16:14
20	05:29 21:58	06:22 20:59	07:18 18:43-19:11/28 19:44	08:14 08:42-08:53/11 18:31 17:49-18:00/11	08:14 08:48-09:11/23 16:32	08:55 16:15
21	05:31 21:57	06:24 20:57	07:20 18:40-19:10/30 19:41	08:16 08:44-08:51/7 18:28 17:48-17:58/10	08:16 08:50-09:12/22 16:30	08:56 16:15
22	05:32 21:55	06:26 20:55	07:22 18:39-19:10/31 19:39	08:18 08:46-08:50/4 18:26 17:48-17:56/8	08:18 08:52-09:12/20 16:29	08:56 16:16
23	05:34 21:54	06:28 20:52	07:24 18:38-19:08/30 19:36	08:20 17:47-17:53/6 18:24	08:20 08:54-09:13/19 16:28	08:57 16:16
24	05:35 21:52	06:29 20:50	07:25 18:37-19:05/28 19:34	08:22 17:47-17:51/4 18:22	08:22 08:56-09:13/17 16:26	08:57 16:17
25	05:37 21:51	06:31 20:48	07:27 18:36-19:03/27 19:31	07:24 16:47-16:48/1 17:19	08:23 08:58-09:14/16 16:25	08:58 16:17
26	05:38 21:49	06:33 20:45	07:29 18:35-19:00/25 19:29	07:26 17:17	08:25 09:00-09:14/14 16:24	08:58 16:18
27	05:40 21:47	06:35 20:43	07:31 18:35-18:57/22 19:26	07:28 17:15	08:27 09:02-09:15/13 16:23	08:58 16:19
28	05:42 21:46	06:37 20:41	07:33 18:35-18:55/20 19:24	07:30 17:13	08:29 09:04-09:15/11 16:22	08:58 16:20
29	05:43 21:44	06:38 20:38	07:34 18:35-18:53/18 19:21	07:32 17:11	08:30 09:05-09:14/9 16:21	08:58 16:21
30	05:45 21:42	06:40 20:36	07:36 18:36-18:50/14 19:19	07:34 17:09	08:32 09:07-09:15/8 16:20	08:59 16:22
31	05:47 21:40	06:42 20:33		07:35 17:07		08:58 16:23
Potential sun hours	515	461	382	328	257	231
Sum of minutes with flicker	398	0	335	569	298	16

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker



### SHADOW - Calendar per WTG

Calculation: Tirawley Shadow Flicker Real Case WTG: 7 - AT07  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January		February		March		April		May		June	
1	08:58	15:21-15:45/24	08:27	15:56-16:43/47	07:29		07:12	19:02-19:34/32	06:02	20:16-20:32/16	05:12	20:21-20:54/33
	16:24		17:16		18:13		20:12		21:09		22:00	
2	08:58	15:21-15:47/26	08:25	15:56-16:46/50	07:26		07:10	19:02-19:35/33	06:00	20:14-20:34/20	05:11	20:27-20:54/27
	16:25		17:18		18:15		20:14		21:11		22:01	20:24-20:26/2
3	08:58	15:22-15:48/26	08:24	15:57-16:48/51	07:24		07:08	19:00-19:34/34	05:58	20:12-20:35/23	05:10	20:27-20:53/26
	16:26		17:20		18:17		20:16		21:13		22:02	
4	08:58	15:21-15:48/27	08:22	15:58-16:50/52	07:22		07:05	19:00-19:34/34	05:56	20:11-20:36/25	05:09	20:28-20:54/26
	16:27		17:22		18:19		20:18		21:14		22:03	
5	08:57	15:21-15:48/27	08:20	15:59-16:51/52	07:19		07:03	19:01-19:34/33	05:54	20:11-20:38/27	05:08	20:28-20:53/25
	16:29		17:24		18:21		20:20		21:16		22:05	
6	08:57	15:22-15:50/28	08:18	16:00-16:52/52	07:17		07:00	19:00-19:33/33	05:52	20:10-20:38/28	05:07	20:28-20:53/25
	16:30		17:26		18:23		20:22		21:18		22:06	
7	08:56	15:22-15:50/28	08:16	16:02-16:53/51	07:14		06:58	19:00-19:33/33	05:50	20:09-20:39/30	05:07	20:29-20:53/24
	16:31		17:28		18:25		20:24		21:20		22:07	
8	08:56	15:22-15:51/29	08:14	16:05-16:53/48	07:12		06:55	19:00-19:32/32	05:48	20:08-20:39/31	05:06	20:29-20:53/24
	16:33		17:30		18:27		20:26	19:47-19:51/4	21:22		22:08	
9	08:55	15:23-15:52/29	08:12	16:12-16:53/41	07:09		06:53	19:43-19:55/12	05:46	20:08-20:44/36	05:06	20:30-20:53/23
	16:34		17:32		18:28		20:27	19:01-19:31/30	21:23		22:09	
10	08:55	15:23-15:53/30	08:10	16:13-16:53/40	07:07		06:50	19:41-19:58/17	05:44	20:08-20:47/39	05:05	20:30-20:52/22
	16:36		17:34		18:30		20:29	19:02-19:31/29	21:25		22:09	
11	08:54	15:23-15:53/30	08:08	16:15-16:53/38	07:05		06:48	19:38-19:58/20	05:42	20:07-20:48/41	05:05	20:31-20:52/21
	16:37		17:36		18:32		20:31	19:02-19:29/27	21:27		22:10	
12	08:53	15:23-15:54/31	08:06	16:18-16:53/35	07:02		06:46	19:37-20:00/23	05:40	20:07-20:49/42	05:04	20:32-20:53/21
	16:39		17:38		18:34		20:33	19:03-19:28/25	21:29		22:11	
13	08:52	15:23-15:54/31	08:04	16:22-16:53/31	07:00		06:43	19:36-20:00/24	05:39	20:08-20:51/43	05:04	20:33-20:53/20
	16:41		17:41		18:36		20:35	19:04-19:25/21	21:31		22:12	
14	08:51	15:24-15:55/31	08:02	16:31-16:52/21	06:57		06:41	19:35-20:00/25	05:37	20:07-20:51/44	05:03	20:32-20:52/20
	16:42		17:43	16:28-16:29/1	18:38		20:37	19:06-19:23/17	21:32		22:12	
15	08:50	15:23-15:54/31	08:00	16:31-16:51/20	06:55		06:38	19:35-20:01/26	05:35	20:07-20:51/44	05:03	20:33-20:52/19
	16:44	16:01-16:06/5	17:45		18:40		20:39	19:09-19:21/12	21:34		22:13	
16	08:49	15:24-15:55/31	07:58	16:33-16:50/17	06:52		06:36	19:34-20:01/27	05:33	20:08-20:52/44	05:03	20:33-20:52/19
	16:46	15:59-16:09/10	17:47		18:42		20:41		21:36		22:14	
17	08:48	15:24-15:56/32	07:56	16:35-16:48/13	06:50		06:34	19:33-20:00/27	05:32	20:07-20:52/45	05:03	20:34-20:52/18
	16:47	15:58-16:11/13	17:49		18:44		20:43		21:37		22:14	
18	08:47	15:25-15:56/31	07:54	16:38-16:46/8	06:47		06:31	19:33-20:00/27	05:30	20:08-20:53/45	05:03	20:34-20:52/18
	16:49	15:57-16:13/16	17:51		18:46		20:44		21:39		22:14	
19	08:46	15:25-16:14/49	07:51		06:45		06:38	19:34-20:00/26	05:29	20:08-20:53/45	05:03	20:34-20:52/18
	16:51		17:53		18:48		20:46		21:41		22:15	
20	08:45	15:26-16:16/50	07:49		06:42		06:27	19:33-19:59/26	05:27	20:09-20:53/44	05:03	20:35-20:52/17
	16:53		17:55		18:50		20:48		21:42		22:15	
21	08:44	15:26-16:16/50	07:47		06:40		06:24	19:34-19:58/24	05:25	20:10-20:54/44	05:03	20:36-20:53/17
	16:55		17:57		18:52		20:50		21:44		22:15	
22	08:42	15:27-16:18/51	07:45		06:37		06:22	19:34-19:57/23	05:24	20:09-20:53/44	05:03	20:36-20:53/17
	16:56		17:59		18:53		20:52		21:46		22:16	
23	08:41	15:27-16:23/56	07:43		06:35		06:20	19:35-19:56/21	05:23	20:10-20:54/44	05:04	20:35-20:53/18
	16:58		18:01		18:55		20:54		21:47		22:16	
24	08:40	15:28-16:26/58	07:40		06:32	18:15-18:26/11	06:17	19:37-19:55/18	05:21	20:11-20:54/43	05:04	20:35-20:53/18
	17:00		18:03		18:57		20:56		21:49		22:16	
25	08:38	15:29-16:28/59	07:38		06:30	18:13-18:29/16	06:15	19:38-19:53/15	05:20	20:12-20:54/42	05:04	20:36-20:54/18
	17:02		18:05		18:59		20:58		21:50		22:16	
26	08:37	15:30-16:30/60	07:36		06:27	18:11-18:29/18	06:13	19:40-19:50/10	05:19	20:13-20:55/42	05:05	20:36-20:54/18
	17:04		18:07		19:01		20:59		21:52		22:16	
27	08:35	15:32-16:33/61	07:33		06:25	18:09-18:31/22	06:11		05:17	20:14-20:55/41	05:05	20:36-20:55/19
	17:06		18:09		19:03		21:01		21:53		22:16	
28	08:34	15:54-16:34/40	07:31		06:22	18:07-18:32/25	06:09		05:16	20:15-20:55/40	05:06	20:35-20:55/20
	17:08	15:33-15:52/19	18:11		19:05		21:03		21:55		22:16	
29	08:32	15:54-16:35/41			07:20	19:06-19:33/27	06:06		05:15	20:16-20:55/39	05:06	20:36-20:56/20
	17:10	15:35-15:49/14			20:07		21:05		21:56		22:15	
30	08:31	15:54-16:36/42			07:17	19:04-19:33/29	06:04	20:18-20:30/12	05:14	20:18-20:54/36	05:07	20:36-20:57/21
	17:12	15:38-15:46/8			20:09		21:07		21:57		22:15	
31	08:29	15:54-16:37/43			07:15	19:03-19:34/31			05:13	20:19-20:54/35		
	17:14				20:10				21:59			
Potential sun hours	248		272		367		421		496		513	634
Sum of minutes with flicker	1267		668		179		832		1162			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker

### SHADOW - Calendar per WTG

Calculation: Tirawley Shadow Flicker Real Case WTG: 7 - AT07  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	July		August		September		October		November		December	
1	05:08	20:35-20:57/22	05:48	20:17-20:59/42	06:44	19:37-19:57/20	07:38	07:37	15:42-16:22/40	08:33	15:05-15:35/30	
	22:15		21:39		20:31	19:01-19:28/27	19:16	17:04		16:19		
2	05:08	20:36-20:57/21	05:50	20:18-20:58/40	06:46	19:39-19:56/17	07:40	07:39	15:41-16:22/41	08:35	15:05-15:35/30	
	22:14		21:37		20:28	19:00-19:29/29	19:14	17:02	15:38-15:39/1	16:18		
3	05:09	20:36-20:58/22	05:52	20:17-20:55/38	06:47	19:41-19:53/12	07:42	07:41	15:33-16:22/49	08:36	15:06-15:35/29	
	22:14		21:35		20:26	18:59-19:29/30	19:11	17:00		16:18		
4	05:10	20:35-20:58/23	05:53	20:18-20:53/35	06:49	18:57-19:29/32	07:44	07:43	15:31-16:22/51	08:38	15:07-15:36/29	
	22:13		21:33		20:24	19:44-19:48/4	19:09	16:58		16:17		
5	05:11	20:35-20:58/23	05:55	20:19-20:49/30	06:51	18:56-19:29/33	07:45	07:45	15:30-16:21/51	08:39	15:07-15:35/28	
	22:13		21:31		20:21		19:06	16:57		16:16		
6	05:12	20:35-20:59/24	05:57	20:19-20:48/29	06:53	18:56-19:29/33	07:47	07:47	15:28-16:21/53	08:41	15:08-15:36/28	
	22:12		21:29		20:19		19:04	16:55		16:16		
7	05:13	20:35-21:00/25	05:59	20:19-20:47/28	06:55	18:56-19:30/34	07:49	07:49	15:27-16:19/52	08:42	15:08-15:35/27	
	22:12		21:27		20:16		19:01	16:53		16:15		
8	05:14	20:35-21:00/25	06:00	20:21-20:47/26	06:56	18:55-19:28/33	07:51	07:51	15:26-16:18/52	08:43	15:09-15:36/27	
	22:11		21:25		20:14		18:59	16:51		16:15		
9	05:15	20:34-21:01/27	06:02	20:21-20:45/24	06:58	18:55-19:28/33	07:53	07:53	15:26-16:16/50	08:45	15:10-15:36/26	
	22:10		21:23		20:11		18:56	16:49		16:14		
10	05:16	20:34-21:01/27	06:04	20:22-20:44/22	07:00	18:55-19:28/33	07:55	07:55	16:10-16:13/3	08:46	15:10-15:36/26	
	22:09		21:21		20:09		18:54	16:47	15:26-16:09/43	16:14		
11	05:17	20:29-21:01/32	06:06	20:24-20:43/19	07:02	18:55-19:27/32	07:57	07:57	15:26-16:09/43	08:47	15:11-15:35/24	
	22:08		21:19		20:06		18:52	16:45		16:14		
12	05:18	20:27-21:02/35	06:08	20:25-20:40/15	07:04	18:55-19:26/31	07:59	07:59	15:26-16:08/42	08:48	15:12-15:36/24	
	22:07		21:17		20:04		18:49	16:44	15:10-15:18/8	16:14		
13	05:20	20:27-21:03/36	06:09	20:28-20:37/9	07:05	18:55-19:25/30	08:00	08:01	15:26-16:07/41	08:49	15:13-15:35/22	
	22:06		21:15		20:01		18:47	16:42	15:07-15:21/14	16:14		
14	05:21	20:26-21:03/37	06:11		07:07	18:56-19:24/28	08:02	08:03	15:26-16:06/40	08:50	15:13-15:35/22	
	22:05		21:13		19:59		18:44	16:40	15:05-15:24/19	16:14		
15	05:22	20:24-21:03/39	06:13		07:09	18:57-19:22/25	08:04	08:05	15:04-16:05/61	08:51	15:14-15:35/21	
	22:04		21:10		19:56		18:42	16:39		16:14		
16	05:23	20:23-21:03/40	06:15		07:11	18:58-19:19/21	08:06	08:07	15:03-16:03/60	08:52	15:15-15:35/20	
	22:03		21:08		19:54		18:40	16:37		16:14		
17	05:25	20:22-21:03/41	06:17	19:47-19:58/11	07:13	18:59-19:18/19	08:08	08:09	15:03-16:02/59	08:53	15:16-15:35/19	
	22:02		21:06		19:51		18:37	16:36		16:14		
18	05:26	20:22-21:04/42	06:18	19:44-19:59/15	07:14	19:00-19:16/16	08:10	08:11	15:02-16:00/58	08:54	15:16-15:35/19	
	22:01		21:04		19:49		18:35	16:34		16:14		
19	05:28	20:21-21:04/43	06:20	19:42-20:01/19	07:16	19:02-19:14/12	08:12	08:12	15:02-15:58/56	08:55	15:16-15:35/19	
	21:59		21:01		19:46		18:33	16:33		16:14		
20	05:29	20:20-21:04/44	06:22	19:41-20:02/21	07:18		08:14	08:14	15:02-15:53/51	08:55	15:17-15:36/19	
	21:58		20:59		19:44		18:30	16:31		16:15		
21	05:31	20:20-21:04/44	06:24	19:39-20:02/23	07:20		08:16	08:16	15:02-15:52/50	08:56	15:17-15:36/19	
	21:57		20:57		19:41		18:28	16:30		16:15		
22	05:32	20:20-21:04/44	06:26	19:38-20:03/25	07:22		08:18	08:18	15:02-15:52/50	08:56	15:18-15:37/19	
	21:55		20:55		19:39		18:26	16:29		16:15		
23	05:34	20:20-21:04/44	06:27	19:38-20:03/25	07:23		08:20	08:20	15:02-15:51/49	08:57	15:18-15:37/19	
	21:54		20:52		19:36		18:24	16:27		16:16		
24	05:35	20:19-21:04/45	06:29	19:37-20:04/27	07:25		08:22	08:22	17:06-17:16/10	08:57	15:18-15:37/19	
	21:52		20:50		19:34		18:21	16:26	15:34-15:50/16	16:17		
25	05:37	20:18-21:03/45	06:31	19:36-20:03/27	07:27		07:24	07:24	16:04-16:18/14	08:58	15:20-15:39/19	
	21:51		20:48		19:31		17:19	16:25	15:36-15:49/13	16:17		
26	05:38	20:18-21:03/45	06:33	19:36-20:03/27	07:29		07:26	08:25	15:03-15:34/31	08:58	15:20-15:39/19	
	21:49		20:45		19:29		17:17	16:24	15:38-15:48/10	16:18		
27	05:40	20:18-21:02/44	06:35	19:36-20:03/27	07:31		07:28	08:27	15:03-15:35/32	08:58	15:20-15:40/20	
	21:47		20:43		19:26		17:15	16:23	15:41-15:46/5	16:19		
28	05:42	20:18-21:02/44	06:36	19:35-20:02/27	07:33		07:29	08:29	15:03-15:34/31	08:58	15:20-15:41/21	
	21:46		20:41	19:10-19:22/12	19:24		17:13	16:22		16:20		
29	05:43	20:18-21:02/44	06:38	19:36-20:01/25	07:34		07:31	08:30	15:03-15:34/31	08:58	15:20-15:42/22	
	21:44		20:38	19:07-19:24/17	19:21		17:11	16:21		16:20		
30	05:45	20:18-21:01/43	06:40	19:36-20:00/24	07:36		07:33	08:32	15:04-15:35/31	08:58	15:21-15:43/22	
	21:42		20:36	19:05-19:26/21	19:19		17:09	16:20		16:21		
31	05:47	20:18-21:01/43	06:42	19:37-20:00/23			07:35	08:35	15:44-16:23/39	08:58	15:21-15:44/23	
	21:40		20:33	19:03-19:28/25			17:06			16:22		
Potential sun hours	515		461		382		328	257		231		
Sum of minutes with flicker	1113		778		584		194	1450		711		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker



## SHADOW - Calendar per WTG

Calculation: Tirawley Shadow Flicker Real Case WTG: 8 - AT08  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June
1	08:58 13:58-14:51/53	08:27 16:09-16:39/30	07:29 16:45-17:34/49	07:12	06:02 19:52-20:33/41	05:12
	16:24	17:16	18:13	20:12	21:09	22:00
2	08:58 13:59-14:51/52	08:25 16:09-16:39/30	07:26 16:49-17:34/45	07:10	06:00 19:53-20:33/40	05:11
	16:25	17:18	18:15	20:14	21:11	22:01
3	08:58 14:00-14:52/52	08:24 16:08-16:40/32	07:24 16:54-17:34/40	07:08	05:58 19:56-20:40/44	05:10
	16:26	17:20	18:17	20:16	21:13	22:02
4	08:58 14:00-14:52/52	08:22 16:08-16:41/33	07:22 16:56-17:32/36	07:05	05:56 20:01-20:42/41	05:09
	16:27	17:22	18:19	20:18	21:14	22:03
5	08:57 14:00-14:52/52	08:20 16:07-16:41/34	07:19 17:00-17:32/32	07:03	05:54 20:01-20:45/44	05:08
	16:29	17:24	18:21	20:20	21:16	22:05
6	08:57 14:01-14:53/52	08:18 16:07-16:42/35	07:17 17:09-17:30/21	07:00	05:52 20:01-20:46/45	05:07
	16:30	17:26	18:23	20:22	21:18	22:06
7	08:56 14:01-14:53/52	08:16 16:07-16:42/35	07:14 17:10-17:29/19	06:58	05:50 20:00-20:47/47	05:07 21:23-21:29/6
	16:31	17:28	18:25	20:24	21:20	22:07
8	08:56 14:02-14:53/51	08:14 16:07-16:42/35	07:12 17:12-17:27/15	06:55	05:48 20:00-20:47/47	05:06 21:21-21:30/9
	16:33	17:30	18:27	20:26	21:22	22:08
9	08:55 14:03-14:54/51	08:12 16:06-16:41/35	07:09 17:15-17:24/9	06:53	05:46 20:00-20:48/48	05:05 21:21-21:32/11
	16:34	17:32	18:28	20:27	21:23	22:09
10	08:55 14:04-14:54/50	08:10 16:43-17:03/20	07:07	06:50	05:44 20:01-20:49/48	05:05 21:20-21:32/12
	16:36	17:34	18:30	20:29	21:25	22:09
11	08:54 14:04-14:54/50	08:08 16:07-17:05/58	07:05	06:48	05:42 20:01-20:49/48	05:04 21:19-21:34/15
	16:37	17:36	18:32	20:31	21:27	22:10
12	08:53 14:05-14:54/49	08:06 16:07-17:07/60	07:02	06:46	05:40 20:01-20:49/48	05:04 21:19-21:35/16
	16:39	17:38	18:34	20:33	21:29	22:11
13	08:52 14:06-14:54/48	08:04 16:08-17:10/62	07:00	06:43	05:39 20:01-20:49/48	05:04 21:19-21:36/17
	16:41	17:40	18:36	20:35	21:31	22:12
14	08:51 14:07-14:54/47	08:02 16:09-17:11/62	06:57	06:41	05:37 20:01-20:49/48	05:03 21:18-21:35/17
	16:42	17:43	18:38	20:37	21:32	22:12
15	08:50 14:06-14:53/47	08:00 16:09-17:13/64	06:55	06:38 20:01-20:08/7	05:35 20:02-20:49/47	05:03 21:19-21:36/17
	16:44	17:45	18:40	20:39	21:34	22:13
16	08:50 14:08-14:53/45	07:58 16:10-17:16/66	06:52	06:36 19:57-20:10/13	05:33 20:03-20:49/46	05:03 21:19-21:36/17
	16:46	17:47	18:42	20:41	21:36	22:14
17	08:48 14:09-14:54/45	07:56 16:11-17:18/67	06:50	06:34 19:55-20:12/17	05:32 20:03-20:49/46	05:03 21:19-21:37/18
	16:47	17:49	18:44	20:43	21:37	22:14
18	08:47 14:10-14:54/44	07:54 16:13-17:20/67	06:47	06:31 19:53-20:13/20	05:30 20:04-20:49/45	05:03 21:19-21:37/18
	16:49	17:51	18:46	20:44	21:39	22:15
19	08:46 14:10-14:53/43	07:51 16:36-17:20/44	06:45	06:29 19:52-20:14/22	05:29 20:04-20:48/44	05:03 21:19-21:38/19
	16:51	17:53	18:48	20:46	21:41	22:15
20	08:45 14:12-14:53/41	07:49 16:36-17:22/46	06:42	06:27 19:51-20:14/23	05:27 20:06-20:48/42	05:03 21:19-21:38/19
	16:53	17:55	18:50	20:48	21:42	22:15
21	08:44 14:13-14:52/39	07:47 16:37-17:27/50	06:40	06:24 19:50-20:15/25	05:25 20:07-20:48/41	05:03 21:20-21:39/19
	16:55	17:57	18:52	20:50	21:44	22:15
22	08:42 14:14-14:52/38	07:45 16:36-17:29/53	06:37	06:22 19:50-20:15/25	05:24 20:08-20:47/39	05:03 21:20-21:39/19
	16:56	17:59	18:53	20:52	21:46	22:16
23	08:41 14:15-14:50/35	07:43 16:37-17:31/54	06:35	06:20 19:50-20:15/25	05:23 20:09-20:47/38	05:04 21:20-21:39/19
	16:58	18:01	18:55	20:54	21:47	22:16
24	08:40 14:18-14:50/32	07:40 16:38-17:33/55	06:32	06:17 19:49-20:15/26	05:21 20:26-20:46/20	05:04 21:20-21:38/18
	17:00	18:03	18:57	20:56	21:49	22:16
25	08:38 16:17-16:28/11	07:38 16:38-17:33/55	06:30	06:15 19:49-20:26/37	05:20 20:28-20:46/18	05:04 21:21-21:39/18
	17:02	18:05	18:59	20:58	21:50	22:16
26	08:37 16:15-16:30/15	07:36 16:39-17:34/55	06:27	06:13 19:49-20:27/38	05:18 20:29-20:45/16	05:05 21:21-21:39/18
	17:04	18:07	19:01	20:59	21:52	22:16
27	08:35 16:14-16:33/19	07:33 16:40-17:34/54	06:25	06:11 19:49-20:29/40	05:17 20:30-20:44/14	05:05 21:22-21:39/17
	17:06	18:09	19:03	21:01	21:53	22:16
28	08:34 16:13-16:34/21	07:31 16:42-17:34/52	06:22	06:09 19:49-20:30/41	05:16 20:31-20:43/12	05:06 21:21-21:39/18
	17:08	18:11	19:05	21:03	21:55	22:16
29	08:32 16:11-16:35/24		07:20	06:06 19:50-20:32/42	05:15 20:33-20:42/9	05:06 21:22-21:39/17
	17:10		20:07	21:05	21:56	22:15
30	08:31 16:10-16:36/26		07:17	06:04 19:51-20:32/41	05:14 20:35-20:40/5	05:07 21:23-21:39/16
	17:12		20:09	21:07	21:57	22:15
31	08:29 16:09-16:37/28		07:15		05:13	
	17:14		20:10		21:59	
Potential sun hours	248	272	367	421	496	513
Sum of minutes with flicker	1354	1437	266	442	1143	390

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker

### SHADOW - Calendar per WTG

Calculation: Tirawley Shadow Flicker Real Case WTG: 8 - AT08  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	July	August	September	October	November	December
1	05:08 21:23-21:38/15 22:15	05:48 20:11-20:59/48 21:39	06:44 20:31	07:38 19:16	07:37 16:13-16:32/19 17:04 15:36-16:11/35	08:33 13:46-14:36/50 16:19
2	05:08 21:24-21:38/14 22:14	05:50 20:11-20:59/48 21:37	06:46 20:28	07:40 19:14	07:39 15:36-16:11/35 17:02 16:15-16:28/13	08:35 13:46-14:36/50 16:18
3	05:09 21:26-21:38/12 22:14	05:52 20:10-20:58/48 21:35	06:47 20:26	07:42 19:11	07:41 15:36-16:11/35 17:00	08:36 13:46-14:37/51 16:18
4	05:10 21:26-21:36/10 22:13	05:53 20:10-20:58/48 21:33	06:49 20:24	07:44 17:54-17:59/5 19:09	07:43 15:37-16:12/35 16:58	08:38 13:47-14:38/51 16:17
5	05:11 21:27-21:35/8 22:13	05:55 20:11-20:58/47 21:31	06:51 20:21	07:45 17:50-18:03/13 19:06	07:45 15:37-16:11/34 16:57	08:39 13:46-14:38/52 16:16
6	05:12 21:30-21:33/3 22:12	05:57 20:10-20:56/46 21:29	06:53 20:19	07:47 17:47-18:05/18 19:04	07:47 15:37-16:11/34 16:55	08:41 13:47-14:39/52 16:16
7	05:13 22:12	05:59 20:10-20:55/45 21:27	06:55 20:16	07:49 17:45-18:06/21 19:01	07:49 15:37-16:10/33 16:53	08:42 13:47-14:39/52 16:15
8	05:14 22:11	06:00 20:11-20:54/43 21:25	06:56 20:14	07:51 17:39-18:07/28 18:59	07:51 15:38-16:10/32 16:51	08:43 13:48-14:40/52 16:15
9	05:15 22:10	06:02 20:08-20:51/43 21:23	06:58 20:11	07:53 17:33-18:07/34 18:56	07:53 15:38-16:09/31 16:49	08:45 13:48-14:40/52 16:14
10	05:16 22:09	06:04 20:04-20:48/44 21:21	07:00 20:09	07:55 17:30-18:08/38 18:54	07:55 15:40-16:09/29 16:47	08:46 13:48-14:40/52 16:14
11	05:17 22:08	06:06 20:01-20:43/42 21:19	07:02 20:06	07:57 17:27-18:08/41 18:52	07:57 15:41-16:09/28 16:45	08:47 13:48-14:41/53 16:14
12	05:18 22:07	06:08 20:00-20:41/41 21:17	07:04 20:04	07:59 17:20-18:08/48 18:49	07:59 15:42-16:08/26 16:44	08:48 13:49-14:42/53 16:14
13	05:19 22:06	06:09 19:59-20:41/42 21:15	07:05 20:01	08:00 17:17-18:07/50 18:47	08:01 15:43-16:07/24 16:42	08:49 14:58-15:02/4 16:14 13:49-14:42/53
14	05:21 20:42-20:50/8 22:05	06:11 19:58-20:40/42 21:13	07:07 19:59	08:02 17:14-18:07/53 18:44	08:03 15:45-16:06/21 16:40 14:00-14:14/14	08:50 14:57-15:03/6 16:14 13:50-14:43/53
15	05:22 20:40-20:51/11 22:04	06:13 19:57-20:38/41 21:10	07:09 19:56	08:04 17:12-18:07/55 18:42	08:05 15:46-16:04/18 16:39 13:56-14:17/21	08:51 14:57-15:05/8 16:14 13:50-14:43/53
16	05:23 20:39-20:52/13 22:03	06:15 19:56-20:36/40 21:08	07:11 19:54	08:06 17:11-18:06/55 18:40	08:07 15:48-16:03/15 16:37 13:54-14:20/26	08:52 14:57-15:06/9 16:14 13:51-14:44/53
17	05:25 20:38-20:53/15 22:02	06:17 19:56-20:34/38 21:06	07:13 19:51	08:08 17:10-18:05/55 18:37	08:09 15:51-16:01/10 16:36 13:53-14:22/29	08:53 14:57-15:07/10 16:14 13:51-14:45/54
18	05:26 20:38-20:55/17 22:01 20:24-20:31/7	06:18 19:55-20:31/36 21:04	07:14 19:49	08:10 17:09-18:04/55 18:35	08:11 13:52-14:24/32 16:34	08:54 14:57-15:07/10 16:14 13:51-14:44/53
19	05:28 20:37-20:56/19 21:59 20:22-20:34/12	06:20 19:55-20:21/26 21:01	07:16 19:46	08:12 17:08-18:02/54 18:33	08:12 13:50-14:25/35 16:33	08:55 14:57-15:08/11 16:14 13:52-14:45/53
20	05:29 20:36-20:56/20 21:58 20:20-20:35/15	06:22 19:55-20:21/26 20:59	07:18 19:44	08:14 17:07-18:00/53 18:30	08:14 13:49-14:27/38 16:31	08:55 14:58-15:09/11 16:15 13:53-14:46/53
21	05:31 20:19-20:57/38 21:57	06:24 19:54-20:20/26 20:57	07:20 19:41	08:16 17:07-17:57/50 18:28 16:50-17:00/10	08:16 13:49-14:28/39 16:30	08:56 14:58-15:09/11 16:15 13:53-14:46/53
22	05:32 20:17-20:57/40 21:55	06:26 19:55-20:19/24 20:55	07:22 19:39	08:18 17:07-17:52/45 18:26 16:47-17:03/16	08:18 13:48-14:29/41 16:29	08:56 14:59-15:10/11 16:15 13:54-14:47/53
23	05:34 20:17-20:59/42 21:54	06:27 19:55-20:19/24 20:52	07:23 19:36	08:20 17:06-17:50/44 18:24 16:44-17:05/21	08:20 13:47-14:30/43 16:27	08:57 14:59-15:10/11 16:16 13:54-14:47/53
24	05:35 20:16-20:59/43 21:52	06:29 19:56-20:18/22 20:50	07:25 19:34	08:22 16:42-17:49/67 18:21	08:22 13:47-14:31/44 16:26	08:57 14:59-15:10/11 16:17 13:54-14:47/53
25	05:37 20:14-20:58/44 21:51	06:31 19:56-20:16/20 20:48	07:27 19:31	07:24 15:40-16:47/67 17:19	08:23 13:47-14:32/45 16:25	08:58 15:00-15:11/11 16:17 13:55-14:48/53
26	05:38 20:14-20:59/45 21:49	06:33 19:58-20:15/17 20:45	07:29 19:29	07:26 15:39-16:44/65 17:17	08:25 13:47-14:33/46 16:24	08:58 15:01-15:11/10 16:18 13:55-14:48/53
27	05:40 20:13-20:59/46 21:47	06:35 20:00-20:13/13 20:43	07:31 19:26	07:28 15:38-16:42/64 17:15	08:27 13:47-14:33/46 16:23	08:58 15:02-15:11/9 16:19 13:56-14:49/53
28	05:42 20:13-21:00/47 21:46	06:36 20:02-20:08/6 20:41	07:33 19:24	07:30 15:38-16:40/62 17:13	08:29 13:46-14:33/47 16:22	08:58 15:03-15:11/8 16:20 13:56-14:49/53
29	05:43 20:13-21:00/47 21:44	06:38 20:38	07:34 19:21	07:31 15:37-16:39/62 17:11	08:30 13:46-14:34/48 16:21	08:58 15:04-15:10/6 16:20 13:57-14:50/53
30	05:45 20:12-21:00/48 21:42	06:40 20:36	07:36 19:19	07:33 15:37-16:36/59 17:09	08:32 13:46-14:35/49 16:20	08:58 15:06-15:10/4 16:21 13:57-14:50/53
31	05:47 20:12-21:00/48 21:40	06:42 20:33	 	07:35 16:12-16:34/22 17:06 15:36-16:11/35	 	08:58 13:58-14:51/53 16:22
Potential sun hours	515	461	382	328	257	231
Sum of minutes with flicker	687	986	0	1365	1150	1789

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker

### SHADOW - Calendar per WTG

Calculation: Tirawley Shadow Flicker Real Case WTG: 9 - AT09  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January	February	March	April	May	June
1	08:58 16:24	08:27 09:00-09:15/15 17:16 16:29-16:44/15	07:29 17:11-17:30/19 18:13	07:12 20:12	06:02 19:32-20:19/47 21:09	05:12 21:03-21:21/18 22:00
2	08:58 16:25	08:25 09:02-09:14/12 17:18 16:28-16:46/18	07:26 17:12-17:28/16 18:15	07:10 20:14	06:00 19:32-20:18/46 21:11	05:11 21:03-21:21/18 22:01
3	08:58 16:26	08:24 09:05-09:11/6 17:20 16:28-16:48/20	07:24 17:15-17:26/11 18:17	07:08 19:34-19:46/12 20:16	05:58 19:32-20:18/46 21:13	05:10 21:03-21:21/18 22:02
4	08:58 16:27	08:22 16:28-16:50/22 17:22	07:22 18:19	07:05 19:32-19:49/17 20:18	05:56 19:32-20:18/46 21:14	05:09 21:04-21:21/17 22:04
5	08:57 16:29	08:20 16:28-16:53/25 17:24	07:19 18:21	07:03 19:31-19:50/19 20:20	05:54 19:33-20:19/46 21:16	05:08 21:04-21:21/17 22:05
6	08:57 16:30	08:18 16:28-16:54/26 17:26	07:17 18:23	07:00 19:29-19:51/22 20:22	05:52 19:33-20:18/45 21:18	05:07 21:04-21:21/17 22:06
7	08:57 16:31	08:16 16:28-16:54/26 17:28	07:14 18:25	06:58 19:28-19:52/24 20:24	05:50 19:33-20:18/45 21:20	05:07 21:05-21:21/16 22:07
8	08:56 16:33	08:14 16:29-16:53/24 17:30	07:12 18:27	06:55 19:27-19:52/25 20:26	05:48 19:33-20:17/44 21:22	05:06 21:04-21:21/17 22:08
9	08:55 16:34	08:12 16:29-16:52/23 17:32	07:10 18:29	06:53 19:26-19:57/31 20:27	05:46 19:33-20:16/43 21:24	05:05 21:05-21:21/16 22:09
10	08:55 16:36	08:10 16:30-16:52/22 17:34	07:07 18:30	06:50 19:26-19:59/33 20:29	05:44 19:34-20:17/43 21:25	05:05 21:05-21:21/16 22:09
11	08:54 16:37	08:08 16:31-16:51/20 17:36	07:05 18:32	06:48 19:25-20:02/37 20:31	05:42 19:34-20:16/42 21:27	05:04 21:06-21:21/15 22:10
12	08:53 16:39	08:06 16:32-16:50/18 17:38	07:02 18:34	06:46 19:26-20:05/39 20:33	05:40 19:35-20:15/40 21:29	05:04 21:06-21:21/15 22:11
13	08:52 16:41	08:04 16:34-16:48/14 17:41	07:00 18:36	06:43 19:25-20:06/41 20:35	05:39 19:36-20:15/39 21:31	05:04 21:07-21:22/15 22:12
14	08:51 16:42	08:02 16:37-16:46/9 17:43	06:57 18:38	06:41 19:26-20:08/42 20:37	05:37 19:36-20:14/38 21:32	05:03 21:07-21:21/14 22:12
15	08:51 16:44	08:00 17:45	06:55 18:40	06:38 19:26-20:08/42 20:39	05:35 19:37-20:12/35 21:34	05:03 21:07-21:21/14 22:13
16	08:50 16:46	07:58 17:47	06:52 18:42	06:36 19:27-20:09/42 20:41	05:33 19:38-20:12/34 21:36	05:03 21:07-21:21/14 22:14
17	08:49 16:47	07:56 17:17-17:19/2 17:49	06:50 18:44	06:34 19:28-20:09/41 20:43	05:32 19:39-20:11/32 21:38	05:03 21:08-21:21/13 22:14
18	08:47 16:49	07:54 08:20-08:21/1 17:51 17:15-17:22/7	06:47 18:46	06:31 19:30-20:12/42 20:44	05:30 19:40-20:10/30 21:39	05:03 21:08-21:22/14 22:15
19	08:46 16:51	07:52 08:17-08:21/4 17:53 17:13-17:23/10	06:45 18:48	06:29 19:33-20:13/40 20:46	05:29 19:41-20:09/28 21:41	05:03 21:08-21:22/14 22:15
20	08:45 16:53	07:49 08:15-08:21/6 17:55 17:12-17:26/14	06:42 18:50	06:27 19:34-20:14/40 20:48	05:27 19:43-20:08/25 21:42	05:03 21:08-21:22/14 22:15
21	08:44 09:14-09:16/2 16:55	07:47 08:13-08:21/8 17:57 17:11-17:28/17	06:40 18:52	06:24 19:34-20:15/41 20:50	05:25 21:08-21:11/3 21:44 19:45-20:07/22	05:03 21:10-21:23/13 22:16
22	08:43 09:13-09:17/4 16:56	07:45 08:10-08:20/10 17:59 17:10-17:30/20	06:37 18:53	06:22 19:35-20:16/41 20:52	05:24 21:05-21:12/7 21:46 19:46-20:05/19	05:03 21:09-21:23/14 22:16
23	08:41 09:11-09:17/6 16:58	07:43 08:08-08:19/11 18:01 17:10-17:32/22	06:35 18:55	06:20 19:36-20:17/41 20:54	05:23 21:05-21:13/8 21:47 19:48-20:03/15	05:03 21:09-21:23/14 22:16
24	08:40 09:10-09:18/8 17:00	07:40 08:06-08:18/12 18:03 17:10-17:33/23	06:32 18:57	06:17 19:36-20:18/42 20:56	05:21 21:04-21:15/11 21:49 19:51-20:01/10	05:04 21:09-21:23/14 22:16
25	08:38 09:08-09:18/10 17:02	07:38 08:05-08:16/11 18:05 17:09-17:32/23	06:30 18:59	06:15 19:35-20:18/43 20:58	05:20 21:04-21:16/12 21:50	05:04 21:10-21:24/14 22:16
26	08:37 09:07-09:18/11 17:04	07:36 08:09-08:12/3 18:07 17:09-17:32/23	06:27 19:01	06:13 19:34-20:18/44 21:00	05:18 21:04-21:18/14 21:52	05:05 21:10-21:23/13 22:16
27	08:35 09:05-09:18/13 17:06 16:32-16:33/1	07:33 17:09-17:31/22 18:09	06:25 19:03	06:11 19:33-20:18/45 21:01	05:17 21:03-21:19/16 21:53	05:05 21:10-21:24/14 22:16
28	08:34 09:03-09:18/15 17:08 16:31-16:35/4	07:31 17:10-17:31/21 18:11	06:22 19:05	06:09 19:33-20:18/45 21:03	05:16 21:03-21:20/17 21:55	05:06 21:10-21:24/14 22:16
29	08:32 09:01-09:17/16 17:10 16:30-16:37/7	07:29 17:09-17:32/23 18:09	06:20 19:07	06:06 19:33-20:19/46 21:05	05:15 21:03-21:20/17 21:56	05:06 21:10-21:25/15 22:16
30	08:31 08:59-09:16/17 17:12 16:29-16:39/10	07:27 17:09-17:32/23 18:09	06:17 19:09	06:04 19:32-20:19/47 21:07	05:14 21:03-21:21/18 21:57	05:07 21:10-21:25/15 22:15
31	08:29 08:59-09:17/18 17:14 16:28-16:41/13	07:25 17:09-17:32/23 18:09	06:15 19:10	06:04 19:32-20:19/47 21:07	05:13 21:03-21:21/18 21:59	05:07 21:10-21:25/15 22:15
Potential sun hours	248	272	367	421	496	513
Sum of minutes with flicker	155	585	46	1024	1001	480

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker

### SHADOW - Calendar per WTG

Calculation: Tirawley Shadow Flicker Real Case WTG: 9 - AT09  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	July	August	September	October	November	December
1	05:07 21:10-21:25/15 22:15	05:48 19:45-20:25/40 21:39	06:44 19:24-20:01/37 20:31	07:38 19:16	07:37 15:59-16:21/22 17:04	08:33 16:19
2	05:08 21:10-21:26/16 22:15	05:50 19:45-20:26/41 21:37	06:46 19:24-19:57/33 20:28	07:40 19:14	07:39 15:58-16:22/24 17:02	08:35 16:18
3	05:09 21:11-21:27/16 22:14	05:52 19:43-20:26/43 21:35	06:47 19:24-19:55/31 20:26	07:42 19:11	07:41 15:59-16:23/24 17:00	08:37 16:18
4	05:10 21:10-21:26/16 22:14	05:53 19:43-20:27/44 21:33	06:49 19:24-19:49/25 20:24	07:44 19:09	07:43 15:58-16:23/25 16:58	08:38 16:17
5	05:11 21:10-21:27/17 22:13	05:55 19:43-20:28/45 21:31	06:51 19:24-19:48/24 20:21	07:45 19:06	07:45 15:58-16:23/25 16:57	08:39 16:16
6	05:12 21:10-21:27/17 22:12	05:57 19:42-20:27/45 21:29	06:53 19:25-19:47/22 20:19	07:47 19:04	07:47 15:58-16:22/24 16:55	08:41 16:16
7	05:13 21:10-21:27/17 22:12	05:59 19:42-20:28/46 21:27	06:55 19:26-19:46/20 20:16	07:49 19:01	07:49 15:58-16:20/22 16:53	08:42 16:15
8	05:14 21:10-21:28/18 22:11	06:00 19:42-20:28/46 21:25	06:56 19:26-19:43/17 20:14	07:51 18:59	07:51 08:34-08:41/7 16:51	08:44 16:15
9	05:15 21:10-21:28/18 22:10	06:02 19:41-20:27/46 21:23	06:58 19:28-19:41/13 20:11	07:53 18:56	07:53 08:32-08:45/13 16:49	08:45 16:14
10	05:16 21:10-21:28/18 22:09	06:04 19:41-20:28/47 21:21	07:00 19:33-19:36/3 20:09	07:55 17:51-17:58/7 18:54	07:55 08:31-08:46/15 16:47	08:46 16:14
11	05:17 21:11-21:28/17 22:08	06:06 19:41-20:28/47 21:19	07:02 20:06	07:57 17:47-18:01/14 18:52	07:57 08:29-08:47/18 16:45	08:47 16:14
12	05:18 21:11-21:28/17 22:07	06:08 19:41-20:27/46 21:17	07:04 20:04	07:59 17:45-18:02/17 18:49	07:59 08:31-08:48/17 16:44	08:48 16:14
13	05:19 21:11-21:28/17 22:06	06:09 19:41-20:27/46 21:15	07:05 20:01	08:00 17:44-18:03/19 18:47	08:01 08:33-08:49/16 16:42	08:49 16:14
14	05:21 21:12-21:29/17 22:05	06:11 19:41-20:27/46 21:13	07:07 19:59	08:02 17:43-18:04/21 18:44	08:03 08:35-08:50/15 16:40	08:50 16:14
15	05:22 21:12-21:29/17 22:04	06:13 19:40-20:26/46 21:10	07:09 19:56	08:04 17:42-18:04/22 18:42	08:05 08:38-08:51/13 16:39	08:51 16:14
16	05:23 21:12-21:28/16 22:03	06:15 19:41-20:26/45 21:08	07:11 19:54	08:06 08:39-08:46/7 18:40	08:07 08:40-08:51/11 16:37	08:52 16:14
17	05:25 21:12-21:27/15 22:02	06:17 19:41-20:25/44 21:06	07:13 19:51	08:08 08:36-08:49/13 18:37	08:09 08:42-08:52/10 16:36	08:53 16:14
18	05:26 21:13-21:27/14 22:01	06:18 19:41-20:24/43 21:04	07:14 19:49	08:10 08:38-08:50/12 18:35	08:11 08:44-08:52/8 16:34	08:54 16:14
19	05:28 21:14-21:25/11 21:59	06:20 19:42-20:23/41 21:02	07:16 19:46	08:12 08:40-08:51/11 18:33	08:13 08:46-08:52/6 16:33	08:55 16:14
20	05:29 21:14-21:24/10 21:58	06:22 19:41-20:23/42 20:59	07:18 19:44	08:14 08:42-08:51/9 18:30	08:14 08:48-08:52/4 16:31	08:55 16:15
21	05:31 21:16-21:23/7 21:57	06:24 19:39-20:21/42 20:57	07:20 19:41	08:16 08:44-08:51/7 18:28	08:16 08:50-08:52/2 16:30	08:56 16:15
22	05:32 21:16-21:21/5 21:55	06:26 19:39-20:20/41 20:55	07:22 19:39	08:18 08:46-08:51/5 18:26	08:18 16:29	08:56 16:15
23	05:34 21:19-21:21/2 21:54	06:27 19:38-20:18/40 20:52	07:23 19:36	08:20 08:48-08:51/3 18:24	08:20 16:27	08:57 16:16
24	05:35 19:52-20:19/27 21:52	06:29 19:36-20:17/41 20:50	07:25 19:34	08:22 17:45-17:51/6 18:21	08:22 16:26	08:57 16:17
25	05:37 19:51-20:20/29 21:51	06:31 19:32-20:14/42 20:48	07:27 19:31	07:24 17:19	08:23 16:25	08:58 16:17
26	05:38 19:50-20:21/31 21:49	06:33 19:30-20:12/42 20:45	07:29 19:29	07:26 17:17	08:25 16:24	08:58 16:18
27	05:40 19:49-20:22/33 21:47	06:35 19:29-20:11/42 20:43	07:31 19:26	07:28 17:15	08:27 16:23	08:58 16:19
28	05:42 19:48-20:23/35 21:46	06:36 19:27-20:09/42 20:41	07:33 19:24	07:30 16:06-16:16/10 17:13	08:29 16:22	08:58 16:20
29	05:43 19:48-20:24/36 21:44	06:38 19:26-20:08/42 20:38	07:34 19:21	07:32 16:03-16:18/15 17:11	08:30 16:21	08:59 16:20
30	05:45 19:46-20:24/38 21:42	06:40 19:26-20:07/41 20:36	07:36 19:19	07:33 16:01-16:20/19 17:09	08:32 16:20	08:59 16:21
31	05:47 19:46-20:25/39 21:40	06:42 19:25-20:05/40 20:33	07:37 17:06	07:35 16:00-16:21/21 17:06	08:33 16:19	08:59 16:22
Potential sun hours	515	461	382	328	257	231
Sum of minutes with flicker	679	1344	225	387	407	0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker



### SHADOW - Calendar per WTG

Calculation: Tirawley Shadow Flicker Real Case WTG: 10 - AT10  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January	February	March	April	May	June
1	08:58 09:33-09:52/19 16:24	08:27 17:16	07:29 17:06-17:34/28 18:13	07:12 20:12	06:02 20:13-20:38/25 21:09	05:12 20:31-20:49/18 22:00
2	08:58 09:33-09:53/20 16:25	08:25 17:18	07:26 17:06-17:33/27 18:15	07:10 20:14	06:00 20:12-20:40/28 21:11	05:11 20:32-20:48/16 22:01
3	08:58 09:33-09:53/20 16:26	08:24 17:20	07:24 17:08-17:32/24 18:17	07:08 20:16	19:37-19:46/9 21:13	05:10 20:32-20:47/15 22:02
4	08:58 09:32-09:53/21 16:27	08:22 17:22	07:22 17:08-17:30/22 18:19	07:05 20:18	19:35-19:48/13 21:14	05:09 20:34-20:47/13 22:04
5	08:57 09:32-09:54/22 16:29	08:20 17:24	07:19 17:10-17:29/19 18:21	07:03 20:20	19:34-19:50/16 21:16	05:08 20:35-20:46/11 22:05
6	08:57 09:31-09:54/23 16:30	08:18 17:26	07:17 17:12-17:26/14 18:23	07:00 20:22	19:33-19:51/18 21:18	05:07 20:36-20:45/9 22:06
7	08:57 09:30-09:54/24 16:31	08:16 17:28	07:14 07:39-07:41/2 18:25 17:16-17:22/6	06:58 20:24	19:33-19:51/18 21:20	05:07 20:38-20:44/6 22:07
8	08:56 09:30-09:55/25 16:33	08:14 17:30	07:12 07:37-07:41/4 18:27 17:56-17:59/3	06:55 20:26	19:32-19:51/19 21:22	05:06 22:08
9	08:55 09:29-09:54/25 16:34	08:12 17:32	07:10 07:34-07:41/7 18:29 17:52-18:01/9	06:53 20:27	19:32-19:51/19 21:24	05:05 22:09
10	08:55 09:28-09:54/26 16:36	08:10 17:34	07:07 07:32-07:41/9 18:30 17:50-18:03/13	06:50 20:29	19:32-19:50/18 21:25	05:05 22:09
11	08:54 09:27-09:54/27 16:37	08:08 17:36	07:05 07:29-07:39/10 18:32 17:48-18:05/17	06:48 20:31	19:33-19:49/16 21:27	05:04 22:10
12	08:53 09:28-09:54/26 16:39	08:06 08:33-08:34/1 17:38	07:02 07:27-07:39/12 18:34 17:47-18:07/20	06:46 20:33	19:35-19:49/14 21:29	05:04 21:23-21:30/7 22:11
13	08:52 09:29-09:54/25 16:40	08:04 08:31-08:35/4 17:40	07:00 07:24-07:37/13 18:36 17:46-18:09/23	06:43 20:35	19:37-19:46/9 21:31	05:04 21:22-21:31/9 22:12
14	08:52 09:30-09:54/24 16:42	08:02 08:29-08:36/7 17:43	06:57 07:25-07:35/10 18:38 17:45-18:10/25	06:41 20:37	19:40-19:43/3 21:32	05:03 21:20-21:32/12 22:12
15	08:51 09:31-09:54/23 16:44	08:00 08:27-08:36/9 17:45	06:55 17:45-18:10/25 18:40	06:38 20:39	20:13-20:53/40 21:34	05:03 21:20-21:33/13 22:13
16	08:50 09:32-09:52/20 16:46	07:58 08:24-08:35/11 17:47 17:16-17:17/1	06:52 17:44-18:10/26 18:42	06:36 20:41	20:14-20:53/39 21:36	05:03 21:20-21:34/14 22:14
17	08:49 09:33-09:52/19 16:47	07:56 08:22-08:35/13 17:49 17:13-17:19/6	06:50 17:44-18:10/26 18:44	06:34 20:43	20:15-20:53/38 21:38	05:03 21:19-21:34/15 22:14
18	08:47 09:35-09:51/16 16:49	07:54 08:20-08:35/15 17:51 17:12-17:22/10	06:47 17:44-18:09/25 18:46	06:31 20:44	20:17-20:53/36 21:39	05:03 21:19-21:35/16 22:15
19	08:46 09:37-09:49/12 16:51	07:52 08:17-08:34/17 17:53 17:10-17:23/13	06:45 17:44-18:08/24 18:48	06:29 20:46	20:18-20:53/35 21:41	05:03 21:19-21:35/16 22:15
20	08:45 09:41-09:46/5 16:53	07:49 08:15-08:34/19 17:55 17:09-17:26/17	06:42 17:44-18:07/23 18:50	06:27 20:48	20:21-20:53/32 21:42	05:03 21:19-21:35/16 22:15
21	08:44 16:55	07:47 08:13-08:33/20 17:57 17:08-17:28/20	06:40 17:46-18:06/20 18:52	06:24 20:50	20:25-20:53/28 21:44	05:03 21:20-21:36/16 22:16
22	08:43 16:56	07:45 08:13-08:31/18 17:59 17:07-17:30/23	06:37 17:47-18:04/17 18:53	06:22 20:52	20:24-20:52/28 21:46	05:03 21:20-21:36/16 22:16
23	08:41 16:58	07:43 08:15-08:29/14 18:01 17:06-17:32/26	06:35 17:49-18:02/13 18:55	06:20 20:54	20:25-20:52/27 21:47	05:03 21:20-21:36/16 22:16
24	08:40 17:00	07:40 08:18-08:26/8 18:03 17:06-17:35/29	06:32 17:52-17:57/5 18:57	06:17 20:56	20:26-20:52/26 21:49	05:04 21:20-21:36/16 22:16
25	08:38 17:02	07:38 17:05-17:35/30 18:05	06:30 18:59	06:15 20:58	20:26-20:52/26 21:50	05:04 21:21-21:37/16 22:16
26	08:37 17:04	07:36 17:06-17:35/29 18:07	06:27 19:01	06:13 21:00	20:27-20:52/25 21:52	05:05 21:22-21:36/14 22:16
27	08:35 17:06	07:33 17:05-17:34/29 18:09	06:25 19:03	06:11 20:20-20:28/8 21:01	20:28-20:51/23 21:53	05:05 21:23-21:36/13 22:16
28	08:34 17:08	07:31 17:06-17:34/28 18:11	06:22 19:05	06:09 20:17-20:31/14 21:03	20:28-20:51/23 21:55	05:06 21:23-21:35/12 22:16
29	08:32 17:10		07:20 20:07	06:06 20:16-20:33/17 21:05	20:29-20:51/22 21:56	05:06 21:25-21:35/10 22:16
30	08:31 17:12		07:17 20:09	06:04 20:14-20:34/20 21:07	20:29-20:50/21 21:57	05:07 21:26-21:34/8 22:15
31	08:29 17:14		07:15 20:10		20:30-20:50/20 21:59	
Potential sun hours	248	272	367	421	496	513
Sum of minutes with flicker	422	417	521	231	996	343

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker

### SHADOW - Calendar per WTG

Calculation: Tirawley Shadow Flicker Real Case WTG: 10 - AT10

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	July		August		September		October		November		December	
1	05:07	21:28-21:32/4	05:48	20:21-21:02/41	06:44	19:32-19:48/16	07:38	08:05-08:17/12	07:37		08:33	09:09-09:36/27
	22:15		21:39		20:31		19:16	18:26-18:48/22	17:04		16:19	
2	05:08		05:50	20:21-21:02/41	06:46	19:31-19:49/18	07:40	08:07-08:18/11	07:39		08:35	09:11-09:38/27
	22:15		21:37		20:28		19:14	18:26-18:44/18	17:02		16:18	
3	05:09		05:52	20:20-21:00/40	06:47	19:30-19:49/19	07:42	08:09-08:19/10	07:41		08:37	09:12-09:38/26
	22:14		21:35		20:26		19:11	18:27-18:42/15	17:00		16:18	
4	05:10		05:53	20:20-21:00/40	06:49	19:29-19:48/19	07:44	08:10-08:18/8	07:43		08:38	09:14-09:39/25
	22:14		21:33		20:24		19:09	18:28-18:39/11	16:58		16:17	
5	05:11	20:44-20:49/5	05:55	20:21-20:59/38	06:51	19:29-19:47/18	07:45	08:12-08:18/6	07:45		08:39	09:15-09:39/24
	22:13		21:31		20:21		19:06	18:31-18:37/6	16:56		16:16	
6	05:12	20:43-20:51/8	05:57	20:20-20:57/37	06:53	19:29-19:47/18	07:47	08:14-08:17/3	07:47		08:41	09:17-09:40/23
	22:12		21:29		20:19		19:04		16:55		16:16	
7	05:13	20:42-20:52/10	05:59	20:20-20:56/36	06:55	19:29-19:45/16	07:49	08:16-08:17/1	07:49		08:42	09:18-09:40/22
	22:12		21:27		20:16		19:01	17:49-18:00/11	16:53		16:15	
8	05:14	20:41-20:53/12	06:00	20:21-20:54/33	06:56	19:29-19:42/13	07:51	17:46-18:03/17	07:51		08:44	09:20-09:41/21
	22:11		21:25		20:14		18:59		16:51		16:15	
9	05:15	20:40-20:54/14	06:02	20:20-20:52/32	06:58	19:31-19:40/9	07:53	17:44-18:04/20	07:53		08:45	09:21-09:41/20
	22:10		21:23		20:11		18:56		16:49		16:14	
10	05:16	20:39-20:55/16	06:04	20:21-20:50/29	07:00	19:34-19:37/3	07:55	17:42-18:06/24	07:55		08:46	09:22-09:42/20
	22:09		21:21		20:09		18:54		16:47		16:14	
11	05:17	20:39-20:56/17	06:06	20:22-20:48/26	07:02		07:57	17:41-18:06/25	07:57		08:47	09:24-09:43/19
	22:08		21:19		20:06		18:52		16:45		16:14	
12	05:18	20:38-20:57/19	06:08	20:22-20:43/21	07:04		07:59	17:40-18:07/27	07:59		08:48	09:25-09:43/18
	22:07		21:17		20:04		18:49		16:44		16:14	
13	05:19	20:37-20:57/20	06:09	20:23-20:42/19	07:05		08:00	17:39-18:07/28	08:01		08:49	09:26-09:44/18
	22:06		21:15		20:01		18:47		16:42		16:14	
14	05:21	20:38-20:59/21	06:11	20:24-20:41/17	07:07		08:02	17:39-18:08/29	08:03		08:50	09:27-09:44/17
	22:05		21:13		19:59		18:44		16:40		16:14	
15	05:22	20:37-20:59/22	06:13	20:26-20:38/12	07:09		08:04	17:38-18:08/30	08:05		08:51	09:28-09:45/17
	22:04		21:10		19:56		18:42		16:39		16:14	
16	05:23	20:36-21:00/24	06:15	20:29-20:35/6	07:11		08:06	17:38-18:07/29	08:07		08:52	09:29-09:45/16
	22:03		21:08		19:54		18:40		16:37		16:14	
17	05:25	20:36-21:00/24	06:17		07:13		08:08	17:38-18:07/29	08:09		08:53	09:30-09:46/16
	22:02		21:06		19:51		18:37		16:36		16:14	
18	05:26	20:36-21:01/25	06:18		07:14		08:10	08:48-08:59/11	08:11		08:54	09:30-09:46/16
	22:01		21:04		19:49		18:35	17:38-18:05/27	16:34		16:14	
19	05:28	20:35-21:01/26	06:20		07:16		08:12	08:46-09:01/15	08:13		08:55	09:31-09:46/15
	21:59		21:02		19:46		18:33	17:38-18:03/25	16:33		16:14	
20	05:29	20:35-21:02/27	06:22		07:18	18:36-18:48/12	08:14	08:44-09:03/19	08:14		08:55	09:32-09:47/15
	21:58		20:59		19:44		18:30	17:38-18:00/22	16:31		16:15	
21	05:31	20:35-21:03/28	06:24		07:20	18:33-18:49/16	08:16	08:44-09:04/20	08:16		08:56	09:32-09:47/15
	21:57		20:57		19:41		18:28	17:39-17:58/19	16:30		16:15	
22	05:32	20:35-21:03/28	06:26		07:22	18:31-18:50/19	08:18	08:46-09:04/18	08:18	09:17-09:22/5	08:56	09:33-09:48/15
	21:55		20:55		19:39		18:26	17:39-17:55/16	16:29		16:15	
23	05:34	20:35-21:04/29	06:27		07:23	18:29-18:51/22	08:20	08:48-09:05/17	08:20	09:14-09:26/12	08:57	09:33-09:48/15
	21:54		20:52		19:36		18:24	17:40-17:53/13	16:27		16:16	
24	05:35	20:30-21:03/33	06:29		07:25	18:28-18:52/24	08:22	08:50-09:05/15	08:22	09:12-09:28/16	08:57	09:34-09:49/15
	21:52		20:50		19:34		18:21	17:42-17:51/9	16:26		16:17	
25	05:37	20:27-21:03/36	06:31		07:27	18:28-18:52/24	07:24	07:52-08:05/13	08:23	09:11-09:30/19	08:58	09:34-09:49/15
	21:51		20:48		19:31		17:19	16:43-16:48/5	16:25		16:17	
26	05:38	20:26-21:04/38	06:33		07:29	18:26-18:51/25	07:26	07:55-08:06/11	08:25	09:11-09:31/20	08:58	09:34-09:50/16
	21:49		20:45		19:29		17:17		16:24		16:18	
27	05:40	20:25-21:03/38	06:35		07:31	18:26-18:51/25	07:28	07:57-08:05/8	08:27	09:10-09:33/23	08:58	09:34-09:50/16
	21:47		20:43		19:26		17:15		16:23		16:19	
28	05:42	20:24-21:04/40	06:36		07:33	18:25-18:51/26	07:30	07:59-08:05/6	08:29	09:10-09:34/24	08:58	09:34-09:50/16
	21:46		20:41		19:24		17:13		16:22		16:20	
29	05:43	20:23-21:03/40	06:38	19:40-19:44/4	07:34	08:06-08:13/7	07:32	08:01-08:04/3	08:30	09:09-09:34/25	08:59	09:34-09:51/17
	21:44		20:38		19:21	18:26-18:51/25	17:11		16:21		16:20	
30	05:45	20:22-21:03/41	06:40	19:37-19:47/10	07:36	08:04-08:16/12	07:33	08:03-08:04/1	08:32	09:09-09:35/26	08:59	09:34-09:51/17
	21:42		20:36		19:19	18:26-18:50/24	17:09		16:20		16:21	
31	05:47	20:22-21:03/41	06:42	19:35-19:48/13			07:35				08:59	09:34-09:52/18
	21:40		20:33				17:06				16:22	
Potential sun hours	515		461		383		328		257		231	
Sum of minutes with flicker	686		495		410		685		170		577	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker

## SHADOW - Calendar per WTG

Calculation: Tirawley Shadow Flicker Real Case WTG: 11 - AT11

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June
1	08:58 16:24	08:27 08:56-09:16/20 17:16	07:29 18:13	07:12 07:37-07:41/4 20:12 19:19-19:45/26	06:02 21:09	05:12 21:06-21:25/19 22:00
2	08:58 16:25	08:26 08:54-09:17/23 17:18	07:26 18:15	07:10 07:34-07:40/6 20:14 19:19-19:47/28	06:00 21:11	05:11 21:05-21:26/21 22:01
3	08:58 16:26	08:24 08:52-09:17/25 17:20	07:24 18:17	07:08 07:32-07:41/9 20:16 19:18-19:46/28	05:58 21:13	05:10 21:05-21:27/22 22:02
4	08:58 16:27	08:22 08:50-09:18/28 17:22	07:22 18:19	07:05 07:29-07:40/11 20:18 19:19-19:46/27	05:56 21:14	05:09 21:06-21:28/22 22:04
5	08:57 16:29	08:20 08:48-09:18/30 17:24	07:19 18:21	07:03 07:27-07:40/13 20:20 19:19-19:46/27	05:54 21:16	05:08 21:05-21:29/24 22:05
6	08:57 16:30	08:18 08:46-09:19/33 17:26	07:17 18:23	07:00 07:24-07:39/15 20:22 19:19-19:44/25	05:52 21:18	05:07 21:05-21:30/25 22:06
7	08:57 16:31	08:16 08:44-09:19/35 17:28	07:14 18:25	06:58 07:22-07:39/17 20:24 19:20-19:44/24	05:50 21:20	05:07 21:06-21:31/25 22:07
8	08:56 16:33	08:14 08:42-09:19/37 17:30	07:12 18:27	06:55 07:19-07:37/18 19:20-19:42/22 20:26 19:51-19:58/7	05:48 21:22	05:06 21:05-21:31/26 22:08
9	08:55 16:34	08:12 08:40-09:20/40 17:32	07:10 18:29	06:53 07:19-07:36/17 19:21-19:41/20 20:27 19:49-20:00/11	05:46 21:24	05:05 21:06-21:33/27 22:09
10	08:55 16:36	08:10 08:37-09:19/42 17:34	07:07 18:30	06:50 07:21-07:34/13 19:23-19:39/16 20:29 19:48-20:02/14	05:44 21:25	05:05 21:05-21:33/28 22:10
11	08:54 16:37	08:08 08:35-09:19/44 17:36	07:05 18:32	06:48 07:22-07:31/9 19:25-19:36/11 20:31 19:46-20:03/17	05:42 21:27	05:04 21:06-21:34/28 22:10
12	08:53 16:39	08:06 08:33-09:19/46 17:38	07:02 18:34	06:46 19:45-20:05/20 20:33	05:40 21:29	05:04 21:06-21:35/29 22:11
13	08:52 16:40	08:04 08:31-09:19/48 17:40	07:00 07:24-07:25/1 18:36	06:43 19:44-20:06/22 20:35	05:39 21:31	05:04 21:07-21:36/29 22:12
14	08:52 16:42	08:02 08:29-09:19/50 17:43	06:57 07:22-07:27/5 18:38	06:41 19:43-20:06/23 20:37	05:37 21:32	05:03 21:06-21:36/30 22:13
15	08:51 16:44	08:00 08:29-09:19/50 17:45	06:55 07:19-07:27/8 18:40	06:38 19:43-20:06/23 20:39	05:35 21:34	05:03 21:06-21:36/30 22:13
16	08:50 16:46	07:58 08:28-09:18/50 17:47	06:52 07:17-07:29/12 18:42	06:36 19:43-20:05/22 20:41	05:33 21:36	05:03 21:07-21:37/30 22:14
17	08:49 16:47	07:56 08:29-09:17/48 17:49	06:50 07:14-07:28/14 18:44	06:34 19:43-20:05/22 20:43	05:32 21:38	05:03 21:07-21:37/30 22:14
18	08:47 16:49	07:54 08:30-09:17/47 17:51	06:47 07:11-07:28/17 18:46	06:31 19:44-20:05/21 20:44	05:30 21:39	05:03 21:07-21:38/31 22:15
19	08:46 16:51	07:52 08:30-09:15/45 17:53	06:45 07:09-07:29/20 18:48	06:29 19:44-20:04/20 20:46	05:28 21:41	05:03 21:07-21:38/31 22:15
20	08:45 16:53	07:49 08:31-09:15/44 17:55	06:42 07:06-07:28/22 18:50	06:27 19:44-20:02/18 20:48	05:27 21:43	05:03 21:07-21:38/31 22:15
21	08:44 16:55	07:47 08:33-09:14/41 17:57	06:40 07:04-07:28/24 18:52	06:24 19:46-20:00/14 20:50	05:25 21:44	05:03 21:08-21:39/31 22:16
22	08:43 16:56	07:45 08:33-09:12/39 17:59	06:37 07:01-07:27/26 18:53	06:22 19:48-19:58/10 20:52	05:24 21:46	05:03 21:08-21:39/31 22:16
23	08:41 16:58	07:43 08:35-09:10/35 18:01	06:35 06:59-07:27/28 18:55	06:20 20:54 20:54	05:22 21:12-21:13/1 21:47	05:03 21:08-21:39/31 22:16
24	08:40 17:00	07:40 08:37-09:09/32 18:03	06:32 06:56-07:26/30 18:57	06:17 20:56 20:56	05:21 21:10-21:15/5 21:49	05:04 21:08-21:39/31 22:16
25	08:38 09:08-09:09/1 17:02	07:38 08:38-09:06/28 18:05	06:30 06:56-07:25/29 18:59	06:15 20:58 20:58	05:20 21:09-21:16/7 21:50	05:04 21:09-21:39/30 22:16
26	08:37 09:07-09:11/4 17:04	07:36 08:41-09:03/22 18:07	06:27 06:56-07:23/27 19:01 18:29-18:34/5	06:13 21:00 21:00	05:18 21:09-21:18/9 21:52	05:05 21:09-21:39/30 22:16
27	08:35 09:05-09:11/6 17:06	07:33 08:45-09:00/15 18:09	06:25 06:58-07:22/24 19:03 18:26-18:36/10	06:11 21:01 21:01	05:17 21:08-21:19/11 21:53	05:05 21:10-21:39/29 22:16
28	08:34 09:03-09:12/9 17:08	07:31 18:11	06:22 06:58-07:20/22 19:05 18:24-18:37/13	06:09 21:03 21:03	05:16 21:08-21:20/12 21:55	05:06 21:09-21:39/30 22:16
29	08:32 09:01-09:13/12 17:10		07:20 08:00-08:18/18 20:07 19:23-19:40/17	06:06 21:05 21:05	05:15 21:07-21:22/15 21:56	05:06 21:10-21:39/29 22:16
30	08:31 08:59-09:14/15 17:12		07:17 08:02-08:14/12 20:09 19:21-19:41/20	06:04 21:07 21:07	05:14 21:07-21:23/16 21:57	05:07 21:09-21:38/29 22:15
31	08:29 08:58-09:15/17 17:14		07:15 19:21-19:43/22 20:10	21:07	05:13 21:06-21:24/18 21:59	
Potential sun hours	248	272	367	421	496	513
Sum of minutes with flicker	64	997	426	650	94	839

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker

### SHADOW - Calendar per WTG

Calculation: Tirawley Shadow Flicker Real Case WTG: 11 - AT11

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	July		August		September		October		November		December	
1	05:07	21:10-21:38/28	05:48		06:44	07:21-07:30/9	19:23-19:35/12	07:38		07:37	08:07-08:49/42	08:33
	22:15		21:39		20:31	19:45-20:02/17		19:16		17:04		16:19
2	05:08	21:11-21:38/27	05:50		06:46	07:18-07:32/14	19:21-19:37/16	07:40		07:39	08:09-08:48/39	08:35
	22:15		21:37		20:29	19:46-20:00/14		19:14		17:02		16:18
3	05:09	21:11-21:38/27	05:52		06:47	07:17-07:34/17	19:19-19:39/20	07:42		07:41	08:12-08:49/37	08:37
	22:14		21:35		20:26	19:47-19:58/11		19:11		17:00		16:18
4	05:10	21:10-21:37/27	05:53		06:49	07:17-07:35/18	19:17-19:39/22	07:44		07:43	08:14-08:49/35	08:38
	22:14		21:33		20:24	19:48-19:55/7		19:09		16:58		16:17
5	05:11	21:11-21:37/26	05:55		06:51	07:18-07:35/17		07:45		07:45	08:16-08:48/32	08:39
	22:13		21:31		20:21	19:16-19:40/24		19:06		16:56		16:16
6	05:12	21:11-21:36/25	05:57		06:53	07:20-07:35/15		07:47		07:47	08:18-08:48/30	08:41
	22:12		21:29		20:19	19:15-19:40/25		19:04		16:55		16:16
7	05:13	21:12-21:36/24	05:59		06:55	07:22-07:35/13		07:49		07:49	08:20-08:48/28	08:42
	22:12		21:27		20:16	19:14-19:41/27		19:01		16:53		16:15
8	05:14	21:12-21:35/23	06:00		06:56	07:24-07:35/11		07:51		07:51	08:22-08:47/25	08:44
	22:11		21:25		20:14	19:13-19:40/27		18:59		16:51		16:15
9	05:15	21:12-21:34/22	06:02		06:58	07:25-07:34/9		07:53		07:53	08:25-08:47/22	08:45
	22:10		21:23		20:11	19:13-19:40/27		18:56		16:49		16:14
10	05:16	21:13-21:34/21	06:04		07:00	07:27-07:34/7		07:55		07:55	08:27-08:47/20	08:46
	22:09		21:21		20:09	19:13-19:40/27		18:54		16:47		16:14
11	05:17	21:13-21:33/20	06:06		07:02	07:29-07:33/4		07:57		07:57	08:29-08:46/17	08:47
	22:08		21:19		20:06	19:13-19:38/25		18:52		16:45		16:14
12	05:18	21:13-21:32/19	06:08		07:04	07:31-07:32/1		07:59		07:59	08:31-08:46/15	08:48
	22:07		21:17		20:04	19:12-19:35/23		18:49		16:44		16:14
13	05:19	21:14-21:31/17	06:09		07:05	07:54-08:05/11		08:01		08:01	08:33-08:45/12	08:49
	22:06		21:15		20:01	19:12-19:33/21		18:47		16:42		16:14
14	05:21	21:15-21:31/16	06:11		07:07	07:51-08:08/17		08:02	09:21-09:28/7	08:03	08:35-08:44/9	08:50
	22:05		21:13		19:59	19:13-19:31/18		18:44		16:40		16:14
15	05:22	21:16-21:30/14	06:13		07:09	07:49-08:10/21		08:04	09:15-09:33/18	08:05	08:37-08:43/6	08:51
	22:04		21:10		19:56	19:14-19:28/14		18:42		16:39		16:14
16	05:23	21:16-21:28/12	06:15		07:11	07:47-08:12/25		08:06	09:12-09:37/25	08:07	08:40-08:43/3	08:52
	22:03		21:08		19:54	19:15-19:25/10		18:40		16:37		16:14
17	05:25	21:17-21:27/10	06:17		07:13	07:45-08:12/27		08:08	09:09-09:39/30	08:09	08:42-08:43/1	08:53
	22:02		21:06		19:51	19:17-19:23/6		18:37		16:36		16:14
18	05:26	21:18-21:27/9	06:18		07:14	07:44-08:13/29		08:10	09:07-09:41/34	08:11		08:54
	22:01		21:04		19:49			18:35		16:34		16:14
19	05:28	21:19-21:25/6	06:20		07:16	07:43-08:13/30		08:12	09:05-09:42/37	08:13		08:55
	21:59		21:02		19:46			18:33		16:33		16:14
20	05:29	21:20-21:24/4	06:22	19:57-20:01/4	07:18	07:45-08:14/29		08:14	09:04-09:43/39	08:14		08:55
	21:58		20:59		19:44			18:30		16:31		16:15
21	05:31		06:24	19:52-20:03/11	07:20	07:46-08:13/27		08:16	09:03-09:44/41	08:16		08:56
	21:57		20:57		19:41			18:28		16:30		16:15
22	05:32		06:26	19:50-20:05/15	07:22	07:48-08:13/25		08:18	09:01-09:45/44	08:18		08:56
	21:55		20:55		19:39			18:26		16:29		16:15
23	05:34		06:27	19:49-20:07/18	07:23	07:50-08:13/23		08:20	09:00-09:46/46	08:20		08:57
	21:54		20:52		19:36			18:24		16:27		16:16
24	05:35		06:29	19:48-20:08/20	07:25	07:52-08:12/20		08:22	08:59-09:46/47	08:22		08:57
	21:52		20:50		19:34			18:21		16:26		16:17
25	05:37		06:31	19:46-20:07/21	07:27	07:54-08:12/18		07:24	07:58-08:47/49	08:23		08:58
	21:51		20:48		19:31			17:19		16:25		16:17
26	05:38		06:33	19:46-20:08/22	07:29	07:55-08:10/15		07:26	07:58-08:47/49	08:25		08:58
	21:49		20:45		19:29			17:17		16:24		16:18
27	05:40		06:35	19:45-20:08/23	07:31	07:57-08:10/13		07:28	07:58-08:48/50	08:27		08:58
	21:47		20:43		19:26			17:15		16:23		16:19
28	05:42		06:36	19:44-20:07/23	07:33	07:59-08:09/10		07:30	07:59-08:49/50	08:29		08:58
	21:46		20:41		19:24			17:13		16:22		16:20
29	05:43		06:38	19:44-20:07/23	07:34	08:01-08:07/6		07:32	08:01-08:49/48	08:30		08:59
	21:44		20:38		19:21			17:11		16:21		16:20
30	05:45		06:40	19:45-20:07/22	07:36	08:03-08:06/3		07:34	08:03-08:49/46	08:32		08:59
	21:42		20:36		19:19			17:09		16:20		16:21
31	05:47		06:42	19:45-20:05/20				07:35	08:05-08:49/44			08:59
	21:41		20:33					17:06				16:22
Potential sun hours	515		461		383			327		257		230
Sum of minutes with flicker	377		222		877			704		373		0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker

### SHADOW - Calendar per WTG

Calculation: Tirawley Shadow Flicker Real Case WTG: 12 - AT12

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January	February	March	April	May	June	
1	08:59 15:27-15:45/18 16:24	08:27 17:16	07:29 18:13	07:12 20:12	06:02 20:32-20:38/6 21:09	05:12 05:43-05:52/9 22:00	
2	08:58 15:27-15:46/19 16:25	08:26 17:18	07:26 18:15	07:10 20:14	06:00 20:30-20:40/10 21:11	05:11 05:42-05:53/11 22:01	
3	08:58 15:28-15:48/20 16:26	08:24 17:20	07:24 18:17	07:08 20:16	05:58 20:29-20:42/13 21:13	05:10 05:41-05:53/12 22:02	
4	08:58 15:28-15:49/21 16:27	08:22 17:22	07:22 18:19	07:05 20:18	05:56 20:27-20:43/16 21:14	05:09 05:41-05:55/14 22:04	
5	08:57 15:29-15:51/22 16:29	08:20 17:24	07:19 18:21	07:03 20:20	05:54 20:27-20:45/18 21:16	05:08 05:40-05:55/15 22:05	
6	08:57 15:28-15:52/24 16:30	08:18 17:26	07:17 18:23	07:00 20:22	05:52 20:27-20:46/19 21:18	05:07 05:39-05:55/16 22:06	
7	08:57 15:28-15:53/25 16:31	08:16 17:28	07:14 18:25	06:58 20:24	05:50 20:26-20:49/23 21:20	05:07 05:39-05:56/17 22:07	
8	08:56 15:29-15:56/27 16:33	08:14 17:30	07:12 18:27	06:55 20:26	05:48 20:26-20:50/24 21:22	05:06 05:38-05:56/18 22:08	
9	08:55 15:30-15:57/27 16:34	08:12 17:32	07:10 18:29	06:53 20:28	05:46 20:26-20:52/26 21:24	05:05 05:38-05:57/19 22:09	
10	08:55 15:30-15:59/29 16:36	08:10 17:34	07:07 18:30	06:50 20:29	05:44 20:26-20:53/27 21:25	05:05 05:38-05:57/19 22:10	
11	08:54 15:30-16:00/30 16:37	08:08 17:36	07:05 18:32	06:48 20:31	05:42 20:27-20:54/27 21:27	05:04 05:37-05:57/20 22:10	
12	08:53 15:30-16:02/32 16:39	08:06 17:38	07:02 18:34	06:46 20:33	05:40 20:27-20:54/27 21:29	05:04 05:37-05:58/21 22:11	
13	08:52 15:31-16:04/33 16:40	08:04 17:41	07:00 18:36	06:43 20:35	05:39 20:27-20:54/27 21:31	05:04 05:37-05:58/21 22:12	
14	08:52 15:31-16:06/35 16:42	08:02 17:43	06:57 18:38	06:41 20:37	05:37 20:28-20:55/27 21:32	05:03 05:37-05:59/22 22:13	
15	08:51 15:32-16:07/35 16:44	08:00 17:45	06:55 18:40	06:38 20:39	05:35 20:29-20:54/25 21:34	05:03 05:36-05:58/22 22:13	
16	08:50 15:32-16:07/35 16:46	07:58 17:47	06:52 18:42	06:36 20:41	05:33 20:31-20:55/24 21:36	05:03 05:36-05:59/23 22:14	
17	08:49 15:32-16:08/36 16:47	07:56 17:49	06:50 18:44	06:34 20:43	05:32 20:32-20:54/22 21:38	05:03 05:36-05:59/23 22:14	
18	08:47 15:33-16:09/36 16:49	07:54 17:51	06:47 18:46	06:31 20:45	05:30 20:39-20:54/15 21:39	05:03 05:36-05:59/23 22:15	
19	08:46 15:33-16:09/36 16:51	07:52 17:53	06:45 18:48	06:29 20:46	05:28 20:39-20:53/14 21:41	05:03 05:36-05:59/23 22:15	
20	08:45 15:34-16:09/35 16:53	07:49 17:55	06:42 18:50	06:27 20:48	05:27 20:40-20:53/13 21:43	05:03 05:37-06:00/23 22:15	
21	08:44 15:34-16:09/35 16:55	07:47 17:57	06:40 18:52	06:24 20:50	05:25 20:41-20:52/11 21:44	05:03 05:37-06:00/23 22:16	
22	08:43 15:35-16:10/35 16:56	07:45 17:59	06:37 18:53	06:22 20:52	05:24 20:42-20:50/8 21:46	05:03 05:37-06:00/23 22:16	
23	08:41 15:35-16:09/34 16:58	07:43 18:01	06:35 18:55	06:20 20:54	05:22 20:44-20:49/5 21:47	05:03 05:37-06:00/23 22:16	
24	08:40 15:37-16:10/33 17:00	07:40 18:03	06:32 18:57	06:17 20:56	05:21 06:17 21:49	05:04 05:38-06:01/23 22:16	
25	08:38 15:37-16:09/32 17:02	07:38 18:05	06:30 18:59	06:15 20:58	05:20 20:58 21:50	05:04 05:38-06:01/23 22:16	
26	08:37 15:39-16:10/31 17:04	07:36 18:07	06:27 19:01	06:13 21:00	05:18 21:52 21:52	05:05 05:38-06:01/23 22:16	
27	08:35 15:40-16:09/29 17:06	07:33 18:09	06:25 19:03	06:11 21:01	05:17 21:53 21:53	05:05 05:39-06:01/22 22:16	
28	08:34 15:42-16:08/26 17:08	07:31 18:11	06:22 19:05	06:09 21:03	05:16 05:47-05:48/1 21:55	05:06 05:39-06:01/22 22:16	
29	08:32 15:45-16:07/22 17:10		07:20 20:07	06:06 21:05	05:15 05:46-05:50/4 21:56	05:06 05:40-06:02/22 22:16	
30	08:31 15:52-16:05/13 17:12		07:17 20:09	06:04 21:07	05:14 05:45-05:51/6 21:57	05:07 05:41-06:02/21 22:15	
31	08:29 15:55-16:04/9 17:14		07:15 20:11		05:13 05:44-05:52/8 21:59		
Potential sun hours	248	272	367	421	496	513	
Sum of minutes with flicker	874	0	0	0	446	596	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker

## SHADOW - Calendar per WTG

Calculation: Tirawley Shadow Flicker Real Case WTG: 12 - AT12  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	July	August	September	October	November	December
1	05:07 05:41-06:01/20 22:15	05:48 20:37-21:05/28 21:39	06:44 20:31	07:38 19:16	07:38 17:04	08:34 15:12-15:42/30 16:19
2	05:08 05:42-06:02/20 22:15	05:50 20:37-21:05/28 21:37	06:46 20:29	07:40 19:14	07:39 17:02	08:35 15:13-15:42/29 16:18
3	05:09 05:43-06:02/19 22:14	05:52 20:36-21:03/27 21:35	06:47 20:26	07:42 19:11	07:41 17:00	08:37 15:13-15:40/27 16:18
4	05:10 05:44-06:02/18 22:14	05:53 20:36-21:02/26 21:33	06:49 20:24	07:44 19:09	07:43 16:58	08:38 15:14-15:40/26 16:17
5	05:11 05:44-06:01/17 22:13	05:55 20:37-21:00/23 21:31	06:51 20:21	07:46 19:06	07:45 16:56	08:40 15:14-15:38/24 16:16
6	05:12 05:45-06:01/16 22:12	05:57 20:36-20:58/22 21:29	06:53 20:19	07:47 19:04	07:47 16:55	08:41 15:15-15:38/23 16:16
7	05:13 05:46-06:01/15 22:12	05:59 20:37-20:55/18 21:27	06:55 20:16	07:49 19:01	07:49 16:53	08:42 15:15-15:37/22 16:15
8	05:14 05:47-06:01/14 22:11	06:00 20:37-20:55/18 21:25	06:56 20:14	07:51 18:59	07:51 16:51	08:44 15:16-15:37/21 16:15
9	05:15 05:48-06:01/13 22:10	06:02 20:37-20:52/15 21:23	06:58 20:11	07:53 18:56	07:53 16:49	08:45 15:16-15:36/20 16:14
10	05:16 05:49-06:01/12 22:09	06:04 20:38-20:51/13 21:21	07:00 20:09	07:55 18:54	07:55 16:47	08:46 15:16-15:35/19 16:14
11	05:17 05:50-06:00/10 22:08	06:06 20:39-20:48/9 21:19	07:02 20:06	07:57 18:52	07:57 16:45	08:47 15:18-15:36/18 16:14
12	05:18 05:51-06:00/9 22:08	06:08 20:41-20:46/5 21:17	07:04 20:04	07:59 18:49	07:59 16:44	08:48 15:18-15:35/17 16:14
13	05:19 05:53-06:00/7 22:06	06:09 21:15	07:05 20:01	08:01 18:47	08:01 16:42	08:49 15:19-15:35/16 16:14
14	05:21 05:54-05:59/5 22:05	06:11 21:13	07:07 19:59	08:02 18:44	08:03 16:40	08:50 15:19-15:35/16 16:13
15	05:22 05:55-05:57/2 22:04	06:13 21:10	07:09 19:56	08:04 18:42	08:05 16:39	08:51 15:20-15:35/15 16:14
16	05:23 22:03	06:15 21:08	07:11 19:54	08:06 18:40	08:07 16:37	08:52 15:21-15:35/14 16:14
17	05:25 22:02	06:17 21:06	07:13 19:51	08:08 18:37	08:09 16:36	08:53 15:22-15:35/13 16:14
18	05:26 22:01	06:18 21:04	07:14 19:49	08:10 18:35	08:11 16:34	08:54 15:21-15:35/14 16:14
19	05:28 21:59	06:20 21:02	07:16 19:46	08:12 18:33	08:13 16:33	08:55 15:22-15:35/13 16:14
20	05:29 21:58	06:22 20:59	07:18 19:44	08:14 18:30	08:14 16:31	08:55 15:23-15:36/13 16:15
21	05:30 21:57	06:24 20:57	07:20 19:41	08:16 18:28	08:16 16:30	08:56 15:23-15:36/13 16:15
22	05:32 21:55	06:26 20:55	07:22 19:39	08:18 18:26	08:18 16:29	08:57 15:24-15:37/13 16:15
23	05:34 21:54	06:27 20:52	07:23 19:36	08:20 18:24	08:20 16:27	08:57 15:24-15:37/13 16:16
24	05:35 21:52	06:29 20:50	07:25 19:34	08:22 18:21	08:22 16:26	08:57 15:25-15:38/13 16:17
25	05:37 21:51	06:31 20:48	07:27 19:31	08:24 17:19	08:24 16:25	08:58 15:25-15:38/13 16:17
26	05:38 21:49	06:33 20:45	07:29 19:29	08:26 17:17	08:25 16:24	08:58 15:25-15:39/14 16:18
27	05:40 21:47	06:35 20:43	07:31 19:26	08:28 17:15	08:27 16:23	08:58 15:26-15:40/14 16:19
28	05:42 21:46	06:36 20:41	07:33 19:24	08:30 17:13	08:29 16:22	08:58 15:26-15:40/14 16:20
29	05:43 21:44	06:38 20:38	07:34 19:21	08:32 17:11	08:30 16:21	08:59 15:26-15:41/15 16:20
30	05:45 21:42	06:40 20:36	07:36 19:19	08:34 17:09	08:32 16:20	08:59 15:27-15:43/16 16:21
31	05:47 21:41	06:42 20:33		07:36 17:06		08:59 15:27-15:44/17 16:22
Potential sun hours	515	461	383	327	257	230
Sum of minutes with flicker	403	232	0	0	614	545

Table layout: For each day in each month the following matrix apply

Day in month Sun rise (hh:mm) First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker  
 Sun set (hh:mm) First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker



### SHADOW - Calendar per WTG

Calculation: Tirawley Shadow Flicker Real Case WTG: 13 - AT13

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January	February	March	April	May	June			
1	08:59 16:24	08:27 17:16	07:29 18:13	07:12 20:12	07:36-08:05/29	06:02 21:09	06:28-07:03/35	07:19-07:47/28	05:12 22:00
2	08:58 16:25	08:26 17:18	07:26 18:15	07:10 20:14	07:34-08:06/32	06:00 21:11	06:26-07:02/36	07:21-07:45/24	05:11 22:01
3	08:58 16:26	08:24 17:20	07:24 18:17	07:08 20:16	07:32-08:08/36	05:58 21:13	06:24-07:01/37	07:24-07:41/17	05:10 22:02
4	08:58 16:27	08:22 17:22	07:22 18:19	07:05 20:18	07:29-08:07/38	05:56 21:14	06:25-07:00/35	07:30-07:35/5	05:09 22:04
5	08:57 16:29	08:20 17:24	07:19 18:21	07:03 20:20	07:27-08:08/41	05:54 21:16	06:26-07:00/34		05:08 22:05
6	08:57 16:30	08:18 17:26	07:17 18:23	07:00 20:22	07:24-08:08/44	05:52 21:18	06:27-06:58/31		05:07 22:06
7	08:57 16:31	08:16 17:28	07:14 18:25	06:58 20:24	07:22-08:09/47	05:50 21:20	06:28-06:39/11	20:12-20:49/37	05:07 22:07
8	08:56 16:33	08:14 17:30	07:12 18:27	06:55 20:26	07:19-08:08/49	05:48 21:22	06:31-06:35/4	20:12-20:50/38	05:06 22:08
9	08:55 16:34	08:12 17:32	07:10 18:29	06:53 20:27	07:17-08:08/51	05:46 21:24	20:13-20:51/38		05:05 22:09
10	08:55 16:36	08:10 17:34	07:07 18:30	06:50 20:29	07:15-08:09/54	05:44 21:25	20:13-20:51/38		05:05 22:10
11	08:54 16:37	08:08 17:36	07:05 18:32	06:48 20:31	07:12-08:08/56	05:42 21:27	20:14-20:52/38		05:04 22:10
12	08:53 16:39	08:06 17:38	07:02 18:34	06:46 20:33	07:10-08:08/58	05:40 21:29	20:14-20:51/37		05:04 22:11
13	08:52 16:40	08:04 17:40	07:00 18:36	06:43 20:35	07:09-08:08/59	05:39 21:31	20:15-20:51/36		05:04 22:12
14	08:52 16:42	08:02 17:43	06:57 18:38	06:41 20:37	07:08-08:07/59	05:37 21:32	20:16-20:52/36		05:03 22:13
15	08:51 16:44	08:00 17:45	06:55 18:40	06:38 20:39	07:08-08:07/59	05:35 21:34	20:17-20:51/34		05:03 22:13
16	08:50 16:46	07:58 17:47	06:52 18:42	06:36 20:41	07:09-08:07/58	05:33 21:36	20:19-20:51/32		05:03 22:14
17	08:49 16:47	07:56 17:49	06:50 18:44	06:34 20:43	06:58-07:02/4	05:32 21:38	20:30-20:51/21		05:03 22:14
18	08:47 16:49	07:54 17:51	06:47 18:46	06:31 20:44	06:56-07:04/8	05:30 21:39	20:31-20:51/20		05:03 22:15
19	08:46 16:51	07:52 17:53	06:45 18:48	06:29 20:46	06:54-07:05/11	05:28 21:41	20:31-20:50/19		05:03 22:15
20	08:45 16:53	07:49 17:55	06:42 18:50	06:27 20:48	06:52-07:06/14	05:27 21:43	20:32-20:49/17		05:03 22:15
21	08:44 16:55	07:47 17:57	06:40 18:52	06:24 20:50	06:49-07:05/16	05:25 21:44	20:33-20:49/16		05:03 22:16
22	08:43 16:56	07:45 17:59	06:37 18:53	06:22 20:52	06:47-07:06/19	05:24 21:46	20:33-20:48/15		05:03 22:16
23	08:41 16:58	07:43 18:01	06:35 18:55	06:20 20:54	06:45-07:06/21	05:22 21:47	20:35-20:47/12		05:03 22:16
24	08:40 17:00	07:40 18:03	06:32 18:57	06:17 20:56	06:43-07:07/24	05:21 21:49	20:36-20:46/10		05:04 22:16
25	08:38 17:02	07:38 18:05	06:30 18:59	06:15 20:58	06:41-07:07/26	05:20 21:50	20:39-20:44/5		05:04 22:16
26	08:37 17:04	07:36 18:07	06:27 19:01	06:13 21:00	06:39-07:07/28	05:18 21:52	07:13-07:57/44		05:05 22:16
27	08:35 17:06	07:33 18:09	06:25 19:03	06:11 21:01	06:36-07:05/29	05:17 21:53	07:13-07:55/42		05:05 22:16
28	08:34 17:08	07:31 18:11	06:22 19:05	06:09 21:03	06:34-07:05/31	05:16 21:55	07:14-07:53/39		05:06 22:16
29	08:32 17:10		07:20 20:07	06:06 21:05	06:32-07:05/33	05:15 21:56	07:16-07:51/35		05:06 22:16
30	08:31 17:12		07:17 20:09	06:04 21:07	06:30-07:04/34	05:14 21:57	07:17-07:50/33		05:07 22:15
31	08:29 17:14		07:15 20:11		07:39-08:05/26	05:13 21:59			
Potential sun hours	248	272	367	421	496	1002		513	0
Sum of minutes with flicker	0	0	97	1822					

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
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## SHADOW - Calendar per WTG

Calculation: Tirawley Shadow Flicker Real Case WTG: 13 - AT13

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	July	August	September	October	November	December
1	05:07 22:15	05:48 20:24-21:02/38 21:39	06:44 07:11-08:07/56 20:31	07:38 19:16	07:37 17:04	08:33 16:19
2	05:08 22:15	05:50 20:24-21:02/38 21:37	06:46 07:13-08:07/54 20:29	07:40 19:14	07:39 17:02	08:35 16:18
3	05:09 22:14	05:52 20:23-21:01/38 21:35	06:47 07:15-08:06/51 20:26	07:42 19:11	07:41 17:00	08:37 16:18
4	05:10 22:14	05:53 20:23-21:01/38 21:33	06:49 07:17-08:06/49 20:24	07:44 19:09	07:43 16:58	08:38 16:17
5	05:11 22:13	05:55 06:40-06:47/7 20:23-21:00/37 21:31 06:53-07:04/11	06:51 07:18-08:05/47 20:21	07:45 19:06	07:45 16:56	08:39 16:16
6	05:12 22:12	05:57 06:37-06:49/12 20:22-20:58/36 21:29 06:50-07:06/16	06:53 07:20-08:04/44 20:19	07:47 19:04	07:47 16:55	08:41 16:16
7	05:13 22:12	05:59 06:36-07:08/32 21:27 20:22-20:56/34	06:55 07:22-08:03/41 20:16	07:49 19:01	07:49 16:53	08:42 16:15
8	05:14 22:11	06:00 06:35-07:10/35 21:25 20:22-20:54/32	06:56 07:24-08:03/39 20:14	07:51 18:59	07:51 16:51	08:44 16:15
9	05:15 22:10	06:02 06:34-07:10/36 07:37-07:47/10 21:23 20:22-20:52/30	06:58 07:25-08:01/36 20:11	07:53 18:56	07:53 16:49	08:45 16:14
10	05:16 22:09	06:04 06:34-07:11/37 07:33-07:52/19 21:21 20:22-20:48/26	07:00 07:27-08:00/33 20:09	07:55 18:54	07:55 16:47	08:46 16:14
11	05:17 22:08	06:06 06:36-07:12/36 07:30-07:55/25 21:19 20:21-20:47/26	07:02 07:29-07:59/30 20:06	07:57 18:52	07:57 16:45	08:47 16:14
12	05:18 22:07	06:08 06:37-07:12/35 07:27-07:56/29 21:17 20:22-20:46/24	07:04 07:30-07:56/26 20:04	07:59 18:49	07:59 16:44	08:48 16:14
13	05:19 22:06	06:09 06:39-07:13/34 07:25-07:59/34 21:15 20:23-20:45/22	07:05 07:32-07:55/23 20:01	08:01 18:47	08:01 16:42	08:49 16:14
14	05:21 22:05	06:11 06:41-07:13/32 07:24-08:00/36 21:13 20:24-20:43/19	07:07 07:34-07:53/19 19:59	08:02 18:44	08:03 16:40	08:50 16:13
15	05:22 22:04	06:13 06:42-07:13/31 07:21-08:01/40 21:10 20:24-20:40/16	07:09 07:36-07:51/15 19:56	08:04 18:42	08:05 16:39	08:51 16:13
16	05:23 22:03	06:15 06:44-07:13/29 07:20-08:03/43 21:08 20:26-20:38/12	07:11 07:38-07:49/11 19:54	08:06 18:40	08:07 16:37	08:52 16:14
17	05:25 22:02	06:17 06:46-07:13/27 07:19-08:04/45 21:06 20:28-20:37/9	07:13 07:39-07:46/7 19:51	08:08 18:37	08:09 16:36	08:53 16:14
18	05:26 22:01	06:18 06:47-07:12/25 07:17-08:04/47 21:04 20:30-20:34/4	07:14 07:41-07:42/1 19:49	08:10 18:35	08:11 16:34	08:54 16:14
19	05:28 20:47-20:54/7 21:59	06:20 06:49-07:12/23 21:02 07:17-08:05/48	07:16 19:46	08:12 18:33	08:13 16:33	08:55 16:14
20	05:29 20:45-20:56/11 21:58	06:22 06:51-07:12/21 20:59 07:16-08:06/50	07:18 19:44	08:14 18:30	08:14 16:31	08:55 16:15
21	05:30 20:45-20:58/13 21:57	06:24 06:53-07:12/19 20:57 07:14-08:06/52	07:20 19:41	08:16 18:28	08:16 16:30	08:56 16:15
22	05:32 20:43-20:58/15 21:55	06:26 06:54-07:10/16 20:55 07:14-08:07/53	07:22 19:39	08:18 18:26	08:18 16:29	08:56 16:15
23	05:34 20:43-21:00/17 21:54	06:27 06:56-07:09/13 20:52 07:13-08:08/55	07:23 19:36	08:20 18:24	08:20 16:27	08:57 16:16
24	05:35 20:42-21:00/18 21:52	06:29 06:58-07:08/10 20:50 07:12-08:08/56	07:25 19:34	08:22 18:21	08:22 16:26	08:57 16:17
25	05:37 20:41-21:00/19 21:51	06:31 06:59-07:06/7 20:48 07:11-08:08/57	07:27 19:31	07:24 17:19	08:23 16:25	08:58 16:17
26	05:38 20:41-21:01/20 21:49 20:34-20:38/4	06:33 07:01-07:05/4 20:45 07:11-08:08/57	07:29 19:29	07:26 17:17	08:25 16:24	08:58 16:18
27	05:40 20:30-21:01/31 21:47	06:35 07:10-08:09/59 20:43	07:31 19:26	07:28 17:15	08:27 16:23	08:58 16:19
28	05:42 20:29-21:02/33 21:46	06:36 07:09-08:08/59 20:41	07:33 19:24	07:30 17:13	08:29 16:22	08:58 16:20
29	05:43 20:27-21:01/34 21:44	06:38 07:09-08:08/59 20:38	07:34 19:21	07:32 17:11	08:30 16:21	08:59 16:20
30	05:45 20:26-21:02/36 21:42	06:40 07:09-08:08/59 20:36	07:36 19:19	07:34 17:09	08:32 16:20	08:59 16:21
31	05:47 20:26-21:02/36 21:41	06:42 07:10-08:08/58 20:33		07:35 17:06		08:59 16:22
Potential sun hours	515	461	383	327	257	230
Sum of minutes with flicker	294	2077	582	0	0	0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker

### SHADOW - Calendar per WTG

Calculation: Tirawley Shadow Flicker Real Case WTG: 14 - AT14

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January	February	March	April	May	June				
1	08:58 16:24	08:27 17:16	07:29 18:13	17:28-17:45/17	07:12 20:12	07:36-07:56/20	06:02 21:09	05:12 22:00	20:37-21:23/46	
2	08:58 16:25	08:25 17:18	07:26 18:15	17:29-17:47/18	07:10 20:14	07:34-07:56/22	06:00 21:11	05:11 22:01	20:37-21:23/46	
3	08:58 16:26	08:24 17:20	07:24 18:17	17:31-17:49/18	07:08 20:16	07:32-07:56/24	05:58 21:13	05:10 22:02	20:37-21:24/47	
4	08:58 16:27	08:22 17:22	07:22 18:19	17:33-17:51/18	07:05 20:18	07:29-07:54/25	05:56 21:14	05:09 22:04	20:37-21:25/48	
5	08:57 16:29	08:20 17:24	07:19 18:21	17:34-17:52/18	07:03 20:20	07:27-07:54/27	05:54 21:16	05:08 22:05	20:37-21:25/48	
6	08:57 16:30	08:18 17:26	07:17 18:23	17:37-17:51/14	07:00 20:22	07:25-07:52/27	05:52 21:18	05:07 22:06	20:37-21:25/48	
7	08:57 16:31	08:16 17:28	07:14 18:25	17:38-17:50/12	06:58 20:24	07:26-07:51/25	05:50 21:20	05:07 22:07	20:37-21:26/49	
8	08:56 16:33	08:14 17:30	07:12 18:27	17:40-17:47/7	06:55 20:26	07:27-07:48/21	05:48 21:22	05:06 22:08	20:37-21:26/49	
9	08:55 16:34	08:12 17:32	07:09 18:28		06:53 20:27	07:29-07:46/17	05:46 21:24	05:05 22:09	20:38-21:26/48	
10	08:55 16:36	08:10 17:34	07:07 18:30		06:50 20:29	07:15-07:17/2	05:44 21:25	05:05 22:10	20:37-21:26/49	
11	08:54 16:37	08:08 17:36	07:05 18:32		06:48 20:31	07:12-07:17/5	05:42 21:27	05:04 22:10	20:38-21:27/49	
12	08:53 16:39	08:06 17:38	07:02 18:34		06:46 20:33	07:10-07:17/7	05:40 21:29	05:04 22:11	20:38-21:27/49	
13	08:52 16:40	08:04 17:40	07:00 18:36		06:43 20:35	07:08-07:17/9	05:39 21:31	20:53-20:56/3	05:04 22:12	20:39-21:28/49
14	08:52 16:42	08:02 17:43	06:57 18:38		06:41 20:37	07:05-07:16/11	05:37 21:32	20:49-21:00/11	05:03 22:13	20:38-21:27/49
15	08:51 16:44	08:00 17:45	06:55 18:40		06:38 20:39	07:03-07:16/13	05:35 21:34	20:46-21:01/15	05:03 22:13	20:39-21:28/49
16	08:50 16:45	07:58 17:47	06:52 18:42		06:36 20:41	07:01-07:15/14	05:33 21:36	20:45-21:03/18	05:03 22:14	20:39-21:28/49
17	08:49 16:47	07:56 17:49	06:50 18:44		06:34 20:43	06:58-07:14/16	05:32 21:38	20:43-21:04/21	05:03 22:14	20:39-21:28/49
18	08:47 16:49	07:54 17:51	06:47 18:46		06:31 20:44	06:56-07:12/16	05:30 21:39	20:42-21:06/24	05:03 22:15	20:39-21:29/50
19	08:46 16:51	07:52 17:53	06:45 18:48		06:29 20:46	06:54-07:11/17	05:28 21:41	20:41-21:07/26	05:03 22:15	20:39-21:29/50
20	08:45 16:53	07:49 17:55	06:42 18:50	17:25-17:26/1	06:27 20:48	06:52-06:57/5	05:27 21:42	20:40-21:09/29	05:03 22:15	20:40-21:29/49
21	08:44 16:54	07:47 17:57	06:40 18:52	17:25-17:28/3	06:24 20:50	06:49-06:56/7	05:25 21:44	20:40-21:11/31	05:03 22:16	20:41-21:30/49
22	08:43 16:56	07:45 17:59	06:37 18:53	17:23-17:30/7	06:22 20:52	06:47-06:55/8	05:24 21:46	20:39-21:12/33	05:03 22:16	20:41-21:30/49
23	08:41 16:58	07:43 18:01	06:35 18:55	17:23-17:32/9	06:20 20:54	06:45-06:54/9	05:22 21:47	20:38-21:13/35	05:03 22:16	20:40-21:30/50
24	08:40 17:00	07:40 18:03	06:32 18:57	17:23-17:35/12	06:17 20:56	06:44-06:52/8	05:21 21:49	20:38-21:15/37	05:04 22:16	20:40-21:30/50
25	08:38 17:02	07:38 18:05	06:30 18:59	17:22-17:36/14	06:15 20:58	06:54-06:56/2	05:20 21:50	20:38-21:16/38	05:04 22:16	20:41-21:30/49
26	08:37 17:04	07:36 18:07	06:27 19:01	17:23-17:39/16	06:13 21:00	06:51-06:56/5	05:18 21:52	20:38-21:18/40	05:04 22:16	20:41-21:30/49
27	08:35 17:06	07:33 18:09	06:25 19:03	17:23-17:40/17	06:11 21:01	06:49-06:57/8	05:17 21:53	20:38-21:19/41	05:05 22:16	20:42-21:31/49
28	08:34 17:08	07:31 18:11	06:22 19:05	17:25-17:43/18	06:09 21:03	06:46-06:57/11	05:16 21:55	20:36-21:20/44	05:05 22:16	20:41-21:31/50
29	08:32 17:10		07:20 20:07	07:44-07:58/14	06:06 21:05		05:15 21:56	20:37-21:20/43	05:06 22:16	20:42-21:31/49
30	08:31 17:12		07:17 20:09	07:41-07:57/16	06:04 21:07		05:14 21:57	20:37-21:22/45	05:07 22:15	20:42-21:31/49
31	08:29 17:14		07:15 20:10	07:39-07:57/18			05:13 21:59	20:37-21:23/46		
Potential sun hours	248	272	367	421	496	513	1463			
Sum of minutes with flicker	0	97	196	374	580					

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker

### SHADOW - Calendar per WTG

Calculation: Tirawley Shadow Flicker Real Case WTG: 14 - AT14

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	July	August	September	October	November	December
1	05:07 20:42-21:31/49 22:15	05:48 21:39	06:44 07:11-07:16/5 20:31	07:38 19:16	07:37 17:04	08:33 16:19
2	05:08 20:43-21:31/48 22:15	05:50 21:37	06:45 07:13-07:15/2 20:28 07:30-07:42/12	07:40 19:14	07:39 17:02	08:35 16:18
3	05:09 20:43-21:32/49 22:14	05:52 21:35	06:47 07:27-07:44/17 20:26	07:42 19:11	07:41 17:00	08:37 16:18
4	05:10 20:42-21:31/49 22:14	05:53 21:33	06:49 07:25-07:46/21 20:24	07:44 19:09	07:43 16:58	08:38 16:17
5	05:11 20:43-21:31/48 22:13	05:55 21:31	06:51 07:22-07:47/25 20:21	07:45 18:18-18:22/4 19:06	07:45 16:56	08:39 16:16
6	05:12 20:43-21:31/48 22:12	05:57 21:29	06:53 07:21-07:48/27 20:19	07:47 18:15-18:25/10 19:04	07:47 16:55	08:41 16:16
7	05:13 20:43-21:31/48 22:12	05:59 21:27	06:55 07:22-07:49/27 20:16	07:49 18:13-18:26/13 19:01	07:49 16:53	08:42 16:15
8	05:14 20:44-21:31/47 22:11	06:00 21:25	06:56 07:24-07:49/25 20:14	07:51 18:11-18:27/16 18:59	07:51 16:51	08:44 16:15
9	05:15 20:44-21:31/47 22:10	06:02 21:23	06:58 07:25-07:49/24 20:11	07:53 18:08-18:27/19 18:56	07:53 16:49	08:45 16:14
10	05:16 20:44-21:31/47 22:09	06:04 21:21	07:00 07:27-07:49/22 20:09	07:55 18:06-18:25/19 18:54	07:55 16:47	08:46 16:14
11	05:17 20:44-21:31/47 22:08	06:06 21:19	07:02 07:29-07:49/20 20:06	07:57 18:04-18:22/18 18:52	07:57 16:45	08:47 16:14
12	05:18 20:44-21:30/46 22:07	06:08 21:17	07:04 07:30-07:48/18 20:04	07:59 18:03-18:20/17 18:49	07:59 16:44	08:48 16:14
13	05:19 20:45-21:30/45 22:06	06:09 21:15	07:05 07:32-07:48/16 20:01	08:00 18:00-18:17/17 18:47	08:01 16:42	08:49 16:14
14	05:21 20:46-21:30/44 22:05	06:11 21:13	07:07 07:34-07:48/14 19:59	08:02 17:57-18:15/18 18:44	08:03 16:40	08:50 16:13
15	05:22 20:46-21:29/43 22:04	06:13 21:10	07:09 07:36-07:47/11 19:56	08:04 17:56-18:13/17 18:42	08:05 16:39	08:51 16:13
16	05:23 20:46-21:28/42 22:03	06:15 21:08	07:11 07:38-07:47/9 19:54	08:06 17:55-18:10/15 18:40	08:07 16:37	08:52 16:14
17	05:25 20:46-21:27/41 22:02	06:17 21:06	07:13 07:39-07:45/6 19:51	08:08 17:54-18:08/14 18:37	08:09 16:36	08:53 16:14
18	05:26 20:47-21:27/40 22:01	06:18 21:04	07:14 07:41-07:44/3 19:49	08:10 17:54-18:05/11 18:35	08:11 16:34	08:54 16:14
19	05:28 20:48-21:25/37 21:59	06:20 06:50-06:58/8 21:02	07:16 19:46	08:12 17:54-18:03/9 18:33	08:13 16:33	08:55 16:14
20	05:29 20:48-21:23/35 21:58	06:22 06:51-07:00/9 20:59	07:18 19:44	08:14 17:54-18:00/6 18:30	08:14 16:31	08:55 16:15
21	05:30 20:49-21:23/34 21:57	06:24 06:53-07:01/8 20:57	07:20 19:41	08:16 17:55-17:58/3 18:28	08:16 16:30	08:56 16:15
22	05:32 20:49-21:21/32 21:55	06:26 06:54-07:01/7 20:55	07:22 19:39	08:18 18:26	08:18 16:29	08:56 16:15
23	05:34 20:51-21:21/30 21:54	06:27 06:56-07:01/5 20:52 07:03-07:13/10	07:23 19:36	08:20 18:24	08:20 16:27	08:57 16:16
24	05:35 20:51-21:19/28 21:52	06:29 06:58-07:15/17 20:50	07:25 19:34	08:22 18:21	08:22 16:26	08:57 16:16
25	05:37 20:51-21:17/26 21:51	06:31 06:59-07:15/16 20:48	07:27 19:31	07:24 17:19	08:23 16:25	08:58 16:17
26	05:38 20:53-21:16/23 21:49	06:33 07:01-07:16/15 20:45	07:29 19:29	07:26 17:17	08:25 16:24	08:58 16:18
27	05:40 20:54-21:14/20 21:47	06:35 07:03-07:17/14 20:43	07:31 19:26	07:28 17:15	08:27 16:23	08:58 16:19
28	05:42 20:56-21:13/17 21:46	06:36 07:05-07:18/13 20:41	07:33 19:24	07:30 17:13	08:29 16:22	08:58 16:19
29	05:43 20:57-21:11/14 21:44	06:38 07:06-07:17/11 20:38	07:34 19:21	07:32 17:11	08:30 16:21	08:59 16:20
30	05:45 21:01-21:10/9 21:42	06:40 07:08-07:17/9 20:36	07:36 19:19	07:33 17:09	08:32 16:20	08:59 16:21
31	05:47 21:40	06:42 07:10-07:17/7 20:33		07:35 17:06		08:59 16:22
Potential sun hours	515	461	383	327	257	230
Sum of minutes with flicker	1133	149	304	226	0	0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker

### SHADOW - Calendar per WTG

Calculation: Tirawley Shadow Flicker Real Case WTG: 15 - AT15

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January	February	March	April	May	June
1	08:58 15:16-15:45/29 16:24	08:27 08:56-09:18/22 17:16 15:33-16:37/64	07:29 16:44-17:40/56 18:13	07:12 18:27-19:35/68 20:12	06:02 19:28-20:25/57 21:09	05:12 20:17-21:13/56 22:00
2	08:58 15:16-15:46/30 16:25	08:25 08:54-09:17/23 17:18 15:35-16:38/63	07:26 16:43-17:41/58 18:15	07:10 18:28-19:37/69 20:14	06:00 19:28-20:27/59 21:11	05:11 20:19-21:14/55 22:01
3	08:58 15:17-15:48/31 16:26	08:24 08:52-09:17/25 17:20 15:36-16:38/62	07:24 16:44-17:43/59 18:17	07:07 18:28-19:38/70 20:16	05:58 19:28-20:29/61 21:13	05:10 20:19-21:14/55 22:02
4	08:58 15:17-15:49/32 16:27	08:22 08:50-09:17/27 17:22 15:37-16:39/62	07:22 16:45-17:44/59 18:19	07:05 18:29-19:39/70 20:18	05:56 19:29-20:30/61 21:14	05:09 20:19-21:15/56 22:04
5	08:57 15:17-15:51/34 16:28	08:20 16:46-16:50/4 15:38-16:39/61 17:24 08:48-09:16/28	07:19 16:46-17:46/60 18:21	07:03 18:31-19:40/69 20:20	05:54 19:29-20:31/62 21:16	05:08 20:21-21:16/55 22:05
6	08:57 15:17-15:52/35 16:30	08:18 16:42-16:54/12 15:40-16:39/59 17:26 08:46-09:15/29	07:17 16:47-17:48/61 18:23	07:00 18:32-19:40/68 20:22	05:52 19:31-20:33/62 21:18	05:07 20:21-21:17/56 22:06
7	08:57 15:17-15:53/36 16:31	08:16 16:41-16:56/15 15:42-16:40/58 17:28 08:44-09:14/30	07:14 16:49-17:51/62 18:25	06:58 18:34-19:41/67 20:24	05:50 19:32-20:34/62 21:20	05:07 20:22-21:18/56 22:07
8	08:56 15:17-15:55/38 16:33	08:14 16:02-16:58/56 15:45-16:00/15 17:30 08:42-09:12/30	07:12 16:51-17:53/62 18:26	06:55 18:36-19:40/64 20:26	05:48 19:33-20:36/63 21:22	05:06 20:22-21:18/56 22:08
9	08:55 15:18-15:57/39 16:34	08:12 16:01-16:59/58 15:49-15:54/5 17:32 08:40-09:09/29	07:09 17:05-17:56/51 18:28 16:55-17:04/9	06:53 18:41-19:41/60 20:27	05:46 19:34-20:38/64 21:24	05:05 20:23-21:19/56 22:09
10	08:55 15:18-15:59/41 16:36	08:10 16:02-17:01/59 17:34 08:37-09:04/27	07:07 17:06-17:57/51 18:30	06:50 18:42-19:40/58 20:29	05:44 19:36-20:40/64 21:25	05:05 20:23-21:19/56 22:09
11	08:54 15:19-16:00/41 16:37	08:08 16:02-17:03/61 17:36 08:35-09:03/28	07:05 17:06-17:59/53 18:32	06:48 18:44-19:40/56 20:31	05:42 19:55-20:42/47 21:27 19:38-19:53/15	05:04 20:23-21:20/57 22:10
12	08:53 15:19-16:01/42 16:39	08:06 16:03-17:04/61 17:38 08:33-09:02/29	07:02 17:05-17:59/54 18:34	06:45 19:44-19:50/6 20:33 18:47-19:40/53	05:40 19:55-20:43/48 21:29 19:42-19:49/7	05:04 20:24-21:22/58 22:11
13	08:52 15:19-16:02/43 16:40	08:04 16:04-17:06/62 17:40 08:32-09:01/29	07:00 17:06-18:02/56 18:36	06:43 18:49-19:53/64 20:35	05:38 19:55-20:45/50 21:31	05:04 20:24-21:22/58 22:12
14	08:51 15:20-16:02/42 16:42	08:02 16:05-17:09/64 17:42 08:33-08:59/26	06:57 17:05-18:04/59 18:38	06:41 18:58-19:57/59 20:37	05:37 19:56-20:48/52 21:32	05:03 20:24-21:24/60 22:12
15	08:51 15:19-16:02/43 16:44	08:00 16:05-17:11/66 17:44 08:34-08:56/22	06:55 17:06-18:07/61 18:40	06:38 18:58-19:59/61 20:39	05:35 19:56-20:49/53 21:34	05:03 20:25-21:25/60 22:13
16	08:50 15:20-16:03/43 16:45	07:58 16:36-17:13/37 16:06-16:35/29 17:47 08:35-08:52/17	06:52 17:06-18:08/62 18:42	06:36 18:58-20:00/62 20:41	05:33 19:57-20:50/53 21:36	05:03 20:25-21:26/61 22:14
17	08:48 15:20-16:04/44 16:47	07:56 16:36-17:15/39 16:08-16:34/26 17:49 08:37-08:50/13	06:50 17:07-18:09/62 18:44	06:34 18:58-20:02/64 20:43	05:32 19:57-20:51/54 21:37	05:03 20:25-21:27/62 22:14
18	08:47 15:21-16:05/44 16:49	07:54 16:37-17:16/39 16:10-16:33/23 17:51 08:42-08:46/4	06:47 17:07-18:10/63 18:46	06:31 18:59-20:03/64 20:44	05:30 19:59-20:52/53 21:39	05:03 20:26-21:27/61 22:15
19	08:46 15:21-16:05/44 16:51	07:51 16:37-17:17/40 17:53 16:11-16:30/19	06:45 17:08-18:12/64 18:48	06:29 19:00-20:04/64 20:46	05:28 19:59-20:53/54 21:41	05:03 20:26-21:27/61 22:15
20	08:45 15:22-16:06/44 16:53	07:49 16:38-17:19/41 17:55 16:15-16:27/12	06:42 17:09-18:14/65 18:50	06:27 19:00-20:04/64 20:48	05:27 20:00-20:54/54 21:42	05:03 20:26-21:28/62 22:15
21	08:44 15:22-16:06/44 16:54	07:47 16:40-17:21/41 17:57	06:40 17:11-18:16/65 18:51	06:24 19:01-20:05/64 20:50	05:25 20:02-20:56/54 21:44	05:03 20:26-21:28/62 22:16
22	08:42 15:23-16:07/44 16:56 16:13-16:21/8	07:45 16:40-17:21/41 17:59	06:37 17:12-18:17/65 18:53	06:22 19:02-20:05/63 20:50	05:24 20:02-20:56/54 21:46	05:03 20:27-21:29/62 22:16
23	08:41 09:11-09:13/2 16:10-16:23/13 16:58 15:23-16:07/44	07:43 16:42-17:22/40 18:01	06:35 17:15-18:18/63 18:55	06:20 19:04-20:06/62 20:54	05:22 20:04-20:56/52 21:47	05:03 20:27-21:28/61 22:16
24	08:40 09:10-09:14/4 16:09-16:26/17 17:00 15:25-16:08/43	07:40 16:43-17:23/40 18:03	06:32 17:18-18:19/61 18:57	06:17 19:06-20:06/60 20:56	05:21 20:06-21:04/58 21:49	05:04 20:27-21:28/61 22:16
25	08:38 09:08-09:15/7 17:00 15:25-16:28/63	07:38 16:42-17:23/41 18:05	06:30 17:19-18:20/61 18:59	06:15 19:27-20:05/38 20:58 19:07-19:25/18	05:20 20:07-21:05/58 21:50	05:04 20:28-21:29/61 22:16
26	08:37 09:07-09:16/9 17:04 15:25-16:30/65	07:36 16:43-17:24/41 18:07	06:27 17:19-18:20/61 19:01	06:13 19:27-20:05/38 20:59 19:10-19:22/12	05:18 20:09-21:07/58 21:52	05:04 20:27-21:28/61 22:16
27	08:35 09:05-09:16/11 17:06 15:27-16:32/65	07:33 16:42-17:33/51 18:09	06:25 17:20-18:20/60 19:03	06:11 19:27-20:18/51 21:01	05:17 20:09-21:07/58 21:53	05:05 20:28-21:28/60 22:16
28	08:34 09:03-09:17/14 17:08 15:27-16:33/66	07:31 16:43-17:37/54 18:11	06:22 17:21-18:20/59 19:05	06:09 19:27-20:20/53 21:03	05:16 20:10-21:08/58 21:55	05:05 20:27-21:28/61 22:16
29	08:32 09:01-09:17/16 17:10 15:28-16:34/66		07:20 18:22-19:20/58 20:07 19:22-19:25/3	06:06 19:27-20:22/55 21:05	05:15 20:12-21:09/57 21:56	05:06 20:28-21:27/59 22:16
30	08:31 08:59-09:17/18 17:12 15:29-16:35/66		07:17 18:23-19:31/68 20:09	06:04 19:27-20:24/57 21:07	05:14 20:13-21:09/56 21:57	05:07 20:27-21:25/58 22:15
31	08:29 08:58-09:18/20 17:14 15:31-16:36/65		07:15 18:26-19:34/68 20:10		05:13 20:15-21:11/56 21:59	
	Potential sun hours 248 Sum of minutes with flicker 1545	272 2059	367 1879	421 1851	496 1774	513 1763

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
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### SHADOW - Calendar per WTG

Calculation: Tirawley Shadow Flicker Real Case WTG: 15 - AT15  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	July	August	September	October	November	December	
1	05:07 20:28-21:25/57 22:15	05:48 20:05-20:53/48 21:39 19:50-20:01/11	06:44 18:43-19:39/56 20:31	07:38 17:45-18:40/55 19:16	07:37 15:31-16:30/59 17:04 08:07-08:33/26	08:33 15:01-15:42/41 16:19	
2	05:08 20:28-21:24/56 22:15	05:50 20:06-20:52/46 21:37 19:48-20:04/16	06:45 18:41-19:39/58 20:28	07:40 17:44-18:37/53 19:14	07:39 15:31-16:28/57 15:17-15:25/8 17:02 08:09-08:39/30	08:35 15:01-15:42/41 16:18	
3	05:09 20:28-21:24/56 22:14	05:52 19:45-20:50/65 21:35	06:47 18:39-19:39/60 20:26	07:42 17:44-18:35/51 19:11	07:41 15:31-16:26/55 15:14-15:30/16 17:00 08:12-08:42/30	08:37 15:01-15:40/39 16:17	
4	05:10 20:27-21:23/56 22:14	05:53 19:44-20:48/64 21:33	06:49 18:33-19:37/64 20:24	07:44 17:44-18:34/50 19:09	07:43 16:10-16:25/15 15:12-16:09/57 16:58 08:14-08:44/30	08:38 15:02-15:40/38 16:17	
5	05:11 20:27-21:23/56 22:13	05:55 19:43-20:45/62 21:31	06:51 18:30-19:37/67 20:21	07:45 17:29-18:31/62 19:06	07:45 16:12-16:23/11 15:10-16:09/59 16:56 08:16-08:45/29	08:39 15:02-15:38/36 16:16	
6	05:12 20:27-21:23/56 22:12	05:57 19:41-20:43/62 21:29	06:53 18:28-19:36/68 20:19	07:47 17:26-18:28/62 19:04	07:47 08:18-08:46/28 16:54 15:08-16:09/61	08:41 15:03-15:38/35 16:16	
7	05:13 20:27-21:23/56 22:12	05:59 19:40-20:42/62 21:27	06:54 18:26-19:35/69 20:16	07:49 17:24-18:26/62 19:01	07:49 08:20-08:46/26 16:53 15:07-16:08/61	08:42 15:03-15:37/34 16:15	
8	05:14 20:27-21:23/56 22:11	06:00 19:39-20:40/61 21:25	06:56 18:24-19:33/69 20:14	07:51 17:22-18:23/61 18:59	07:51 08:22-08:47/25 16:51 15:06-16:08/62	08:44 15:05-15:37/32 16:15	
9	05:15 20:27-21:22/55 22:10	06:02 19:38-20:39/61 21:23	06:58 18:22-19:32/70 20:11	07:53 17:20-18:20/60 18:56	07:53 08:25-08:48/23 16:49 15:06-16:09/63	08:45 15:05-15:36/31 16:14	
10	05:16 20:27-21:22/55 22:09	06:04 19:38-20:38/60 21:21	07:00 18:21-19:30/69 20:09	07:55 17:19-18:18/59 18:54	07:55 08:29-08:49/20 16:47 15:04-16:08/64	08:46 15:05-15:35/30 16:14	
11	05:17 20:26-21:21/55 22:08	06:06 19:36-20:35/59 21:19	07:02 18:20-19:29/69 20:06	07:57 17:18-18:17/59 18:52	07:57 08:29-08:49/20 16:45 15:02-16:07/65	08:47 15:07-15:36/29 16:14	
12	05:18 20:24-21:20/56 22:07	06:07 19:36-20:33/57 21:17	07:03 18:17-19:25/68 20:04	07:59 17:17-18:15/58 18:49	07:59 08:31-08:49/18 16:44 15:01-16:07/66	08:48 15:07-15:35/28 16:14	
13	05:19 20:22-21:18/56 22:06	06:09 19:36-20:32/56 21:15	07:05 18:15-19:22/67 20:01	08:00 17:16-18:12/56 18:47	08:01 08:33-08:49/16 16:42 15:00-16:06/66	08:49 15:08-15:35/27 16:13	
14	05:21 20:22-21:19/57 22:05	06:11 19:35-20:29/54 21:13	07:07 18:13-19:17/64 19:59	08:02 17:16-18:09/53 18:44	08:03 08:35-08:48/13 16:40 14:59-16:05/66	08:50 15:08-15:35/27 16:13	
15	05:22 20:20-21:18/58 22:04	06:13 19:35-20:27/52 21:10	07:09 18:11-19:10/59 19:56	08:04 17:15-17:56/41 18:42 17:59-18:03/4	08:05 08:37-08:48/11 16:39 14:59-16:04/65	08:51 15:09-15:35/26 16:13	
16	05:23 20:19-21:17/58 22:03	06:15 19:35-20:13/38 21:08 20:14-20:25/11	07:11 18:09-19:09/60 19:54	08:06 17:15-17:56/41 18:40	08:07 08:40-08:49/9 16:37 14:59-16:04/65	08:52 15:10-15:35/25 16:13	
17	05:25 20:18-21:16/58 22:02	06:16 19:35-20:13/38 21:06 19:17-19:30/13	07:12 18:08-19:08/60 19:51	08:08 17:14-17:55/41 18:37	08:09 08:42-08:49/7 16:36 14:59-16:02/63	08:53 15:10-15:35/25 16:14	
18	05:26 20:18-21:16/58 22:01	06:18 19:34-20:12/38 21:04 19:13-19:32/19	07:14 18:07-19:07/60 19:49	08:10 17:14-17:54/40 18:35	08:11 08:44-08:48/4 15:43-16:00/17 16:34 14:58-15:42/44	08:54 15:10-15:35/25 16:14	
19	05:27 20:16-21:14/58 21:59	06:20 19:11-20:12/61 21:01	07:16 18:06-19:06/60 19:46	08:12 17:13-17:53/40 18:33	08:13 08:46-08:48/2 15:45-15:58/13 16:33 14:58-15:42/44	08:55 15:11-15:35/24 16:14	
20	05:29 20:14-21:12/58 21:58	06:22 19:09-20:11/62 20:59	07:18 18:02-19:04/62 19:44	08:14 17:11-17:52/41 18:30	08:14 14:58-15:42/44 16:31 15:48-15:56/8	08:55 15:12-15:36/24 16:14	
21	05:30 20:14-21:07/53 21:57	06:24 19:07-20:10/63 20:57	07:20 17:59-19:03/64 19:41	08:16 17:10-17:51/41 18:28	08:16 14:58-15:42/44 16:30	08:56 15:12-15:36/24 16:15	
22	05:32 20:12-21:06/54 21:55	06:25 19:05-20:09/64 20:55	07:22 17:56-19:01/65 19:39	08:18 17:08-17:49/41 18:26 16:44-16:58/14	08:18 14:58-15:42/44 16:29	08:56 15:13-15:37/24 16:15	
23	05:33 20:10-21:05/55 21:54	06:27 19:04-20:09/65 20:52	07:23 17:54-18:59/65 19:36	08:20 17:07-17:47/40 18:24 16:41-17:01/20	08:20 14:58-15:42/44 16:27	08:57 15:13-15:37/24 16:16	
24	05:35 20:10-21:04/54 21:52	06:29 19:02-20:07/65 20:50	07:25 17:52-18:57/65 19:34	08:22 17:06-17:46/40 16:39-17:02/23 18:21 09:09-09:17/8	08:22 14:58-15:42/44 16:26	08:57 15:13-15:37/24 16:16	
25	05:37 20:09-21:03/54 21:51	06:31 19:02-20:06/64 20:48	07:27 17:51-18:54/63 19:31	07:24 16:06-16:44/38 15:37-16:04/27 17:19 08:06-08:20/14	08:23 14:58-15:42/44 16:25	08:58 15:14-15:38/24 16:17	
26	05:38 20:09-21:02/53 21:49	06:33 19:01-20:05/64 20:45	07:29 17:49-18:51/62 19:29	07:26 15:35-16:42/67 17:17 08:04-08:22/18	08:25 14:59-15:42/43 16:24	08:58 15:14-15:39/25 16:18	
27	05:40 20:07-21:01/54 21:47	06:35 19:00-20:03/63 20:43	07:31 17:48-18:50/62 19:26	07:28 15:34-16:40/66 17:15 08:04-08:27/23	08:27 14:59-15:43/44 16:23	08:58 15:14-15:40/26 16:19	
28	05:41 20:07-21:00/53 21:46	06:36 18:59-20:00/61 20:41	07:32 17:47-18:48/61 19:24	07:29 15:34-16:38/64 17:13 08:03-08:29/26	08:29 14:59-15:42/43 16:22	08:58 15:15-15:40/25 16:19	
29	05:43 20:06-20:59/53 21:44	06:38 18:59-19:57/58 20:38	07:34 17:46-18:46/60 19:21	07:31 15:33-16:35/62 17:11 08:02-08:31/29	08:30 14:59-15:42/43 16:21	08:59 15:15-15:41/26 16:20	
30	05:45 20:06-20:57/51 21:42	06:40 18:50-19:54/64 20:36	07:36 17:46-18:43/57 19:19	07:33 15:32-16:33/61 17:08 08:03-08:32/29	08:32 15:00-15:42/42 16:20	08:59 15:16-15:43/27 16:21	
31	05:46 20:05-20:55/50 21:40	06:42 19:44-19:48/4 20:33 18:47-19:40/53	07:35 15:32-16:32/60 17:06 08:05-08:33/28	07:35 15:32-16:32/60 17:06 08:05-08:33/28	07:35 15:32-16:32/60 17:06 08:05-08:33/28	08:59 15:16-15:44/28 16:22	
	Potential sun hours Sum of minutes with flicker	515 1715	461 1864	383 1903	327 1888	257 2077	230 894

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
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### SHADOW - Calendar per WTG

Calculation: Tirawley Shadow Flicker Real Case WTG: 16 - AT16  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January	February	March	April	May	June
1	08:58 09:33-09:34/1 16:24 14:31-15:20/49	08:27 15:37-16:35/58 17:16	07:29 16:23-17:20/57 18:13	07:12 18:20-19:25/65 20:12	06:02 19:15-20:19/64 21:09	05:12 19:54-20:59/65 22:00
2	08:58 09:33-09:35/2 16:25 14:32-15:21/49	08:25 15:38-16:37/59 17:18	07:26 16:24-17:20/56 18:15	07:10 18:25-19:27/62 20:14	06:00 19:16-20:20/64 21:11	05:11 19:55-20:59/64 22:01
3	08:58 09:33-09:36/3 16:26 14:34-15:21/47	08:24 15:39-16:38/59 17:20	07:24 16:26-17:20/54 18:17	07:07 18:36-19:29/53 20:16	05:58 19:18-20:21/63 21:13	05:10 19:55-20:59/64 22:02
4	08:58 09:32-09:36/4 16:27 14:34-15:21/47	08:22 15:41-16:39/58 17:22	07:21 16:27-17:20/53 18:19	07:05 18:40-19:31/51 20:18	05:56 19:21-20:22/61 21:14	05:09 19:56-20:59/63 22:03
5	08:57 09:32-09:38/6 16:29 14:36-15:22/46	08:20 15:42-16:40/58 17:24	07:19 16:30-17:20/50 18:21	07:03 18:42-19:32/50 20:20	05:54 19:23-20:23/60 21:16	05:08 19:58-21:00/62 22:05
6	08:57 09:31-09:38/7 16:30 14:37-14:50/13	08:18 15:44-16:41/57 17:26	07:17 16:34-17:19/45 18:23	07:00 18:44-19:33/49 20:22	05:52 19:25-20:25/60 21:18	05:07 19:58-20:59/61 22:06
7	08:56 15:36-15:51/15 16:31 09:30-09:38/8	08:16 15:48-16:42/54 17:28	07:14 16:38-17:19/41 18:25	06:58 18:52-19:34/42 20:24	05:50 19:26-20:27/61 21:20	05:07 20:00-21:11/71 22:07
8	08:56 15:35-15:54/19 16:33 09:30-09:39/9	08:14 15:52-16:47/55 17:30	07:12 17:34-17:37/3 18:26	06:55 18:51-19:34/43 20:26	05:48 19:27-20:30/63 21:22	05:06 20:01-21:11/70 22:08
9	08:55 15:35-15:57/22 16:34 09:29-09:40/11	08:12 15:51-16:49/58 17:32	07:09 17:28-17:43/15 18:28	06:53 18:51-19:39/48 20:27	05:46 19:28-20:33/65 21:24	05:05 20:02-21:13/71 22:09
10	08:55 15:35-15:58/23 16:36 09:28-09:40/12	08:10 15:52-16:51/59 17:34	07:07 17:24-17:46/22 18:30	06:50 18:50-19:41/51 20:29	05:44 19:30-20:34/64 21:25	05:05 20:03-21:13/70 22:09
11	08:54 15:34-16:00/26 16:37 09:27-09:40/13	08:08 15:53-16:53/60 17:36	07:05 17:22-17:48/26 18:32	06:48 18:51-19:43/52 20:31	05:42 19:33-20:36/63 21:27	05:04 20:06-21:14/68 22:10
12	08:53 15:34-16:01/27 16:39 09:26-09:41/15	08:06 15:54-16:55/61 17:38	07:02 17:20-17:49/29 18:34	06:45 18:52-19:45/53 20:33	05:40 19:37-20:37/60 21:29	05:04 20:09-21:15/66 22:11
13	08:52 15:34-16:02/28 16:40 09:25-09:41/16	08:04 15:55-16:56/61 17:40	07:00 17:19-17:51/32 18:36	06:43 18:52-19:45/53 20:35	05:39 19:37-20:39/62 21:31	05:04 20:09-21:15/66 22:12
14	08:51 15:34-16:03/29 16:42 09:24-09:41/17	08:02 15:57-16:57/60 17:42	06:57 17:17-17:52/35 18:38	06:41 18:53-19:46/53 20:37	05:37 19:38-20:41/63 21:32	05:03 20:10-21:16/66 22:12
15	08:51 15:33-16:04/31 16:44 09:23-09:41/18	08:00 15:57-16:57/60 17:44	06:55 17:16-17:55/39 18:40	06:38 18:54-19:47/53 20:39	05:35 19:39-20:43/64 21:34	05:03 20:11-21:16/65 22:13
16	08:50 15:33-16:05/32 16:45 09:21-09:41/20	07:58 16:00-16:58/58 17:47	06:52 17:15-17:56/41 18:42	06:36 18:54-19:50/56 20:41	05:33 19:40-20:44/64 21:36	05:03 20:11-21:17/66 22:14
17	08:48 15:33-16:08/35 16:47 09:20-09:41/21	07:56 16:02-16:59/57 17:49	06:50 17:14-17:58/44 18:44	06:34 18:56-19:52/56 20:43	05:32 19:40-20:45/65 21:37	05:03 20:11-21:17/66 22:14
18	08:47 15:33-16:10/37 16:49 09:19-09:41/22	07:54 16:03-17:05/62 17:51	06:47 17:13-17:58/45 18:46	06:31 18:59-19:56/57 20:44	05:30 19:42-20:48/66 21:39	05:03 20:12-21:18/66 22:15
19	08:46 15:32-16:11/39 16:51 09:17-09:40/23	07:51 16:03-17:09/66 17:53	06:45 17:13-18:02/49 18:48	06:29 19:01-19:59/58 20:46	05:28 19:42-20:49/67 21:41	05:03 20:12-21:18/66 22:15
20	08:45 15:33-16:13/40 16:53 09:16-09:40/24	07:49 16:05-17:12/67 17:55	06:42 17:12-18:04/52 18:50	06:27 19:02-20:00/58 20:48	05:27 19:44-20:51/67 21:42	05:03 20:12-21:18/66 22:15
21	08:44 15:32-16:14/42 16:54 09:14-09:39/25	07:47 16:06-17:14/68 17:57	06:40 17:12-18:06/54 18:51	06:24 19:03-20:01/58 20:50	05:25 19:46-20:52/66 21:44	05:03 20:12-21:18/66 22:16
22	08:42 15:33-16:16/43 16:56 09:13-09:38/25	07:45 16:06-17:15/69 17:59	06:37 17:12-18:07/55 18:53	06:22 19:05-20:02/57 20:52	05:24 19:47-20:53/66 21:46	05:03 20:13-21:19/66 22:16
23	08:41 15:33-16:17/44 16:58 09:11-09:34/23	07:43 16:07-17:16/69 18:01	06:35 17:12-18:08/56 18:55	06:20 19:08-20:03/55 20:54	05:22 19:48-20:54/66 21:47	05:03 20:13-21:19/66 22:16
24	08:40 15:33-16:19/46 17:00 09:10-09:33/23	07:40 16:09-17:18/69 18:03	06:32 17:12-18:08/56 18:57	06:17 19:10-20:04/54 20:56	05:21 19:48-20:55/67 21:49	05:04 20:13-21:19/66 22:16
25	08:38 15:33-16:20/47 17:02 09:08-09:32/24	07:38 16:10-17:18/68 18:05	06:30 17:13-18:13/60 18:59	06:15 19:10-20:05/55 20:58	05:20 19:49-20:56/67 21:50	05:04 20:14-21:19/65 22:16
26	08:37 15:33-16:21/48 17:04 09:07-09:32/25	07:36 16:12-17:19/67 18:07	06:27 17:12-18:14/62 19:01	06:13 19:10-20:06/56 20:59	05:18 19:50-20:56/66 21:52	05:04 20:13-21:19/66 22:16
27	08:35 15:34-16:25/51 17:06 09:06-09:30/24	07:33 16:14-17:19/65 18:09	06:25 17:14-18:16/62 19:03	06:11 19:11-20:11/60 21:01	05:17 19:50-20:56/66 21:53	05:05 20:14-21:20/66 22:16
28	08:34 15:34-16:27/53 17:08 09:07-09:28/21	07:31 16:20-17:20/60 18:11	06:22 17:14-18:17/63 19:05	06:09 19:12-20:15/63 21:03	05:16 19:50-20:57/67 21:55	05:05 20:13-21:19/66 22:16
29	08:32 15:35-16:29/54 17:10 09:08-09:23/15		07:20 18:15-19:20/65 20:07	06:06 19:12-20:17/65 21:05	05:15 19:51-20:57/66 21:56	05:06 20:14-21:19/65 22:15
30	08:31 15:35-16:31/56 17:12 09:09-09:22/13		07:17 18:16-19:22/66 20:09	06:04 19:13-20:18/65 21:07	05:14 19:52-20:57/65 21:57	05:07 20:13-21:19/66 22:15
31	08:29 15:36-16:33/57 17:14 09:12-09:21/9		07:15 18:18-19:24/66 20:10		05:13 19:53-20:59/66 21:59	
	Potential sun hours 248	272	367	421	496	513
	Sum of minutes with flicker 2110	1722	1727	1651	1994	1992

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker

### SHADOW - Calendar per WTG

Calculation: Tirawley Shadow Flicker Real Case WTG: 16 - AT16  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	July	August	September	October	November	December	
1	05:07 20:11-21:19/68 22:15	05:48 19:46-20:47/61 21:39	06:44 18:50-19:42/52 20:31	07:38 17:59-18:29/30 19:16 17:21-17:53/32	07:37 15:22-16:21/59 17:04	08:33 15:16-15:42/26 14:36-15:05/29 16:19 09:09-09:22/13	
2	05:08 20:09-21:19/70 22:14	05:50 19:42-20:46/64 21:37	06:45 18:49-19:40/51 20:28	07:40 17:59-18:27/28 19:14 17:19-17:52/33	07:39 15:21-16:18/57 17:02	08:35 15:17-15:40/23 14:36-15:05/29 16:18 09:11-09:23/12	
3	05:09 20:08-21:18/70 22:14	05:52 19:39-20:44/65 21:35	06:47 18:49-19:37/48 20:26	07:42 18:01-18:25/24 19:11 17:17-17:53/36	07:41 15:20-16:15/55 17:00	08:36 15:18-15:40/22 14:36-15:06/30 16:17 09:12-09:23/11	
4	05:10 20:06-21:17/71 22:14	05:53 19:38-20:42/64 21:33	06:49 18:48-19:31/43 20:24	07:44 18:03-18:22/19 19:09 17:16-17:54/38	07:43 15:17-16:12/55 16:58	08:38 15:20-15:39/19 14:26-14:32/6 16:17 09:14-09:23/9 14:37-15:07/30	
5	05:11 20:06-21:17/71 22:13	05:55 19:37-20:39/62 21:31	06:51 18:48-19:30/42 20:21	07:45 18:07-18:18/11 19:06 17:15-17:54/39	07:45 15:14-16:11/57 16:56	08:39 15:21-15:37/16 14:24-14:34/10 16:16 09:15-09:23/8 14:36-15:07/31	
6	05:12 20:05-21:16/71 22:12	05:57 19:35-20:36/61 21:29	06:53 18:40-19:29/49 20:19	07:47 17:15-17:55/40 19:04	07:47 15:12-16:10/58 16:54	08:41 09:17-09:24/7 15:23-15:35/12 16:16 14:23-14:36/13 14:37-15:08/31	
7	05:13 20:04-21:06/62 22:12	05:59 19:34-20:34/60 21:27	06:54 18:38-19:28/50 20:16	07:49 17:14-17:55/41 19:01	07:49 15:10-16:09/59 16:53	08:42 09:18-09:24/6 15:24-15:34/10 16:15 14:22-15:08/46	
8	05:14 20:04-21:06/62 22:11	06:00 19:32-20:32/60 21:25	06:56 18:35-19:25/50 20:14	07:51 17:07-17:55/48 18:59	07:51 15:09-16:08/59 16:51	08:43 09:20-09:25/5 15:27-15:33/6 16:15 14:22-15:09/47	
9	05:15 20:03-21:06/63 22:10	06:02 19:29-20:31/62 21:23	06:58 18:32-19:23/51 20:11	07:53 17:04-17:55/51 18:56	07:53 15:08-16:06/58 16:49	08:45 09:21-09:24/3 16:14 14:22-15:09/47	
10	05:16 20:03-21:06/63 22:09	06:04 19:27-20:30/63 21:21	07:00 18:19-19:21/62 20:09	07:55 17:01-17:55/54 18:54	07:55 15:08-16:06/58 16:47	08:46 09:22-09:24/2 16:14 14:21-15:10/49	
11	05:17 20:02-21:06/64 22:08	06:06 19:24-20:28/64 21:19	07:02 18:14-19:19/65 20:06	07:57 16:59-17:54/55 18:52	07:57 15:07-16:04/57 16:45 08:43-08:52/9	08:47 09:24-09:25/1 16:14 14:22-15:11/49	
12	05:18 20:01-21:06/65 22:07	06:07 19:23-20:27/64 21:17	07:03 18:10-19:15/65 20:04	07:59 16:57-17:54/57 18:49	07:59 15:07-16:03/56 16:44 08:41-08:54/13	08:48 09:25-09:26/1 16:14 14:22-15:11/49	
13	05:19 20:01-21:06/65 22:06	06:09 19:22-20:26/64 21:15	07:05 18:08-19:13/65 20:01	08:00 16:56-17:53/57 18:47	08:01 15:07-16:01/54 16:42 08:40-08:55/15	08:49 14:22-15:12/50 16:13	
14	05:21 20:01-21:07/66 22:05	06:11 19:20-20:24/64 21:13	07:07 18:06-19:11/65 19:59	08:02 16:50-17:53/63 18:44	08:03 15:06-15:59/53 16:40 08:39-09:00/21	08:50 14:22-15:12/50 16:13	
15	05:22 20:00-21:06/66 22:04	06:13 19:19-20:21/62 21:10	07:09 18:04-19:08/64 19:56	08:04 16:46-17:52/66 18:42	08:05 15:06-15:57/51 16:39 08:38-09:02/24	08:51 14:22-15:12/50 16:13	
16	05:23 19:59-21:06/67 22:03	06:15 19:18-20:15/57 21:08	07:11 18:02-19:05/63 19:54	08:06 16:43-17:51/68 18:40	08:07 15:06-15:54/48 16:37 08:40-09:05/25	08:52 14:23-15:13/50 16:13	
17	05:25 19:59-21:05/66 22:02	06:16 19:18-20:14/56 21:06	07:12 18:01-19:03/62 19:51	08:08 16:41-17:50/69 18:37	08:09 15:07-15:54/47 16:36 08:42-09:06/24	08:53 14:23-15:14/51 16:14	
18	05:26 19:59-21:06/67 22:01	06:18 19:16-20:11/55 21:04	07:14 18:00-19:01/61 19:49	08:10 16:39-17:49/70 18:35	08:11 15:07-15:53/46 16:34 08:44-09:07/23	08:54 14:23-15:13/50 16:14	
19	05:27 19:58-21:05/67 21:59	06:20 19:16-20:09/53 21:01	07:16 17:59-18:56/57 19:46	08:12 16:38-17:47/69 18:33	08:13 15:08-15:52/44 16:33 08:46-09:09/23	08:55 14:23-15:14/51 16:14	
20	05:29 19:58-21:04/66 21:58	06:22 19:13-20:08/55 20:59	07:18 17:58-18:54/56 19:44	08:14 16:37-17:46/69 18:30	08:14 15:08-15:51/43 16:31 08:48-09:13/25	08:55 14:24-15:15/51 16:14	
21	05:30 19:58-21:04/66 21:57	06:24 19:10-20:07/57 20:57	07:20 17:57-18:53/56 19:41	08:16 16:36-17:44/68 18:28	08:16 15:08-15:50/42 14:43-14:53/10 16:30 08:50-09:15/25	08:56 14:24-15:15/51 16:15	
22	05:32 19:57-21:03/66 21:55	06:26 19:08-20:06/58 20:55	07:22 17:57-18:51/54 19:39	08:18 16:35-17:41/66 18:26	08:18 15:09-15:49/40 14:41-14:55/14 16:29 08:52-09:16/24	08:56 14:25-15:16/51 16:15	
23	05:33 19:55-21:01/66 21:54	06:27 19:06-20:04/58 20:52	07:23 17:57-18:49/52 19:36	08:20 16:33-17:38/65 18:24	08:20 15:10-15:48/38 14:39-14:57/18 16:27 08:54-09:17/23	08:57 14:25-15:16/51 16:16	
24	05:35 19:54-21:01/67 21:52	06:29 19:03-20:01/58 20:50	07:25 17:57-18:47/50 19:34	08:22 16:32-17:29/57 18:21	08:22 15:10-15:47/37 14:38-14:59/21 16:26 08:56-09:18/22	08:57 14:25-15:16/51 16:16	
25	05:37 19:52-20:59/67 21:51	06:31 19:01-19:58/57 20:48	07:27 17:56-18:41/45 19:31	07:24 15:31-16:28/57 17:19	08:23 15:11-15:46/35 14:38-15:00/22 16:25 08:58-09:19/21	08:58 14:26-15:17/51 16:17	
26	05:38 19:52-20:57/65 21:49	06:33 18:59-19:54/55 20:45	07:29 17:56-18:40/44 19:29	07:26 15:29-16:28/59 17:17	08:25 15:12-15:44/32 14:37-15:01/24 16:24 09:00-09:20/20	08:58 14:27-15:17/50 16:18	
27	05:40 19:50-20:55/65 21:47	06:35 18:57-19:52/55 20:43	07:31 17:56-18:39/43 19:26 17:32-17:44/12	07:28 15:26-16:27/61 17:15	08:27 15:13-15:44/31 14:37-15:02/25 16:23 09:02-09:21/19	08:58 14:27-15:18/51 16:19	
28	05:41 19:50-20:54/64 21:46	06:36 18:55-19:48/53 20:41	07:32 17:57-18:37/40 19:24 17:28-17:47/19	07:29 15:26-16:27/61 17:13	08:29 15:13-15:42/29 14:36-15:02/26 16:22 09:04-09:21/17	08:58 14:28-15:18/50 16:19	
29	05:43 19:49-20:52/63 21:44	06:38 18:53-19:47/54 20:38	07:34 17:57-18:34/37 19:21 17:25-17:50/25	07:31 15:24-16:25/61 17:11	08:30 15:14-15:42/28 14:36-15:03/27 16:21 09:05-09:21/16	08:58 14:29-15:19/50 16:20	
30	05:45 19:48-20:51/63 21:42	06:40 18:52-19:46/54 20:36	07:36 17:58-18:31/33 19:19 17:23-17:51/28	07:33 15:23-16:24/61 17:08	08:32 15:15-15:42/27 14:36-15:04/28 16:20 09:07-09:22/15	08:59 14:29-15:19/50 16:21	
31	05:46 19:48-20:49/61 21:40	06:42 18:51-19:44/53 20:33		07:35 15:22-16:23/61 17:06		08:59 14:30-15:20/50 16:22	
	Potential sun hours Sum of minutes with flicker	515 2049	461 1828	383 1659	327 1844	257 2032	230 1667

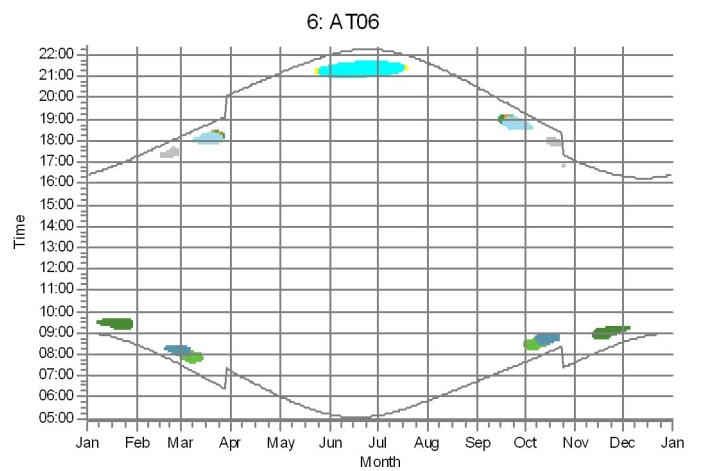
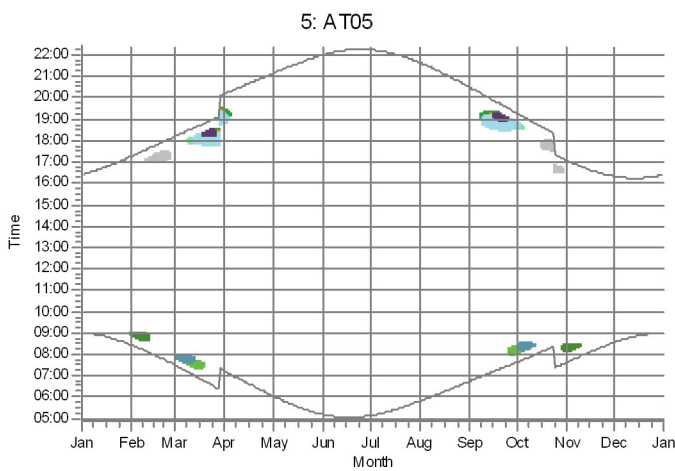
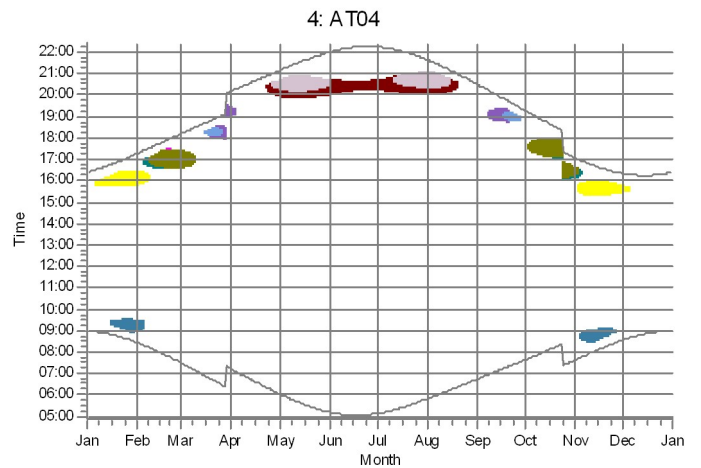
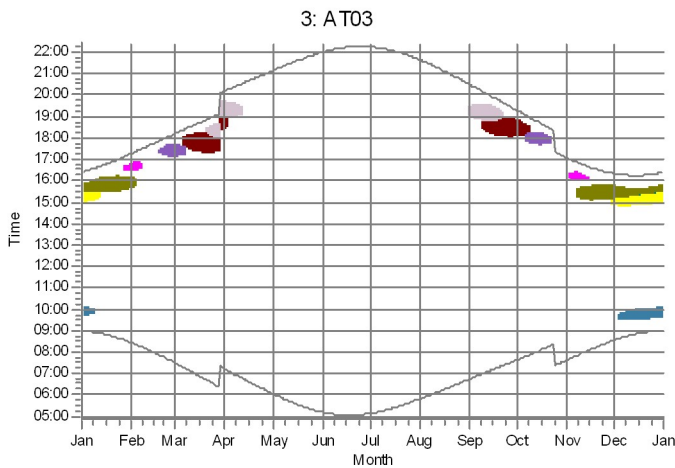
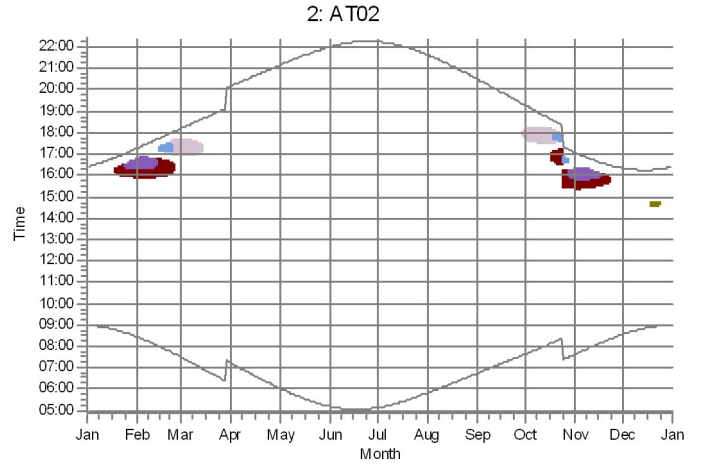
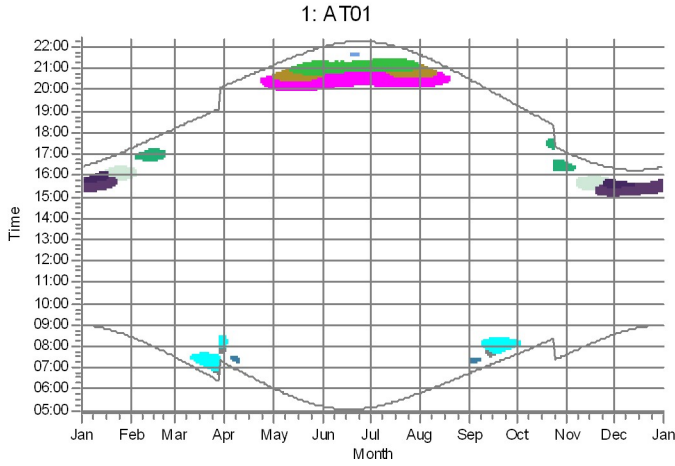
Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker



## SHADOW - Calendar per WTG, graphical

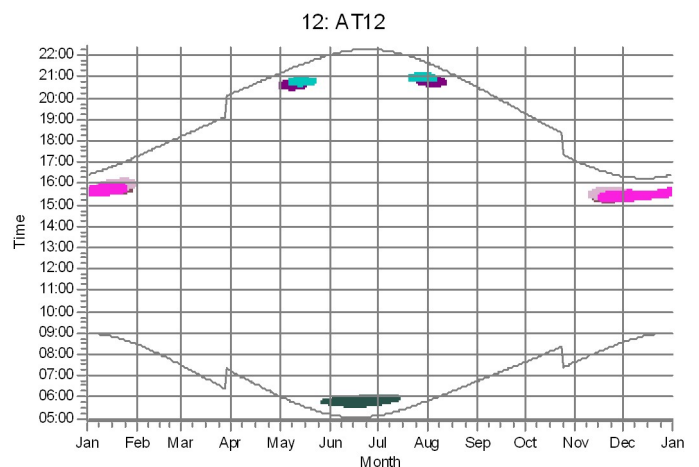
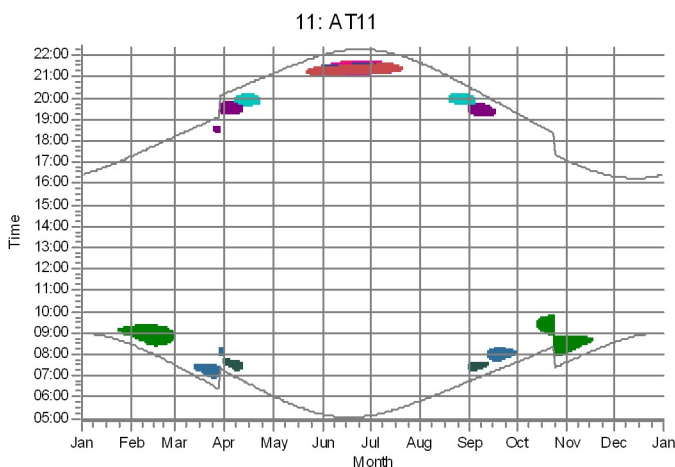
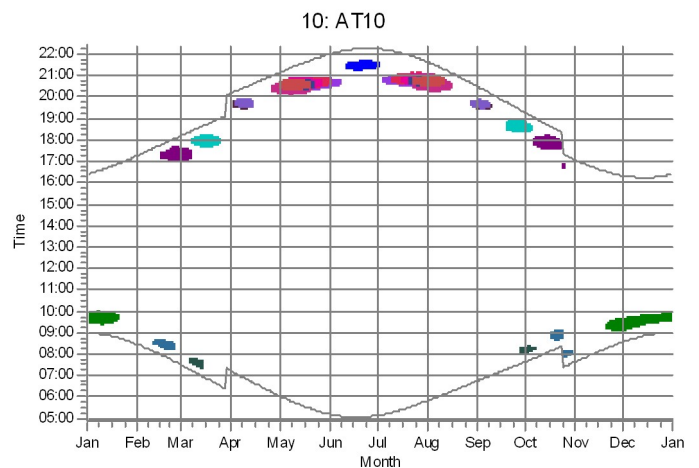
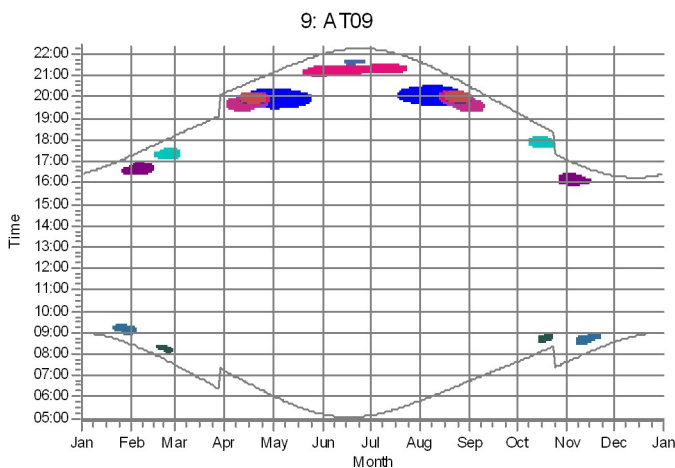
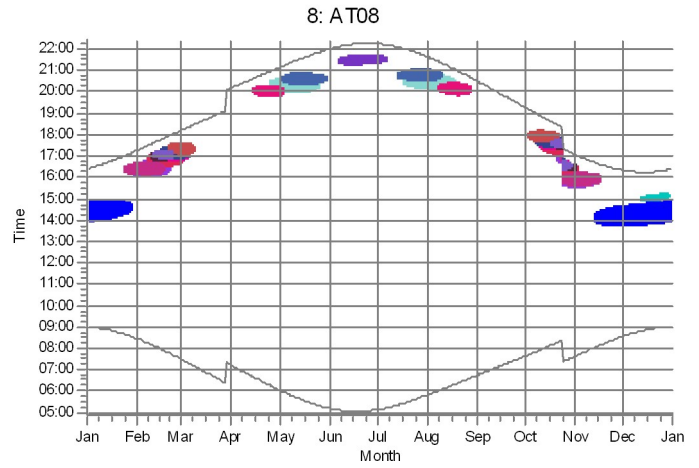
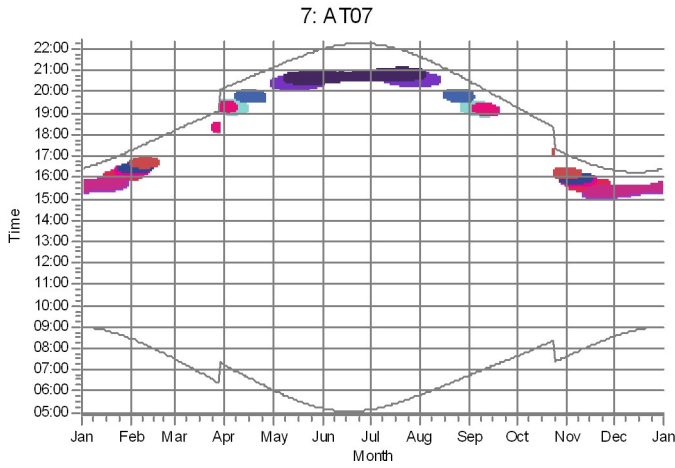
Calculation: Tirawley Shadow Flicker Real Case



Shadow receptors

B: H2*	H: H8	T: H20	AB: H28	AK: H37	BK: H63	CL: H90	CU: H99
D: H4	J: H10	W: H23	AD: H30	AS: H45	BV: H74	CM: H91	
E: H5	L: H12	Y: H25	AE: H31	BC: H55	BZ: H78	CN: H92	
F: H6	M: H13	Z: H26	AG: H33	BI: H61	CG: H85	CP: H94	

**SHADOW - Calendar per WTG, graphical**  
 Calculation: Tirawley Shadow Flicker Real Case

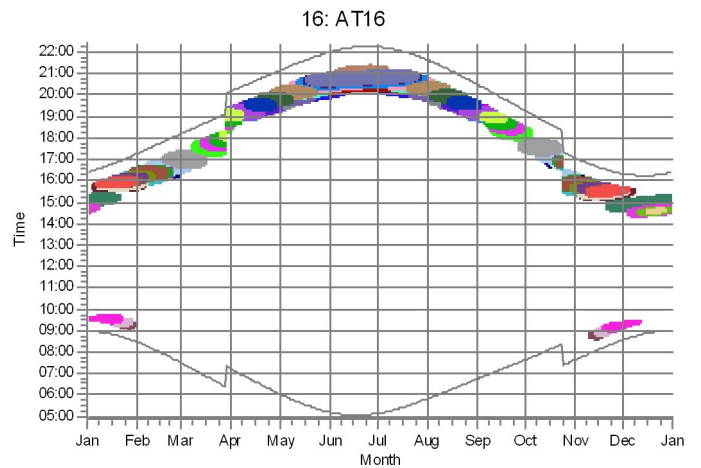
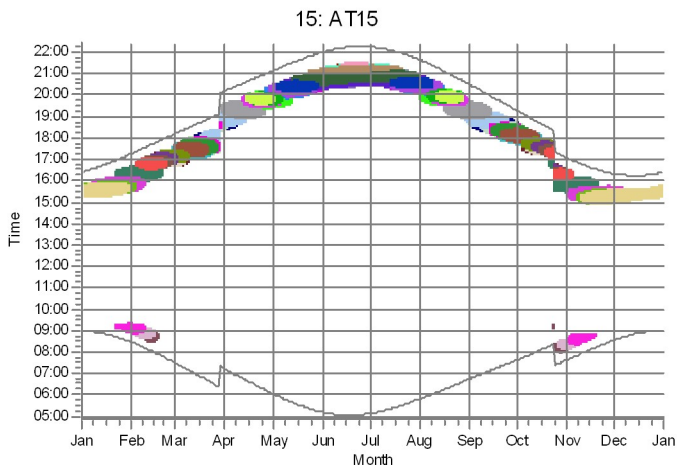
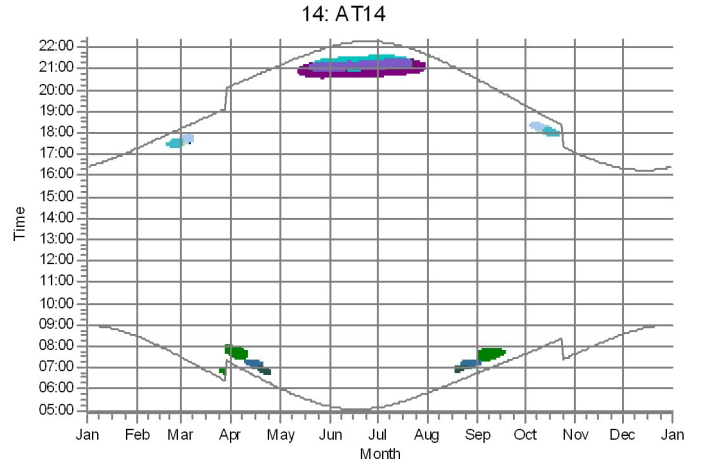
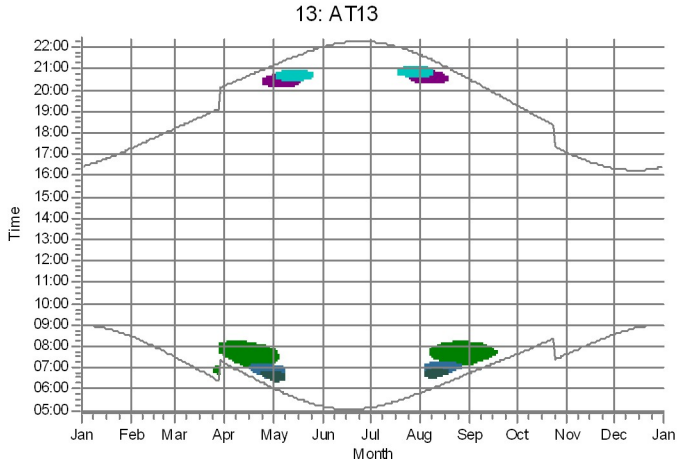


Shadow receptors

A: H1*	U: H21	AV: H48	BE: H57	BW: H75	CE: H83	CK: H89	CS: H97
C: H3	V: H22	BA: H53	BN: H66	CA: H79	CF: H84	CO: H93	
K: H11	AT: H46	BC: H55	BV: H74	CB: H80	CJ: H88	CR: H96	

## SHADOW - Calendar per WTG, graphical

Calculation: Tirawley Shadow Flicker Real Case



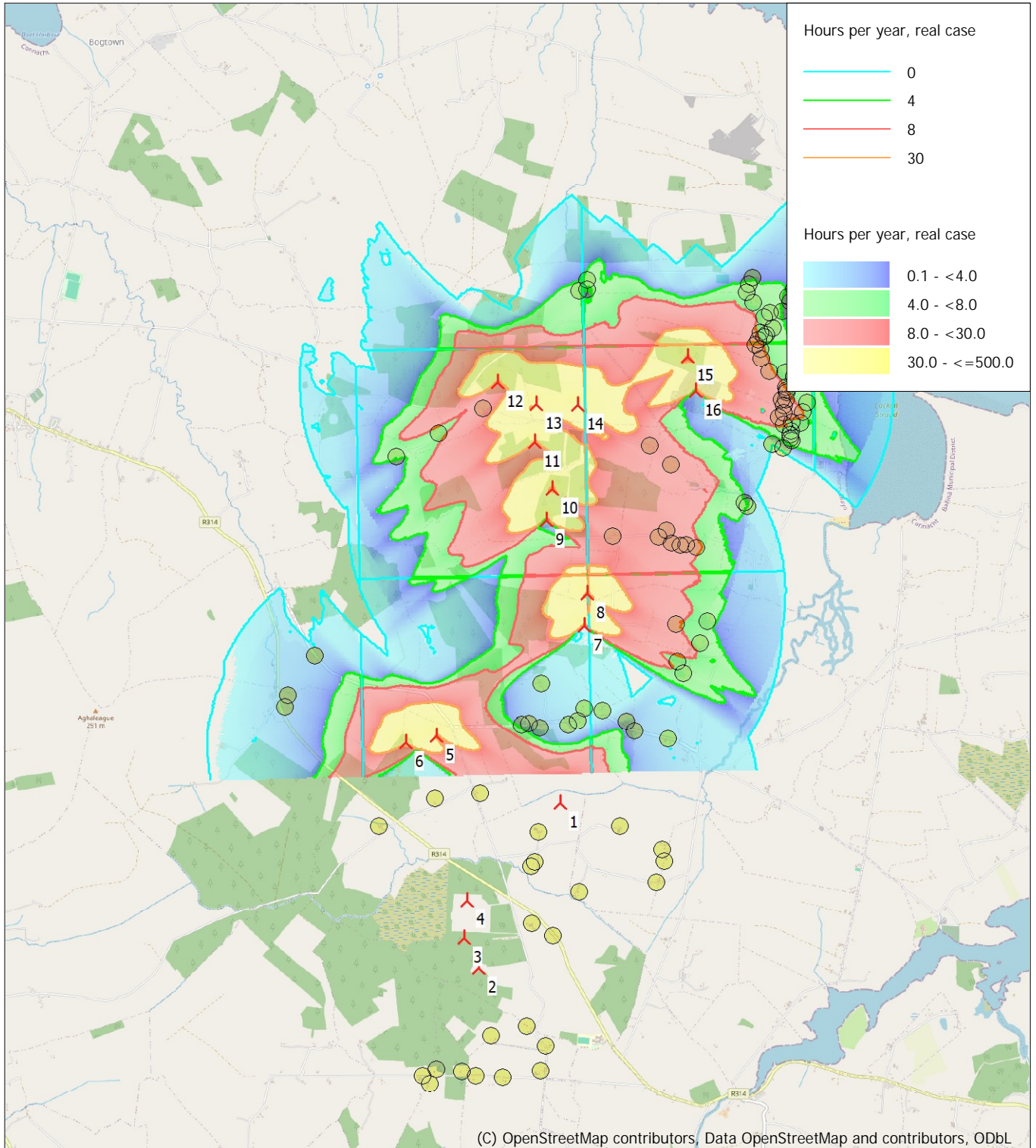
Shadow receptors

A: H1*	R: H18	AC: H29	AM: H39	AU: H47	BF: H58	BQ: H69	CC: H81	CT: H98
G: H7	S: H19	AF: H32	AN: H40	AW: H49	BG: H59	BS: H71	CD: H82	CV: H100
K: H11	U: H21	AH: H34	AO: H41	AY: H51	BJ: H62	BU: H73	CJ: H88	
N: H14	V: H22	AI: H35	AP: H42	AZ: H52	BL: H64	BY: H77	CO: H93	
O: H15	X: H24	AJ: H36	AQ: H43	BB: H54	BO: H67	CA: H79	CR: H96	
P: H16	AA: H27	AL: H38	AR: H44	BD: H56	BP: H68	CB: H80	CS: H97	



## SHADOW - Map

Calculation: Tirawley Shadow Flicker Real Case



Map: EMD OpenStreetMap , Print scale 1:50,000, Map center Irish ITM-IRENET95 (IE), geocentric, GRS80 East: 515,390 North: 836,019  
 New WTG Shadow receptor  
 Flicker map level: Elevation Grid Data Object: 6289 Tirawley WF\_EMDGrid\_2.wpg (3)  
 Time step: 2 minutes, Day step: 3 days, Map resolution: 10 m, Visibility resolution: 5 m, Eye height: 1.5 m



## SHADOW - Main Result

Calculation: Tirawley Shadow Flicker Worst Case  
 Assumptions for shadow calculations

Maximum distance for influence  
 Calculate only when more than 20 % of sun is covered by the blade  
 Please look in WTG table

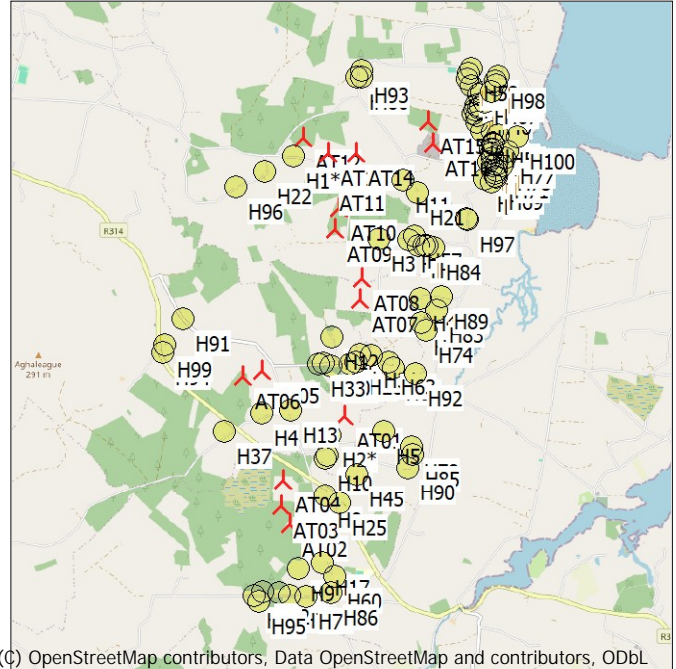
Minimum sun height over horizon for influence 3 °  
 Day step for calculation 1 days  
 Time step for calculation 1 minutes

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

Operational time  
 N NNE NE ENE E ESE SE SSE S SSW SW WSW  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828  
 W WNW NW NNW Sum  
 483 620 606 455 8,760

Monthly aggregation of real case reduction  
 A ZVI (Zones of Visual Influence) calculation is performed before flicker calculation so non visible WTG do not contribute to calculated flicker values. A WTG will be visible if it is visible from any part of the receiver window. The ZVI calculation is based on the following assumptions:  
 DHM: Elevation Grid Data Object: 6289 Tirawley WF\_EMDGrid\_2.wpg (3)  
 Receptor grid resolution: 1.0 m

All coordinates are in  
 Irish ITM-IREN95 (IE), geocentric, GRS80  
 WTGs



Easting	Northing	Z	Row data/Description	WTG type				Shadow data			
				Valid	Manufact.	Type-generator	Power, rated [kW]	Rotor diameter [m]	Hub height [m]	Calculation distance [m]	RPM [RPM]
1	515,725	834,020	42.8 AT01	Yes	VESTAS	V117-4.3-4,300	4,300	117.0	76.5	1,736	13.6
2	514,978	832,589	53.5 AT02	Yes	VESTAS	V117-4.3-4,300	4,300	117.0	76.5	1,736	13.6
3	514,857	832,846	58.2 AT03	Yes	VESTAS	V117-4.3-4,300	4,300	117.0	76.5	1,736	13.6
4	514,889	833,179	55.7 AT04	Yes	VESTAS	V117-4.3-4,300	4,300	117.0	76.5	1,736	13.6
5	514,649	834,627	78.2 AT05	Yes	VESTAS	V117-4.3-4,300	4,300	117.0	76.5	1,736	13.6
6	514,381	834,572	78.6 AT06	Yes	VESTAS	V117-4.3-4,300	4,300	117.0	76.5	1,736	13.6
7	515,958	835,555	102.6 AT07	Yes	VESTAS	V117-4.3-4,300	4,300	117.0	76.5	1,736	13.6
8	515,991	835,837	96.2 AT08	Yes	VESTAS	V117-4.3-4,300	4,300	117.0	76.5	1,736	13.6
9	515,645	836,489	110.2 AT09	Yes	VESTAS	V117-4.3-4,300	4,300	117.0	76.5	1,736	13.6
10	515,700	836,763	110.8 AT10	Yes	VESTAS	V117-4.3-4,300	4,300	117.0	76.5	1,736	13.6
11	515,557	837,162	116.7 AT11	Yes	VESTAS	V117-4.3-4,300	4,300	117.0	76.5	1,736	13.6
12	515,244	837,695	148.5 AT12	Yes	VESTAS	V117-4.3-4,300	4,300	117.0	76.5	1,736	13.6
13	515,574	837,498	128.3 AT13	Yes	VESTAS	V117-4.3-4,300	4,300	117.0	76.5	1,736	13.6
14	515,940	837,488	115.9 AT14	Yes	VESTAS	V117-4.3-4,300	4,300	117.0	76.5	1,736	13.6
15	516,909	837,891	112.8 AT15	Yes	VESTAS	V117-4.3-4,300	4,300	117.0	76.5	1,736	13.6
16	516,972	837,587	118.1 AT16	Yes	VESTAS	V117-4.3-4,300	4,300	117.0	76.5	1,736	13.6

### Shadow receptor-Input

No.	Name	Easting	Northing	Z	Width	Height	Elevation a.g.l.	Slope of window	Direction mode	Eye height (ZVI) a.g.l.
				[m]	[m]	[m]	[m]	[°]		[m]
A	H1*	515,110	837,466	144.6	2.0	2.0	0.5	90.0	"Green house mode"	2.5
B	H2*	515,526	833,767	46.1	2.0	2.0	0.5	90.0	"Green house mode"	2.5
C	H3	516,227	836,339	87.2	2.0	2.0	0.5	90.0	"Green house mode"	2.5
D	H4	514,628	834,072	64.9	2.0	2.0	0.5	90.0	"Green house mode"	2.5
E	H5	516,241	833,804	41.8	2.0	2.0	0.5	90.0	"Green house mode"	2.5
F	H6	515,489	833,504	47.8	2.0	2.0	0.5	90.0	"Green house mode"	2.5
G	H7	517,503	837,983	86.1	2.0	2.0	0.5	90.0	"Green house mode"	2.5
H	H8	515,450	832,962	46.2	2.0	2.0	0.5	90.0	"Green house mode"	2.5
I	H9	515,080	831,996	53.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
J	H10	515,456	833,467	47.3	2.0	2.0	0.5	90.0	"Green house mode"	2.5

To be continued on next page...

## SHADOW - Main Result

Calculation: Tirawley Shadow Flicker Worst Case

...continued from previous page

No.	Name	Easting	Northing	Z	Width	Height	Elevation a.g.l.	Slope of window	Direction mode	Eye height (ZVI) a.g.l.
				[m]	[m]	[m]	[m]	[°]		[m]
K	H11	516,561	837,118	97.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
L	H12	515,575	835,060	97.2	2.0	2.0	0.5	90.0	"Green house mode"	2.5
M	H13	515,019	834,112	57.3	2.0	2.0	0.5	90.0	"Green house mode"	2.5
N	H14	517,530	838,028	85.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
O	H15	517,553	837,950	79.4	2.0	2.0	0.5	90.0	"Green house mode"	2.5
P	H16	517,556	837,865	77.6	2.0	2.0	0.5	90.0	"Green house mode"	2.5
Q	H17	515,390	832,068	38.5	2.0	2.0	0.5	90.0	"Green house mode"	2.5
R	H18	517,622	837,746	68.8	2.0	2.0	0.5	90.0	"Green house mode"	2.5
S	H19	517,552	838,096	83.7	2.0	2.0	0.5	90.0	"Green house mode"	2.5
T	H20	515,559	834,678	65.6	2.0	2.0	0.5	90.0	"Green house mode"	2.5
U	H21	516,744	836,946	80.5	2.0	2.0	0.5	90.0	"Green house mode"	2.5
V	H22	514,721	837,259	133.3	2.0	2.0	0.5	90.0	"Green house mode"	2.5
W	H23	515,805	834,702	58.7	2.0	2.0	0.5	90.0	"Green house mode"	2.5
X	H24	517,581	838,054	80.7	2.0	2.0	0.5	90.0	"Green house mode"	2.5
Y	H25	515,641	832,856	42.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
Z	H26	515,947	834,836	64.9	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AA	H27	517,606	838,071	77.9	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AB	H28	515,886	834,729	56.9	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AC	H29	517,490	838,353	90.3	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AD	H30	515,462	834,716	69.6	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AE	H31	516,107	834,819	61.6	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AF	H32	517,583	838,226	81.8	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AG	H33	515,398	834,709	70.6	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AH	H34	517,725	837,501	50.9	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AI	H35	517,434	838,443	92.9	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AJ	H36	517,697	837,346	48.7	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AK	H37	514,129	833,845	67.9	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AL	H38	517,741	837,449	48.4	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AM	H39	517,762	837,602	51.7	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AN	H40	517,663	838,130	72.4	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AO	H41	517,766	837,561	51.3	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AP	H42	517,762	837,501	49.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AQ	H43	517,767	837,579	51.4	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AR	H44	517,742	837,383	46.6	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AS	H45	515,873	833,236	33.5	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AT	H46	516,625	836,322	65.9	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AU	H47	517,758	837,737	54.2	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AV	H48	516,764	835,557	63.5	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AW	H49	517,632	838,261	76.8	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AX	H50	517,638	837,109	52.3	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AY	H51	517,742	837,283	46.5	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AZ	H52	517,457	838,516	91.5	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BA	H53	516,738	836,261	61.3	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BB	H54	517,836	837,697	46.2	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BC	H55	516,774	835,227	58.5	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BD	H56	517,806	837,295	42.9	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BE	H57	516,697	836,380	64.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BF	H58	517,489	838,569	90.4	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BG	H59	517,798	837,225	45.4	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BH	H60	515,557	831,893	28.4	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BI	H61	516,384	834,641	46.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BJ	H62	517,792	837,189	45.9	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BK	H63	516,320	834,718	54.3	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BL	H64	517,729	837,077	47.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BM	H65	514,818	831,687	50.2	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BN	H66	516,817	836,244	59.2	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BO	H67	517,748	838,272	65.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BP	H68	517,791	837,155	45.9	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BQ	H69	517,804	837,142	44.5	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BR	H70	514,941	831,643	48.4	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BS	H71	517,884	837,289	39.8	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BT	H72	514,595	831,709	50.9	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BU	H73	517,910	837,382	36.5	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BV	H74	516,822	835,130	50.5	2.0	2.0	0.5	90.0	"Green house mode"	2.5

To be continued on next page...

## SHADOW - Main Result

Calculation: Tirawley Shadow Flicker Worst Case

...continued from previous page

No.	Name	Easting	Northing	Z	Width	Height	Elevation a.g.l.	Slope of window	Direction mode	Eye height (ZVI) a.g.l.
				[m]	[m]	[m]	[m]	[°]		[m]
BW	H75	516,865	836,247	57.4	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BX	H76	515,173	831,629	39.5	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BY	H77	517,945	837,469	31.7	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BZ	H78	516,609	833,595	26.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CA	H79	515,971	838,486	119.6	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CB	H80	516,040	838,493	120.9	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CC	H81	517,816	838,358	65.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CD	H82	517,798	838,402	68.9	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CE	H83	516,975	835,388	52.2	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CF	H84	516,953	836,216	54.7	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CG	H85	516,624	833,488	21.6	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CH	H86	515,505	831,678	28.4	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CI	H87	514,472	831,653	49.2	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CJ	H88	517,382	836,605	25.1	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CK	H89	517,041	835,575	49.2	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CL	H90	516,551	833,308	21.6	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CM	H91	513,601	835,338	94.1	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CN	H92	516,678	834,560	29.7	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CO	H93	516,041	838,580	118.5	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CP	H94	513,331	834,901	73.9	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CQ	H95	514,539	831,580	45.5	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CR	H96	514,340	837,065	127.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CS	H97	517,409	836,575	22.8	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CT	H98	517,850	838,466	66.8	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CU	H99	513,352	834,999	71.5	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CV	H100	518,085	837,658	18.7	2.0	2.0	0.5	90.0	"Green house mode"	2.5

## Calculation Results

Shadow receptor

No.	Name	Shadow, worst case			Shadow, expected values
		Shadow hours per year [h/year]	Shadow days per year [days/year]	Max shadow hours per day [h/day]	Shadow hours per year [h/year]
A	H1*	109:11	211	0:59	16:33
B	H2*	55:32	155	0:34	6:48
C	H3	110:08	177	0:54	15:30
D	H4	4:42	24	0:18	0:43
E	H5	85:01	161	0:52	15:12
F	H6	57:21	140	0:41	6:45
G	H7	70:29	132	0:45	10:03
H	H8	142:45	250	0:48	22:34
I	H9	0:00	0	0:00	0:00
J	H10	64:39	147	0:44	7:42
K	H11	101:23	227	0:41	17:06
L	H12	8:08	31	0:25	1:04
M	H13	41:26	99	0:37	6:41
N	H14	63:38	131	0:43	8:42
O	H15	61:26	114	0:42	9:05
P	H16	61:25	112	0:42	9:47
Q	H17	0:00	0	0:00	0:00
R	H18	56:07	112	0:41	9:18
S	H19	57:37	127	0:41	7:36
T	H20	14:23	43	0:30	2:13
U	H21	69:29	210	0:31	11:26
V	H22	40:06	148	0:31	6:23
W	H23	8:26	33	0:24	1:16
X	H24	51:26	104	0:39	7:00
Y	H25	73:12	165	0:39	12:18
Z	H26	4:54	23	0:20	0:42
AA	H27	47:39	101	0:38	6:28
AB	H28	6:57	30	0:22	1:02
AC	H29	58:39	122	0:38	6:24
AD	H30	16:56	46	0:34	2:31

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## SHADOW - Main Result

Calculation: Tirawley Shadow Flicker Worst Case

...continued from previous page

No.	Name	Shadow, worst case			Shadow, expected values
		Shadow hours per year [h/year]	Shadow days per year [days/year]	Max shadow hours per day [h/day]	Shadow hours per year [h/year]
AE	H31	3:38	20	0:17	0:32
AF	H32	52:03	118	0:37	6:23
AG	H33	20:15	49	0:36	3:02
AH	H34	64:07	139	0:36	11:34
AI	H35	53:07	100	0:38	5:34
AJ	H36	50:22	107	0:37	9:09
AK	H37	22:02	89	0:27	2:24
AL	H38	60:03	130	0:36	10:45
AM	H39	44:14	104	0:34	8:14
AN	H40	40:10	94	0:35	5:21
AO	H41	46:55	113	0:34	8:52
AP	H42	58:45	140	0:35	10:41
AO	H43	44:59	107	0:35	8:28
AR	H44	52:31	120	0:36	9:25
AS	H45	33:48	109	0:28	4:37
AT	H46	99:27	259	0:37	14:20
AU	H47	38:48	92	0:34	6:26
AV	H48	48:17	118	0:35	8:57
AW	H49	44:35	109	0:34	5:30
AX	H50	0:00	0	0:00	0:00
AY	H51	47:55	96	0:35	8:36
AZ	H52	45:58	88	0:37	4:36
BA	H53	74:00	222	0:33	11:29
BB	H54	32:58	84	0:31	5:37
BC	H55	40:42	128	0:33	7:06
BD	H56	43:06	106	0:32	7:50
BE	H57	93:13	257	0:35	13:36
BF	H58	38:54	82	0:33	3:51
BG	H59	41:41	90	0:32	7:28
BH	H60	0:00	0	0:00	0:00
BI	H61	20:56	64	0:32	2:21
BJ	H62	37:51	81	0:32	6:42
BK	H63	30:13	82	0:32	2:58
BL	H64	9:20	33	0:21	1:30
BM	H65	0:00	0	0:00	0:00
BN	H66	66:36	209	0:30	10:27
BO	H67	32:06	88	0:30	4:04
BP	H68	33:45	72	0:32	5:53
BQ	H69	32:27	70	0:32	5:38
BR	H70	0:00	0	0:00	0:00
BS	H71	42:36	111	0:30	7:41
BT	H72	0:00	0	0:00	0:00
BU	H73	45:29	125	0:29	8:13
BV	H74	40:07	124	0:31	6:54
BW	H75	63:15	208	0:29	10:00
BX	H76	0:00	0	0:00	0:00
BY	H77	32:03	92	0:28	6:03
BZ	H78	21:00	61	0:30	4:07
CA	H79	39:35	114	0:39	4:25
CB	H80	34:44	92	0:46	4:07
CC	H81	27:55	84	0:27	3:29
CD	H82	29:58	91	0:28	3:39
CE	H83	32:44	105	0:27	6:13
CF	H84	56:19	198	0:27	9:01
CG	H85	30:00	81	0:29	5:21
CH	H86	0:00	0	0:00	0:00
CI	H87	0:00	0	0:00	0:00
CJ	H88	25:42	110	0:18	4:18
CK	H89	39:09	135	0:26	6:52
CL	H90	6:13	43	0:15	0:52
CM	H91	14:44	68	0:24	1:49
CN	H92	9:50	35	0:26	1:16
CO	H93	40:11	100	0:44	4:21

To be continued on next page...

## SHADOW - Main Result

Calculation: Tirawley Shadow Flicker Worst Case

...continued from previous page

No.	Name	Shadow, worst case			Shadow, expected values	
		Shadow hours per year [h/year]	Shadow days per year [days/year]	Max shadow hours per day [h/day]	Shadow hours per year [h/year]	per year [h/year]
CP	H94	11:45	40	0:29	1:39	
CQ	H95	0:00	0	0:00	0:00	
CR	H96	29:43	148	0:23	4:50	
CS	H97	25:01	110	0:18	4:10	
CT	H98	27:27	89	0:26	3:17	
CU	H99	12:15	43	0:26	1:43	
CV	H100	20:09	65	0:24	3:32	

Total amount of flickering on the shadow receptors caused by each WTG

No.	Name	Worst case [h/year]	Expected [h/year]
1	AT01	183:04	28:39
2	AT02	68:58	8:48
3	AT03	122:54	15:20
4	AT04	154:04	23:58
5	AT05	44:11	6:26
6	AT06	64:02	9:29
7	AT07	159:32	23:59
8	AT08	183:29	25:34
9	AT09	105:33	17:51
10	AT10	99:13	15:26
11	AT11	93:43	14:49
12	AT12	61:50	8:24
13	AT13	97:54	17:59
14	AT14	75:22	12:55
15	AT15	353:32	53:52
16	AT16	371:15	55:26

Total times in Receptor wise and WTG wise tables can differ, as a WTG can lead to flicker at 2 or more receptors simultaneously and/or receptors may receive flicker from 2 or more WTGs simultaneously.

The calculation of the total expected values for a given receptor assumes a weighted average directional reduction for all WTGs contributing to shadow flicker within the same day. In the case where shadow flicker from different WTGs is not concurrent within the day, the total expected time at a given receptor may deviate marginally from the individual flicker time caused by each turbine separately.

## SHADOW - Detailed Results

Calculation: Tirawley Shadow Flicker Worst Case

Worst case, Shadow hours per year [h/year]

Receptor	WTG	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Total
A		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	19:29	35:38	0:00	54:00	9:50	0:00	0:00	109:11
B		0:00	0:00	14:39	24:42	0:00	16:11	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	55:32
C		0:00	0:00	0:00	0:00	0:00	0:00	0:00	58:01	47:48	4:19	0:00	0:00	0:00	0:00	0:00	0:00	110:08
D		4:42	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	4:42
E		78:02	0:00	3:13	3:46	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	85:01
F		0:00	0:00	29:39	27:42	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	57:21
G		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	3:19	33:48	33:22	70:29
H		0:00	42:53	33:02	66:50	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	142:45
I		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00
J		0:00	0:20	32:37	31:42	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	64:39
K		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	10:34	13:26	11:25	8:51	15:40	46:26	0:00	0:00	101:23
L		0:00	0:00	0:00	0:00	6:53	2:59	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	8:08
M		18:08	0:00	0:00	0:00	0:00	23:18	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	41:26
N		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	3:08	30:02	30:28	63:38
O		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	3:16	29:36	28:34	61:26
P		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	31:33	29:52	61:25
Q		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00
R		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	29:19	26:48	56:07
S		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	3:00	26:53	28:32	57:37
T		0:00	0:00	0:00	0:00	13:10	6:43	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	14:23
U		0:00	0:00	0:00	0:00	0:00	0:00	0:00	2:41	8:25	10:28	8:55	7:33	12:34	25:00	0:00	0:00	69:29
V		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	5:08	5:13	11:28	0:00	15:16	3:51	0:00	0:00	40:06
W		0:00	0:00	0:00	0:00	7:39	4:11	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	8:26
X		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	25:29	25:57	51:26
Y		0:00	24:01	19:37	29:34	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	73:12
Z		0:00	0:00	0:00	0:00	4:54	2:36	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	4:54
AA		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	23:30	24:09	47:39
AB		0:00	0:00	0:00	0:00	6:26	3:36	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	6:57
AC		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	29:35	29:04	58:39
AD		0:00	0:00	0:00	0:00	16:27	7:58	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	16:56
AE		0:00	0:00	0:00	0:00	3:38	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	3:38
AF		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	23:12	28:51	52:03
AG		0:00	0:00	0:00	0:00	19:42	9:16	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	20:15
AH		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	39:22	24:45	64:07
AI		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	41:33	11:34	53:07
AJ		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	10:29	39:53	50:22
AK		0:46	0:00	9:38	11:38	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	22:02
AL		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	34:40	25:23	60:03
AM		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	23:47	20:27	44:14
AN		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	19:44	20:26	40:10
AO		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	25:56	20:59	46:55
AP		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	36:24	22:21	58:45
AQ		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	24:33	20:26	44:59
AR		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	24:11	28:20	52:31
AS		0:00	11:55	10:01	11:52	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	33:48
AT		0:00	0:00	0:00	0:00	0:00	0:00	31:03	24:52	14:16	24:09	5:07	0:00	0:00	0:00	0:00	0:00	99:27
AU		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	19:57	18:51	38:48
AV		0:00	0:00	0:00	0:00	0:00	0:00	19:33	28:16	0:28	0:00	0:00	0:00	0:00	0:00	0:00	0:00	48:17
AW		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	20:13	24:22	44:35
AX		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00
AY		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	4:24	43:31	47:55
AZ		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	41:38	4:20	45:58
BA		0:00	0:00	0:00	0:00	0:00	0:00	17:37	18:47	11:30	18:04	8:02	0:00	0:00	0:00	0:00	0:00	74:00
BB		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	17:01	15:57	32:58
BC		4:58	0:00	0:00	0:00	0:00	0:00	28:12	7:32	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	40:42
BD		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	15:27	27:39	43:06
BE		0:00	0:00	0:00	0:00	0:00	0:00	26:32	20:45	11:56	16:31	17:29	0:00	0:00	0:00	0:00	0:00	93:13
BF		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	37:52	1:02	38:54
BG		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	2:27	39:14	41:41
BH		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00
BI		20:56	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	20:56
BJ		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	37:51	37:51
BK		27:31	0:00	0:00	0:00	2:42	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	30:13
BL		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	9:20	9:20

To be continued on next page...



## SHADOW - Detailed Results

Calculation: Tirawley Shadow Flicker Worst Case

...continued from previous page

Receptor	WTG															Total	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
BM	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00
BN	0:00	0:00	0:00	0:00	0:00	0:00	14:29	15:49	9:57	14:24	11:57	0:00	0:00	0:00	0:00	0:00	66:36
BO	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	15:15	16:51	32:06
BP	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	33:45	33:45
BQ	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	32:27	32:27
BR	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00
BS	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	21:46	20:50	42:36
BT	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00
BU	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	28:22	17:07	45:29
BV	4:43	0:00	0:00	0:00	0:00	0:00	35:24	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	40:07
BW	0:00	0:00	0:00	0:00	0:00	0:00	13:04	14:16	9:02	12:35	14:18	0:00	0:00	0:00	0:00	0:00	63:15
BX	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00
BY	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	17:34	14:29	32:03
BZ	21:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	21:00
CA	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	25:51	0:00	0:00	7:36	6:08	39:35
CB	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	18:12	0:00	0:00	8:52	7:40	34:44
CC	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	13:01	14:54	27:55
CD	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	13:29	16:29	29:58
CE	0:00	0:00	0:00	0:00	0:00	0:00	13:14	19:02	0:28	0:00	0:00	0:00	0:00	0:00	0:00	0:00	32:44
CF	0:00	0:00	0:00	0:00	0:00	0:00	10:57	12:12	8:01	10:28	14:41	0:00	0:00	0:00	0:00	0:00	56:19
CG	30:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	30:00
CH	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00
CI	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00
CJ	0:00	0:00	0:00	0:00	0:00	0:00	0:00	5:40	0:00	4:33	0:00	0:00	0:00	15:29	0:00	0:00	25:42
CK	0:00	0:00	0:00	0:00	0:00	0:00	10:41	13:02	15:26	0:00	0:00	0:00	0:00	0:00	0:00	0:00	39:09
CL	0:05	3:03	0:00	3:05	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	6:13
CM	0:00	0:00	0:00	0:00	4:17	10:27	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	14:44
CN	9:50	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	9:50
CO	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	22:31	0:00	0:00	9:03	8:37	40:11
CP	0:00	0:00	0:00	0:00	4:05	7:40	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	11:45
CQ	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00
CR	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	2:13	2:17	4:27	13:32	5:50	1:24	0:00	0:00	29:43
CS	0:00	0:00	0:00	0:00	0:00	0:00	0:00	5:32	0:00	4:29	0:00	0:00	0:00	15:00	0:00	0:00	25:01
CT	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	12:06	15:21	27:27
CU	0:00	0:00	0:00	0:00	4:19	7:56	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	12:15
CV	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	10:17	9:52	20:09
Total	183:04	68:58	122:54	154:04	44:11	64:02	159:32	183:29	105:33	99:13	93:43	61:50	97:54	75:22	353:32	371:15	

Worst case, Shadow days per year [days/year]

Receptor	WTG															Total	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
A	0	0	0	0	0	0	0	0	0	60	69	0	81	34	0	0	211
B	0	0	44	66	0	57	0	0	0	0	0	0	0	0	0	0	155
C	0	0	0	0	0	0	0	76	81	20	0	0	0	0	0	0	177
D	24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24
E	118	0	22	21	0	0	0	0	0	0	0	0	0	0	0	0	161
F	0	0	84	56	0	0	0	0	0	0	0	0	0	0	0	0	140
G	0	0	0	0	0	0	0	0	0	0	0	0	20	58	62	132	
H	0	74	57	119	0	0	0	0	0	0	0	0	0	0	0	0	250
I	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
J	0	6	88	59	0	0	0	0	0	0	0	0	0	0	0	0	147
K	0	0	0	0	0	0	0	0	38	39	34	35	47	79	0	0	227
L	0	0	0	0	29	20	0	0	0	0	0	0	0	0	0	0	31
M	46	0	0	0	0	53	0	0	0	0	0	0	0	0	0	0	99
N	0	0	0	0	0	0	0	0	0	0	0	0	19	55	60	131	
O	0	0	0	0	0	0	0	0	0	0	0	0	19	54	55	114	
P	0	0	0	0	0	0	0	0	0	0	0	0	58	54	112	0	0
Q	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
R	0	0	0	0	0	0	0	0	0	0	0	0	0	60	52	112	0
S	0	0	0	0	0	0	0	0	0	0	0	0	19	52	62	127	0
T	0	0	0	0	38	28	0	0	0	0	0	0	0	0	0	0	43
U	0	0	0	0	0	0	18	30	33	31	34	44	59	0	0	0	210
V	0	0	0	0	0	0	0	28	26	36	0	44	22	0	0	0	148
W	0	0	0	0	29	22	0	0	0	0	0	0	0	0	0	0	33
X	0	0	0	0	0	0	0	0	0	0	0	0	0	50	54	104	0

To be continued on next page...

## SHADOW - Detailed Results

Calculation: Tirawley Shadow Flicker Worst Case

...continued from previous page

Receptor	WTG	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Total
Y		0	51	44	70	0	0	0	0	0	0	0	0	0	0	0	0	165
Z		0	0	0	0	23	17	0	0	0	0	0	0	0	0	0	0	23
AA		0	0	0	0	0	0	0	0	0	0	0	0	0	0	48	53	101
AB		0	0	0	0	27	21	0	0	0	0	0	0	0	0	0	0	30
AC		0	0	0	0	0	0	0	0	0	0	0	0	0	0	60	62	122
AD		0	0	0	0	42	30	0	0	0	0	0	0	0	0	0	0	46
AE		0	0	0	0	20	0	0	0	0	0	0	0	0	0	0	0	20
AF		0	0	0	0	0	0	0	0	0	0	0	0	0	0	48	70	118
AG		0	0	0	0	46	32	0	0	0	0	0	0	0	0	0	0	49
AH		0	0	0	0	0	0	0	0	0	0	0	0	0	0	86	53	139
AI		0	0	0	0	0	0	0	0	0	0	0	0	0	0	100	36	100
AJ		0	0	0	0	0	0	0	0	0	0	0	0	0	0	35	88	107
AK		10	0	36	43	0	0	0	0	0	0	0	0	0	0	0	0	89
AL		0	0	0	0	0	0	0	0	0	0	0	0	0	0	75	55	130
AM		0	0	0	0	0	0	0	0	0	0	0	0	0	0	58	46	104
AN		0	0	0	0	0	0	0	0	0	0	0	0	0	0	45	49	94
AO		0	0	0	0	0	0	0	0	0	0	0	0	0	0	65	48	113
AP		0	0	0	0	0	0	0	0	0	0	0	0	0	0	90	50	140
AQ		0	0	0	0	0	0	0	0	0	0	0	0	0	0	61	46	107
AR		0	0	0	0	0	0	0	0	0	0	0	0	0	0	58	62	120
AS		0	40	33	36	0	0	0	0	0	0	0	0	0	0	0	0	109
AT		0	0	0	0	0	0	80	54	40	68	29	0	0	0	0	0	259
AU		0	0	0	0	0	0	0	0	0	0	0	0	0	0	48	44	92
AV		0	0	0	0	0	0	44	63	11	0	0	0	0	0	0	0	118
AW		0	0	0	0	0	0	0	0	0	0	0	0	0	0	46	63	109
AX		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AY		0	0	0	0	0	0	0	0	0	0	0	0	0	0	23	96	96
AZ		0	0	0	0	0	0	0	0	0	0	0	0	0	0	88	22	88
BA		0	0	0	0	0	0	51	45	35	56	37	0	0	0	0	0	222
BB		0	0	0	0	0	0	0	0	0	0	0	0	0	0	45	39	84
BC		30	0	0	0	0	0	68	30	0	0	0	0	0	0	0	0	128
BD		0	0	0	0	0	0	0	0	0	0	0	0	0	0	46	68	106
BE		0	0	0	0	0	0	78	50	35	48	56	0	0	0	0	0	257
BF		0	0	0	0	0	0	0	0	0	0	0	0	0	0	82	11	82
BG		0	0	0	0	0	0	0	0	0	0	0	0	0	0	17	90	90
BH		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BI		64	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	64
BJ		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	81
BK		64	0	0	0	18	0	0	0	0	0	0	0	0	0	0	0	82
BL		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	33
BM		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BN		0	0	0	0	0	0	42	40	32	48	47	0	0	0	0	0	209
BO		0	0	0	0	0	0	0	0	0	0	0	0	0	0	40	48	88
BP		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	72
BQ		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	70
BR		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BS		0	0	0	0	0	0	0	0	0	0	0	0	0	0	58	55	111
BT		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BU		0	0	0	0	0	0	0	0	0	0	0	0	0	0	80	45	125
BV		36	0	0	0	0	0	88	0	0	0	0	0	0	0	0	0	124
BW		0	0	0	0	0	0	42	39	30	43	54	0	0	0	0	0	208
BX		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BY		0	0	0	0	0	0	0	0	0	0	0	0	0	0	53	39	92
BZ		61	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	61
CA		0	0	0	0	0	0	0	0	0	0	0	78	0	0	32	31	114
CB		0	0	0	0	0	0	0	0	0	0	0	62	0	0	34	38	92
CC		0	0	0	0	0	0	0	0	0	0	0	0	0	0	37	47	84
CD		0	0	0	0	0	0	0	0	0	0	0	0	0	0	39	52	91
CE		0	0	0	0	0	0	38	56	11	0	0	0	0	0	0	0	105
CF		0	0	0	0	0	0	36	35	30	38	59	0	0	0	0	0	198
CG		81	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	81
CH		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CI		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CJ		0	0	0	0	0	0	0	24	0	21	0	0	0	65	0	0	110
CK		0	0	0	0	0	0	32	39	64	0	0	0	0	0	0	0	135

To be continued on next page...

## SHADOW - Detailed Results

Calculation: Tirawley Shadow Flicker Worst Case

...continued from previous page

Receptor	WTG																Total
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
CL	5	18	0	20	0	0	0	0	0	0	0	0	0	0	0	0	43
CM	0	0	0	0	24	44	0	0	0	0	0	0	0	0	0	0	68
CN	35	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	35
CO	0	0	0	0	0	0	0	0	0	0	70	0	0	36	47	100	
CP	0	0	0	0	22	30	0	0	0	0	0	0	0	0	0	40	
CQ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
CR	0	0	0	0	0	0	0	17	17	23	49	29	14	0	0	148	
CS	0	0	0	0	0	0	0	25	0	22	0	0	63	0	0	110	
CT	0	0	0	0	0	0	0	0	0	0	0	0	0	37	52	89	
CU	0	0	0	0	22	30	0	0	0	0	0	0	0	0	0	43	
CV	0	0	0	0	0	0	0	0	0	0	0	0	0	34	31	65	
Total	574	189	408	490	340	384	599	594	482	539	475	328	245	413	2091	2291	

### Worst case, Max shadow hours per day [h/day]

Receptor	WTG																Total
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
A	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:27	0:50	0:00	0:59	0:27	0:00	0:00	0:59
B	0:00	0:00	0:24	0:34	0:00	0:22	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:34
C	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:54	0:47	0:16	0:00	0:00	0:00	0:00	0:00	0:00	0:54
D	0:18	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:18
E	0:52	0:00	0:15	0:17	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:52
F	0:00	0:00	0:32	0:41	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:41
G	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:16	0:45	0:42	0:45
H	0:00	0:47	0:45	0:48	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:48
I	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00
J	0:00	0:04	0:34	0:44	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:44
K	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:26	0:30	0:28	0:20	0:27	0:41	0:00	0:00	0:41
L	0:00	0:00	0:00	0:00	0:23	0:15	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:25
M	0:37	0:00	0:00	0:00	0:00	0:34	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:37
N	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:15	0:43	0:39	0:43
O	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:16	0:42	0:40	0:42
P	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:42	0:42	0:42
Q	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00
R	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:38	0:41	0:41
S	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:15	0:41	0:37	0:41
T	0:00	0:00	0:00	0:00	0:30	0:22	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:30
U	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:11	0:23	0:26	0:23	0:17	0:23	0:31	0:00	0:00	0:31
V	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:18	0:20	0:30	0:00	0:31	0:16	0:00	0:00	0:31
W	0:00	0:00	0:00	0:00	0:24	0:19	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:24
X	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:39	0:37	0:39
Y	0:00	0:39	0:35	0:35	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:39
Z	0:00	0:00	0:00	0:00	0:20	0:14	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:20
AA	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:38	0:36	0:38
AB	0:00	0:00	0:00	0:00	0:22	0:16	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:22
AC	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:38	0:32	0:38
AD	0:00	0:00	0:00	0:00	0:34	0:25	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:34
AE	0:00	0:00	0:00	0:00	0:17	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:17
AF	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:37	0:33	0:37
AG	0:00	0:00	0:00	0:00	0:36	0:27	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:36
AH	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:32	0:36	0:36
AI	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:38	0:24	0:38
AJ	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:22	0:37	0:37
AK	0:06	0:00	0:21	0:27	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:27
AL	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:31	0:36	0:36
AM	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:32	0:34	0:34
AN	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:35	0:32	0:35
AO	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:31	0:34	0:34
AP	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:31	0:35	0:35
AQ	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:32	0:35	0:35
AR	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:30	0:36	0:36
AS	0:00	0:26	0:26	0:28	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:28
AT	0:00	0:00	0:00	0:00	0:00	0:00	0:29	0:35	0:28	0:29	0:14	0:00	0:00	0:00	0:00	0:00	0:37
AU	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:33	0:34	0:34
AV	0:00	0:00	0:00	0:00	0:00	0:00	0:34	0:35	0:03	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:35
AW	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:34	0:31	0:34

To be continued on next page...



## SHADOW - Detailed Results

Calculation: Tirawley Shadow Flicker Worst Case

...continued from previous page

Receptor	WTG																Total
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
AX	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00
AY	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:15	0:35	0:35
AZ	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:35	0:15	0:37
BA	0:00	0:00	0:00	0:00	0:00	0:00	0:27	0:33	0:25	0:25	0:17	0:00	0:00	0:00	0:00	0:00	0:33
BB	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:30	0:31	0:31
BC	0:12	0:00	0:00	0:00	0:00	0:00	0:33	0:19	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:33
BD	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:25	0:32	0:32
BE	0:00	0:00	0:00	0:00	0:00	0:00	0:27	0:32	0:26	0:27	0:22	0:00	0:00	0:00	0:00	0:00	0:35
BF	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:33	0:07	0:33
BG	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:11	0:32	0:32
BH	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00
BI	0:32	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:32
BJ	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:32	0:32
BK	0:32	0:00	0:00	0:00	0:14	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:32
BL	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:21	0:21
BM	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00
BN	0:00	0:00	0:00	0:00	0:00	0:00	0:26	0:30	0:24	0:24	0:19	0:00	0:00	0:00	0:00	0:00	0:30
BO	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:30	0:28	0:30
BP	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:32	0:32
BQ	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:32	0:32
BR	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00
BS	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:26	0:30	0:30
BT	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00
BU	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:26	0:29	0:29
BV	0:14	0:00	0:00	0:00	0:00	0:00	0:31	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:31
BW	0:00	0:00	0:00	0:00	0:00	0:00	0:25	0:29	0:23	0:23	0:19	0:00	0:00	0:00	0:00	0:00	0:29
BX	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00
BY	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:26	0:28	0:28
BZ	0:30	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:30
CA	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:27	0:00	0:00	0:23	0:19	0:39
CB	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:26	0:00	0:00	0:25	0:20	0:46
CC	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:27	0:25	0:27
CD	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:28	0:25	0:28
CE	0:00	0:00	0:00	0:00	0:00	0:00	0:27	0:27	0:03	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:27
CF	0:00	0:00	0:00	0:00	0:00	0:00	0:24	0:27	0:21	0:21	0:18	0:00	0:00	0:00	0:00	0:00	0:27
CG	0:29	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:29
CH	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00
CI	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00
CJ	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:18	0:00	0:16	0:00	0:00	0:00	0:18	0:00	0:00	0:18
CK	0:00	0:00	0:00	0:00	0:00	0:00	0:25	0:26	0:18	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:26
CL	0:01	0:15	0:00	0:15	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:15
CM	0:00	0:00	0:00	0:00	0:17	0:24	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:24
CN	0:26	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:26
CO	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:25	0:00	0:00	0:24	0:20	0:44
CP	0:00	0:00	0:00	0:00	0:18	0:25	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:29
CQ	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00
CR	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:13	0:13	0:18	0:23	0:19	0:09	0:00	0:00	0:23
CS	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:18	0:00	0:16	0:00	0:00	0:00	0:17	0:00	0:00	0:18
CT	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:26	0:24	0:26
CU	0:00	0:00	0:00	0:00	0:19	0:24	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:26
CV	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:24	0:24	0:24
Total	4:49	2:11	3:52	4:49	4:34	4:27	5:08	6:34	4:58	5:13	4:18	2:18	2:39	3:41	20:18	22:04	

### Real case, Shadow hours per year [h/year]

Receptor	WTG																Total
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
A	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	1:56	4:56	0:00	9:41	1:45	0:00	16:33
B	0:00	0:00	1:13	2:52	0:00	2:43	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	6:48
C	0:00	0:00	0:00	0:00	0:00	0:00	0:00	5:52	8:55	0:43	0:00	0:00	0:00	0:00	0:00	0:00	15:30
D	0:43	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:43
E	14:19	0:00	0:23	0:30	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	15:12
F	0:00	0:00	3:07	3:39	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	6:45
G	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:26	5:16	10:03
H	0:00	5:25	4:46	12:24	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	22:34
I	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00

To be continued on next page...

### SHADOW - Detailed Results

#### Calculation: Tirawley Shadow Flicker Worst Case

...continued from previous page

Receptor	WTG 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Total
J	0:00	0:02	3:28	4:13	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	7:42
K	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	1:18	1:47	2:02	1:44	3:02	8:11	0:00	0:00	17:06
L	0:00	0:00	0:00	0:00	0:55	0:24	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	1:04
M	2:47	0:00	0:00	0:00	0:00	3:55	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	6:41
N	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:25	4:21	3:56	8:42
O	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:26	4:54	3:45	9:05
P	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	5:46	4:02	9:47
Q	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00
R	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	5:22	3:56	9:18
S	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:24	3:45	3:34	7:36
T	0:00	0:00	0:00	0:00	2:03	1:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	2:13
U	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:12	1:07	1:30	1:38	1:29	2:28	4:15	0:00	0:00	11:26
V	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:38	0:45	1:45	0:00	2:44	0:40	0:00	0:00	6:23
W	0:00	0:00	0:00	0:00	1:09	0:37	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	1:16
X	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	3:39	3:21	7:00
Y	0:00	3:12	3:20	5:46	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	12:18
Z	0:00	0:00	0:00	0:00	0:42	0:22	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:42
AA	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	3:21	3:07	6:28
AB	0:00	0:00	0:00	0:00	0:58	0:32	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	1:02
AC	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	3:43	2:42	6:24
AD	0:00	0:00	0:00	0:00	2:27	1:10	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	2:31
AE	0:00	0:00	0:00	0:00	0:32	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:32
AF	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	3:05	3:18	6:23
AG	0:00	0:00	0:00	0:00	2:58	1:22	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	3:02
AH	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	7:03	4:32	11:34
AI	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	4:36	0:59	5:34
AJ	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	1:42	7:27	9:09
AK	0:08	0:00	0:49	1:27	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	2:24
AL	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	6:06	4:40	10:45
AM	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	4:34	3:41	8:14
AN	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	2:44	2:37	5:21
AO	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	5:01	3:52	8:52
AP	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	6:37	4:05	10:41
AQ	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	4:44	3:45	8:28
AR	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	4:06	5:19	9:25
AS	0:00	1:27	1:20	1:50	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	4:37
AT	0:00	0:00	0:00	0:00	0:00	0:00	3:06	3:09	2:36	4:38	0:51	0:00	0:00	0:00	0:00	0:00	14:20
AU	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	3:38	2:48	6:26
AV	0:00	0:00	0:00	0:00	0:00	0:00	3:27	5:26	0:05	0:00	0:00	0:00	0:00	0:00	0:00	0:00	8:57
AW	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	2:41	2:50	5:30
AX	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00
AY	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:43	7:53	8:36
AZ	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	4:16	0:21	4:36
BA	0:00	0:00	0:00	0:00	0:00	0:00	2:05	2:29	2:05	3:31	1:20	0:00	0:00	0:00	0:00	0:00	11:29
BB	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	3:06	2:31	5:37
BC	0:24	0:00	0:00	0:00	0:00	0:00	5:28	1:15	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	7:06
BD	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	2:32	5:18	7:50
BE	0:00	0:00	0:00	0:00	0:00	0:00	2:40	2:36	2:12	3:12	2:57	0:00	0:00	0:00	0:00	0:00	13:36
BF	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	3:46	0:05	3:51
BG	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:24	7:04	7:28
BH	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00
BI	2:21	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	2:21
BJ	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	6:42
BK	2:34	0:00	0:00	0:00	0:24	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	2:58
BL	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	1:31	1:30
BM	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00
BN	0:00	0:00	0:00	0:00	0:00	0:00	1:45	2:06	1:48	2:49	1:59	0:00	0:00	0:00	0:00	0:00	10:27
BO	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	2:02	2:02	4:04
BP	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	5:53	5:53
BQ	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	5:39	5:38
BR	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00
BS	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	3:42	3:59	7:41
BT	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00
BU	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	5:05	3:08	8:13
BV	0:29	0:00	0:00	0:00	0:00	0:00	6:26	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	6:54

To be continued on next page...



## SHADOW - Detailed Results

Calculation: Tirawley Shadow Flicker Worst Case

...continued from previous page

Receptor	WTG																Total
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
BW	0:00	0:00	0:00	0:00	0:00	0:00	1:36	1:54	1:38	2:28	2:24	0:00	0:00	0:00	0:00	0:00	10:00
BX	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00
BY	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	3:25	2:38	6:03
BZ	4:07	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	4:07
CA	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	2:38	0:00	0:00	1:04	0:44	4:25
CB	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	2:00	0:00	0:00	1:12	0:56	4:07
CC	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	1:44	1:45	3:29
CD	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	1:46	1:53	3:39
CE	0:00	0:00	0:00	0:00	0:00	0:00	2:25	3:43	0:05	0:00	0:00	0:00	0:00	0:00	0:00	0:00	6:13
CF	0:00	0:00	0:00	0:00	0:00	0:00	1:23	1:38	1:27	2:03	2:30	0:00	0:00	0:00	0:00	0:00	9:01
CG	5:22	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	5:21
CH	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00
CI	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00
CJ	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:45	0:00	0:51	0:00	0:00	0:00	2:43	0:00	0:00	4:18
CK	0:00	0:00	0:00	0:00	0:00	0:00	1:48	2:24	2:41	0:00	0:00	0:00	0:00	0:00	0:00	0:00	6:52
CL	0:01	0:24	0:00	0:28	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:52
CM	0:00	0:00	0:00	0:00	0:34	1:15	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	1:49
CN	1:17	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	1:16
CO	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	2:12	0:00	0:00	1:10	0:59	4:21
CP	0:00	0:00	0:00	0:00	0:36	1:04	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	1:39
CQ	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00
CR	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:19	0:19	0:49	2:04	1:04	0:15	0:00	0:00	4:50
CS	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:44	0:00	0:50	0:00	0:00	0:00	2:37	0:00	0:00	4:10
CT	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	1:34	1:43	3:17
CU	0:00	0:00	0:00	0:00	0:36	1:07	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	1:43
CV	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	1:52	1:40	3:32
Total	28:40	8:48	15:21	23:59	6:26	9:29	24:00	25:34	17:51	15:26	14:50	8:25	18:00	12:55	53:52	55:27	

Total time can be different from the sum in case of concurrent Shadow flicker events



### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: A - H1\*

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January			February			March			April			May			June		
1	08:59	09:33 (10)	08:27	08:56 (11)	07:29	07:13	07:36 (14)	06:02	07:19 (13)	05:12								
	16:24	19	09:52 (10)	17:16	20	09:16 (11)	18:13	20:12	29	08:05 (13)	21:09	28	07:47 (13)	22:00				
2	08:58	09:33 (10)	08:26	08:54 (11)	07:26	07:10	07:34 (14)	06:00	07:21 (13)	05:11								
	16:25	20	09:53 (10)	17:18	23	09:17 (11)	18:15	20:14	32	08:06 (13)	21:11	24	07:45 (13)	22:01				
3	08:58	09:33 (10)	08:24	08:52 (11)	07:24	07:08	07:32 (14)	05:58	07:24 (13)	05:10								
	16:26	20	09:53 (10)	17:20	25	09:17 (11)	18:17	20:16	36	08:08 (13)	21:13	17	07:41 (13)	22:02				
4	08:58	09:32 (10)	08:22	08:50 (11)	07:22	07:05	07:29 (14)	05:56	07:30 (13)	05:09								
	16:27	21	09:53 (10)	17:22	28	09:18 (11)	18:19	20:18	38	08:07 (13)	21:14	5	07:35 (13)	22:04				
5	08:57	09:32 (10)	08:20	08:48 (11)	07:19	07:03	07:27 (14)	05:54	07:27 (13)	05:08								
	16:29	22	09:54 (10)	17:24	30	09:18 (11)	18:21	20:20	41	08:08 (13)	21:16			22:05				
6	08:57	09:31 (10)	08:18	08:46 (11)	07:17	07:00	07:24 (13)	05:52	07:24 (13)	05:07								
	16:30	23	09:54 (10)	17:26	33	09:19 (11)	18:23	20:22	44	08:08 (13)	21:18			22:06				
7	08:57	09:30 (10)	08:16	08:44 (11)	07:14	06:58	07:22 (13)	05:50	07:22 (13)	05:07								
	16:31	24	09:54 (10)	17:28	35	09:19 (11)	18:25	20:24	47	08:09 (13)	21:20			22:07				
8	08:56	09:30 (10)	08:14	08:42 (11)	07:12	06:55	07:19 (13)	05:48	07:19 (13)	05:06								
	16:33	25	09:55 (10)	17:30	37	09:19 (11)	18:27	20:26	49	08:08 (13)	21:22			22:08				
9	08:55	09:29 (10)	08:12	08:40 (11)	07:10	06:53	07:17 (13)	05:46	07:17 (13)	05:05								
	16:34	25	09:54 (10)	17:32	40	09:20 (11)	18:29	20:28	51	08:08 (13)	21:24			22:09				
10	08:55	09:28 (10)	08:10	08:37 (11)	07:07	06:50	07:15 (13)	05:44	07:15 (13)	05:05								
	16:36	26	09:54 (10)	17:34	42	09:19 (11)	18:30	20:29	54	08:09 (13)	21:25			22:10				
11	08:54	09:27 (10)	08:08	08:35 (11)	07:05	06:48	07:12 (13)	05:42	07:12 (13)	05:04								
	16:37	27	09:54 (10)	17:36	44	09:19 (11)	18:32	20:31	56	08:08 (13)	21:27			22:10				
12	08:53	09:28 (10)	08:06	08:33 (11)	07:02	06:46	07:10 (13)	05:40	07:10 (13)	05:04								
	16:39	26	09:54 (10)	17:38	46	09:19 (11)	18:34	20:33	58	08:08 (13)	21:29			22:11				
13	08:52	09:29 (10)	08:04	08:31 (11)	07:00	06:43	07:09 (13)	05:39	07:09 (13)	05:04								
	16:40	25	09:54 (10)	17:41	48	09:19 (11)	18:36	20:35	59	08:08 (13)	21:31			22:12				
14	08:52	09:30 (10)	08:02	08:29 (11)	06:57	06:41	07:08 (13)	05:37	07:08 (13)	05:03								
	16:42	24	09:54 (10)	17:43	50	09:19 (11)	18:38	20:37	59	08:07 (13)	21:32			22:13				
15	08:51	09:31 (10)	08:00	08:29 (11)	06:55	06:38	07:08 (13)	05:35	07:08 (13)	05:03								
	16:44	23	09:54 (10)	17:45	50	09:19 (11)	18:40	20:39	59	08:07 (13)	21:34			22:13				
16	08:50	09:32 (10)	07:58	08:28 (11)	06:52	06:36	07:09 (13)	05:33	07:09 (13)	05:03								
	16:46	20	09:52 (10)	17:47	50	09:18 (11)	18:42	20:41	58	08:07 (13)	21:36			22:14				
17	08:49	09:33 (10)	07:56	08:29 (11)	06:50	06:34	07:08 (13)	05:32	07:08 (13)	05:03								
	16:47	19	09:52 (10)	17:49	48	09:17 (11)	18:44	20:43	57	08:05 (13)	21:38			22:14				
18	08:47	09:35 (10)	07:54	08:30 (11)	06:47	06:31	07:08 (13)	05:30	07:08 (13)	05:03								
	16:49	16	09:51 (10)	17:51	47	09:17 (11)	18:46	20:45	57	08:05 (13)	21:39			22:15				
19	08:46	09:37 (10)	07:52	08:30 (11)	06:45	06:29	07:09 (13)	05:29	07:09 (13)	05:03								
	16:51	12	09:49 (10)	17:53	45	09:15 (11)	18:48	20:46	55	08:04 (13)	21:41			22:15				
20	08:45	09:41 (10)	07:49	08:31 (11)	06:42	06:27	07:09 (13)	05:27	07:09 (13)	05:03								
	16:53	5	09:46 (10)	17:55	44	09:15 (11)	18:50	20:48	55	08:04 (13)	21:43			22:15				
21	08:44		07:47	08:33 (11)	06:40	06:24	07:09 (13)	05:25	07:09 (13)	05:03								
	16:55		17:57	41	09:14 (11)	18:52	20:50	53	08:02 (13)	21:44			22:16					
22	08:43		07:45	08:33 (11)	06:37	06:22	07:10 (13)	05:24	07:10 (13)	05:03								
	16:56		17:59	39	09:12 (11)	18:53	20:52	51	08:01 (13)	21:46			22:16					
23	08:41		07:43	08:35 (11)	06:35	06:20	07:10 (13)	05:23	07:10 (13)	05:03								
	16:58		18:01	35	09:10 (11)	18:55	20:54	51	08:01 (13)	21:47			22:16					
24	08:40		07:40	08:37 (11)	06:32	06:18	07:11 (13)	05:21	07:11 (13)	05:04								
	17:00		18:03	32	09:09 (11)	18:57	20:56	49	08:00 (13)	21:49			22:16					
25	08:38	09:08 (11)	07:38	08:38 (11)	06:30	06:15	07:12 (13)	05:20	07:12 (13)	05:04								
	17:02	1	09:09 (11)	18:05	28	09:06 (11)	18:59	2	06:56 (14)	20:58	46	07:58 (13)	21:50	22:16				
26	08:37	09:07 (11)	07:36	08:41 (11)	06:27	06:51 (14)	06:13	07:13 (13)	05:18	05:05								
	17:04	4	09:11 (11)	18:07	22	09:03 (11)	19:01	5	06:56 (14)	21:00	44	07:57 (13)	21:52	22:16				
27	08:35	09:05 (11)	07:33	08:45 (11)	06:25	06:49 (14)	06:11	07:13 (13)	05:17	05:05								
	17:06	6	09:11 (11)	18:09	15	09:00 (11)	19:03	10	06:59 (13)	21:01	42	07:55 (13)	21:53	22:16				
28	08:34	09:03 (11)	07:31		06:22	06:46 (14)	06:09	07:14 (13)	05:16	05:06								
	17:08	9	09:12 (11)	18:11	19:05	15	07:01 (13)	21:03	39	07:53 (13)	21:55			22:16				
29	08:32	09:01 (11)			07:20	07:44 (14)	06:06	07:16 (13)	05:15	05:06								
	17:10	12	09:13 (11)		20:07	19	08:03 (13)	21:05	35	07:51 (13)	21:56			22:16				
30	08:31	08:59 (11)			07:17	07:41 (14)	06:04	07:17 (13)	05:14	05:07								
	17:12	15	09:14 (11)		20:09	22	08:03 (13)	21:07	33	07:50 (13)	21:57			22:15				
31	08:29	08:58 (11)			07:15	07:39 (14)		05:13										
	17:14	17	09:15 (11)		20:11	26	08:05 (13)		21:59									
Potential sun hours	248		272		367		421		496		513							
Total, worst case		486		997		99		1437		74								
Sun reduction		0.17		0.22		0.22		0.34		0.36								
Oper. time red.		1.00		1.00		1.00		1.00		1.00								
Wind dir. red.		0.66		0.63		0.58		0.58		0.58								
Total reduction		0.11		0.14		0.13		0.20		0.21								
Total, real		54		139		13		287		16								

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: A - H1\*  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	July	August	September	October	November	December	
1	05:07 22:15	05:48 21:39	06:44 20:31	07:11 (13) 19:16	07:38 17:04	08:07 (11) 16:19	09:09 (10) 09:36 (10)
2	05:08 22:15	05:50 21:37	06:46 20:29	07:13 (13) 19:14	07:40 17:02	08:09 (11) 16:18	09:11 (10) 09:38 (10)
3	05:09 22:14	05:52 21:35	06:47 20:26	07:15 (13) 19:11	07:42 17:00	08:12 (11) 16:18	09:12 (10) 09:38 (10)
4	05:10 22:14	05:53 21:33	06:49 20:24	07:17 (13) 19:09	07:44 16:58	08:14 (11) 16:17	09:14 (10) 09:39 (10)
5	05:11 22:13	05:55 21:31	06:51 20:21	07:18 (13) 19:06	07:46 16:57	08:16 (11) 16:16	09:15 (10) 09:39 (10)
6	05:12 22:12	05:57 21:29	06:53 20:19	07:20 (13) 19:04	07:47 16:55	08:18 (11) 16:16	09:17 (10) 09:40 (10)
7	05:13 22:12	05:59 21:27	06:55 20:16	07:22 (14) 19:01	07:49 16:53	08:20 (11) 16:15	09:18 (10) 09:40 (10)
8	05:14 22:11	06:00 21:25	06:56 20:14	07:24 (14) 18:59	07:51 16:51	08:22 (11) 16:15	09:20 (10) 09:41 (10)
9	05:15 22:10	06:02 21:23	07:37 (13) 07:47 (13)	06:58 20:11	07:25 (14) 18:56	07:53 16:49	09:21 (10) 09:41 (10)
10	05:16 22:09	06:04 21:21	07:33 (13) 07:52 (13)	07:00 20:09	07:27 (14) 18:54	07:55 16:47	09:22 (10) 09:42 (10)
11	05:17 22:08	06:06 21:19	07:30 (13) 07:55 (13)	07:02 20:06	07:29 (14) 18:52	07:57 16:45	09:24 (10) 09:43 (10)
12	05:18 22:08	06:08 21:17	07:27 (13) 07:56 (13)	07:04 20:04	07:30 (14) 18:49	07:59 16:44	09:25 (10) 09:43 (10)
13	05:19 22:06	06:09 21:15	07:25 (13) 07:59 (13)	07:05 20:01	07:32 (14) 18:47	08:01 16:42	09:26 (10) 09:44 (10)
14	05:21 22:05	06:11 21:13	07:24 (13) 08:00 (13)	07:07 19:59	07:34 (14) 18:44	08:03 09:28 (11)	09:27 (10) 09:44 (10)
15	05:22 22:04	06:13 21:10	07:21 (13) 08:01 (13)	07:09 19:56	07:36 (14) 18:42	08:05 09:15 (11)	09:28 (10) 09:45 (10)
16	05:23 22:03	06:15 21:08	07:20 (13) 08:03 (13)	07:11 19:54	07:38 (14) 18:40	08:07 09:12 (11)	09:29 (10) 09:45 (10)
17	05:25 22:02	06:17 21:06	07:19 (13) 08:04 (13)	07:13 19:51	07:39 (14) 18:37	08:09 09:09 (11)	09:30 (10) 09:46 (10)
18	05:26 22:01	06:18 21:04	07:17 (13) 08:04 (13)	07:14 19:49	07:41 (14) 18:35	08:11 09:07 (11)	09:30 (10) 09:46 (10)
19	05:28 21:59	06:20 21:02	07:17 (13) 08:05 (13)	07:16 19:46	08:12 18:33	09:05 (11) 09:42 (11)	09:31 (10) 09:46 (10)
20	05:29 21:58	06:22 20:59	07:16 (13) 08:06 (13)	07:18 19:44	08:14 18:30	09:04 (11) 09:43 (11)	09:32 (10) 09:47 (10)
21	05:31 21:57	06:24 20:57	07:14 (13) 08:06 (13)	07:20 19:41	08:16 18:28	09:03 (11) 09:44 (11)	09:32 (10) 09:47 (10)
22	05:32 21:55	06:26 20:55	07:14 (13) 08:07 (13)	07:22 19:39	08:18 18:26	09:01 (11) 09:45 (11)	09:33 (10) 09:48 (10)
23	05:34 21:54	06:27 20:52	07:13 (13) 08:08 (13)	07:23 19:36	08:20 18:24	09:00 (11) 09:46 (11)	09:33 (10) 09:48 (10)
24	05:35 21:52	06:29 20:50	07:12 (13) 08:08 (13)	07:25 19:34	08:22 18:21	08:59 (11) 09:46 (11)	09:34 (10) 09:49 (10)
25	05:37 21:51	06:31 20:48	07:11 (13) 08:08 (13)	07:27 19:31	07:24 17:19	07:58 (11) 08:47 (11)	09:34 (10) 09:50 (10)
26	05:38 21:49	06:33 20:45	07:11 (13) 08:08 (13)	07:29 19:29	07:26 17:17	07:58 (11) 08:47 (11)	09:34 (10) 09:50 (10)
27	05:40 21:47	06:35 20:43	07:10 (13) 08:09 (13)	07:31 19:26	07:28 17:15	07:58 (11) 08:48 (11)	09:34 (10) 09:50 (10)
28	05:42 21:46	06:36 20:41	07:09 (13) 08:08 (13)	07:33 19:24	07:30 17:13	08:29 08:49 (11)	09:34 (10) 09:50 (10)
29	05:43 21:44	06:38 20:38	07:09 (13) 08:08 (13)	07:34 19:21	07:32 17:11	08:01 (11) 08:49 (11)	09:34 (10) 09:51 (10)
30	05:45 21:42	06:40 20:36	07:09 (13) 08:08 (13)	07:36 19:19	07:34 17:09	08:03 (11) 08:49 (11)	09:34 (10) 09:51 (10)
31	05:47 21:41	06:42 20:33	07:10 (13) 08:08 (13)	19:19	07:36 17:07	08:05 (11) 08:49 (11)	09:34 (10) 09:52 (10)
Potential sun hours	515	461	383	327	257	230	
Total, worst case		1050	584	704	543	577	
Sun reduction		0.27	0.29	0.23	0.20	0.12	
Oper. time red.		1.00	1.00	1.00	1.00	1.00	
Wind dir. red.		0.58	0.58	0.63	0.64	0.66	
Total reduction		0.16	0.17	0.15	0.13	0.08	
Total, real		167	99	104	69	46	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: B - H2\*  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June	
1	08:58 16:24	15:04 (3) 15:26 (3)	08:27 17:16	15:53 (4) 16:23 (4)	07:29 18:13	07:13 20:12	06:02 21:09
2	08:58 16:25	15:05 (3) 15:27 (3)	08:25 17:18	15:54 (4) 16:22 (4)	07:26 18:15	07:10 20:14	06:00 21:11
3	08:58 16:26	15:05 (3) 15:26 (3)	08:24 17:20	15:55 (4) 16:21 (4)	07:24 18:17	07:08 20:16	05:58 21:12
4	08:58 16:27	15:06 (3) 15:27 (3)	08:22 17:22	15:56 (4) 16:21 (4)	07:22 18:19	07:05 20:18	05:56 21:14
5	08:57 16:29	15:07 (3) 15:27 (3)	08:20 17:24	15:58 (4) 16:19 (4)	07:19 18:21	07:03 20:20	05:54 21:16
6	08:57 16:30	15:08 (3) 15:27 (3)	08:18 17:26	16:00 (4) 16:18 (4)	07:17 18:23	07:00 20:22	05:52 21:18
7	08:56 16:31	15:09 (3) 15:54 (4)	08:16 17:28	16:02 (4) 16:16 (4)	07:14 18:25	06:58 20:24	05:50 21:20
8	08:56 16:33	15:10 (3) 15:55 (4)	08:14 17:30	16:07 (4) 16:11 (4)	07:12 18:27	06:55 20:26	05:48 21:22
9	08:55 16:34	15:11 (3) 15:57 (4)	08:12 17:32	16:09 18:29	07:09 20:27	06:53 21:23	05:46 22:08
10	08:55 16:36	15:13 (3) 15:59 (4)	08:10 17:34	16:07 18:30	07:07 20:29	06:50 21:25	05:44 22:09
11	08:54 16:37	15:15 (3) 16:01 (4)	08:08 17:36	16:05 18:32	07:05 20:31	06:48 21:27	05:05 22:10
12	08:53 16:39	15:17 (3) 16:03 (4)	08:06 17:39	16:02 18:34	07:02 20:33	06:46 21:29	05:04 22:11
13	08:52 16:41	15:50 (4) 16:04 (4)	08:04 17:41	16:00 18:36	07:00 20:35	06:43 21:31	05:39 22:12
14	08:51 16:42	15:49 (4) 16:05 (4)	08:02 17:43	16:01 18:38	06:57 20:37	06:41 21:32	05:37 22:12
15	08:50 16:44	15:49 (4) 16:07 (4)	08:00 17:45	16:05 18:40	06:55 20:39	06:38 21:34	05:35 22:13
16	08:49 16:46	15:49 (4) 16:10 (4)	07:58 17:47	16:52 18:42	06:52 20:41	06:36 21:36	05:34 22:13
17	08:48 16:47	15:49 (4) 16:12 (4)	07:56 17:49	16:50 18:44	06:50 20:43	06:34 21:37	05:32 22:14
18	08:47 16:49	15:50 (4) 16:14 (4)	07:54 17:51	16:47 18:46	06:47 20:44	06:31 21:39	05:30 22:14
19	08:46 16:51	15:49 (4) 16:16 (4)	07:51 17:53	16:45 18:48	06:29 20:46	05:29 21:41	05:03 22:15
20	08:45 16:53	15:49 (4) 16:18 (4)	07:49 17:55	16:42 18:50	06:27 20:48	05:27 21:42	05:03 22:15
21	08:44 16:55	15:49 (4) 16:20 (4)	07:47 17:57	16:40 18:52	06:24 20:50	05:26 21:44	05:03 22:15
22	08:42 16:57	15:49 (4) 16:22 (4)	07:45 17:59	16:37 18:53	06:22 20:52	05:24 21:46	05:03 22:16
23	08:41 16:58	15:49 (4) 16:22 (4)	07:43 18:01	16:35 18:55	06:20 20:54	05:23 21:47	05:04 22:16
24	08:40 17:00	15:50 (4) 16:23 (4)	07:40 18:03	16:32 18:57	06:18 20:56	05:21 21:49	05:04 22:16
25	08:38 17:02	15:50 (4) 16:23 (4)	07:38 18:05	16:30 18:59	06:15 20:58	2 21:15 (6) 21:16 (6)	22:16 22:16
26	08:37 17:04	15:49 (4) 16:23 (4)	07:36 18:07	16:27 19:01	06:13 20:59	05:19 21:52	05:05 22:16
27	08:35 17:06	15:50 (4) 16:24 (4)	07:33 18:09	16:25 19:03	06:11 21:01	05:17 21:53	05:05 22:16
28	08:34 17:08	15:51 (4) 16:23 (4)	07:31 18:11	16:22 19:05	06:09 21:03	05:16 21:54	05:06 22:16
29	08:32 17:10	15:51 (4) 16:23 (4)		16:20 20:07	06:07 21:05	21:10 (6) 21:21 (6)	05:06 22:15
30	08:30 17:12	15:51 (4) 16:23 (4)		16:17 20:09	06:04 21:07	05:14 21:57	05:07 22:15
31	08:29 17:14	15:52 (4) 16:22 (4)		16:15 20:10	05:13 21:59	21:10 (6) 21:24 (6)	21:36 (6)
Potential sun hours	248		272	367	421	496	513
Total, worst case	775		166			68	611
Sun reduction	0.17		0.22			0.36	0.26
Oper. time red.	1.00		1.00			1.00	1.00
Wind dir. red.	0.62		0.61			0.63	0.63
Total reduction	0.11		0.14			0.23	0.16
Total, real	82		23			15	99

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: B - H2\*  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	July	August	September	October	November	December			
1	05:08	21:14 (6)	05:48	06:44	07:38	07:37	08:33	14:57 (3)	
	22	21:36 (6)	21:39	20:31	19:16	17:05	16:19	20 15:43 (4)	
2	05:08	21:15 (6)	05:50	06:46	07:40	07:39	08:35	14:55 (3)	
	21	21:36 (6)	21:37	20:28	19:14	17:02	16:18	21 15:41 (4)	
3	05:09	21:15 (6)	05:52	06:47	07:42	07:41	15:35 (4)	08:36	14:55 (3)
	22	21:37 (6)	21:35	20:26	19:11	17:01	6 15:41 (4)	16:18	21 15:41 (4)
4	05:10	21:16 (6)	05:54	06:49	07:44	07:43	15:32 (4)	08:38	14:55 (3)
	21	21:37 (6)	21:33	20:24	19:09	16:59	14 15:46 (4)	16:17	20 15:40 (4)
5	05:11	21:15 (6)	05:55	06:51	07:45	07:45	15:29 (4)	08:39	14:54 (3)
	21	21:36 (6)	21:31	20:21	19:06	16:57	19 15:48 (4)	16:16	20 15:39 (4)
6	05:12	21:15 (6)	05:57	06:53	07:47	07:47	15:27 (4)	08:41	14:54 (3)
	21	21:36 (6)	21:29	20:19	19:04	16:55	22 15:49 (4)	16:16	19 15:13 (3)
7	05:13	21:16 (6)	05:59	06:55	07:49	07:49	15:26 (4)	08:42	14:54 (3)
	19	21:35 (6)	21:27	20:16	19:01	16:53	24 15:50 (4)	16:15	20 15:14 (3)
8	05:14	21:16 (6)	06:01	06:56	07:51	07:51	15:25 (4)	08:43	14:53 (3)
	19	21:35 (6)	21:25	20:14	18:59	16:51	26 15:51 (4)	16:15	21 15:14 (3)
9	05:15	21:16 (6)	06:02	06:58	07:53	07:53	15:24 (4)	08:45	14:54 (3)
	18	21:34 (6)	21:23	20:11	18:56	16:49	28 15:52 (4)	16:15	21 15:15 (3)
10	05:16	21:16 (6)	06:04	07:00	07:55	07:55	15:24 (4)	08:46	14:54 (3)
	17	21:33 (6)	21:21	20:09	18:54	16:47	30 15:54 (4)	16:14	22 15:16 (3)
11	05:17	21:17 (6)	06:06	07:02	07:57	07:57	15:24 (4)	08:47	14:54 (3)
	16	21:33 (6)	21:19	20:06	18:52	16:46	30 15:54 (4)	16:14	22 15:16 (3)
12	05:18	21:17 (6)	06:08	07:04	07:59	07:59	15:23 (4)	08:48	14:55 (3)
	15	21:32 (6)	21:17	20:04	18:49	16:44	32 15:55 (4)	16:14	23 15:18 (3)
13	05:20	21:18 (6)	06:09	07:05	08:00	08:01	15:23 (4)	08:49	14:55 (3)
	14	21:32 (6)	21:15	20:01	18:47	16:42	32 15:55 (4)	16:14	23 15:18 (3)
14	05:21	21:19 (6)	06:11	07:07	08:02	08:03	15:23 (4)	08:50	14:55 (3)
	12	21:31 (6)	21:13	19:59	18:45	16:41	32 15:55 (4)	16:14	24 15:19 (3)
15	05:22	21:19 (6)	06:13	07:09	08:04	08:05	15:22 (4)	08:51	14:56 (3)
	10	21:29 (6)	21:10	19:56	18:42	16:39	33 15:55 (4)	16:14	23 15:19 (3)
16	05:24	21:19 (6)	06:15	07:11	08:06	08:07	15:22 (4)	08:52	14:56 (3)
	9	21:28 (6)	21:08	19:54	18:40	16:37	34 15:56 (4)	16:14	24 15:20 (3)
17	05:25	21:21 (6)	06:17	07:13	08:08	08:09	15:22 (4)	08:53	14:56 (3)
	7	21:28 (6)	21:06	19:51	18:37	16:36	34 15:56 (4)	16:14	24 15:20 (3)
18	05:26	21:21 (6)	06:18	07:14	08:10	08:11	15:24 (4)	08:54	14:56 (3)
	5	21:26 (6)	21:04	19:49	18:35	16:34	33 15:57 (4)	16:14	24 15:20 (3)
19	05:28	21:22 (6)	06:20	07:16	08:12	08:12	15:24 (4)	08:54	14:57 (3)
	3	21:25 (6)	21:01	19:46	18:33	16:33	33 15:57 (4)	16:14	24 15:21 (3)
20	05:29		06:22	07:18	08:14	08:14	15:24 (4)	08:55	14:57 (3)
	21:58		20:59	19:44	18:31	16:31	33 15:57 (4)	16:15	24 15:21 (3)
21	05:31		06:24	07:20	08:16	08:16	15:25 (4)	08:56	14:58 (3)
	21:56		20:57	19:41	18:28	16:30	31 15:56 (4)	16:15	24 15:22 (3)
22	05:32		06:26	07:22	08:18	08:18	15:25 (4)	08:56	14:59 (3)
	21:55		20:55	19:39	18:26	16:29	29 15:54 (4)	16:16	24 15:23 (3)
23	05:34		06:27	07:23	08:20	08:20	15:26 (4)	08:57	14:59 (3)
	21:54		20:52	19:36	18:24	16:28	27 15:53 (4)	16:16	24 15:23 (3)
24	05:35		06:29	07:25	08:22	08:22	15:27 (4)	08:57	14:59 (3)
	21:52		20:50	19:34	18:22	16:26	24 15:51 (4)	16:17	24 15:23 (3)
25	05:37		06:31	07:27	08:23	08:23	15:27 (4)	08:58	15:00 (3)
	21:50		20:48	19:31	17:19	16:25	23 15:50 (4)	16:17	24 15:24 (3)
26	05:38		06:33	07:29	08:25	08:25	15:28 (4)	08:58	15:01 (3)
	21:49		20:45	19:29	17:17	16:24	21 15:49 (4)	16:18	24 15:25 (3)
27	05:40		06:35	07:31	08:27	08:27	15:28 (4)	08:58	15:01 (3)
	21:47		20:43	19:26	17:15	16:23	19 15:47 (4)	16:19	24 15:25 (3)
28	05:42		06:37	07:33	08:28	08:28	15:29 (4)	08:58	15:02 (3)
	21:46		20:41	19:24	17:13	16:22	17 15:46 (4)	16:20	23 15:25 (3)
29	05:43		06:38	07:34	08:30	08:30	15:30 (4)	08:58	15:02 (3)
	21:44		20:38	19:21	17:11	16:21	15 15:45 (4)	16:21	24 15:26 (3)
30	05:45		06:40	07:36	08:32	08:32	14:59 (3)	08:58	15:03 (3)
	21:42		20:36	19:19	17:09	16:20	18 15:44 (4)	16:22	23 15:26 (3)
31	05:47		06:42		07:35			08:58	15:04 (3)
	21:40		20:33		17:07			16:23	23 15:27 (3)
Potential sun hours	515		461	382	328	257	231		
Total, worst case		292				719		701	
Sun reduction		0.27				0.20		0.12	
Oper. time red.		1.00				1.00		1.00	
Wind dir. red.		0.63				0.61		0.63	
Total reduction		0.17				0.12		0.08	
Total, real		49				88		53	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: C - H3

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January		February		March		April		May		June	
1	08:58	13:58 (8)	08:27	07:29	07:12				06:02	19:32 (9)	05:12	
	16:24	53	14:51 (8)	17:16	18:13				21:09	47	20:19 (9)	22:00
2	08:58		13:59 (8)	08:25	07:26	07:10			06:00		19:32 (9)	05:11
	16:25	52	14:51 (8)	17:18	18:15	20:14			21:11	46	20:18 (9)	22:01
3	08:58		14:00 (8)	08:24	07:24	07:08			05:58		19:32 (9)	05:10
	16:26	52	14:52 (8)	17:20	18:17	20:16			21:13	46	20:18 (9)	22:02
4	08:58		14:00 (8)	08:22	07:22	07:05			05:56		19:32 (9)	05:09
	16:27	52	14:52 (8)	17:22	18:19	20:18			21:14	46	20:18 (9)	22:03
5	08:57		14:00 (8)	08:20	07:19	07:03			05:54		19:33 (9)	05:08
	16:29	52	14:52 (8)	17:24	18:21	20:20			21:16	46	20:19 (9)	22:05
6	08:57		14:01 (8)	08:18	07:17	07:00			05:52		19:33 (9)	05:07
	16:30	52	14:53 (8)	17:26	18:23	20:22			21:18	45	20:18 (9)	22:06
7	08:56		14:01 (8)	08:16	07:14	06:58			05:50		19:33 (9)	05:07
	16:31	52	14:53 (8)	17:28	18:25	20:24			21:20	45	20:18 (9)	22:07
8	08:56		14:02 (8)	08:14	07:12	06:55			05:48		19:33 (9)	05:06
	16:33	51	14:53 (8)	17:30	18:27	20:26			21:22	44	20:17 (9)	22:08
9	08:55		14:03 (8)	08:12	07:09	06:53			05:46		19:33 (9)	05:05
	16:34	51	14:54 (8)	17:32	18:28	20:27			21:23	43	20:16 (9)	22:09
10	08:55		14:04 (8)	08:10	07:07	06:50			05:44		19:34 (9)	05:05
	16:36	50	14:54 (8)	17:34	18:30	20:29			21:25	43	20:17 (9)	22:09
11	08:54		14:04 (8)	08:08	07:05	06:48			05:42		19:34 (9)	05:04
	16:37	50	14:54 (8)	17:36	18:32	20:31			21:27	42	20:16 (9)	22:10
12	08:53		14:05 (8)	08:06	07:02	06:46			05:40		19:35 (9)	05:04
	16:39	49	14:54 (8)	17:38	18:34	20:33			21:29	40	20:15 (9)	22:11
13	08:52		14:06 (8)	08:04	07:00	06:43			05:39		19:36 (9)	05:04
	16:40	48	14:54 (8)	17:40	18:36	20:35			21:31	39	20:15 (9)	22:12
14	08:51		14:07 (8)	08:02	06:57	06:41			05:37		19:36 (9)	05:03
	16:42	47	14:54 (8)	17:43	18:38	20:37			21:32	38	20:14 (9)	22:12
15	08:51		14:06 (8)	08:00	06:55	06:38		19:56 (9)	05:35		19:37 (9)	05:03
	16:44	47	14:53 (8)	17:45	18:40	20:39	6	20:02 (9)	21:34	35	20:12 (9)	22:13
16	08:50		14:08 (8)	07:58	06:52	06:36		19:50 (9)	05:33		19:38 (9)	05:03
	16:46	45	14:53 (8)	17:47	18:42	20:41	17	20:07 (9)	21:36	34	20:12 (9)	22:14
17	08:48		14:09 (8)	07:56	06:50	06:34		19:46 (9)	05:32		19:39 (9)	05:03
	16:47	45	14:54 (8)	17:49	18:44	20:43	23	20:09 (9)	21:37	32	20:11 (9)	22:14
18	08:47		14:10 (8)	07:54	06:47	06:31		19:44 (9)	05:30		19:40 (9)	05:03
	16:49	44	14:54 (8)	17:51	18:46	20:44	28	20:12 (9)	21:39	30	20:10 (9)	22:15
19	08:46		14:10 (8)	07:51	06:45	06:29		19:42 (9)	05:28		19:41 (9)	05:03
	16:51	43	14:53 (8)	17:53	18:48	20:46	31	20:13 (9)	21:41	28	20:09 (9)	22:15
20	08:45		14:12 (8)	07:49	06:42	06:27		19:40 (9)	05:27		19:43 (9)	05:03
	16:53	41	14:53 (8)	17:55	18:50	20:48	34	20:14 (9)	21:42	25	20:08 (9)	22:15
21	08:44		14:13 (8)	07:47	06:40	06:24		19:39 (9)	05:25		19:45 (9)	05:03
	16:55	39	14:52 (8)	17:57	18:52	20:50	36	20:15 (9)	21:44	22	20:07 (9)	22:15
22	08:42		14:14 (8)	07:45	06:37	06:22		19:38 (9)	05:24		19:46 (9)	05:03
	16:56	38	14:52 (8)	17:59	18:53	20:52	38	20:16 (9)	21:46	19	20:05 (9)	22:16
23	08:41		14:15 (8)	07:43	06:35	06:20		19:37 (9)	05:22		19:48 (9)	05:03
	16:58	35	14:50 (8)	18:01	18:55	20:54	40	20:17 (9)	21:47	15	20:03 (9)	22:16
24	08:40		14:18 (8)	07:40	06:32	06:17		19:36 (9)	05:21		19:51 (9)	05:04
	17:00	32	14:50 (8)	18:03	18:57	20:56	42	20:18 (9)	21:49	10	20:01 (9)	22:16
25	08:38		14:19 (8)	07:38	06:30	06:15		19:35 (9)	05:20			05:04
	17:02	29	14:48 (8)	18:05	18:59	20:58	43	20:18 (9)	21:50			22:16
26	08:37		14:21 (8)	07:36	06:27	06:13		19:34 (9)	05:18			05:05
	17:04	26	14:47 (8)	18:07	19:01	20:59	44	20:18 (9)	21:52			22:16
27	08:35		14:24 (8)	07:33	06:25	06:11		19:33 (9)	05:17			05:05
	17:06	21	14:45 (8)	18:09	19:03	21:01	45	20:18 (9)	21:53			22:16
28	08:34		14:28 (8)	07:31	06:22	06:09		19:33 (9)	05:16			05:06
	17:08	14	14:42 (8)	18:11	19:05	21:03	45	20:18 (9)	21:55			22:16
29	08:32				07:20	06:06		19:33 (9)	05:15			05:06
	17:10				20:07	21:05	46	20:19 (9)	21:56			22:15
30	08:31				07:17	06:04		19:32 (9)	05:14			05:07
	17:12				20:09	21:07	47	20:19 (9)	21:57			22:15
31	08:29				07:15				05:13			
	17:14				20:10				21:59			
Potential sun hours	248		272	367	421			496		513		
Total, worst case		1210			565			860		255		
Sun reduction		0.17			0.34			0.36		0.26		
Oper. time red.		1.00			1.00			1.00		1.00		
Wind dir. red.		0.67			0.60			0.60		0.64		
Total reduction		0.11			0.20			0.22		0.17		
Total, real		137			116			185		42		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: C - H3

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

		July		August		September		October		November		December	
1	05:07	21:28 (10)	05:48	19:45 (9)	06:44	07:38	07:37	08:33	13:46 (8)				
	22:15	4 21:32 (10)	21:39	40	20:25 (9)	20:31	19:16	17:04	16:19	50	14:36 (8)		
2	05:08		05:50		19:45 (9)	06:45	07:40	07:39	08:35		13:46 (8)		
	22:14		21:37	41	20:26 (9)	20:28	19:14	17:02	16:18	50	14:36 (8)		
3	05:09		05:52		19:43 (9)	06:47	07:42	07:41	08:36		13:46 (8)		
	22:14		21:35	43	20:26 (9)	20:26	19:11	17:00	16:18	51	14:37 (8)		
4	05:10		05:53		19:43 (9)	06:49	07:44	07:43	08:38		13:47 (8)		
	22:13		21:33	44	20:27 (9)	20:24	19:09	16:58	16:17	51	14:38 (8)		
5	05:11		05:55		19:43 (9)	06:51	07:45	07:45	08:39		13:46 (8)		
	22:13		21:31	45	20:28 (9)	20:21	19:06	16:56	16:16	52	14:38 (8)		
6	05:12		05:57		19:42 (9)	06:53	07:47	07:47	08:41		13:47 (8)		
	22:12		21:29	45	20:27 (9)	20:19	19:04	16:55	16:16	52	14:39 (8)		
7	05:13		05:59		19:42 (9)	06:55	07:49	07:49	08:42		13:47 (8)		
	22:12		21:27	46	20:28 (9)	20:16	19:01	16:53	16:15	52	14:39 (8)		
8	05:14		06:00		19:42 (9)	06:56	07:51	07:51	08:43		13:48 (8)		
	22:11		21:25	46	20:28 (9)	20:14	18:59	16:51	16:15	52	14:40 (8)		
9	05:15		06:02		19:41 (9)	06:58	07:53	07:53	08:45		13:48 (8)		
	22:10		21:23	46	20:27 (9)	20:11	18:56	16:49	16:14	52	14:40 (8)		
10	05:16		06:04		19:41 (9)	07:00	07:55	07:55	08:46		13:48 (8)		
	22:09		21:21	47	20:28 (9)	20:09	18:54	16:47	16:14	52	14:40 (8)		
11	05:17		06:06		19:41 (9)	07:02	07:57	07:57	08:47		13:48 (8)		
	22:08		21:19	47	20:28 (9)	20:06	18:52	16:45	16:14	53	14:41 (8)		
12	05:18		06:08		19:41 (9)	07:04	07:59	07:59	08:48		13:49 (8)		
	22:07		21:17	46	20:27 (9)	20:04	18:49	16:44	16:14	53	14:42 (8)		
13	05:19		06:09		19:41 (9)	07:05	08:00	08:01	08:49		13:49 (8)		
	22:06		21:15	46	20:27 (9)	20:01	18:47	16:42	16:14	53	14:42 (8)		
14	05:21		06:11		19:41 (9)	07:07	08:02	08:03		14:00 (8)	08:50		13:50 (8)
	22:05		21:13	46	20:27 (9)	19:59	18:44	16:40	14	14:14 (8)	16:14	53	14:43 (8)
15	05:22		06:13		19:40 (9)	07:09	08:04	08:05		13:56 (8)	08:51		13:50 (8)
	22:04		21:10	46	20:26 (9)	19:56	18:42	16:39	21	14:17 (8)	16:14	53	14:43 (8)
16	05:23		06:15		19:41 (9)	07:11	08:06	08:07		13:54 (8)	08:52		13:51 (8)
	22:03		21:08	45	20:26 (9)	19:54	18:40	16:37	26	14:20 (8)	16:14	53	14:44 (8)
17	05:25		06:17		19:41 (9)	07:13	08:08	08:09		13:53 (8)	08:53		13:51 (8)
	22:02		21:06	44	20:25 (9)	19:51	18:37	16:36	29	14:22 (8)	16:14	54	14:45 (8)
18	05:26		06:18		19:41 (9)	07:14	08:10	08:11		13:52 (8)	08:54		13:51 (8)
	22:01		21:04	43	20:24 (9)	19:49	18:35	16:34	32	14:24 (8)	16:14	53	14:44 (8)
19	05:28		20:04 (9)	06:20	19:42 (9)	07:16	08:12	08:12		13:50 (8)	08:55		13:52 (8)
	21:59	4	20:08 (9)	21:01	41	20:23 (9)	19:46	18:33	35	14:25 (8)	16:14	53	14:45 (8)
20	05:29		19:59 (9)	06:22	19:43 (9)	07:18	08:14	08:14		13:49 (8)	08:55		13:53 (8)
	21:58	12	20:11 (9)	20:59	40	20:23 (9)	19:44	18:30	38	14:27 (8)	16:15	53	14:46 (8)
21	05:31		19:57 (9)	06:24	19:43 (9)	07:20	08:16	08:16		13:49 (8)	08:56		13:53 (8)
	21:57	17	20:14 (9)	20:57	38	20:21 (9)	19:41	18:28	39	14:28 (8)	16:15	53	14:46 (8)
22	05:32		19:55 (9)	06:26	19:44 (9)	07:22	08:18	08:18		13:48 (8)	08:56		13:54 (8)
	21:55	21	20:16 (9)	20:55	36	20:20 (9)	19:39	18:26	41	14:29 (8)	16:15	53	14:47 (8)
23	05:34		19:54 (9)	06:27	19:45 (9)	07:23	08:20	08:20		13:47 (8)	08:57		13:54 (8)
	21:54	24	20:18 (9)	20:52	33	20:18 (9)	19:36	18:24	43	14:30 (8)	16:16	53	14:47 (8)
24	05:35		19:52 (9)	06:29	19:46 (9)	07:25	08:22	08:22		13:47 (8)	08:57		13:54 (8)
	21:52	27	20:19 (9)	20:50	31	20:17 (9)	19:34	18:21	44	14:31 (8)	16:17	53	14:47 (8)
25	05:37		19:51 (9)	06:31	19:47 (9)	07:27	07:24	08:23		13:47 (8)	08:58		13:55 (8)
	21:51	29	20:20 (9)	20:48	27	20:14 (9)	19:31	17:19	45	14:32 (8)	16:17	53	14:48 (8)
26	05:38		19:50 (9)	06:33	19:49 (9)	07:29	07:26	08:25		13:47 (8)	08:58		13:55 (8)
	21:49	31	20:21 (9)	20:45	23	20:12 (9)	19:29	17:17	46	14:33 (8)	16:18	53	14:48 (8)
27	05:40		19:49 (9)	06:35	19:52 (9)	07:31	07:28	08:27		13:47 (8)	08:58		13:56 (8)
	21:47	33	20:22 (9)	20:43	17	20:09 (9)	19:26	17:15	46	14:33 (8)	16:19	53	14:49 (8)
28	05:42		19:48 (9)	06:36	19:57 (9)	07:33	07:29	08:29		13:46 (8)	08:58		13:56 (8)
	21:46	35	20:23 (9)	20:41	5	20:02 (9)	19:24	17:13	47	14:33 (8)	16:20	53	14:49 (8)
29	05:43		19:48 (9)	06:38			07:34	07:31		13:46 (8)	08:58		13:57 (8)
	21:44	36	20:24 (9)	20:38			19:21	17:11	48	14:34 (8)	16:20	53	14:50 (8)
30	05:45		19:46 (9)	06:40			07:36	07:33		13:46 (8)	08:59		13:57 (8)
	21:42	38	20:24 (9)	20:36			19:19	17:09	49	14:35 (8)	16:21	53	14:50 (8)
31	05:47		19:46 (9)	06:42				07:35		13:46 (8)	08:58		13:58 (8)
	21:40	39	20:25 (9)	20:33				17:06		16:22	53		14:51 (8)
Potential sun hours	515		461		382	328	257		231				
Total, worst case		350		1097			643		1628				
Sun reduction		0.27		0.27			0.20		0.12				
Oper. time red.		1.00		1.00			1.00		1.00				
Wind dir. red.		0.60		0.60			0.67		0.67				
Total reduction		0.16		0.16			0.13		0.08				
Total, real		56		179			85		130				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)



### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Assumptions for shadow calculations

Shadow receptor: D - H4

Sunshine probability S (Average daily sunshine hours) [BELMULLET]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:58 16:24	08:27 17:16	07:29 18:13	07:13 20:12	06:02 21:09	05:12 22:00	05:08 22:15	05:48 21:39	06:44 20:31	07:38 19:16	07:37 17:05	08:33 16:19
2	08:58 16:25	08:25 17:18	07:26 18:15	07:10 20:14	06:00 21:11	05:11 22:01	05:08 22:14	05:50 21:37	06:46 20:29	07:40 19:14	07:39 17:03	08:35 16:19
3	08:58 16:26	08:24 17:20	07:24 18:17	07:08 20:16	05:58 21:13	05:10 22:02	05:09 22:14	05:52 21:35	06:47 20:26	07:42 19:11	07:41 17:01	08:36 16:18
4	08:58 16:28	08:22 17:22	07:22 18:19	07:05 20:18	05:56 21:14	05:09 22:03	05:10 22:13	05:54 21:33	06:49 20:24	07:44 19:09	07:43 16:59	08:38 16:17
5	08:57 16:29	08:20 17:24	07:19 18:21	07:03 20:20	05:54 21:16	05:08 22:05	05:11 22:13	05:55 21:31	06:51 20:21	07:46 19:06	07:45 16:57	08:39 16:17
6	08:57 16:30	08:18 17:26	07:17 18:23	07:00 20:22	05:52 21:18	05:08 22:06	05:12 22:12	05:57 21:29	06:53 20:19	07:47 19:04	07:47 16:55	08:41 16:16
7	08:56 16:32	08:16 17:28	07:14 18:25	06:58 20:24	05:50 21:20	05:07 22:07	05:13 22:12	05:59 21:27	06:55 20:16	07:49 19:01	07:49 16:53	08:42 16:15
8	08:56 16:33	08:14 17:30	07:12 18:27	06:55 20:26	05:48 21:22	05:06 22:08	05:14 22:11	06:01 21:25	06:56 20:14	07:51 18:59	07:51 16:51	08:43 16:15
9	08:55 16:34	08:12 17:32	07:10 18:29	06:53 20:28	05:46 21:24	05:06 22:09	05:15 22:10	06:02 21:23	06:58 20:11	07:53 18:57	07:53 16:49	08:45 16:15
10	08:55 16:36	08:10 17:34	07:07 18:31	06:50 20:29	05:44 21:25	05:05 22:09	05:16 22:09	06:04 21:21	07:00 20:09	07:55 18:54	07:55 16:47	08:46 16:14
11	08:54 16:37	08:08 17:37	07:05 18:32	06:48 20:31	05:42 21:27	05:05 22:10	05:17 22:08	06:06 21:19	07:02 20:06	07:57 18:52	07:57 16:46	08:47 16:14
12	08:53 16:39	08:06 17:39	07:02 18:34	06:46 20:33	05:41 21:29	05:04 22:11	05:18 22:07	06:08 21:17	07:04 20:04	9 07:41 (1) 07:50 (1)	07:59 18:49	08:48 16:44
13	08:52 16:41	08:04 17:41	07:00 18:36	06:43 20:35	05:39 21:31	05:04 22:12	05:20 22:06	06:10 21:15	07:05 20:01	07:37 (1) 07:51 (1)	08:01 18:47	08:49 16:42
14	08:51 16:42	08:02 17:43	06:57 18:38	06:41 20:37	05:37 21:32	05:04 22:12	05:21 22:05	06:11 21:13	07:07 19:59	14 07:35 (1) 07:53 (1)	08:02 18:45	08:50 16:41
15	08:50 16:44	08:00 17:45	06:55 18:40	06:38 20:39	05:35 21:34	05:03 22:13	05:22 22:04	06:13 21:10	07:09 19:56	18 07:36 (1) 07:54 (1)	08:04 18:42	08:51 16:39
16	08:50 16:46	07:58 17:47	06:52 18:42	06:36 20:41	05:34 21:36	05:03 22:14	05:24 22:03	06:15 21:08	07:11 19:54	18 07:38 (1) 07:55 (1)	08:06 18:40	08:52 16:37
17	08:48 16:47	07:56 17:49	06:50 18:44	06:34 20:43	05:32 21:37	05:03 22:14	05:25 22:02	06:17 21:06	07:13 19:51	17 07:39 (1) 07:55 (1)	08:08 18:38	08:53 16:36
18	08:47 16:49	07:54 17:51	06:47 18:46	06:31 20:44	05:30 21:39	05:03 22:14	05:26 22:01	06:19 21:04	07:14 19:49	16 07:41 (1) 07:55 (1)	08:10 18:35	08:54 16:34
19	08:46 16:51	07:52 17:53	06:45 18:48	06:29 20:46	05:29 21:41	05:03 22:15	05:28 21:59	06:20 21:02	07:16 19:46	12 07:43 (1) 07:55 (1)	08:12 18:33	08:55 16:33
20	08:45 16:53	07:49 17:55	06:42 18:50	7 07:06 (1) 07:07 (1)	05:27 20:48	05:03 22:15	05:29 21:58	06:22 20:59	07:18 19:44	14 07:45 (1) 07:55 (1)	08:14 18:31	08:55 16:32
21	08:44 16:55	07:47 17:57	06:40 18:52	1 07:04 (1) 07:08 (1)	06:24 20:50	05:03 22:15	05:31 21:57	06:24 20:57	07:20 19:41	10 07:46 (1) 07:54 (1)	08:16 18:28	08:56 16:30
22	08:42 16:57	07:45 17:59	06:37 18:54	4 07:01 (1) 07:08 (1)	06:22 20:52	05:03 22:16	05:32 21:55	06:26 20:55	07:22 19:39	8 07:48 (1) 07:53 (1)	08:18 18:26	08:56 16:29
23	08:41 16:58	07:43 18:01	06:35 18:55	7 07:01 (1) 07:08 (1)	06:20 20:54	05:23 22:16	05:04 21:54	06:28 20:52	07:23 19:36	5 07:50 (1) 07:52 (1)	08:20 18:24	08:57 16:28
24	08:40 17:00	07:40 18:03	06:32 18:57	9 07:08 (1) 07:08 (1)	06:18 20:56	05:21 21:49	05:04 22:16	06:29 20:50	07:25 19:34	2 07:52 (1)	08:22 18:22	08:57 16:26
25	08:38 17:02	07:38 18:05	06:30 18:59	12 07:08 (1) 07:08 (1)	06:15 20:58	05:20 22:16	05:04 21:51	06:31 20:48	07:27 19:31	08:22 17:19	08:23 16:25	08:58 16:17
26	08:37 17:04	07:36 18:07	06:27 19:01	14 07:08 (1) 07:06 (1)	06:13 21:00	05:19 21:52	05:08 22:16	06:33 21:49	07:29 20:45	5 07:53 (1) 07:50 (1)	18:26 08:20	08:58 16:24
27	08:35 17:06	07:33 18:09	06:25 19:03	15 07:06 (1) 07:06 (1)	06:11 21:01	05:17 21:53	05:05 22:16	06:35 20:43	07:31 19:26	12 07:28 (1) 07:45 (1)	08:27 17:15	08:58 16:19
28	08:34 17:08	07:31 18:11	06:23 19:05	17 07:06 (1) 07:04 (1)	06:09 21:03	05:16 21:55	05:06 22:16	06:37 20:41	07:33 19:24	10 07:55 (1) 07:48 (1)	07:30 17:13	08:58 16:22
29	08:32 17:10	07:29 18:11	06:20 19:05	18 07:04 (1) 08:03 (1)	06:07 21:05	05:15 21:56	05:06 22:15	06:38 20:38	07:34 19:21	8 07:54 (1) 07:48 (1)	08:18 17:11	08:56 16:21
30	08:31 17:12	07:28 18:09	06:18 19:01	18 07:46 (1) 08:00 (1)	06:04 21:07	05:14 21:57	05:07 22:15	06:40 20:36	07:36 19:19	5 07:53 (1) 07:50 (1)	07:33 17:09	08:58 16:20
31	08:29 17:14	07:15 18:01	06:15 19:01	14 07:48 (1) 07:58 (1)	05:13 21:59	05:03 21:59	05:47 21:40	06:42 20:33	07:35 19:06	17 07:55 (1) 07:52 (1)	08:20 17:07	08:58 16:23
Potential sun hours	248	272	367	421	496	513	515	461	382	328	257	231
Total, worst case			139						143			
Sun reduction			0.22						0.29			
Oper. time red.			1.00						1.00			
Wind dir. red.			0.59						0.59			
Total reduction			0.13						0.17			
Total, real			18						25			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: E - H5  
 Assumptions for shadow calculations Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January	February	March	April	May	June									
1	08:58	08:27	16:33 (3)	07:29	07:12	06:02	20:07 (1)	05:12							20:06 (1)
	16:24	17:16	10 16:43 (3)	18:13	20:12	21:09	31 20:38 (1)	22:00				43			20:49 (1)
2	08:58	08:25	16:34 (3)	07:26	07:10	06:00	20:06 (1)	05:11							20:06 (1)
	16:25	17:18	12 16:46 (3)	18:15	20:14	21:11	34 20:40 (1)	22:01				43			20:49 (1)
3	08:58	08:24	16:35 (3)	07:24	07:08	05:58	20:05 (1)	05:10							20:07 (1)
	16:26	17:20	14 16:49 (3)	18:17	20:16	21:12	36 20:41 (1)	22:02				41			20:48 (1)
4	08:58	08:22	16:36 (3)	07:21	07:05	05:56	20:04 (1)	05:09							20:08 (1)
	16:27	17:22	14 16:50 (3)	18:19	20:18	21:14	39 20:43 (1)	22:03				41			20:49 (1)
5	08:57	08:20	16:37 (3)	07:19	07:03	05:54	20:04 (1)	05:08							20:08 (1)
	16:29	17:24	12 16:49 (3)	18:21	20:20	21:16	42 20:46 (1)	22:04				40			20:48 (1)
6	08:57	08:18	16:38 (3)	07:17	07:00	05:52	20:03 (1)	05:07							20:08 (1)
	16:30	17:26	10 16:48 (3)	18:23	20:22	21:18	44 20:47 (1)	22:05				40			20:48 (1)
7	08:56	08:16	16:41 (3)	07:14	06:58	05:50	20:02 (1)	05:07							20:09 (1)
	16:31	17:28	5 16:46 (3)	18:25	20:24	21:20	47 20:49 (1)	22:07				39			20:48 (1)
8	08:56	08:14		07:12	06:55	05:48	20:02 (1)	05:06							20:10 (1)
	16:33	17:30		18:27	20:26	21:22	48 20:50 (1)	22:07				38			20:48 (1)
9	08:55	08:12		07:09	06:53	05:46	20:01 (1)	05:06							20:11 (1)
	16:34	17:32		18:28	20:27	21:23	50 20:51 (1)	22:08				37			20:48 (1)
10	08:55	08:10		07:07	06:50	05:44	20:02 (1)	05:05							20:11 (1)
	16:36	17:34		18:30	20:29	21:25	50 20:52 (1)	22:09				37			20:48 (1)
11	08:54	08:08		07:05	06:48	05:42	20:01 (1)	05:05							20:11 (1)
	16:37	17:36		18:32	20:31	21:27	51 20:52 (1)	22:10				37			20:48 (1)
12	08:53	08:06		07:02	06:46	05:41	20:00 (1)	05:04							20:12 (1)
	16:39	17:38		18:34	20:33	21:29	51 20:51 (1)	22:11				36			20:48 (1)
13	08:52	08:04		07:00	06:43	05:39	20:01 (1)	05:04							20:13 (1)
	16:41	17:41		18:36	20:35	21:30	51 20:52 (1)	22:12				35			20:48 (1)
14	08:51	08:02	17:10 (4)	06:57	06:41	05:37	20:01 (1)	05:04							20:14 (1)
	16:42	17:43	3 17:13 (4)	18:38	20:37	21:32	51 20:52 (1)	22:12				34			20:48 (1)
15	08:50	08:00	17:08 (4)	06:55	06:38	05:35	20:00 (1)	05:03							20:13 (1)
	16:44	17:45	7 17:15 (4)	18:40	20:39	21:34	51 20:51 (1)	22:13				34			20:47 (1)
16	08:49	07:58	17:08 (4)	06:52	06:36	05:33	20:01 (1)	05:03							20:14 (1)
	16:46	17:47	9 17:17 (4)	18:42	20:41	21:36	51 20:52 (1)	22:13				33			20:47 (1)
17	08:48	07:56	17:08 (4)	06:50	06:34	05:32	20:00 (1)	05:03							20:14 (1)
	16:47	17:49	12 17:20 (4)	18:44	20:42	21:37	51 20:51 (1)	22:14				33			20:47 (1)
18	08:47	07:54	17:08 (4)	06:47	06:31	05:30	20:01 (1)	05:03							20:14 (1)
	16:49	17:51	14 17:22 (4)	18:46	20:44	21:39	51 20:52 (1)	22:14				33			20:47 (1)
19	08:46	07:51	17:08 (4)	06:45	06:29	05:29	20:01 (1)	05:03							20:15 (1)
	16:51	17:53	16 17:24 (4)	18:48	20:46	21:41	51 20:52 (1)	22:15				33			20:48 (1)
20	08:45	07:49	17:09 (4)	06:42	06:27	05:27	20:01 (1)	05:03							20:16 (1)
	16:53	17:55	17 17:26 (4)	18:50	20:48	21:42	50 20:51 (1)	22:15				33			20:49 (1)
21	08:44	07:47	17:10 (4)	06:40	06:24	05:26	20:02 (1)	05:03							20:16 (1)
	16:55	17:57	15 17:25 (4)	18:52	20:50	21:44	50 20:52 (1)	22:15				33			20:49 (1)
22	08:42	07:45	17:11 (4)	06:37	06:22	05:24	20:02 (1)	05:03							20:16 (1)
	16:56	17:59	12 17:23 (4)	18:53	20:52	21:45	50 20:52 (1)	22:16				33			20:49 (1)
23	08:41	07:42	17:13 (4)	06:35	06:20	05:23	20:02 (1)	05:04							20:16 (1)
	16:58	18:01	8 17:21 (4)	18:55	20:54	21:47	49 20:51 (1)	22:16				33			20:49 (1)
24	08:40	07:40		06:32	06:18	05:21	20:02 (1)	05:04							20:16 (1)
	17:00	18:03		18:57	20:56	3 20:27 (1)	21:49	49 20:51 (1)				33			20:49 (1)
25	08:38	07:38		06:30	06:15	05:20	20:19 (1)	05:04							20:16 (1)
	17:02	18:05		18:59	20:58	9 20:28 (1)	21:50	48 20:51 (1)				33			20:49 (1)
26	08:37	07:36		06:27	06:13	05:19	20:16 (1)	05:05							20:16 (1)
	17:04	18:07		19:01	20:59	14 20:30 (1)	21:52	48 20:51 (1)				33			20:49 (1)
27	08:35	07:33		06:25	06:11	05:17	20:13 (1)	05:05							20:16 (1)
	17:06	18:09		19:03	21:01	18 20:31 (1)	21:53	47 20:51 (1)				34			20:50 (1)
28	08:34	16:34 (3)	07:31	06:22	06:09	05:16	20:11 (1)	05:06							20:16 (1)
	17:08	1 16:35 (3)	18:11	19:05	21:03	22 20:33 (1)	21:54	47 20:51 (1)				34			20:50 (1)
29	08:32	16:34 (3)		07:20	06:07	20:09 (1)	05:15	20:05 (1)							20:16 (1)
	17:10	3 16:37 (3)		20:07	21:05	26 20:35 (1)	21:56	45 20:50 (1)				35			20:51 (1)
30	08:30	16:33 (3)		07:17	06:04	20:08 (1)	05:14	20:05 (1)							20:16 (1)
	17:12	6 16:39 (3)		20:09	21:07	28 20:36 (1)	21:57	45 20:50 (1)				36			20:52 (1)
31	08:29	16:33 (3)		07:15			05:13	20:06 (1)							
	17:14	8 16:41 (3)		20:10			21:58	44 20:50 (1)							
Potential sun hours	248	272		367	421	496					513				
Total, worst case	18	190			120		1452				1077				
Sun reduction	0.17	0.22			0.34		0.36				0.26				
Oper. time red.	1.00	1.00			1.00		1.00				1.00				
Wind dir. red.	0.58	0.58			0.62		0.62				0.62				
Total reduction	0.10	0.13			0.21		0.22				0.16				
Total, real	2	25			25		325				172				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: E - H5  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	July		August		September		October		November		December	
1	05:08	20:16 (1)	05:48	20:11 (1)	06:44	07:38	07:37	08:33				
	22:15	36	20:52 (1)	21:39	51	21:02 (1)	20:31	19:16	17:04			16:19
2	05:08	20:16 (1)	05:50	20:11 (1)	06:46	07:40	07:39	08:35				
	22:14	36	20:52 (1)	21:37	51	21:02 (1)	20:28	19:14	17:02			16:18
3	05:09	20:16 (1)	05:52	20:11 (1)	06:47	07:42	07:41	08:36				
	22:14	37	20:53 (1)	21:35	50	21:01 (1)	20:26	19:11	17:00			16:18
4	05:10	20:16 (1)	05:54	20:12 (1)	06:49	07:44	07:43	08:38		16:10 (3)		
	22:13	38	20:54 (1)	21:33	49	21:01 (1)	20:24	19:09	16:58	6	16:16 (3)	16:17
5	05:11	20:15 (1)	05:55	20:12 (1)	06:51	07:45	07:45	08:39				
	22:13	38	20:53 (1)	21:31	48	21:00 (1)	20:21	19:06	16:57	10	16:18 (3)	16:16
6	05:12	20:15 (1)	05:57	20:12 (1)	06:53	07:47	07:47	08:41				
	22:12	39	20:54 (1)	21:29	45	20:57 (1)	20:19	19:04	16:55	13	16:19 (3)	16:16
7	05:13	20:15 (1)	05:59	20:13 (1)	06:55	07:49	07:49	08:42				
	22:11	40	20:55 (1)	21:27	43	20:56 (1)	20:16	19:01	16:53	15	16:20 (3)	16:15
8	05:14	20:15 (1)	06:01	20:14 (1)	06:56	07:51	07:51	08:43				
	22:11	40	20:55 (1)	21:25	41	20:55 (1)	20:14	18:59	16:51	13	16:18 (3)	16:15
9	05:15	20:14 (1)	06:02	20:13 (1)	06:58	07:53	07:53	08:45				
	22:10	42	20:56 (1)	21:23	39	20:52 (1)	20:11	18:56	16:49	12	16:16 (3)	16:15
10	05:16	20:14 (1)	06:04	20:14 (1)	07:00	07:55	07:55	08:46				
	22:09	42	20:56 (1)	21:21	36	20:50 (1)	20:09	18:54	16:47	10	16:15 (3)	16:14
11	05:17	20:14 (1)	06:06	20:16 (1)	07:02	07:57	07:57	08:47				
	22:08	43	20:57 (1)	21:19	33	20:49 (1)	20:06	18:52	16:46	8	16:13 (3)	16:14
12	05:18	20:13 (1)	06:08	20:16 (1)	07:04	07:59	07:59	08:48				
	22:07	44	20:57 (1)	21:17	30	20:46 (1)	20:04	18:49	16:44	6	16:11 (3)	16:14
13	05:20	20:14 (1)	06:09	20:17 (1)	07:05	08:00	08:00	08:49				
	22:06	44	20:58 (1)	21:15	27	20:44 (1)	20:01	18:47	16:42	4	16:09 (3)	16:14
14	05:21	20:14 (1)	06:11	20:18 (1)	07:07	08:02	08:02	08:50				
	22:05	45	20:59 (1)	21:12	25	20:43 (1)	19:59	18:44	16:40	1	16:07 (3)	16:14
15	05:22	20:13 (1)	06:13	20:19 (1)	07:09	08:04	08:05	08:51				
	22:04	46	20:59 (1)	21:10	21	20:40 (1)	19:56	18:42	16:39			16:14
16	05:23	20:13 (1)	06:15	20:21 (1)	07:11	08:06	08:07	08:52				
	22:03	46	20:59 (1)	21:08	17	20:38 (1)	19:54	18:40	16:37			16:14
17	05:25	20:13 (1)	06:17	20:23 (1)	07:13	08:08	08:09	08:53				
	22:02	47	21:00 (1)	21:06	13	20:36 (1)	19:51	18:37	16:36			16:14
18	05:26	20:13 (1)	06:18	20:25 (1)	07:14	08:10	08:11	08:54				
	22:00	47	21:00 (1)	21:04	9	20:34 (1)	19:49	18:35	1	17:48 (4)	16:34	16:14
19	05:28	20:12 (1)	06:20	20:31 (1)	07:16	08:12	08:12	08:54				
	21:59	48	21:00 (1)	21:01	1	20:32 (1)	19:46	18:33	10	17:53 (4)	16:33	16:14
20	05:29	20:12 (1)	06:22	07:18	08:14	08:14	08:14	08:55				
	21:58	48	21:00 (1)	20:59	19:44	18:30	14	17:55 (4)	16:31			16:15
21	05:31	20:12 (1)	06:24	07:20	08:16	08:16	08:16	08:56				
	21:56	49	21:01 (1)	20:57	19:41	18:28	16	17:56 (4)	16:30			16:15
22	05:32	20:11 (1)	06:26	07:22	08:18	08:18	08:18	08:56				
	21:55	50	21:01 (1)	20:55	19:39	18:26	17	17:56 (4)	16:29			16:16
23	05:34	20:12 (1)	06:27	07:23	08:20	08:20	08:20	08:57				
	21:53	50	21:02 (1)	20:52	19:36	18:24	15	17:53 (4)	16:28			16:16
24	05:35	20:11 (1)	06:29	07:25	08:22	08:22	08:22	08:57				
	21:52	51	21:02 (1)	20:50	19:34	18:21	13	17:51 (4)	16:26			16:17
25	05:37	20:12 (1)	06:31	07:27	08:24	08:24	08:23	08:58				
	21:50	51	21:03 (1)	20:48	19:31	17:19	10	16:48 (4)	16:25			16:17
26	05:38	20:11 (1)	06:33	07:29	08:26	08:26	08:25	08:58				
	21:49	51	21:02 (1)	20:45	19:29	17:17	8	16:46 (4)	16:24			16:18
27	05:40	20:12 (1)	06:35	07:31	08:27	08:27	08:27	08:58				
	21:47	51	21:03 (1)	20:43	19:26	17:15	6	16:44 (4)	16:23			16:19
28	05:42	20:11 (1)	06:36	07:33	08:28	08:28	08:28	08:58				
	21:46	51	21:02 (1)	20:40	19:24	17:13	3	16:42 (4)	16:22			16:20
29	05:43	20:11 (1)	06:38	07:34	08:30	08:30	08:30	08:58				
	21:44	52	21:03 (1)	20:38	19:21	17:11		16:21				16:21
30	05:45	20:11 (1)	06:40	07:36	08:32	08:32	08:32	08:58				
	21:42	51	21:02 (1)	20:36	19:19	17:09		16:20				16:22
31	05:47	20:11 (1)	06:42	07:35	08:35	08:35	08:35	08:58				
	21:40	51	21:02 (1)	20:33	17:07	17:07		16:23				16:23
Potential sun hours	515		461		382	328		257				231
Total, worst case	1404		629			113		98				
Sun reduction	0.27		0.27			0.23		0.20				
Oper. time red.	1.00		1.00			1.00		1.00				
Wind dir. red.	0.62		0.62			0.58		0.58				
Total reduction	0.16		0.17			0.14		0.12				
Total, real	231		106			15		11				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Assumptions for shadow calculations

Shadow receptor: F - H6

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January	February	March	April	May	June										
1	08:58	15:32 (3)	08:27	15:49 (3)	07:29	16:41 (4)	07:13	06:02	05:12							
	16:24	13	15:45 (3)	17:16	11	16:00 (3)	18:13	31	17:12 (4)	20:12	21:09	22:00				
2	08:58	15:33 (3)	08:25	16:42 (4)	07:26	16:42 (4)	07:10	06:00	05:11							
	16:25	14	15:47 (3)	17:18	18:15	28	17:10 (4)	20:14	21:11	22:01						
3	08:58	15:32 (3)	08:24	16:45 (4)	07:08	16:45 (4)	07:08	05:58	05:10							
	16:26	16	15:48 (3)	17:20	18:17	23	17:08 (4)	20:16	21:12	22:02						
4	08:58	15:33 (3)	08:22	16:46 (4)	07:05	16:46 (4)	07:05	05:56	05:09							
	16:28	17	15:50 (3)	17:22	18:19	19	17:05 (4)	20:18	21:14	22:03						
5	08:57	15:33 (3)	08:20	16:51 (4)	07:19	16:51 (4)	07:03	05:54	05:08							
	16:29	18	15:51 (3)	17:24	18:21	10	17:01 (4)	20:20	21:16	22:04						
6	08:57	15:33 (3)	08:18	16:52 (4)	07:17	16:52 (4)	07:00	05:52	05:08							
	16:30	20	15:53 (3)	17:26	3	16:55 (4)	18:23	20:22	21:18	22:06						
7	08:56	15:33 (3)	08:16	16:49 (4)	07:14	16:49 (4)	07:14	06:58	05:07							
	16:32	21	15:54 (3)	17:28	9	16:58 (4)	18:25	20:24	21:20	22:07						
8	08:56	15:33 (3)	08:14	16:46 (4)	07:12	16:46 (4)	07:12	06:55	05:48	05:06						
	16:33	22	15:55 (3)	17:30	14	17:00 (4)	18:27	20:26	21:22	22:08						
9	08:55	15:33 (3)	08:12	16:44 (4)	07:09	16:44 (4)	07:09	06:53	05:46	05:06						
	16:34	24	15:57 (3)	17:32	17	17:01 (4)	18:29	20:27	21:23	22:08						
10	08:55	15:34 (3)	08:10	16:43 (4)	07:07	16:43 (4)	07:07	06:50	05:44	05:05						
	16:36	25	15:59 (3)	17:34	21	17:04 (4)	18:30	20:29	21:25	22:09						
11	08:54	15:34 (3)	08:08	16:42 (4)	07:05	16:42 (4)	07:05	06:48	05:42	05:05						
	16:37	27	16:01 (3)	17:36	24	17:06 (4)	18:32	20:31	21:27	22:10						
12	08:53	15:34 (3)	08:06	16:41 (4)	07:02	16:41 (4)	07:02	06:46	05:41	05:04						
	16:39	29	16:03 (3)	17:39	27	17:08 (4)	18:34	20:33	21:29	22:11						
13	08:52	15:35 (3)	08:04	16:40 (4)	07:00	16:40 (4)	07:00	06:43	05:39	05:04						
	16:41	29	16:04 (3)	17:41	31	17:11 (4)	18:36	20:35	21:31	22:12						
14	08:51	15:34 (3)	08:02	16:40 (4)	06:57	16:40 (4)	06:57	06:41	05:37	05:04						
	16:42	31	16:05 (3)	17:43	33	17:13 (4)	18:38	20:37	21:32	22:12						
15	08:50	15:34 (3)	08:00	16:38 (4)	06:55	16:38 (4)	06:55	06:38	05:35	05:03						
	16:44	32	16:06 (3)	17:45	37	17:15 (4)	18:40	20:39	21:34	22:13						
16	08:49	15:35 (3)	07:58	16:38 (4)	06:52	16:38 (4)	06:52	06:36	05:34	05:03						
	16:46	32	16:07 (3)	17:47	39	17:17 (4)	18:42	20:41	21:36	22:13						
17	08:48	15:35 (3)	07:56	16:38 (4)	06:50	16:38 (4)	06:50	06:34	05:32	05:03						
	16:47	32	16:07 (3)	17:49	39	17:17 (4)	18:44	20:43	21:37	22:14						
18	08:47	15:35 (3)	07:54	16:38 (4)	06:47	16:38 (4)	06:47	06:31	05:30	05:03						
	16:49	32	16:07 (3)	17:51	40	17:18 (4)	18:46	20:44	21:39	22:14						
19	08:46	15:36 (3)	07:51	16:37 (4)	06:45	16:37 (4)	06:45	06:29	05:29	05:03						
	16:51	32	16:08 (3)	17:53	40	17:17 (4)	18:48	20:46	21:41	22:15						
20	08:45	15:36 (3)	07:49	16:37 (4)	06:42	16:37 (4)	06:42	06:27	05:27	05:03						
	16:53	32	16:08 (3)	17:55	41	17:18 (4)	18:50	20:48	21:42	22:15						
21	08:44	15:36 (3)	07:47	16:37 (4)	06:40	16:37 (4)	06:40	06:24	05:26	05:03						
	16:55	32	16:08 (3)	17:57	41	17:18 (4)	18:52	20:50	21:44	22:15						
22	08:42	15:37 (3)	07:45	16:37 (4)	06:37	16:37 (4)	06:37	06:22	05:24	05:03						
	16:57	31	16:08 (3)	17:59	40	17:17 (4)	18:53	20:52	21:46	22:16						
23	08:41	15:38 (3)	07:43	16:37 (4)	06:35	16:37 (4)	06:35	06:20	05:23	05:04						
	16:58	30	16:08 (3)	18:01	40	17:17 (4)	18:55	20:54	21:47	22:16						
24	08:40	15:39 (3)	07:40	16:38 (4)	06:32	16:38 (4)	06:32	06:18	05:21	05:04						
	17:00	29	16:08 (3)	18:03	39	17:17 (4)	18:57	20:56	21:49	22:16						
25	08:38	15:39 (3)	07:38	16:38 (4)	06:30	16:38 (4)	06:30	06:15	05:20	05:04						
	17:02	29	16:08 (3)	18:05	37	17:15 (4)	18:59	20:58	21:50	22:16						
26	08:37	15:40 (3)	07:36	16:39 (4)	06:27	16:39 (4)	06:27	06:13	05:19	05:05						
	17:04	27	16:07 (3)	18:07	36	17:15 (4)	19:01	20:59	21:52	22:16						
27	08:35	15:41 (3)	07:33	16:39 (4)	06:25	16:39 (4)	06:25	06:11	05:17	05:05						
	17:06	26	16:07 (3)	18:09	34	17:13 (4)	19:03	21:01	21:53	22:16						
28	08:34	15:42 (3)	07:31	16:40 (4)	06:22	16:40 (4)	06:22	06:09	05:16	05:06						
	17:08	25	16:07 (3)	18:11	33	17:13 (4)	19:05	21:03	21:54	22:16						
29	08:32	15:43 (3)	07:29	16:40 (4)	06:20	16:40 (4)	06:20	06:07	05:15	05:06						
	17:10	23	16:06 (3)	18:13	32	17:14 (4)	19:07	21:05	21:56	22:15						
30	08:30	15:45 (3)	07:27	16:39 (4)	06:17	16:39 (4)	06:17	06:04	05:14	05:07						
	17:12	19	16:04 (3)	18:15	31	17:14 (4)	19:09	21:07	21:57	22:15						
31	08:29	15:46 (3)	07:25	16:40 (4)	06:15	16:40 (4)	06:15	05:13	05:13	05:07						
	17:14	17	16:03 (3)	18:17	30	17:14 (4)	19:11	21:05	21:58	22:15						
Potential sun hours	248		272	367	421	496	513									
Total, worst case	786		726	111												
Sun reduction	0.17		0.22	0.22												
Oper. time red.	1.00		1.00	1.00												
Wind dir. red.	0.62		0.58	0.58												
Total reduction	0.11		0.13	0.13												
Total, real	83		94	14												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: F - H6  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	July	August	September	October	November	December
1	05:08 22:15	05:48 21:39	06:44 20:31	07:38 19:16	07:37 17:05	16:12 (4) 16:19
2	05:08 22:14	05:50 21:37	06:46 20:28	07:40 19:14	07:39 17:03	16:14 (4) 16:19
3	05:09 22:14	05:52 21:35	06:47 20:26	07:42 19:11	07:41 17:01	16:15 (4) 16:18
4	05:10 22:13	05:54 21:33	06:49 20:24	07:44 19:09	07:43 16:59	16:19 (4) 16:17
5	05:11 22:13	05:55 21:31	06:51 20:21	07:45 19:06	07:45 16:57	16:22 (4) 16:16
6	05:12 22:12	05:57 21:29	06:53 20:19	07:47 19:04	07:47 16:55	16:25 (4) 16:16
7	05:13 22:11	05:59 21:27	06:55 20:16	07:49 19:01	07:49 16:53	08:42 16:15
8	05:14 22:11	06:01 21:25	06:56 20:14	07:51 18:59	07:51 16:51	08:43 16:15
9	05:15 22:10	06:02 21:23	06:58 20:11	07:53 18:56	17:23 (4) 17:38 (4)	07:53 16:49
10	05:16 22:09	06:04 21:21	07:00 20:09	07:55 18:54	17:20 (4) 17:41 (4)	07:55 16:47
11	05:17 22:08	06:06 21:19	07:02 20:06	07:57 18:52	17:18 (4) 17:43 (4)	07:57 16:46
12	05:18 22:07	06:08 21:17	07:04 20:04	07:59 18:49	17:16 (4) 17:44 (4)	07:59 16:44
13	05:20 22:06	06:09 21:15	07:05 20:01	08:00 18:47	17:14 (4) 17:45 (4)	08:01 16:42
14	05:21 22:05	06:11 21:12	07:07 19:59	08:02 18:45	17:13 (4) 17:46 (4)	08:03 16:41
15	05:22 22:04	06:13 21:10	07:09 19:56	08:04 18:42	17:11 (4) 17:47 (4)	08:05 16:39
16	05:24 22:03	06:15 21:08	07:11 19:54	08:06 18:40	17:10 (4) 17:47 (4)	08:07 16:37
17	05:25 22:02	06:17 21:06	07:13 19:51	08:08 18:37	17:10 (4) 17:48 (4)	08:09 16:36
18	05:26 22:00	06:18 21:04	07:14 19:49	08:10 18:35	17:09 (4) 17:48 (4)	08:11 16:34
19	05:28 21:59	06:20 21:01	07:16 19:46	08:12 18:33	17:08 (4) 17:48 (4)	08:12 16:33
20	05:29 21:58	06:22 20:59	07:18 19:44	08:14 18:31	17:08 (4) 17:48 (4)	08:14 16:32
21	05:31 21:56	06:24 20:57	07:20 19:41	08:16 18:28	17:07 (4) 17:48 (4)	08:16 16:30
22	05:32 21:55	06:26 20:55	07:22 19:39	08:18 18:26	17:07 (4) 17:48 (4)	08:18 16:29
23	05:34 21:54	06:28 20:52	07:23 19:36	08:20 18:24	17:07 (4) 17:48 (4)	08:20 16:28
24	05:35 21:52	06:29 20:50	07:25 19:34	08:22 18:22	17:07 (4) 17:47 (4)	08:22 16:26
25	05:37 21:50	06:31 20:48	07:27 19:31	08:24 18:20	16:07 (4) 16:47 (4)	08:23 16:25
26	05:38 21:49	06:33 20:45	07:29 19:29	08:26 18:17	16:07 (4) 16:46 (4)	08:25 16:24
27	05:40 21:47	06:35 20:43	07:31 19:26	08:28 18:15	16:08 (4) 16:44 (4)	08:27 16:23
28	05:42 21:46	06:37 20:41	07:33 19:24	08:29 18:13	16:09 (4) 16:42 (4)	08:28 16:22
29	05:43 21:44	06:38 20:38	07:34 19:21	08:30 18:11	16:10 (4) 16:40 (4)	08:30 16:21
30	05:45 21:42	06:40 20:36	07:36 19:19	08:32 18:09	16:11 (4) 16:37 (4)	08:32 16:20
31	05:47 21:40	06:42 20:33	07:35 19:17	08:35 18:07	16:11 (4) 16:35 (4)	08:58 16:23
Potential sun hours	515	461	382	328	257	231
Total, worst case				774	644	400
Sun reduction				0.23	0.20	0.12
Oper. time red.				1.00	1.00	1.00
Wind dir. red.				0.58	0.62	0.62
Total reduction				0.14	0.12	0.07
Total, real				105	79	30

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: G - H7  
 Assumptions for shadow calculations Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January	February	March	April	May	June			
1	08:58 16:24	08:27 17:16	16:11 (16) 18:13	07:29 13	17:32 (14) 17:45 (14)	07:12 20:12	18:27 (15) 19:07 (15)	06:02 21:09	05:11 22:00
2	08:58 16:25	08:25 17:18	16:10 (16) 18:15	07:26 15	17:32 (14) 17:47 (14)	07:10 20:14	18:28 (15) 19:06 (15)	06:00 21:11	05:10 22:01
3	08:58 16:26	08:24 17:20	16:08 (16) 18:17	07:24 16	17:32 (14) 17:48 (14)	07:07 20:16	18:28 (15) 19:04 (15)	05:58 21:13	05:10 22:02
4	08:58 16:27	08:22 17:22	16:07 (16) 18:19	07:21 13	17:33 (14) 17:46 (14)	07:05 20:18	18:29 (15) 19:03 (15)	05:56 21:14	05:09 22:03
5	08:57 16:28	08:20 17:24	16:06 (16) 18:21	07:19 11	17:34 (14) 17:45 (14)	07:02 20:20	18:31 (15) 19:02 (15)	05:54 21:16	05:08 22:05
6	08:57 16:30	08:18 17:26	16:06 (16) 18:23	07:17 4	17:37 (14) 17:41 (14)	07:00 20:22	18:32 (15) 19:00 (15)	05:52 21:18	05:07 22:06
7	08:56 16:31	08:16 17:28	16:05 (16) 18:24	07:14 11	06:58 20:24	18:34 (15) 21:20	05:50 21:20	05:06 22:07	
8	08:56 16:33	08:14 17:30	16:05 (16) 18:26	07:12 11	06:55 20:26	18:36 (15) 18:54 (15)	05:48 21:22	05:06 22:08	
9	08:55 16:34	08:12 17:32	16:03 (16) 18:28	07:09 10	06:53 20:27	18:41 (15) 18:49 (15)	05:46 21:23	05:05 22:09	
10	08:55 16:36	08:10 17:34	16:03 (16) 18:30	07:07 10	06:50 20:29	05:44 21:25	05:44 22:09		
11	08:54 16:37	08:08 17:36	16:03 (16) 18:32	07:05 10	06:48 20:31	05:42 21:27	05:42 22:10		
12	08:53 16:39	08:06 17:38	16:03 (16) 18:34	07:02 11	06:45 17:47 (15) 17:58 (15)	05:40 20:33	05:40 21:29	05:04 22:11	
13	08:52 16:40	08:04 17:40	16:03 (16) 18:36	07:00 19	06:43 18:02 (15)	05:38 20:35	05:38 21:31	05:04 22:12	
14	08:51 16:42	08:02 17:42	16:03 (16) 18:38	06:57 25	06:41 17:39 (15) 18:04 (15)	05:37 20:37	05:37 21:32	05:03 22:12	
15	08:51 16:44	08:00 17:44	16:02 (16) 18:40	06:55 29	06:38 17:38 (15) 18:07 (15)	05:35 20:39	05:35 21:34	05:03 22:13	
16	08:50 16:45	07:58 17:46	16:03 (16) 18:42	06:52 33	06:36 17:35 (15) 18:08 (15)	05:33 20:41	05:33 21:36	05:03 22:14	
17	08:48 16:47	07:56 17:49	16:03 (16) 18:44	06:50 35	06:33 17:34 (15) 18:09 (15)	05:32 20:42	05:32 21:37	05:03 22:14	
18	08:47 16:49	07:54 17:51	16:04 (16) 18:46	06:47 38	06:31 17:32 (15) 18:10 (15)	05:30 20:44	05:30 21:39	05:03 22:15	
19	08:46 16:51	07:51 17:53	16:04 (16) 18:48	06:45 40	06:29 17:31 (15) 18:11 (15)	05:28 20:46	05:28 21:41	05:03 22:15	
20	08:45 16:53	07:49 17:55	16:05 (16) 18:50	06:42 41	06:26 17:30 (15) 18:11 (15)	05:27 20:48	05:27 21:42	05:03 22:15	
21	08:44 16:54	07:47 17:57	16:06 (16) 18:51	06:40 43	06:24 17:29 (15) 18:12 (15)	05:25 20:50	05:25 21:44	05:03 22:16	
22	08:42 16:56	07:45 17:59	16:06 (16) 18:53	06:37 43	06:22 17:28 (15) 18:11 (15)	05:24 20:52	05:24 21:46	05:03 22:16	
23	08:41 16:58	07:42 18:01	16:07 (16) 18:55	06:35 44	06:20 17:28 (15) 18:12 (15)	05:22 20:54	05:22 21:47	05:03 22:16	
24	08:40 17:00	07:40 18:03	16:09 (16) 18:57	06:32 44	06:17 17:27 (15) 18:11 (15)	05:21 20:56	05:21 21:49	05:04 22:16	
25	08:38 17:02	07:38 18:05	16:10 (16) 18:59	06:30 45	06:15 17:27 (15) 18:12 (15)	05:20 20:58	05:20 21:50	05:04 22:16	
26	08:37 17:04	07:36 18:07	16:12 (16) 19:01	06:27 45	06:13 17:26 (15) 18:11 (15)	05:18 20:59	05:18 21:52	05:04 22:16	
27	08:35 17:06	07:33 18:09	16:14 (16) 19:03	06:25 45	06:11 17:26 (15) 18:11 (15)	05:17 21:01	05:17 21:53	05:05 22:16	
28	08:34 17:08	07:31 18:11	16:20 (16) 19:05	06:22 44	06:08 17:26 (15) 18:10 (15)	05:16 21:03	05:16 21:55	05:05 22:16	
29	08:32 17:10	16:18 (16) 16:25 (16)	07:20 20:07	44	18:26 (15) 19:10 (15)	06:06 21:05	05:15 21:56	05:06 22:15	
30	08:31 17:12	7 16:14 (16) 16:29 (16)	07:17 20:08	43	18:26 (15) 19:09 (15)	06:04 21:07	05:14 21:57	05:07 22:15	
31	08:29 17:14	16:12 (16) 16:32 (16)	07:15 20:10	41	18:27 (15) 19:08 (15)	05:12 21:09	05:12 21:59	05:07 22:15	
Potential sun hours	248	272	367	421	496	513			
Total, worst case	42	980	824	257					
Sun reduction	0.17	0.22	0.22	0.34					
Oper. time red.	1.00	1.00	1.00	1.00					
Wind dir. red.	0.59	0.59	0.57	0.57					
Total reduction	0.10	0.13	0.13	0.20					
Total, real	4	129	105	50					

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)





## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: G - H7

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	July	August	September	October	November	December	
1	05:07 22:15	05:48 21:39	06:44 20:31	07:38 19:16	18:25 (15) 18:40 (15)	07:37 17:04	15:33 (16) 16:19
2	05:08 22:14	05:50 21:37	06:45 20:28	07:40 19:14	40 17:02	15:33 (16) 16:18	08:35 16:18
3	05:09 22:14	05:52 21:35	06:47 20:26	18:39 (15) 18:47 (15)	07:42 19:11	07:41 17:00	15:34 (16) 16:17
4	05:10 22:14	05:53 21:33	06:49 20:24	18:33 (15) 18:51 (15)	07:44 19:09	07:43 16:58	15:35 (16) 16:17
5	05:11 22:13	05:55 21:31	06:51 20:21	18:30 (15) 18:54 (15)	07:45 19:06	07:45 16:56	15:36 (16) 16:16
6	05:12 22:12	05:57 21:29	06:53 20:19	18:28 (15) 18:56 (15)	07:47 19:04	07:47 16:54	15:36 (16) 16:16
7	05:12 22:12	05:59 21:27	06:54 20:16	18:26 (15) 18:57 (15)	07:49 19:01	07:49 16:53	15:37 (16) 16:15
8	05:14 22:11	06:00 21:25	06:56 20:14	18:24 (15) 18:57 (15)	07:51 18:59	18:11 (14) 18:19 (14)	15:38 (16) 16:15
9	05:15 22:10	06:02 21:23	06:58 20:11	18:22 (15) 18:58 (15)	07:53 18:56	18:08 (14) 18:20 (14)	15:39 (16) 16:14
10	05:16 22:09	06:04 21:21	07:00 20:09	18:21 (15) 18:59 (15)	07:55 18:54	18:07 (14) 18:21 (14)	15:42 (16) 16:14
11	05:17 22:08	06:06 21:19	07:02 20:06	18:20 (15) 19:00 (15)	07:57 18:51	18:06 (14) 18:22 (14)	15:44 (16) 16:14
12	05:18 22:07	06:07 21:17	07:03 20:04	18:18 (15) 19:00 (15)	07:58 18:49	18:05 (14) 18:20 (14)	15:46 (16) 16:14
13	05:19 22:06	06:09 21:15	07:05 20:01	18:17 (15) 19:00 (15)	08:00 18:47	18:05 (14) 18:17 (14)	15:51 (16) 16:13
14	05:21 22:05	06:11 21:13	07:07 19:59	18:17 (15) 19:00 (15)	08:02 18:44	16:50 (16) 18:15 (14)	08:03 16:13
15	05:22 22:04	06:13 21:10	07:09 19:56	18:16 (15) 19:00 (15)	08:04 18:42	16:46 (16) 18:13 (14)	08:05 16:13
16	05:23 22:03	06:15 21:08	07:11 19:54	18:15 (15) 18:59 (15)	08:06 18:40	16:43 (16) 18:10 (14)	08:07 16:13
17	05:25 22:02	06:16 21:06	07:12 19:51	18:15 (15) 18:59 (15)	08:08 18:37	16:41 (16) 18:08 (14)	08:09 16:14
18	05:26 22:01	06:18 21:04	07:14 19:49	18:14 (15) 18:59 (15)	08:10 18:35	16:39 (16) 17:11 (16)	08:11 16:14
19	05:27 21:59	06:20 21:01	07:16 19:46	18:14 (15) 18:59 (15)	08:12 18:33	16:38 (16) 17:11 (16)	08:12 16:14
20	05:29 21:58	06:22 20:59	07:18 19:44	18:13 (15) 18:58 (15)	08:14 18:30	16:37 (16) 17:12 (16)	08:14 16:14
21	05:30 21:57	06:24 20:57	07:20 19:41	18:14 (15) 18:57 (15)	08:16 18:28	16:36 (16) 17:13 (16)	08:16 16:15
22	05:32 21:55	06:25 20:55	07:21 19:39	18:14 (15) 18:56 (15)	08:18 18:26	16:35 (16) 17:13 (16)	08:18 16:15
23	05:33 21:54	06:27 20:52	07:23 19:36	18:14 (15) 18:56 (15)	08:20 18:24	16:34 (16) 17:14 (16)	08:20 16:16
24	05:35 21:52	06:29 20:50	07:25 19:34	18:15 (15) 18:55 (15)	08:22 18:21	16:33 (16) 17:14 (16)	08:22 16:16
25	05:37 21:51	06:31 20:48	07:27 19:31	18:16 (15) 18:54 (15)	07:24 17:19	15:33 (16) 16:14 (16)	08:23 16:17
26	05:38 21:49	06:33 20:45	07:29 19:28	18:15 (15) 18:51 (15)	07:26 17:17	15:32 (16) 16:14 (16)	08:25 16:18
27	05:40 21:47	06:35 20:43	07:31 19:26	18:16 (15) 18:50 (15)	07:27 17:15	15:32 (16) 16:14 (16)	08:27 16:19
28	05:41 21:46	06:36 20:40	07:32 19:23	18:18 (15) 18:48 (15)	07:29 17:13	15:33 (16) 16:15 (16)	08:29 16:19
29	05:43 21:44	06:38 20:38	07:34 19:21	18:19 (15) 18:46 (15)	07:31 17:11	15:33 (16) 16:14 (16)	08:30 16:20
30	05:45 21:42	06:40 20:36	07:36 19:18	18:22 (15) 18:43 (15)	07:33 17:08	15:33 (16) 16:14 (16)	08:32 16:21
31	05:46 21:40	06:42 20:33		07:35 17:06	15:33 (16) 16:13 (16)		08:58 16:22
Potential sun hours	515	461	383	327	257		230
Total, worst case			1004	746		376	
Sun reduction			0.29	0.23		0.20	
Oper. time red.			1.00	1.00		1.00	
Wind dir. red.			0.57	0.59		0.59	
Total reduction			0.17	0.14		0.12	
Total, real			167	103		44	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: H - H8

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January	February	March	April	May	June
1	08:58 16:24	08:27 17:16	15:58 (2) 16:41 (2)	07:29 18:13	07:13 20:12	18:32 (3) 21:09
2	08:58 16:25	08:25 17:18	15:58 (2) 16:42 (2)	07:26 18:15	07:10 20:14	18:36 (3) 21:11
3	08:58 16:26	08:24 17:20	15:58 (2) 16:43 (2)	07:24 18:17	07:08 20:16	18:50 (3) 21:18
4	08:58 16:28	08:22 17:22	15:58 (2) 16:43 (2)	07:22 18:19	07:05 20:18	20:21 21:14
5	08:57 16:29	08:20 17:24	15:57 (2) 16:44 (2)	07:19 18:21	07:03 20:20	44 21:16
6	08:57 16:30	08:18 17:26	15:57 (2) 16:44 (2)	07:17 18:23	17:43 (3) 20:22	37 21:18
7	08:56 16:32	08:16 17:28	15:57 (2) 16:44 (2)	07:14 18:25	17:40 (3) 20:24	40 21:20
8	08:56 16:33	08:14 17:30	15:57 (2) 16:43 (2)	07:12 18:27	17:36 (3) 20:26	42 21:22
9	08:55 16:34	08:12 17:32	15:57 (2) 16:43 (2)	07:09 18:29	17:35 (3) 20:27	44 21:23
10	08:55 16:36	08:10 17:34	15:57 (2) 16:44 (2)	07:07 18:30	17:32 (3) 20:29	46 21:25
11	08:54 16:37	08:08 17:37	15:58 (2) 16:44 (2)	07:05 18:32	17:31 (3) 20:31	47 21:27
12	08:53 16:39	08:06 17:39	15:58 (2) 16:43 (2)	07:02 18:34	17:29 (3) 20:33	47 21:29
13	08:52 16:41	08:04 17:41	15:59 (2) 16:43 (2)	07:00 18:36	17:29 (3) 20:35	48 21:31
14	08:51 16:42	08:02 17:43	15:59 (2) 16:43 (2)	06:57 18:38	17:27 (3) 20:37	48 21:32
15	08:50 16:44	08:00 17:45	15:59 (2) 16:42 (2)	06:55 18:40	17:27 (3) 20:39	49 21:34
16	08:49 16:46	07:58 17:47	16:00 (2) 16:41 (2)	06:52 18:42	17:26 (3) 20:41	47 21:36
17	08:48 16:47	07:56 17:49	16:01 (2) 16:41 (2)	06:50 18:44	17:25 (3) 20:43	47 21:37
18	08:47 16:49	07:54 17:51	16:03 (2) 16:40 (2)	06:47 18:46	17:24 (3) 20:44	47 21:39
19	08:46 16:51	16:10 (2) 17:53	07:51 16:03 (2)	06:45 18:48	17:25 (3) 20:46	45 21:41
20	08:45 16:53	16:08 (2) 17:55	07:49 16:05 (2)	06:42 18:50	17:24 (3) 20:48	45 21:42
21	08:44 16:55	16:06 (2) 17:57	07:47 16:07 (2)	06:40 18:52	17:24 (3) 20:50	45 21:44
22	08:42 16:57	16:05 (2) 17:59	07:45 16:08 (2)	06:37 18:53	17:24 (3) 20:52	45 21:45
23	08:41 16:58	16:03 (2) 18:01	07:43 16:12 (2)	06:35 18:55	17:24 (3) 20:54	2 20:21 (4)
24	08:40 17:00	16:03 (2) 18:03	07:40 16:17 (2)	06:32 18:57	17:24 (3) 20:56	2 20:23 (4)
25	08:38 17:02	16:02 (2) 18:05	07:38 16:18 (2)	06:30 18:59	17:25 (3) 20:58	12 20:26 (4)
26	08:37 17:04	16:01 (2) 18:07	07:36 16:20 (2)	06:27 19:01	17:25 (3) 20:59	17 20:28 (4)
27	08:35 17:06	16:01 (2) 18:09	07:33 16:23 (2)	06:25 19:03	17:26 (3) 21:01	21 20:30 (4)
28	08:34 17:08	16:00 (2) 18:11	07:31 16:25 (2)	06:22 19:05	17:26 (3) 21:03	25 20:32 (4)
29	08:32 17:10	15:59 (2) 18:13	07:29 16:27 (2)	06:20 19:07	17:27 (3) 21:05	28 20:34 (4)
30	08:30 17:12	15:59 (2) 18:15	07:27 16:29 (2)	06:18 19:09	18:28 (3) 21:07	32 20:36 (4)
31	08:29 17:14	15:58 (2) 18:17	07:26 16:30 (2)	06:17 19:11	18:31 (3) 21:09	34 20:38 (4)
Potential sun hours	248	272	367	421	496	513
Total, worst case	334	945	945	206	1346	643
Sun reduction	0.17	0.22	0.22	0.34	0.36	0.26
Oper. time red.	1.00	1.00	1.00	1.00	1.00	1.00
Wind dir. red.	0.60	0.60	0.57	0.61	0.61	0.61
Total reduction	0.10	0.13	0.13	0.21	0.22	0.16
Total, real	34	126	120	43	299	102

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: H - H8

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

Operational time

Table with columns: N, NNE, NE, ENE, E, ESE, SE, SSE, S, SSW, SW, WSW, W, WNW, NW, NNW, Sum. Values: 263, 305, 173, 263, 215, 192, 359, 1,103, 1,091, 912, 892, 828, 483, 620, 606, 455, 8,760

Main shadow calculation table with columns for months (July-December) and rows for each day of the month. Includes potential sun hours, total, worst case, and reduction (operational, wind direction, total) for each month.

Table layout: For each day in each month the following matrix apply

Matrix layout table with columns: Day in month, Sun rise (hh:mm), Sun set (hh:mm), Minutes with flicker, First time (hh:mm) with flicker, Last time (hh:mm) with flicker, (WTG causing flicker first time), (WTG causing flicker last time)



## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Assumptions for shadow calculations

Shadow receptor: I - H9

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:58	08:27	07:29	07:13	06:02	05:12	05:08	05:48	06:44	07:38	07:37	08:33
	16:24	17:16	18:13	20:12	21:09	22:00	22:15	21:39	20:31	19:16	17:05	16:19
2	08:58	08:25	07:26	07:10	06:00	05:11	05:09	05:50	06:46	07:40	07:39	08:35
	16:25	17:18	18:15	20:14	21:11	22:01	22:14	21:37	20:28	19:14	17:03	16:19
3	08:58	08:24	07:24	07:08	05:58	05:10	05:09	05:52	06:47	07:42	07:41	08:36
	16:26	17:20	18:17	20:16	21:12	22:02	22:14	21:35	20:26	19:11	17:01	16:18
4	08:58	08:22	07:22	07:05	05:56	05:09	05:10	05:54	06:49	07:44	07:43	08:38
	16:28	17:22	18:19	20:18	21:14	22:03	22:13	21:33	20:24	19:09	16:59	16:17
5	08:57	08:20	07:19	07:03	05:54	05:08	05:11	05:55	06:51	07:45	07:45	08:39
	16:29	17:24	18:21	20:20	21:16	22:04	22:13	21:31	20:21	19:06	16:57	16:17
6	08:57	08:18	07:17	07:00	05:52	05:08	05:12	05:57	06:53	07:47	07:47	08:41
	16:30	17:26	18:23	20:22	21:18	22:05	22:12	21:29	20:19	19:04	16:55	16:16
7	08:56	08:16	07:14	06:58	05:50	05:07	05:13	05:59	06:55	07:49	07:49	08:42
	16:32	17:28	18:25	20:24	21:20	22:06	22:11	21:27	20:16	19:01	16:53	16:16
8	08:56	08:14	07:12	06:55	05:48	05:06	05:14	06:01	06:56	07:51	07:51	08:43
	16:33	17:30	18:27	20:26	21:22	22:07	22:11	21:25	20:14	18:59	16:51	16:15
9	08:55	08:12	07:10	06:53	05:46	05:06	05:15	06:02	06:58	07:53	07:53	08:45
	16:34	17:32	18:29	20:27	21:23	22:08	22:10	21:23	20:11	18:57	16:49	16:15
10	08:55	08:10	07:07	06:50	05:44	05:05	05:16	06:04	07:00	07:55	07:55	08:46
	16:36	17:35	18:31	20:29	21:25	22:09	22:09	21:21	20:09	18:54	16:47	16:14
11	08:54	08:08	07:05	06:48	05:42	05:05	05:17	06:06	07:02	07:57	07:57	08:47
	16:38	17:37	18:32	20:31	21:27	22:10	22:08	21:19	20:06	18:52	16:46	16:14
12	08:53	08:06	07:02	06:46	05:41	05:04	05:19	06:08	07:04	07:59	07:59	08:48
	16:39	17:39	18:34	20:33	21:29	22:11	22:07	21:17	20:04	18:49	16:44	16:14
13	08:52	08:04	07:00	06:43	05:39	05:04	05:20	06:10	07:05	08:00	08:01	08:49
	16:41	17:41	18:36	20:35	21:30	22:12	22:06	21:15	20:01	18:47	16:42	16:14
14	08:51	08:02	06:57	06:41	05:37	05:04	05:21	06:11	07:07	08:02	08:03	08:50
	16:42	17:43	18:38	20:37	21:32	22:12	22:05	21:12	19:59	18:45	16:41	16:14
15	08:50	08:00	06:55	06:38	05:35	05:04	05:22	06:13	07:09	08:04	08:05	08:51
	16:44	17:45	18:40	20:39	21:34	22:13	22:04	21:10	19:56	18:42	16:39	16:14
16	08:49	07:58	06:52	06:36	05:34	05:03	05:24	06:15	07:11	08:06	08:07	08:52
	16:46	17:47	18:42	20:41	21:36	22:13	22:03	21:08	19:54	18:40	16:37	16:14
17	08:48	07:56	06:50	06:34	05:32	05:03	05:25	06:17	07:13	08:08	08:09	08:53
	16:48	17:49	18:44	20:43	21:37	22:14	22:02	21:06	19:51	18:38	16:36	16:14
18	08:47	07:54	06:47	06:31	05:30	05:03	05:26	06:19	07:14	08:10	08:11	08:54
	16:49	17:51	18:46	20:44	21:39	22:14	22:00	21:04	19:49	18:35	16:34	16:14
19	08:46	07:51	06:45	06:29	05:29	05:03	05:28	06:20	07:16	08:12	08:12	08:54
	16:51	17:53	18:48	20:46	21:41	22:15	21:59	21:01	19:46	18:33	16:33	16:15
20	08:45	07:49	06:42	06:27	05:27	05:03	05:29	06:22	07:18	08:14	08:14	08:55
	16:53	17:55	18:50	20:48	21:42	22:15	21:58	20:59	19:44	18:31	16:32	16:15
21	08:44	07:47	06:40	06:24	05:26	05:03	05:31	06:24	07:20	08:16	08:16	08:56
	16:55	17:57	18:52	20:50	21:44	22:15	21:56	20:57	19:41	18:28	16:30	16:15
22	08:42	07:45	06:37	06:22	05:24	05:04	05:32	06:26	07:22	08:18	08:18	08:56
	16:57	17:59	18:53	20:52	21:45	22:15	21:55	20:55	19:39	18:26	16:29	16:16
23	08:41	07:43	06:35	06:20	05:23	05:04	05:34	06:28	07:23	08:20	08:20	08:57
	16:59	18:01	18:55	20:54	21:47	22:16	21:53	20:52	19:36	18:24	16:28	16:16
24	08:40	07:40	06:32	06:18	05:21	05:04	05:35	06:29	07:25	08:22	08:21	08:57
	17:00	18:03	18:57	20:56	21:49	22:16	21:52	20:50	19:34	18:22	16:26	16:17
25	08:38	07:38	06:30	06:15	05:20	05:04	05:37	06:31	07:27	08:24	08:23	08:57
	17:02	18:05	18:59	20:58	21:50	22:16	21:50	20:48	19:31	17:19	16:25	16:17
26	08:37	07:36	06:27	06:13	05:19	05:05	05:39	06:33	07:29	08:26	08:25	08:58
	17:04	18:07	19:01	20:59	21:52	22:16	21:49	20:45	19:29	17:17	16:24	16:18
27	08:35	07:33	06:25	06:11	05:17	05:05	05:40	06:35	07:31	08:27	08:27	08:58
	17:06	18:09	19:03	21:01	21:53	22:16	21:47	20:43	19:26	17:15	16:23	16:19
28	08:34	07:31	06:22	06:09	05:16	05:06	05:42	06:37	07:33	08:29	08:28	08:58
	17:08	18:11	19:05	21:03	21:54	22:15	21:46	20:40	19:24	17:13	16:22	16:20
29	08:32		07:20	06:07	05:15	05:06	05:43	06:38	07:34	08:31	08:30	08:58
	17:10		20:07	21:05	21:56	22:15	21:44	20:38	19:21	17:11	16:21	16:21
30	08:30		07:18	06:04	05:14	05:07	05:45	06:40	07:36	08:33	08:32	08:58
	17:12		20:09	21:07	21:57	22:15	21:42	20:36	19:19	17:09	16:20	16:22
31	08:29		07:15		05:13		05:47	06:42		07:35		08:58
	17:14		20:10		21:58		21:40	20:33		17:07		16:23
Potential sun hours	248	272	367	421	496	513	515	461	382	328	257	231
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: J - H10  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January		February		March		April		May		June	
1	08:58	15:32 (3)	08:27	15:44 (3)	07:29	16:41 (4)	07:13	06:02	05:12			
	16:24	13	15:45 (3)	17:16	21	16:05 (3)	18:13	40	17:21 (4)	20:12	21:09	22:00
2	08:58	15:33 (3)	08:25	15:47 (3)	07:26	16:41 (4)	07:10	06:00	05:11			
	16:25	14	15:47 (3)	17:18	17	16:04 (3)	18:15	38	17:19 (4)	20:14	21:11	22:01
3	08:58	15:32 (3)	08:24	15:50 (3)	07:24	16:42 (4)	07:08	05:58	05:10			
	16:26	16	15:48 (3)	17:20	11	16:01 (3)	18:17	36	17:18 (4)	20:16	21:12	22:02
4	08:58	15:33 (3)	08:22		07:22	16:42 (4)	07:05	05:56	05:09			
	16:28	17	15:50 (3)	17:22		18:19	35	17:17 (4)	20:18	21:14	22:03	
5	08:57	15:32 (3)	08:20		07:19	16:44 (4)	07:03	05:54	05:08			
	16:29	19	15:51 (3)	17:24		18:21	32	17:16 (4)	20:20	21:16	22:04	
6	08:57	15:33 (3)	08:18		07:17	16:45 (4)	07:00	05:52	05:08			
	16:30	20	15:53 (3)	17:26		18:23	28	17:13 (4)	20:22	21:18	22:06	
7	08:56	15:33 (3)	08:16		07:14	16:47 (4)	06:58	05:50	05:07			
	16:32	21	15:54 (3)	17:28		18:25	25	17:12 (4)	20:24	21:20	22:07	
8	08:56	15:33 (3)	08:14		07:12	16:49 (4)	06:55	05:48	05:06			
	16:33	22	15:55 (3)	17:30		18:27	20	17:09 (4)	20:26	21:22	22:08	
9	08:55	15:33 (3)	08:12	16:54 (4)	07:09	16:53 (4)	06:53	05:46	05:06			
	16:34	24	15:57 (3)	17:32	7	17:01 (4)	18:29	12	17:05 (4)	20:27	21:23	22:08
10	08:55	15:34 (3)	08:10	16:51 (4)	07:07		06:50	05:44	05:05			
	16:36	25	15:59 (3)	17:34	13	17:04 (4)	18:30		20:29	21:25	22:09	
11	08:54	15:34 (3)	08:08	16:49 (4)	07:05		06:48	05:42	05:05			
	16:37	27	16:01 (3)	17:37	17	17:06 (4)	18:32		20:31	21:27	22:10	
12	08:53	15:34 (3)	08:06	16:48 (4)	07:02		06:46	05:41	05:04			
	16:39	29	16:03 (3)	17:39	20	17:08 (4)	18:34		20:33	21:29	22:11	
13	08:52	15:34 (3)	08:04	16:46 (4)	07:00		06:43	05:39	05:04			
	16:41	31	16:05 (3)	17:41	25	17:11 (4)	18:36		20:35	21:31	22:12	
14	08:51	15:35 (3)	08:02	16:45 (4)	06:57		06:41	05:37	05:04			
	16:42	32	16:05 (3)	17:43	28	17:13 (4)	18:38		20:37	21:32	22:12	
15	08:50	15:33 (3)	08:00	16:43 (4)	06:55		06:38	05:35	05:03			
	16:44	33	16:06 (3)	17:45	32	17:15 (4)	18:40		20:39	21:34	22:13	
16	08:49	15:34 (3)	07:58	16:43 (4)	06:52		06:36	05:34	05:03			
	16:46	33	16:07 (3)	17:47	34	17:17 (4)	18:42		20:41	21:36	22:13	
17	08:48	15:34 (3)	07:56	16:42 (4)	06:50		06:34	05:32	05:03			
	16:47	34	16:08 (3)	17:49	38	17:20 (4)	18:44		20:43	21:37	22:14	
18	08:47	15:34 (3)	07:54	16:42 (4)	06:47		06:31	05:30	05:03			
	16:49	34	16:08 (3)	17:51	40	17:22 (4)	18:46		20:44	21:39	22:14	
19	08:46	15:35 (3)	07:51	16:40 (4)	06:45		06:29	05:29	05:03			
	16:51	33	16:08 (3)	17:53	42	17:22 (4)	18:48		20:46	21:41	22:15	
20	08:45	15:35 (3)	07:49	16:40 (4)	06:42		06:27	05:27	05:03			
	16:53	34	16:09 (3)	17:55	42	17:22 (4)	18:50		20:48	21:42	22:15	
21	08:44	15:35 (3)	07:47	16:40 (4)	06:40		06:24	05:26	05:03			
	16:55	34	16:09 (3)	17:57	43	17:23 (4)	18:52		20:50	21:44	22:15	
22	08:42	15:36 (3)	07:45	16:39 (4)	06:37		06:22	05:24	05:03			
	16:57	33	16:09 (3)	17:59	43	17:22 (4)	18:53		20:52	21:46	22:16	
23	08:41	15:36 (3)	07:43	16:39 (4)	06:35		06:20	05:23	05:04			
	16:58	33	16:09 (3)	18:01	44	17:23 (4)	18:55		20:54	21:47	22:16	
24	08:40	15:37 (3)	07:40	16:40 (4)	06:32		06:18	05:21	05:04			
	17:00	33	16:10 (3)	18:03	43	17:23 (4)	18:57		20:56	21:49	22:16	
25	08:38	15:37 (3)	07:38	16:39 (4)	06:30		06:15	05:20	05:04			
	17:02	32	16:09 (3)	18:05	43	17:22 (4)	18:59		20:58	21:50	22:16	
26	08:37	15:38 (3)	07:36	16:39 (4)	06:27		06:13	05:19	05:05			
	17:04	31	16:09 (3)	18:07	43	17:22 (4)	19:01		20:59	21:52	22:16	
27	08:35	15:39 (3)	07:33	16:39 (4)	06:25		06:11	05:17	05:05			
	17:06	30	16:09 (3)	18:09	42	17:21 (4)	19:03		21:01	21:53	22:16	
28	08:34	15:40 (3)	07:31	16:40 (4)	06:22		06:09	05:16	05:06			
	17:08	29	16:09 (3)	18:11	41	17:21 (4)	19:05		21:03	21:54	22:16	
29	08:32	15:41 (3)			07:20		06:07	05:15	05:06			
	17:10	27	16:08 (3)		20:07		21:05	21:56	22:15			
30	08:30	15:42 (3)			07:17		06:04	05:14	05:07			
	17:12	25	16:07 (3)		20:09		21:07	21:57	22:15			
31	08:29	15:43 (3)			07:15			05:13				
	17:14	23	16:06 (3)		20:10			21:58				
Potential sun hours	248		272		367		421	496	513			
Total, worst case	841		729		266							
Sun reduction	0.17		0.22		0.22							
Oper. time red.	1.00		1.00		1.00							
Wind dir. red.	0.62		0.58		0.58							
Total reduction	0.11		0.13		0.13							
Total, real	89		95		35							

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: J - H10

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	July	August	September	October	November	December
1	05:08	05:48	06:44	07:38	07:37	16:21 (4) 08:33 15:16 (3)
	22:15	21:39	20:31	19:16	17:05	12 16:33 (4) 16:19 27 15:43 (3)
2	05:08	05:50	06:46	07:40	07:39	16:25 (4) 08:35 15:16 (3)
	22:14	21:37	20:28	19:14	17:03	6 16:31 (4) 16:19 25 15:41 (3)
3	05:09	05:52	06:47	07:42	07:41	08:36 15:17 (3)
	22:14	21:35	20:26	19:11	17:01	16:18 24 15:41 (3)
4	05:10	05:54	06:49	07:44	17:34 (4) 07:43	08:38 15:18 (3)
	22:13	21:33	20:24	19:09	5 17:39 (4) 16:59	16:17 22 15:40 (3)
5	05:11	05:55	06:51	07:45	17:28 (4) 07:45	08:39 15:18 (3)
	22:13	21:31	20:21	19:06	16 17:44 (4) 16:57	16:16 21 15:39 (3)
6	05:12	05:57	06:53	07:47	17:24 (4) 07:47	08:41 15:19 (3)
	22:12	21:29	20:19	19:04	23 17:47 (4) 16:55	16:16 20 15:39 (3)
7	05:13	05:59	06:55	07:49	17:22 (4) 07:49	08:42 15:20 (3)
	22:11	21:27	20:16	19:01	27 17:49 (4) 16:53	16:15 18 15:38 (3)
8	05:14	06:01	06:56	07:51	17:20 (4) 07:51	15:20 (3) 08:43 15:20 (3)
	22:11	21:25	20:14	18:59	30 17:50 (4) 16:51	12 15:32 (3) 16:15 17 15:37 (3)
9	05:15	06:02	06:58	07:53	17:18 (4) 07:53	15:17 (3) 08:45 15:21 (3)
	22:10	21:23	20:11	18:56	33 17:51 (4) 16:49	17 15:34 (3) 16:15 16 15:37 (3)
10	05:16	06:04	07:00	07:55	17:17 (4) 07:55	15:16 (3) 08:46 15:22 (3)
	22:09	21:21	20:09	18:54	35 17:52 (4) 16:47	21 15:37 (3) 16:14 14 15:36 (3)
11	05:17	06:06	07:02	07:57	17:15 (4) 07:57	15:15 (3) 08:47 15:22 (3)
	22:08	21:19	20:06	18:52	38 17:53 (4) 16:46	23 15:38 (3) 16:14 14 15:36 (3)
12	05:18	06:08	07:04	07:59	17:14 (4) 07:59	15:13 (3) 08:48 15:24 (3)
	22:07	21:17	20:04	18:49	39 17:53 (4) 16:44	26 15:39 (3) 16:14 12 15:36 (3)
13	05:20	06:09	07:05	08:00	17:13 (4) 08:01	15:12 (3) 08:49 15:25 (3)
	22:06	21:15	20:01	18:47	41 17:54 (4) 16:42	28 15:40 (3) 16:14 11 15:36 (3)
14	05:21	06:11	07:07	08:02	17:13 (4) 08:03	15:12 (3) 08:50 15:25 (3)
	22:05	21:12	19:59	18:45	41 17:54 (4) 16:41	28 15:40 (3) 16:14 11 15:36 (3)
15	05:22	06:13	07:09	08:04	17:12 (4) 08:05	15:11 (3) 08:51 15:26 (3)
	22:04	21:10	19:56	18:42	42 17:54 (4) 16:39	30 15:41 (3) 16:14 10 15:36 (3)
16	05:24	06:15	07:11	08:06	17:11 (4) 08:07	15:11 (3) 08:52 15:27 (3)
	22:03	21:08	19:54	18:40	43 17:54 (4) 16:37	31 15:42 (3) 16:14 9 15:36 (3)
17	05:25	06:17	07:13	08:08	17:11 (4) 08:09	15:10 (3) 08:53 15:27 (3)
	22:02	21:06	19:51	18:37	43 17:54 (4) 16:36	32 15:42 (3) 16:14 8 15:35 (3)
18	05:26	06:18	07:14	08:10	17:11 (4) 08:11	15:11 (3) 08:54 15:28 (3)
	22:00	21:04	19:49	18:35	43 17:54 (4) 16:34	33 15:44 (3) 16:14 7 15:35 (3)
19	05:28	06:20	07:16	08:12	17:11 (4) 08:12	15:11 (3) 08:54 14:37 (2)
	21:59	21:01	19:46	18:33	43 17:54 (4) 16:33	33 15:44 (3) 16:14 9 15:36 (3)
20	05:29	06:22	07:18	08:14	17:11 (4) 08:14	15:11 (3) 08:55 14:36 (2)
	21:58	20:59	19:44	18:31	43 17:54 (4) 16:32	33 15:44 (3) 16:15 11 15:35 (3)
21	05:31	06:24	07:20	08:16	17:11 (4) 08:16	15:11 (3) 08:56 14:37 (2)
	21:56	20:57	19:41	18:28	42 17:53 (4) 16:30	34 15:45 (3) 16:15 11 15:36 (3)
22	05:32	06:26	07:22	08:18	17:11 (4) 08:18	15:11 (3) 08:56 14:37 (2)
	21:55	20:55	19:39	18:26	42 17:53 (4) 16:29	34 15:45 (3) 16:16 11 15:36 (3)
23	05:34	06:28	07:23	08:20	17:11 (4) 08:20	15:12 (3) 08:57 14:38 (2)
	21:54	20:52	19:36	18:24	41 17:52 (4) 16:28	33 15:45 (3) 16:16 11 15:37 (3)
24	05:35	06:29	07:25	08:22	17:11 (4) 08:22	15:12 (3) 08:57 14:39 (2)
	21:52	20:50	19:34	18:22	40 17:51 (4) 16:26	34 15:46 (3) 16:17 10 15:38 (3)
25	05:37	06:31	07:27	07:24	16:12 (4) 08:23	15:12 (3) 08:58 15:31 (3)
	21:50	20:48	19:31	17:19	36 16:48 (4) 16:25	34 15:46 (3) 16:17 7 15:38 (3)
26	05:38	06:33	07:29	07:26	16:12 (4) 08:25	15:13 (3) 08:58 15:32 (3)
	21:49	20:45	19:29	17:17	34 16:46 (4) 16:24	33 15:46 (3) 16:18 8 15:40 (3)
27	05:40	06:35	07:31	07:28	16:13 (4) 08:27	15:13 (3) 08:58 15:32 (3)
	21:47	20:43	19:26	17:15	31 16:44 (4) 16:23	32 15:45 (3) 16:19 8 15:40 (3)
28	05:42	06:37	07:33	07:29	16:15 (4) 08:28	15:13 (3) 08:58 15:32 (3)
	21:46	20:41	19:24	17:13	27 16:42 (4) 16:22	33 15:46 (3) 16:20 9 15:41 (3)
29	05:43	06:38	07:34	07:31	16:16 (4) 08:30	15:14 (3) 08:58 15:32 (3)
	21:44	20:38	19:21	17:11	24 16:40 (4) 16:21	31 15:45 (3) 16:21 10 15:42 (3)
30	05:45	06:40	07:36	07:33	16:17 (4) 08:32	15:15 (3) 08:58 15:33 (3)
	21:42	20:36	19:19	17:09	20 16:37 (4) 16:20	29 15:44 (3) 16:22 10 15:43 (3)
31	05:47	06:42	07:35	07:35	16:19 (4)	08:58 15:32 (3)
	21:40	20:33	17:07	16:35 (4)	16	16:23 12 15:44 (3)
Potential sun hours	515	461	382	328	257	231
Total, worst case				938	692	413
Sun reduction				0.23	0.20	0.12
Oper. time red.				1.00	1.00	1.00
Wind dir. red.				0.58	0.62	0.62
Total reduction				0.14	0.12	0.07
Total, real				128	86	31

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: K - H11  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June					
1	08:58 16:24	08:27 17:16	16:29 (9) 18:13	07:29 28	17:06 (10) 20:12	07:12 26	19:19 (11) 21:09	06:02 24	20:14 (13) 22:00	05:12 40	20:37 (14) 21:17 (14)
2	08:58 16:25	08:25 17:18	16:28 (9) 18:15	07:26 27	17:06 (10) 20:14	07:10 28	19:19 (11) 21:11	06:00 27	20:13 (13) 22:01	05:11 40	20:37 (14) 21:17 (14)
3	08:58 16:26	08:24 17:20	16:28 (9) 18:17	07:24 24	17:08 (10) 20:16	07:07 28	19:18 (11) 21:13	05:58 30	20:12 (13) 22:02	05:10 40	20:37 (14) 21:17 (14)
4	08:58 16:27	08:22 17:22	16:28 (9) 18:19	07:22 22	17:08 (10) 20:18	07:05 27	19:19 (11) 21:14	05:56 31	20:12 (13) 22:03	05:09 41	20:37 (14) 21:18 (14)
5	08:57 16:29	08:20 17:24	16:28 (9) 18:21	07:19 19	17:10 (10) 20:20	07:03 27	19:19 (11) 21:16	05:54 33	20:12 (13) 22:05	05:08 41	20:37 (14) 21:18 (14)
6	08:57 16:30	08:18 17:26	16:28 (9) 18:23	07:17 14	17:12 (10) 20:22	07:00 25	19:19 (11) 21:18	05:52 33	20:13 (13) 22:06	05:07 40	20:37 (14) 21:17 (14)
7	08:56 16:31	08:16 17:28	16:28 (9) 18:25	07:14 6	17:16 (10) 20:24	06:58 24	19:20 (11) 21:20	05:50 34	20:12 (13) 22:07	05:07 41	20:37 (14) 21:18 (14)
8	08:56 16:33	08:14 17:30	16:29 (9) 18:27	07:12 24	17:22 (10) 20:26	06:55 22	19:20 (11) 21:22	05:48 34	20:12 (13) 22:08	05:06 41	20:37 (14) 21:18 (14)
9	08:55 16:34	08:12 17:32	16:29 (9) 18:28	07:09 23	16:53 (9) 20:27	06:53 20	19:21 (11) 21:24	05:46 33	20:13 (13) 22:09	05:05 41	20:38 (14) 21:19 (14)
10	08:55 16:36	08:10 17:34	16:30 (9) 18:30	07:07 22	16:52 (9) 20:29	06:50 16	19:23 (11) 21:25	05:44 32	20:13 (13) 22:09	05:05 41	20:37 (14) 21:18 (14)
11	08:54 16:37	08:08 17:36	16:31 (9) 18:32	07:05 20	16:51 (9) 20:31	06:48 11	19:25 (11) 21:27	05:42 32	20:14 (13) 22:10	05:04 41	20:38 (14) 21:19 (14)
12	08:53 16:39	08:06 17:38	16:32 (9) 18:34	07:02 18	16:50 (9) 20:33	06:45 22	19:26 (11) 21:29	05:40 31	20:14 (13) 22:11	05:04 41	20:38 (14) 21:19 (14)
13	08:52 16:40	08:04 17:40	16:34 (9) 18:36	07:00 14	16:48 (9) 20:35	06:43 20	19:27 (11) 21:31	05:39 32	20:15 (13) 22:12	05:04 41	20:39 (14) 21:20 (14)
14	08:51 16:42	08:02 17:42	16:37 (9) 18:38	06:57 9	16:46 (9) 20:37	06:41 24	19:28 (11) 21:32	05:37 39	20:16 (13) 22:12	05:03 41	20:38 (14) 21:19 (14)
15	08:51 16:44	08:00 17:45	16:38 (9) 18:40	06:55 17:45	16:45 (9) 20:39	06:38 24	19:29 (11) 21:34	05:35 40	20:17 (13) 22:13	05:03 40	20:39 (14) 21:19 (14)
16	08:50 16:45	07:58 17:47	17:16 (10) 18:42	06:52 1	17:17 (10) 20:41	06:36 24	19:30 (11) 21:36	05:33 41	20:19 (13) 22:14	05:03 41	20:39 (14) 21:20 (14)
17	08:48 16:47	07:56 17:49	17:13 (10) 18:44	06:50 6	17:19 (10) 20:43	06:34 24	19:31 (11) 21:37	05:32 37	20:21 (13) 22:14	05:03 41	20:39 (14) 21:20 (14)
18	08:47 16:49	07:54 17:51	17:12 (10) 18:46	06:47 10	17:22 (10) 20:44	06:31 24	19:32 (11) 21:39	05:30 24	20:22 (14) 22:15	05:03 41	20:39 (14) 21:20 (14)
19	08:46 16:51	07:51 17:53	17:10 (10) 18:48	06:45 13	17:23 (10) 20:46	06:29 24	19:33 (11) 21:41	05:28 26	20:23 (14) 22:15	05:03 41	20:39 (14) 21:20 (14)
20	08:45 16:53	07:49 17:55	17:09 (10) 18:50	06:42 17	17:26 (10) 20:48	06:27 24	19:34 (11) 21:42	05:27 29	20:24 (14) 22:15	05:03 40	20:40 (14) 21:20 (14)
21	08:44 16:54	07:47 17:57	17:08 (10) 18:52	06:40 20	17:28 (10) 20:50	06:24 24	19:35 (11) 21:44	05:25 31	20:25 (14) 22:16	05:03 40	20:41 (14) 21:21 (14)
22	08:42 16:56	07:45 17:59	17:07 (10) 18:53	06:37 23	17:29 (10) 20:52	06:22 24	19:36 (11) 21:46	05:24 33	20:26 (14) 22:16	05:03 40	20:41 (14) 21:21 (14)
23	08:41 16:58	07:43 18:01	17:06 (10) 18:55	06:35 26	17:30 (10) 20:54	06:20 24	19:37 (11) 21:47	05:22 35	20:27 (14) 22:16	05:03 41	20:40 (14) 21:21 (14)
24	08:40 17:00	07:40 18:03	17:06 (10) 18:57	06:32 29	17:31 (10) 20:56	06:17 24	19:38 (11) 21:49	05:21 35	20:28 (14) 22:16	05:04 41	20:40 (14) 21:21 (14)
25	08:38 17:02	07:38 18:05	17:05 (10) 18:59	06:30 30	17:32 (10) 20:58	06:15 5	19:39 (11) 20:24 (13)	05:20 36	20:29 (14) 22:16	05:04 41	20:41 (14) 21:22 (14)
26	08:37 17:04	07:36 18:07	17:06 (10) 19:01	06:27 5	17:33 (10) 18:29 (11)	06:13 10	19:40 (11) 20:26 (13)	05:18 37	20:30 (14) 22:16	05:04 41	20:41 (14) 21:22 (14)
27	08:35 17:06	16:32 (9) 18:09	17:05 (10) 19:03	06:25 10	17:34 (10) 18:36 (11)	06:11 13	19:41 (11) 20:31 (13)	05:17 37	20:31 (14) 22:16	05:05 41	20:42 (14) 21:23 (14)
28	08:34 17:08	16:31 (9) 18:11	17:06 (10) 19:05	06:22 13	17:35 (10) 18:37 (11)	06:09 17	19:42 (11) 20:33 (13)	05:16 39	20:32 (14) 22:16	05:05 41	20:41 (14) 21:22 (14)
29	08:32 17:10	16:30 (9) 16:37 (9)	17:34 (10) 19:05	06:20 17	17:36 (10) 20:07	06:06 20	19:43 (11) 21:05	05:15 39	20:33 (14) 22:15	05:06 41	20:42 (14) 21:23 (14)
30	08:31 17:12	16:29 (9) 16:39 (9)	17:35 (10) 19:05	06:19 20	17:37 (10) 20:09	06:04 23	19:44 (11) 21:07	05:14 39	20:34 (14) 22:15	05:07 40	20:42 (14) 21:22 (14)
31	08:29 17:14	16:28 (9) 16:41 (9)	17:36 (10) 19:05	06:18 22	17:38 (10) 19:43 (11)	06:03 24	19:45 (11) 21:08	05:13 40	20:35 (14) 22:15	05:07 40	20:42 (14) 21:22 (14)
Potential sun hours	248	272	367	421	496	513	1221				
Total, worst case	35	543	227	341	1043	1221					
Sun reduction	0.17	0.22	0.22	0.34	0.36	0.26					
Oper. time red.	1.00	1.00	1.00	1.00	1.00	1.00					
Wind dir. red.	0.58	0.58	0.58	0.60	0.62	0.63					
Total reduction	0.10	0.13	0.13	0.20	0.22	0.16					
Total, real	3	70	30	70	235	197					

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: K - H11

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	July		August		September		October		November		December	
1	05:07	20:42 (14)	05:48	20:24 (13)	06:44	19:23 (11)	07:38		07:37	15:59 (9)	08:33	
	22:15	41	21:23 (14)	21:39	31	20:55 (12)	20:31	12	19:35 (11)	19:16	17:04	22
2	05:08	20:43 (14)	05:50	20:24 (13)	06:45	19:21 (11)	07:40		07:39	15:58 (9)	08:35	
	22:14	40	21:23 (14)	21:37	32	20:56 (12)	20:28	16	19:37 (11)	19:14	17:02	24
3	05:09	20:43 (14)	05:52	20:23 (13)	06:47	19:19 (11)	07:42		07:41	15:59 (9)	08:36	
	22:14	41	21:24 (14)	21:35	33	20:56 (12)	20:26	20	19:39 (11)	19:11	17:00	24
4	05:10	20:42 (14)	05:53	20:23 (13)	06:49	19:17 (11)	07:44		07:43	15:58 (9)	08:38	
	22:14	41	21:23 (14)	21:33	33	20:56 (12)	20:24	22	19:39 (11)	19:09	16:58	25
5	05:11	20:43 (14)	05:55	20:23 (13)	06:51	19:16 (11)	07:45		07:45	15:58 (9)	08:39	
	22:13	41	21:24 (14)	21:31	33	20:56 (12)	20:21	24	19:40 (11)	19:06	16:56	25
6	05:12	20:43 (14)	05:57	20:22 (13)	06:53	19:15 (11)	07:47		07:47	15:58 (9)	08:41	
	22:12	41	21:24 (14)	21:29	33	20:55 (12)	20:19	25	19:40 (11)	19:04	16:55	24
7	05:13	20:43 (14)	05:59	20:22 (13)	06:54	19:14 (11)	07:49		07:49	15:58 (9)	08:42	
	22:12	41	21:24 (14)	21:27	33	20:55 (12)	20:16	27	19:41 (11)	19:01	17:49 (10)	11
8	05:14	20:44 (14)	06:00	20:22 (13)	06:56	19:13 (11)	07:51		07:51	15:58 (9)	08:43	
	22:11	40	21:24 (14)	21:25	33	20:55 (12)	20:14	27	19:40 (11)	18:59	17:46 (10)	17
9	05:15	20:44 (14)	06:02	20:22 (13)	06:58	19:13 (11)	07:53		07:53	15:59 (9)	08:45	
	22:10	40	21:24 (14)	21:23	30	20:52 (12)	20:11	27	19:40 (11)	18:56	17:44 (10)	17
10	05:16	20:44 (14)	06:04	20:22 (13)	07:00	19:13 (11)	07:55		07:55	15:59 (9)	08:46	
	22:09	40	21:24 (14)	21:21	29	20:51 (12)	20:09	27	19:40 (11)	18:54	17:42 (10)	18
11	05:17	20:44 (14)	06:06	20:21 (13)	07:02	19:13 (11)	07:57		07:57	15:59 (9)	08:47	
	22:08	40	21:24 (14)	21:19	27	20:48 (12)	20:06	25	19:38 (11)	18:52	17:41 (10)	17
12	05:18	20:44 (14)	06:08	20:22 (13)	07:04	19:12 (11)	07:59		07:59	15:58 (9)	08:48	
	22:07	40	21:24 (14)	21:17	24	20:46 (12)	20:04	23	19:35 (11)	18:49	17:40 (10)	17
13	05:19	20:45 (14)	06:09	20:23 (13)	07:05	19:12 (11)	08:00		08:00	15:59 (9)	08:49	
	22:06	39	21:24 (14)	21:15	22	20:45 (13)	20:01	21	19:33 (11)	18:47	17:39 (10)	16
14	05:21	20:46 (14)	06:11	20:24 (13)	07:07	19:13 (11)	08:02		08:02	15:59 (9)	08:50	
	22:05	39	21:25 (14)	21:13	19	20:43 (13)	19:59	18	19:31 (11)	18:44	17:37 (10)	16
15	05:22	20:46 (14)	06:13	20:24 (13)	07:09	19:14 (11)	08:04		08:04	15:59 (9)	08:51	
	22:04	38	21:24 (14)	21:10	16	20:40 (13)	19:56	14	19:28 (11)	18:42	17:38 (10)	15
16	05:23	20:46 (14)	06:15	20:26 (13)	07:11	19:15 (11)	08:06		08:06	15:59 (9)	08:52	
	22:03	38	21:24 (14)	21:08	12	20:38 (13)	19:54	10	19:25 (11)	18:40	17:38 (10)	16
17	05:25	20:46 (14)	06:16	20:28 (13)	07:13	19:17 (11)	08:08		08:08	15:59 (9)	08:53	
	22:02	37	21:23 (14)	21:06	9	20:37 (13)	19:51	6	19:23 (11)	18:37	17:38 (10)	16
18	05:26	20:47 (14)	06:18	20:30 (13)	07:14		08:10		08:10	15:59 (9)	08:54	
	22:01	37	21:24 (14)	21:04	4	20:34 (13)	19:49		18:35	17:38 (10)	16:34	16
19	05:28	20:48 (14)	06:20		07:16		08:12		08:12	15:59 (9)	08:55	
	21:59	35	21:23 (14)	21:01		19:46			18:33	17:38 (10)	16:33	16
20	05:29	20:48 (14)	06:22		07:18		08:14		08:14	15:59 (9)	08:55	
	21:58	35	21:23 (14)	20:59		19:44			18:30	17:38 (10)	16:31	16
21	05:30	20:49 (14)	06:24		07:20		08:16		08:16	15:59 (9)	08:56	
	21:57	34	21:23 (14)	20:57		19:41			18:28	17:38 (10)	16:30	16
22	05:32	20:49 (14)	06:26		07:22		08:18		08:18	15:59 (9)	08:56	
	21:55	32	21:21 (14)	20:55		19:39			18:26	17:38 (10)	16:29	16
23	05:33	20:51 (14)	06:27		07:23		08:20		08:20	15:59 (9)	08:57	
	21:54	30	21:21 (14)	20:52		19:36			18:24	17:38 (10)	16:27	16
24	05:35	20:51 (14)	06:29		07:25		08:22		08:22	15:59 (9)	08:57	
	21:52	28	21:19 (14)	20:50		19:34			18:21	17:38 (10)	16:26	16
25	05:37	20:51 (14)	06:31		07:27		07:24		07:24	15:59 (9)	08:58	
	21:51	26	21:17 (14)	20:48		19:31			17:19	16:43 (10)	16:25	16
26	05:38	20:34 (13)	06:33		07:29		07:26		07:26	15:59 (9)	08:58	
	21:49	32	21:16 (14)	20:45		19:29			17:17	16:24	16:24	16
27	05:40	20:30 (13)	06:35		07:31		07:28		07:28	15:59 (9)	08:58	
	21:47	41	21:14 (14)	20:43		19:26			17:15	16:23	16:23	16
28	05:41	20:29 (13)	06:36		07:32		07:29		07:29	15:59 (9)	08:58	
	21:46	41	21:13 (14)	20:41		19:24			17:13	16:16 (9)	16:22	16
29	05:43	20:27 (13)	06:38		07:34		07:31		07:31	15:59 (9)	08:58	
	21:44	40	21:11 (14)	20:38		19:21			17:11	16:18 (9)	16:21	16
30	05:45	20:26 (13)	06:40		07:36		07:33		07:33	15:59 (9)	08:59	
	21:42	37	21:10 (14)	20:36		19:19			17:08	16:20 (9)	16:20	16
31	05:46	20:26 (13)	06:42				07:35		07:35	15:59 (9)	08:59	
	21:40	29	20:55 (12)	20:33			17:06		17:06	16:21 (9)	16:22	16
Potential sun hours	515		461		383		327		257		231	
Total, worst case	1154		453		344		470		252			
Sun reduction	0.27		0.27		0.29		0.23		0.20			
Oper. time red.	1.00		1.00		1.00		1.00		1.00			
Wind dir. red.	0.63		0.62		0.59		0.58		0.58			
Total reduction	0.17		0.17		0.17		0.14		0.12			
Total, real	192		76		59		64		29			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: L - H12  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:58 16:24	08:27 17:16	07:29 18:13	07:13 20:12	06:02 21:09	05:12 22:00	05:08 22:15	05:48 21:39	06:44 20:31	07:38 19:16	07:37 17:04	08:33 16:19
2	08:58 16:25	08:25 17:18	07:26 18:15	07:10 20:14	06:00 21:11	05:11 22:01	05:08 22:14	05:50 21:37	06:46 20:28	07:40 19:14	07:39 17:02	08:35 16:18
3	08:58 16:26	08:24 17:20	07:24 18:17	07:08 20:16	05:58 21:13	05:10 22:02	05:09 22:14	05:52 21:35	06:47 20:26	07:42 19:11	07:41 17:00	08:36 16:18
4	08:58 16:27	08:22 17:22	07:22 18:19	07:05 20:18	05:56 21:14	05:09 22:03	05:10 22:13	05:53 21:33	06:49 20:24	07:44 19:09	07:43 16:58	08:38 16:17
5	08:57 16:29	08:20 17:24	07:19 18:21	07:03 20:20	05:54 21:16	05:08 22:05	05:11 22:13	05:55 21:31	06:51 20:21	07:45 19:06	07:45 16:57	08:39 16:16
6	08:57 16:30	08:18 17:26	07:17 18:23	07:00 20:22	05:52 21:18	05:07 22:06	05:12 22:12	05:57 21:29	06:53 20:19	07:47 19:07	07:47 16:55	08:41 16:16
7	08:56 16:31	08:16 17:28	07:14 18:25	06:58 20:24	05:50 21:20	05:07 22:07	05:13 22:12	05:59 21:27	06:55 20:16	07:49 19:01	07:49 16:53	08:42 16:15
8	08:56 16:33	08:14 17:30	07:12 18:27	06:55 20:26	05:48 21:22	05:06 22:08	05:14 22:11	06:01 21:25	06:56 20:14	07:51 18:59	07:51 16:51	08:43 16:15
9	08:55 16:34	08:12 17:32	07:09 18:29	06:53 20:27	05:46 21:23	05:06 22:09	05:15 22:10	06:02 21:23	06:58 20:11	07:53 18:56	07:53 16:49	08:45 16:15
10	08:55 16:36	08:10 17:34	07:07 18:30	06:50 20:29	05:44 21:25	05:05 22:09	05:16 22:09	06:04 21:21	07:00 20:09	07:55 18:54	07:55 16:47	08:46 16:14
11	08:54 16:37	08:08 17:36	17:05 (5) 07:05	17:06 (5) 18:32	06:48 20:31	05:42 21:27	05:05 22:10	05:17 22:08	06:06 21:19	07:02 20:06	07:57 18:52	08:47 16:46
12	08:53 16:39	08:06 17:38	17:05 (5) 07:02	17:08 (5) 18:34	06:46 20:33	05:40 21:29	05:04 22:11	05:18 22:07	06:08 21:17	07:04 20:04	07:59 18:49	08:48 16:44
13	08:52 16:41	08:04 17:41	17:04 (5) 07:00	17:11 (5) 18:36	06:43 20:35	05:39 21:31	05:04 22:12	05:20 22:06	06:09 21:15	07:05 20:01	08:00 18:47	08:49 16:42
14	08:51 16:42	08:02 17:43	17:04 (5) 06:57	17:13 (5) 18:38	06:41 20:37	05:37 21:32	05:04 22:12	05:21 22:05	06:11 21:13	07:07 19:59	08:02 18:44	08:50 16:40
15	08:50 16:44	08:00 17:45	17:03 (5) 06:55	17:15 (5) 18:40	06:38 20:39	05:35 21:34	05:03 22:13	05:22 22:04	06:13 21:10	07:09 19:56	08:04 18:42	08:51 16:39
16	08:49 16:46	07:58 17:47	17:03 (5) 06:52	17:17 (5) 18:42	06:36 20:41	05:33 21:36	05:03 22:14	05:23 22:03	06:15 21:08	07:11 18:06	17:55 (6) 08:06	08:52 16:37
17	08:48 16:47	07:56 17:49	17:04 (5) 06:50	17:19 (6) 18:44	06:34 20:43	05:32 21:37	05:03 22:14	05:25 22:02	06:17 21:06	07:13 19:51	18:04 (6) 18:37	08:09 16:36
18	08:47 16:49	07:54 17:51	17:04 (5) 06:47	17:22 (6) 18:46	06:31 20:44	05:30 21:39	05:03 22:14	05:26 22:01	06:18 21:04	07:14 19:49	18:01 18:35	08:11 16:34
19	08:46 16:51	07:51 17:53	17:04 (5) 06:45	17:23 (6) 18:48	06:29 20:46	05:29 21:41	05:03 22:15	05:28 21:59	06:20 21:01	07:16 19:46	18:12 18:33	08:12 16:33
20	08:45 16:53	07:49 17:55	17:04 (5) 06:42	17:26 (6) 18:50	06:27 20:48	05:27 21:42	05:03 22:15	05:29 21:58	06:22 20:59	07:18 19:44	18:14 18:31	08:14 16:31
21	08:44 16:55	07:47 17:57	17:05 (5) 06:40	17:28 (6) 18:52	06:24 20:50	05:26 21:44	05:03 22:15	05:31 21:57	06:24 20:57	07:20 19:41	18:16 18:28	08:16 16:30
22	08:42 16:56	07:45 17:59	17:06 (5) 06:37	17:30 (6) 18:53	06:22 20:52	05:24 21:46	05:03 22:16	05:32 21:55	06:26 20:55	07:22 19:39	18:18 18:26	08:18 16:29
23	08:41 16:58	07:43 18:01	17:07 (5) 06:35	17:32 (6) 18:55	06:20 20:54	05:23 21:47	05:04 22:16	05:34 21:54	06:27 20:52	07:23 19:36	18:20 18:24	08:20 16:28
24	08:40 17:00	07:40 18:03	17:10 (5) 06:32	17:35 (6) 18:57	06:18 20:56	05:21 21:49	05:04 22:16	05:35 21:52	06:29 20:50	07:25 19:34	18:22 17:51	08:22 16:26
25	08:38 17:02	07:38 18:05	17:12 (5) 06:30	17:34 (6) 18:59	06:15 20:58	05:20 21:50	05:04 22:16	05:37 21:51	06:31 20:48	07:27 19:31	18:24 17:19	08:23 16:25
26	08:37 17:04	07:36 18:07	17:24 (6) 06:27	17:31 (6) 19:01	06:13 20:59	05:19 21:52	05:05 22:16	05:38 21:49	06:33 20:45	07:29 19:29	18:26 17:17	08:25 16:24
27	08:35 17:06	07:33 18:09	17:31 (6) 06:25	19:03 21:01	06:11 21:53	05:17 22:16	05:05 22:16	05:40 21:47	06:35 20:43	07:31 19:26	18:28 17:15	08:58 16:19
28	08:34 17:08	07:31 18:11	06:22 19:05	06:09 21:03	05:16 21:55	05:06 22:16	05:42 21:46	06:37 20:41	07:33 19:24	07:30 17:13	16:45 (5) 16:42 (5)	08:29 16:22
29	08:32 17:10	07:29 18:11	06:20 20:07	06:07 21:05	05:15 21:56	05:06 22:15	05:43 21:44	06:38 20:38	07:34 19:21	07:31 17:11	16:34 (5) 16:40 (5)	08:30 16:21
30	08:31 17:12	07:28 18:07	06:19 20:09	06:04 21:07	05:14 21:57	05:07 22:15	05:45 21:42	06:40 20:36	07:36 19:19	07:33 17:09	16:34 (5) 16:37 (5)	08:32 16:21
31	08:29 17:14	07:24 18:09	07:15 20:10	05:13 21:59	05:07 21:59	05:47 21:40	06:42 20:33	07:35 17:07	08:20 16:24	09:08 16:22	08:58 16:22	08:58 16:22
Potential sun hours	248	272	367	421	496	513	515	461	382	328	257	231
Total, worst case		246								242		
Sun reduction		0.22								0.23		
Oper. time red.		1.00								1.00		
Wind dir. red.		0.58								0.58		
Total reduction		0.13								0.14		
Total, real		32								33		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: M - H13

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June
1	08:58 16:24	08:27 17:16	07:29 18:13	07:13 20:12	08:04 (1) 08:21 (1)	06:02 21:09
2	08:58 16:25	08:25 17:18	07:26 18:15	07:10 20:14	08:09 (1) 08:16 (1)	06:00 21:11
3	08:58 16:26	08:24 17:20	07:24 18:17	07:08 20:16	05:58 21:13	05:10 22:02
4	08:58 16:28	08:22 17:22	07:22 18:19	07:05 20:18	05:56 21:14	05:09 22:03
5	08:57 16:29	08:20 17:24	07:19 18:21	07:03 20:20	05:54 21:16	05:08 22:05
6	08:57 16:30	08:18 17:26	07:17 18:23	07:00 20:22	05:52 21:18	05:08 22:06
7	08:56 16:32	08:16 17:28	07:14 18:25	06:58 20:24	05:50 21:20	05:07 22:07
8	08:56 16:33	08:14 17:30	07:12 18:27	06:55 20:26	05:48 21:22	05:06 22:08
9	08:55 16:34	08:12 17:32	07:10 18:29	06:53 20:27	05:46 21:23	05:06 22:09
10	08:55 16:36	08:10 17:34	07:07 18:31	06:50 20:29	05:44 21:25	05:05 22:09
11	08:54 16:37	08:08 17:37	07:05 18:32	07:29 (1) 07:30 (1)	06:48 20:31	05:05 21:27
12	08:53 16:39	08:06 17:39	07:02 18:34	07:26 (1) 07:32 (1)	06:46 20:33	05:04 21:29
13	08:52 16:41	08:04 17:41	07:00 18:36	07:24 (1) 07:33 (1)	06:43 20:35	05:39 21:31
14	08:51 16:42	08:02 17:43	06:57 18:38	07:21 (1) 07:34 (1)	06:41 20:37	05:37 21:32
15	08:50 16:44	08:00 17:45	06:55 18:40	07:19 (1) 07:35 (1)	06:38 20:39	05:35 21:34
16	08:49 16:46	07:58 17:47	06:52 18:42	07:16 (1) 07:35 (1)	06:36 20:41	05:34 21:36
17	08:48 16:47	07:56 17:49	06:50 18:44	07:14 (1) 07:36 (1)	06:34 20:43	05:32 21:37
18	08:47 16:49	07:54 17:51	06:47 18:46	07:11 (1) 07:36 (1)	06:31 20:44	05:30 21:39
19	08:46 16:51	07:51 17:53	06:45 18:48	07:09 (1) 07:36 (1)	06:29 20:46	05:29 21:41
20	08:45 16:53	07:49 17:55	06:42 18:50	07:06 (1) 07:36 (1)	06:27 20:48	05:27 21:42
21	08:44 16:55	07:47 17:57	06:40 18:52	07:04 (1) 07:36 (1)	06:24 20:50	05:26 21:44
22	08:42 16:57	07:45 17:59	06:37 18:53	07:01 (1) 07:35 (1)	06:22 20:52	05:24 21:46
23	08:41 16:58	07:43 18:01	06:35 18:55	06:59 (1) 07:35 (1)	06:20 20:54	05:23 21:47
24	08:40 17:00	07:40 18:03	06:32 18:57	06:57 (1) 07:34 (1)	06:18 20:56	05:21 21:49
25	08:38 17:02	07:38 18:05	06:30 18:59	06:57 (1) 07:33 (1)	06:15 20:58	05:20 21:50
26	08:37 17:04	07:36 18:07	06:27 19:01	06:57 (1) 07:32 (1)	06:13 20:59	05:19 21:52
27	08:35 17:06	07:33 18:09	06:25 19:03	06:58 (1) 07:31 (1)	06:11 21:01	05:17 21:53
28	08:34 17:08	07:31 18:11	06:22 19:05	06:58 (1) 07:29 (1)	06:09 21:03	05:16 21:55
29	08:32 17:10		07:20 20:07	08:00 (1) 08:28 (1)	06:07 21:05	05:15 21:56
30	08:31 17:12		07:18 20:09	08:00 (1) 08:26 (1)	06:04 21:07	05:14 21:57
31	08:29 17:14		07:15 20:11	08:02 (1) 08:24 (1)	06:04 21:07	05:13 21:59
Potential sun hours	248	272	367	421	496	513
Total, worst case			518	24	76	932
Sun reduction			0.22	0.34	0.36	0.26
Oper. time red.			1.00	1.00	1.00	1.00
Wind dir. red.			0.59	0.59	0.63	0.63
Total reduction			0.13	0.20	0.23	0.16
Total, real			69	5	17	152

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: M - H13  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	July	August	September	October	November	December		
1	05:08	21:06 (6)	05:48	06:44	07:38	08:05 (1)	07:37	08:33
	22:15	32 21:38 (6)	21:39	20:31	19:16	7 08:12 (1)	17:05	16:19
2	05:08	21:06 (6)	05:50	06:46	07:40	08:07 (1)	07:39	08:35
	22:14	32 21:38 (6)	21:37	20:28	19:14	3 08:10 (1)	17:03	16:19
3	05:09	21:07 (6)	05:52	06:47	07:42		07:41	08:36
	22:14	31 21:38 (6)	21:35	20:26	19:11		17:01	16:18
4	05:10	21:08 (6)	05:54	06:49	07:44		07:43	08:38
	22:13	30 21:38 (6)	21:33	20:24	19:09		16:59	16:17
5	05:11	21:07 (6)	05:55	06:51	07:45		07:45	08:39
	22:13	29 21:36 (6)	21:31	20:21	19:06		16:57	16:16
6	05:12	21:08 (6)	05:57	06:53	07:47		07:47	08:41
	22:12	28 21:36 (6)	21:29	20:19	19:04		16:55	16:16
7	05:13	21:08 (6)	05:59	06:55	07:49		07:49	08:42
	22:12	27 21:35 (6)	21:27	20:16	19:01		16:53	16:15
8	05:14	21:09 (6)	06:01	06:56	07:51		07:51	08:43
	22:11	26 21:35 (6)	21:25	20:14	18:59		16:51	16:15
9	05:15	21:10 (6)	06:02	06:58	07:53		07:53	08:45
	22:10	24 21:34 (6)	21:23	20:11	18:57		16:49	16:15
10	05:16	21:10 (6)	06:04	07:00	08:03 (1)	07:55	07:55	08:46
	22:09	23 21:33 (6)	21:21	20:09	5 08:08 (1)	18:54	16:47	16:14
11	05:17	21:11 (6)	06:06	07:02	07:58 (1)	07:57	07:57	08:47
	22:08	22 21:33 (6)	21:19	20:06	15 08:13 (1)	18:52	16:46	16:14
12	05:18	21:13 (6)	06:08	07:04	07:55 (1)	07:59	07:59	08:48
	22:07	20 21:33 (6)	21:17	20:04	21 08:16 (1)	18:49	16:44	16:14
13	05:20	21:14 (6)	06:09	07:05	07:52 (1)	08:00	08:01	08:49
	22:06	18 21:32 (6)	21:15	20:01	25 08:17 (1)	18:47	16:42	16:14
14	05:21	21:15 (6)	06:11	07:07	07:50 (1)	08:02	08:03	08:50
	22:05	16 21:31 (6)	21:13	19:59	28 08:18 (1)	18:45	16:41	16:14
15	05:22	21:16 (6)	06:13	07:09	07:49 (1)	08:04	08:05	08:51
	22:04	13 21:29 (6)	21:10	19:56	31 08:20 (1)	18:42	16:39	16:14
16	05:24	21:17 (6)	06:15	07:11	07:48 (1)	08:06	08:07	08:52
	22:03	11 21:28 (6)	21:08	19:54	33 08:21 (1)	18:40	16:37	16:14
17	05:25	21:20 (6)	06:17	07:13	07:46 (1)	08:08	08:09	08:53
	22:02	8 21:28 (6)	21:06	19:51	34 08:20 (1)	18:37	16:36	16:14
18	05:26	06:18	07:14	07:14	07:45 (1)	08:10	08:11	08:54
	22:01	06:18	19:49	36 08:21 (1)	18:35	16:34	16:14	
19	05:28	06:20	07:16	07:44 (1)	08:12	08:12	08:12	08:55
	21:59	21:01	19:46	37 08:21 (1)	18:33	16:33	16:14	
20	05:29	06:22	07:18	07:45 (1)	08:14	08:14	08:14	08:55
	21:58	20:59	19:44	36 08:21 (1)	18:31	16:32	16:15	
21	05:31	06:24	07:20	07:46 (1)	08:16	08:16	08:16	08:56
	21:56	20:57	19:41	35 08:21 (1)	18:28	16:30	16:15	
22	05:32	06:26	07:22	07:48 (1)	08:18	08:18	08:18	08:56
	21:55	20:55	19:39	32 08:20 (1)	18:26	16:29	16:16	
23	05:34	06:28	07:23	07:50 (1)	08:20	08:20	08:20	08:57
	21:54	20:52	19:36	30 08:20 (1)	18:24	16:28	16:16	
24	05:35	06:29	07:25	07:52 (1)	08:22	08:22	08:22	08:57
	21:52	20:50	19:34	28 08:20 (1)	18:22	16:26	16:17	
25	05:37	06:31	07:27	07:54 (1)	07:24	08:23	08:23	08:58
	21:51	20:48	19:31	25 08:19 (1)	17:19	16:25	16:17	
26	05:38	06:33	07:29	07:55 (1)	07:26	08:25	08:25	08:58
	21:49	20:45	19:29	23 08:18 (1)	17:17	16:24	16:18	
27	05:40	06:35	07:31	07:57 (1)	07:28	08:27	08:27	08:58
	21:47	20:43	19:26	20 08:17 (1)	17:15	16:23	16:19	
28	05:42	06:37	07:33	07:59 (1)	07:30	08:28	08:28	08:58
	21:46	20:41	19:24	17 08:16 (1)	17:13	16:22	16:20	
29	05:43	06:38	07:34	08:01 (1)	07:31	08:30	08:30	08:58
	21:44	20:38	19:21	14 08:15 (1)	17:11	16:21	16:21	
30	05:45	06:40	07:36	08:03 (1)	07:33	08:32	08:32	08:58
	21:42	20:36	19:19	11 08:14 (1)	17:09	16:20	16:22	
31	05:47	06:42			07:35		08:58	
	21:40	20:33			17:07		16:23	
Potential sun hours	515	461	382	328	257	231		
Total, worst case	390		536	10				
Sun reduction	0.27		0.29	0.23				
Oper. time red.	1.00		1.00	1.00				
Wind dir. red.	0.63		0.59	0.59				
Total reduction	0.17		0.17	0.14				
Total, real	66		93	1				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: N - H14

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January	February	March	April	May	June			
1	08:58 16:24	08:27 17:16	16:03 (16) 18:13	07:29 15	17:29 (14) 17:44 (14)	07:12 20:12	18:28 (15) 18:45 (15)	06:02 21:09	05:11 22:00
2	08:58 16:25	08:25 17:18	16:02 (16) 18:15	07:26 14	17:29 (14) 17:43 (14)	07:10 20:14	18:33 (15) 18:40 (15)	06:00 21:11	05:10 22:01
3	08:58 16:26	08:24 17:20	16:01 (16) 18:17	07:24 10	17:31 (14) 17:41 (14)	07:07 20:16	05:58 21:13	05:10 22:02	
4	08:58 16:27	08:22 17:22	16:01 (16) 18:19	07:21 5	17:33 (14) 17:38 (14)	07:05 20:18	05:56 21:14	05:09 22:03	
5	08:57 16:28	08:20 17:24	16:01 (16) 18:21	07:19 18:21	07:02 20:20	05:54 21:16	05:08 22:05		
6	08:57 16:30	08:18 17:26	16:00 (16) 18:23	07:17 18:23	07:00 20:22	05:52 21:18	05:07 22:06		
7	08:56 16:31	08:16 17:28	16:00 (16) 18:24	07:14 14	17:36 (15) 17:50 (15)	06:58 20:24	05:50 21:20	05:06 22:07	
8	08:56 16:33	08:14 17:30	16:00 (16) 18:26	07:12 21	17:32 (15) 17:53 (15)	06:55 20:26	05:48 21:22	05:06 22:08	
9	08:55 16:34	08:12 17:32	15:59 (16) 18:28	07:09 26	17:30 (15) 17:56 (15)	06:53 20:27	05:46 21:23	05:05 22:09	
10	08:55 16:36	08:10 17:34	15:59 (16) 18:30	07:07 29	17:28 (15) 17:57 (15)	06:50 20:29	05:44 21:25	05:05 22:09	
11	08:54 16:37	08:08 17:36	15:59 (16) 18:32	07:05 33	17:26 (15) 17:59 (15)	06:48 20:31	05:42 21:27	05:04 22:10	
12	08:53 16:39	08:06 17:38	15:59 (16) 18:34	07:02 35	17:24 (15) 17:59 (15)	06:45 20:33	05:40 21:29	05:04 22:11	
13	08:52 16:40	08:04 17:40	16:00 (16) 18:36	07:00 36	17:24 (15) 18:00 (15)	06:43 20:35	05:38 21:31	05:04 22:12	
14	08:51 16:42	08:02 17:42	16:00 (16) 18:38	06:57 38	17:22 (15) 18:00 (15)	06:41 20:37	05:37 21:32	05:03 22:12	
15	08:51 16:44	08:00 17:44	16:00 (16) 18:40	06:55 40	17:21 (15) 18:01 (15)	06:38 20:39	05:35 21:34	05:03 22:13	
16	08:50 16:45	07:58 17:46	16:01 (16) 18:42	06:52 41	17:20 (15) 18:01 (15)	06:36 20:41	05:33 21:36	05:03 22:14	
17	08:48 16:47	07:56 17:49	16:02 (16) 18:44	06:50 42	17:20 (15) 18:02 (15)	06:33 20:42	05:32 21:37	05:03 22:14	
18	08:47 16:49	07:54 17:51	16:03 (16) 18:46	06:47 42	17:19 (15) 18:01 (15)	06:31 20:44	05:30 21:39	05:03 22:15	
19	08:46 16:51	07:51 17:53	16:03 (16) 18:48	06:45 43	17:19 (15) 18:02 (15)	06:29 20:46	05:28 21:41	05:03 22:15	
20	08:45 16:53	07:49 17:55	16:05 (16) 18:50	06:42 43	17:18 (15) 18:01 (15)	06:26 20:48	05:27 21:42	05:03 22:15	
21	08:44 16:54	07:47 17:57	16:07 (16) 18:51	06:40 42	17:19 (15) 18:01 (15)	06:24 20:50	05:25 21:44	05:03 22:16	
22	08:42 16:56	07:45 17:59	16:08 (16) 18:53	06:37 42	17:18 (15) 18:00 (15)	06:22 20:52	05:24 21:46	05:03 22:16	
23	08:41 16:58	07:42 18:01	16:11 (16) 18:55	06:35 41	17:19 (15) 18:00 (15)	06:20 20:54	05:22 21:47	05:03 22:16	
24	08:40 17:00	07:40 18:03	16:17 (16) 18:57	06:32 40	17:18 (15) 17:58 (15)	06:17 20:56	05:21 21:49	05:04 22:16	
25	08:38 17:02	07:38 18:05	17:29 (14) 18:59	06:30 39	17:19 (15) 17:58 (15)	06:15 20:58	05:20 21:50	05:04 22:16	
26	08:37 17:04	16:11 (16) 18:07	07:36 10	06:27 37	17:19 (15) 17:56 (15)	06:13 20:59	05:18 21:52	05:04 22:16	
27	08:35 17:06	16:09 (16) 18:09	07:33 12	06:25 36	17:20 (15) 17:56 (15)	06:11 21:01	05:17 21:53	05:05 22:16	
28	08:34 17:08	16:07 (16) 18:11	07:31 15	06:22 33	17:21 (15) 17:54 (15)	06:08 21:03	05:16 21:55	05:05 22:16	
29	08:32 17:10	16:05 (16) 16:29 (16)	07:20 20:07	06:20 31	18:22 (15) 18:53 (15)	06:06 21:05	05:15 21:56	05:06 22:15	
30	08:31 17:12	16:04 (16) 16:30 (16)	07:17 20:08	06:19 27	18:23 (15) 18:50 (15)	06:04 21:07	05:14 21:57	05:07 22:15	
31	08:29 17:14	16:03 (16) 16:32 (16)	07:15 20:10	06:18 22	18:26 (15) 18:48 (15)	05:12 21:59	05:12 21:59	05:07 22:15	
Potential sun hours	248	272	367	421	496	513			
Total, worst case	125	833	917	24					
Sun reduction	0.17	0.22	0.22	0.34					
Oper. time red.	1.00	1.00	1.00	1.00					
Wind dir. red.	0.60	0.60	0.57	0.57					
Total reduction	0.10	0.13	0.13	0.20					
Total, real	13	111	117	5					

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)





## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: N - H14

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	July	August	September	October	November	December
1	05:07 22:15	05:48 21:39	06:44 20:31	07:38 19:16	18:04 (15) 07:37	15:29 (16) 08:33
2	05:08 22:14	05:50 21:37	06:45 20:28	07:40 19:14	18:04 (15) 07:39	15:28 (16) 08:35
3	05:09 22:14	05:52 21:35	06:47 20:26	07:42 19:11	18:05 (15) 07:41	15:29 (16) 08:36
4	05:10 22:14	05:53 21:33	06:49 20:24	07:44 19:09	18:06 (15) 07:43	15:30 (16) 08:38
5	05:11 22:13	05:55 21:31	06:51 20:21	07:45 19:07	18:08 (15) 07:45	15:30 (16) 08:39
6	05:11 22:12	05:57 21:29	06:53 20:19	07:47 19:04	18:11 (15) 07:47	15:30 (16) 08:41
7	05:12 22:12	05:59 21:27	06:54 20:16	07:49 19:01	18:15 (15) 07:49	15:31 (16) 08:42
8	05:14 22:11	06:00 21:25	06:56 20:14	07:51 18:59	18:23 (15) 07:51	16:06 (16) 08:43
9	05:15 22:10	06:02 21:23	06:58 20:11	07:53 18:56	16:51 16:49	16:05 (16) 16:14
10	05:16 22:09	06:04 21:21	07:00 20:09	07:55 18:28 (15) 18:32 (15)	07:55 18:06 (14) 18:14 (14)	15:34 (16) 16:04 (16) 16:14
11	05:17 22:08	06:06 21:19	07:02 20:06	07:57 18:22 (15) 18:38 (15)	07:57 18:04 (14) 18:16 (14)	15:35 (16) 08:47 16:03 (16)
12	05:18 22:07	06:07 21:17	07:03 20:04	07:58 18:39 (15) 18:15 (15)	07:59 18:17 (14) 18:02 (14)	15:36 (16) 08:48 16:02 (16)
13	05:19 22:06	06:09 21:15	07:05 20:01	08:00 18:41 (15) 18:13 (15)	08:01 18:17 (14) 18:01 (14)	15:37 (16) 08:49 16:01 (16)
14	05:21 22:05	06:11 21:13	07:07 19:59	08:02 18:43 (15) 18:11 (15)	08:03 18:15 (14) 18:01 (14)	15:39 (16) 16:13 15:41 (16)
15	05:22 22:04	06:13 21:10	07:09 19:56	08:04 18:44 (15) 18:09 (15)	08:05 18:13 (14) 18:01 (14)	08:51 16:13 15:44 (16)
16	05:23 22:03	06:15 21:08	07:11 19:54	08:06 18:44 (15) 18:08 (15)	08:07 18:10 (14) 18:01 (14)	08:52 16:13 08:53
17	05:25 22:02	06:16 21:06	07:12 19:51	08:08 18:45 (15) 18:07 (15)	08:09 18:08 (14) 16:46 (16)	08:54 16:14 08:11
18	05:26 22:01	06:18 21:04	07:14 19:49	08:10 18:45 (15) 18:06 (15)	08:11 18:05 (14) 16:41 (16)	08:54 16:14 08:12
19	05:27 21:59	06:20 21:01	07:16 19:46	08:12 18:46 (15) 18:04 (15)	08:12 18:33 16:39 (16)	08:55 16:14 08:14
20	05:29 21:58	06:22 20:59	07:18 19:44	08:14 18:45 (15) 18:04 (15)	08:14 18:30 17:01 (16)	08:55 16:14 16:31
21	05:30 21:57	06:24 20:57	07:20 19:41	08:16 18:45 (15) 18:03 (15)	08:16 18:28 16:35 (16)	08:56 16:15 08:18
22	05:32 21:55	06:25 20:55	07:21 19:39	08:18 18:45 (15) 18:03 (15)	08:18 18:26 17:04 (16)	08:56 16:15 16:29
23	05:33 21:54	06:27 20:52	07:23 19:36	08:20 18:03 (15) 18:45 (15)	08:20 16:33 (16) 17:05 (16)	08:57 16:16 16:27
24	05:35 21:52	06:29 20:50	07:25 19:34	08:22 18:45 (15) 18:03 (15)	08:22 18:21 17:06 (16)	08:57 16:16 16:26
25	05:37 21:51	06:31 20:48	07:27 19:31	08:24 18:03 (15) 18:45 (15)	08:23 15:31 (16) 17:19	08:58 16:17 16:25
26	05:38 21:49	06:33 20:45	07:29 19:28	08:26 18:02 (15) 18:44 (15)	08:25 15:30 (16) 17:17	08:58 16:18 16:24
27	05:40 21:47	06:35 20:43	07:31 19:26	08:27 18:02 (15) 18:43 (15)	08:27 15:29 (16) 16:07 (16)	08:58 16:19 16:23
28	05:41 21:46	06:36 20:40	07:32 19:23	08:29 18:02 (15) 18:42 (15)	08:29 15:30 (16) 16:08 (16)	08:58 16:19 16:22
29	05:43 21:44	06:38 20:38	07:34 19:21	08:30 18:03 (15) 18:42 (15)	08:30 15:29 (16) 16:08 (16)	08:58 16:20 16:21
30	05:45 21:42	06:40 20:36	07:36 19:18	08:33 18:03 (15) 18:41 (15)	08:32 15:29 (16) 17:08	08:59 16:21 16:20
31	05:46 21:40	06:42 20:33		07:35 17:06	15:29 (16) 16:08 (16)	08:58 16:22
Potential sun hours	515	461	383	327	257	230
Total, worst case			731	705	483	
Sun reduction			0.29	0.23	0.20	
Oper. time red.			1.00	1.00	1.00	
Wind dir. red.			0.57	0.59	0.60	
Total reduction			0.17	0.14	0.12	
Total, real			122	97	58	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: O - H15

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June
1	08:58 16:24	08:27 17:16	07:29 18:13	16:23 (16) 17:45 (14)	07:12 20:12	18:37 (15) 21:09
2	08:58 16:25	08:25 17:18	07:26 18:15	16:24 (16) 17:47 (14)	07:10 20:14	18:38 (15) 21:11
3	08:58 16:26	08:24 17:20	07:24 18:17	16:26 (16) 17:49 (14)	07:07 20:16	18:37 (15) 21:13
4	08:58 16:27	08:22 17:22	07:21 18:19	16:27 (16) 17:51 (14)	07:05 20:18	18:38 (15) 21:14
5	08:57 16:28	08:20 17:24	07:19 18:21	16:30 (16) 17:52 (14)	07:02 20:20	18:39 (15) 21:16
6	08:57 16:30	08:18 17:26	07:17 18:23	16:34 (16) 17:51 (14)	07:00 20:22	18:39 (15) 21:18
7	08:56 16:31	08:16 17:28	16:37 (16) 18:24	07:14 17:50 (14)	06:58 20:24	18:40 (15) 21:20
8	08:56 16:33	08:14 17:30	16:32 (16) 16:47 (16)	07:12 18:26	17:40 (14) 17:47 (14)	06:55 20:25
9	08:55 16:34	08:12 17:32	16:29 (16) 16:49 (16)	07:09 18:28	06:53 20:27	18:41 (15) 21:23
10	08:55 16:36	08:10 17:34	16:27 (16) 16:51 (16)	07:07 18:30	06:50 20:29	18:42 (15) 21:25
11	08:54 16:37	08:08 17:36	16:26 (16) 16:53 (16)	07:05 18:32	06:48 20:31	18:44 (15) 21:27
12	08:53 16:39	08:06 17:38	16:25 (16) 16:55 (16)	07:02 18:34	06:45 20:33	18:47 (15) 21:29
13	08:52 16:40	08:04 17:40	16:24 (16) 16:56 (16)	07:00 18:36	06:43 20:35	18:49 (15) 21:31
14	08:51 16:42	08:02 17:42	16:23 (16) 16:57 (16)	06:57 18:38	06:41 20:37	05:37 21:32
15	08:51 16:44	08:00 17:44	16:22 (16) 16:57 (16)	06:55 18:40	06:38 20:39	05:35 21:34
16	08:50 16:45	07:58 17:46	16:21 (16) 16:58 (16)	06:52 18:42	06:36 20:41	05:33 21:36
17	08:48 16:47	07:56 17:49	16:21 (16) 16:59 (16)	06:50 18:44	06:33 20:42	05:32 21:37
18	08:47 16:49	07:54 17:51	16:21 (16) 17:00 (16)	06:47 18:46	17:57 (15) 18:08 (15)	06:31 20:44
19	08:46 16:51	07:51 17:53	16:20 (16) 16:59 (16)	06:45 18:48	17:53 (15) 18:12 (15)	06:29 20:46
20	08:45 16:53	07:49 17:55	16:20 (16) 17:00 (16)	06:42 18:50	17:50 (15) 18:14 (15)	06:26 20:48
21	08:44 16:54	07:47 17:57	16:20 (16) 17:00 (16)	06:40 18:51	17:48 (15) 18:16 (15)	06:24 20:50
22	08:42 16:56	07:45 17:59	16:19 (16) 16:59 (16)	06:37 18:53	17:46 (15) 18:17 (15)	06:22 20:52
23	08:41 16:58	07:42 18:01	16:20 (16) 16:59 (16)	06:35 18:55	17:45 (15) 18:18 (15)	06:20 20:54
24	08:40 17:00	07:40 18:03	16:20 (16) 16:59 (16)	06:32 18:57	17:43 (15) 18:19 (15)	06:17 20:56
25	08:38 17:02	07:38 18:05	16:20 (16) 16:58 (16)	06:30 18:59	17:42 (15) 18:20 (15)	06:15 20:58
26	08:37 17:04	07:36 18:07	16:21 (16) 16:58 (16)	06:27 19:01	17:41 (15) 18:20 (15)	06:13 20:59
27	08:35 17:06	07:33 18:09	16:21 (16) 16:57 (16)	06:25 19:03	17:40 (15) 18:20 (15)	06:11 21:01
28	08:34 17:08	07:31 18:11	16:22 (16) 17:43 (14)	06:22 19:05	17:39 (15) 18:20 (15)	06:08 21:03
29	08:32 17:10		07:20 20:07	18:39 (15) 19:20 (15)	06:06 21:05	05:15 21:56
30	08:31 17:12		07:17 20:08	18:38 (15) 19:20 (15)	06:04 21:07	05:14 21:57
31	08:29 17:14		07:15 20:10	18:38 (15) 19:20 (15)		05:12 21:59
Potential sun hours	248	272	367	421	496	513
Total, worst case		722	691	419		
Sun reduction		0.22	0.22	0.34		
Oper. time red.		1.00	1.00	1.00		
Wind dir. red.		0.58	0.58	0.58		
Total reduction		0.13	0.13	0.20		
Total, real		93	89	83		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: O - H15

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	July	August	September	October	November	December
1	05:07 22:15	05:48 21:39	06:44 20:31	18:43 (15) 19:07 (15)	07:38 17:04	08:33 16:19
2	05:08 22:14	05:50 21:37	06:45 20:28	18:41 (15) 19:08 (15)	07:40 17:14	08:35 16:18
3	05:09 22:14	05:52 21:35	06:47 20:26	18:39 (15) 19:10 (15)	07:42 17:11	08:36 16:17
4	05:10 22:14	05:53 21:33	06:49 20:24	18:37 (15) 19:10 (15)	07:44 17:09	08:38 16:17
5	05:11 22:13	05:55 21:31	06:51 20:21	18:36 (15) 19:11 (15)	07:45 17:06	08:39 16:16
6	05:12 22:12	05:57 21:29	06:53 20:19	18:35 (15) 19:12 (15)	07:47 17:04	08:41 16:16
7	05:12 22:12	05:59 21:27	06:54 20:16	18:34 (15) 19:12 (15)	07:49 17:01	08:42 16:15
8	05:14 22:11	06:00 21:25	06:56 20:14	18:32 (15) 19:12 (15)	07:51 18:59	08:43 16:15
9	05:15 22:10	06:02 21:23	06:58 20:11	18:32 (15) 19:12 (15)	07:53 18:56	08:45 16:14
10	05:16 22:09	06:04 21:21	07:00 20:09	18:31 (15) 19:12 (15)	07:55 18:54	08:46 16:14
11	05:17 22:08	06:06 21:19	07:02 20:06	18:31 (15) 19:12 (15)	07:57 18:51	08:47 16:14
12	05:18 22:07	06:07 21:17	07:03 20:04	18:29 (15) 19:11 (15)	07:58 18:49	08:48 16:14
13	05:19 22:06	06:09 21:15	07:05 20:01	18:29 (15) 19:11 (15)	08:00 18:47	08:01 16:13
14	05:21 22:05	06:11 21:13	07:07 19:59	18:29 (15) 19:11 (15)	08:02 18:44	08:03 16:13
15	05:22 22:04	06:13 21:10	07:09 19:56	18:29 (15) 19:10 (15)	08:04 18:42	08:05 16:39
16	05:23 22:03	06:15 21:08	07:11 19:54	18:29 (15) 19:09 (15)	08:06 18:40	08:07 16:37
17	05:25 22:02	06:16 21:06	07:12 19:51	18:29 (15) 19:08 (15)	08:08 18:37	08:09 16:36
18	05:26 22:01	06:18 21:04	07:14 19:49	18:30 (15) 19:07 (15)	08:10 18:35	08:11 16:34
19	05:27 21:59	06:20 21:01	07:16 19:46	18:30 (15) 19:06 (15)	08:12 18:33	08:12 16:33
20	05:29 21:58	06:22 20:59	07:18 19:44	18:30 (15) 19:04 (15)	08:14 18:30	08:14 16:31
21	05:30 21:57	06:24 20:57	07:20 19:41	18:31 (15) 19:03 (15)	08:16 18:28	08:16 16:30
22	05:32 21:55	06:25 20:55	07:21 19:39	18:32 (15) 19:01 (15)	08:18 18:26	08:18 16:29
23	05:33 21:54	06:27 20:52	07:23 19:36	18:34 (15) 18:59 (15)	08:20 18:24	08:20 16:27
24	05:35 21:52	06:29 20:50	07:25 19:33	18:36 (15) 18:57 (15)	08:22 18:21	08:22 16:26
25	05:37 21:51	06:31 20:48	07:27 19:31	18:39 (15) 18:53 (15)	07:24 17:19	08:23 16:25
26	05:38 21:49	06:33 20:45	07:29 19:28	07:26 17:17	08:25 16:28	08:25 16:24
27	05:40 21:47	06:35 20:43	07:31 19:26	07:27 17:15	08:27 16:27	08:27 16:23
28	05:41 21:46	06:36 20:40	07:32 19:23	07:29 17:13	08:29 16:27	08:29 16:22
29	05:43 21:44	06:38 20:38	07:34 19:21	07:31 17:11	08:30 16:25	08:30 16:21
30	05:45 21:42	06:40 20:36	18:50 (15) 19:02 (15)	07:36 19:18	07:33 17:08	08:32 16:20
31	05:46 21:40	06:42 20:33	18:47 (15) 19:06 (15)	07:35 17:06	07:35 16:23	08:32 16:19
Potential sun hours	515	461	383	327	257	230
Total, worst case		31	861	906	56	
Sun reduction		0.27	0.29	0.23	0.20	
Oper. time red.		1.00	1.00	1.00	1.00	
Wind dir. red.		0.58	0.58	0.58	0.58	
Total reduction		0.16	0.17	0.14	0.12	
Total, real		5	146	123	6	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: P - H16  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June
1	08:58 16:24	08:27 17:16	07:29 18:13	16:39 (16) 17:20 (16)	07:12 20:12	19:09 (15) 21:09
2	08:58 16:25	08:25 17:18	07:26 18:15	41 16:38 (16) 42 17:20 (16)	26 20:10 30 20:14	19:35 (15) 21:11
3	08:58 16:26	08:24 17:20	07:24 18:17	42 16:38 (16) 42 17:20 (16)	07:07 20:16	19:05 (15) 21:13
4	08:58 16:27	08:22 17:22	07:21 18:19	42 16:38 (16) 42 17:20 (16)	07:05 20:18	19:04 (15) 21:14
5	08:57 16:28	08:20 17:24	07:19 18:21	42 16:38 (16) 42 17:20 (16)	07:02 20:20	19:03 (15) 21:16
6	08:57 16:30	08:18 17:26	07:17 18:23	41 16:38 (16) 41 17:19 (16)	07:00 20:22	19:02 (15) 21:18
7	08:56 16:31	08:16 17:28	07:14 18:24	41 16:38 (16) 41 17:19 (16)	06:58 20:24	19:01 (15) 21:20
8	08:56 16:33	08:14 17:30	07:12 18:26	40 16:38 (16) 40 17:18 (16)	06:55 20:25	19:00 (15) 21:22
9	08:55 16:34	08:12 17:32	07:09 18:28	40 16:39 (16) 38 17:17 (16)	06:53 20:27	18:59 (15) 21:23
10	08:55 16:36	08:10 17:34	07:07 18:30	37 16:39 (16) 37 17:16 (16)	06:50 20:29	18:58 (15) 21:25
11	08:54 16:37	08:08 17:36	07:05 18:32	35 16:40 (16) 35 17:15 (16)	06:48 20:31	18:58 (15) 21:27
12	08:53 16:39	08:06 17:38	07:02 18:34	32 16:41 (16) 32 17:13 (16)	06:45 20:33	18:58 (15) 21:29
13	08:52 16:40	08:04 17:40	07:00 18:36	29 16:43 (16) 29 17:12 (16)	06:43 20:35	18:58 (15) 21:31
14	08:51 16:42	08:02 17:42	06:57 18:38	26 16:44 (16) 26 17:10 (16)	06:41 20:37	18:58 (15) 21:32
15	08:50 16:44	08:00 17:44	06:55 18:40	22 16:46 (16) 22 17:08 (16)	06:38 20:39	18:58 (15) 21:34
16	08:50 16:45	07:58 17:46	06:52 18:42	15 16:49 (16) 15 17:04 (16)	06:36 20:41	18:58 (15) 21:36
17	08:48 16:47	07:56 17:49	06:50 18:44	06:33 20:42	39 18:58 (15) 39 19:37 (15)	05:32 21:37
18	08:47 16:49	07:54 17:51	16:57 (16) 17:05 (16)	06:47 18:46	06:31 20:44	18:59 (15) 21:39
19	08:46 16:51	07:51 17:53	16:52 (16) 17:09 (16)	06:45 18:48	06:29 20:46	19:00 (15) 21:41
20	08:45 16:53	07:49 17:55	16:49 (16) 17:12 (16)	06:42 18:50	06:26 20:48	19:00 (15) 21:42
21	08:44 16:54	07:47 17:57	16:48 (16) 17:14 (16)	06:40 18:51	06:24 20:50	19:01 (15) 21:44
22	08:42 16:56	07:45 17:59	16:45 (16) 17:15 (16)	06:37 18:53	06:22 20:52	19:02 (15) 21:46
23	08:41 16:58	07:42 18:01	16:44 (16) 17:16 (16)	06:35 18:55	06:20 20:54	19:04 (15) 21:47
24	08:40 17:00	07:40 18:03	16:43 (16) 17:18 (16)	06:32 18:57	06:17 20:56	19:06 (15) 21:49
25	08:38 17:02	07:38 18:05	16:42 (16) 17:18 (16)	06:30 18:59	06:15 20:58	19:07 (15) 21:50
26	08:37 17:04	07:36 18:07	16:41 (16) 17:19 (16)	06:27 19:01	06:13 20:59	19:10 (15) 21:52
27	08:35 17:06	07:33 18:09	16:40 (16) 17:19 (16)	06:25 19:03	06:11 21:01	05:17 21:53
28	08:34 17:08	07:31 18:11	16:39 (16) 17:20 (16)	06:22 19:05	06:08 21:03	05:16 21:55
29	08:32 17:10		07:20 20:07	3 19:22 (15) 3 19:25 (15)	06:06 21:05	05:15 21:56
30	08:31 17:12		07:17 20:08	16 19:15 (15) 16 19:31 (15)	06:04 21:07	05:14 21:57
31	08:29 17:14		07:15 20:10	22 19:12 (15) 22 19:34 (15)		05:12 21:59
Potential sun hours	248	272	367	421	496	513
Total, worst case		325	606	898		
Sun reduction		0.22	0.22	0.34		
Oper. time red.		1.00	1.00	1.00		
Wind dir. red.		0.58	0.58	0.59		
Total reduction		0.13	0.13	0.20		
Total, real		42	79	182		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: P - H16

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	July	August	September	October	November	December	
1	05:07 22:15	05:48 21:39	06:44 20:31	18:57 (15) 19:39 (15)	07:38 19:16	17:21 (16) 17:04	08:33 16:19
2	05:08 22:14	05:50 21:37	06:45 20:28	18:57 (15) 19:39 (15)	07:40 19:14	17:19 (16) 17:02	08:35 16:18
3	05:09 22:14	05:52 21:35	06:47 20:26	18:57 (15) 19:39 (15)	07:42 19:11	17:17 (16) 17:00	08:36 16:17
4	05:10 22:14	05:53 21:33	06:49 20:24	18:57 (15) 19:37 (15)	07:44 19:09	17:16 (16) 16:58	08:38 16:17
5	05:11 22:13	05:55 21:31	06:51 20:21	18:57 (15) 19:37 (15)	07:45 19:06	17:15 (16) 16:56	08:39 16:16
6	05:12 22:12	05:57 21:29	06:53 20:19	18:58 (15) 19:36 (15)	07:47 19:04	17:15 (16) 16:54	08:41 16:16
7	05:12 22:12	05:59 21:27	06:54 20:16	18:58 (15) 19:35 (15)	07:49 19:01	17:14 (16) 16:53	08:42 16:15
8	05:14 22:11	06:00 21:25	06:56 20:14	18:58 (15) 19:33 (15)	07:51 18:59	17:13 (16) 16:51	08:43 16:15
9	05:15 22:10	06:02 21:23	06:58 20:11	18:59 (15) 19:32 (15)	07:53 18:56	17:13 (16) 16:49	08:45 16:14
10	05:16 22:09	06:04 21:21	07:00 20:09	19:00 (15) 19:30 (15)	07:55 18:54	17:13 (16) 16:47	08:46 16:14
11	05:17 22:08	06:06 21:19	07:02 20:06	19:02 (15) 19:29 (15)	07:57 18:51	17:12 (16) 16:45	08:47 16:14
12	05:18 22:07	06:07 21:17	07:03 20:04	19:03 (15) 19:25 (15)	07:58 18:49	17:12 (16) 16:44	08:48 16:14
13	05:19 22:06	06:09 21:15	07:05 20:01	19:05 (15) 19:22 (15)	08:00 18:47	17:13 (16) 16:42	08:49 16:13
14	05:21 22:05	06:11 21:13	07:07 19:59	19:10 (15) 19:17 (15)	08:02 18:44	17:13 (16) 16:40	08:50 16:13
15	05:22 22:04	06:13 21:10	07:09 19:56	08:04 18:42	08:05 17:52 (16)	17:13 (16) 16:39	08:51 16:13
16	05:23 22:03	06:15 21:08	07:11 19:54	08:06 18:40	08:07 17:51 (16)	17:13 (16) 16:37	08:52 16:13
17	05:25 22:02	06:16 21:06	19:17 (15) 19:30 (15)	07:12 19:51	08:08 18:37	17:14 (16) 16:36	08:53 16:14
18	05:26 22:01	06:18 21:04	19:13 (15) 19:32 (15)	07:14 19:49	08:10 18:35	17:15 (16) 16:34	08:54 16:14
19	05:27 21:59	06:20 21:01	19:11 (15) 19:35 (15)	07:16 19:46	08:12 18:33	17:16 (16) 16:33	08:55 16:14
20	05:29 21:58	06:22 20:59	19:09 (15) 19:36 (15)	07:18 19:44	08:14 18:30	17:17 (16) 16:31	08:55 16:14
21	05:30 21:57	06:24 20:57	19:07 (15) 19:37 (15)	07:20 19:41	08:16 18:28	17:18 (16) 16:30	08:56 16:15
22	05:32 21:55	06:25 20:55	19:05 (15) 19:38 (15)	07:21 19:39	08:18 18:26	17:20 (16) 16:29	08:56 16:15
23	05:33 21:54	06:27 20:52	19:04 (15) 19:39 (15)	07:23 19:36	08:20 18:24	17:23 (16) 16:27	08:57 16:16
24	05:35 21:52	06:29 20:50	19:02 (15) 19:39 (15)	07:25 19:33	08:22 18:21	17:38 (16) 16:26	08:57 16:16
25	05:37 21:51	06:31 20:48	19:02 (15) 19:40 (15)	07:27 19:31	08:24 17:19	16:25 16:25	08:58 16:17
26	05:38 21:49	06:33 20:45	19:01 (15) 19:40 (15)	07:29 19:28	08:26 17:17	16:25 16:24	08:58 16:18
27	05:40 21:47	06:35 20:43	19:00 (15) 19:41 (15)	07:31 19:26	17:32 (16) 17:44 (16)	08:27 17:15	08:58 16:19
28	05:41 21:46	06:36 20:40	18:59 (15) 19:40 (15)	07:32 19:23	17:28 (16) 17:47 (16)	08:29 17:13	08:58 16:19
29	05:43 21:44	06:38 20:38	18:59 (15) 19:40 (15)	07:34 19:21	17:25 (16) 17:50 (16)	08:30 17:11	08:58 16:20
30	05:45 21:42	06:40 20:36	18:58 (15) 19:40 (15)	07:36 19:18	17:23 (16) 17:51 (16)	08:32 16:20	08:59 16:21
31	05:46 21:40	06:42 20:33	18:58 (15) 19:40 (15)	07:35 19:16	17:08 17:06	16:20 16:22	08:58 16:22
Potential sun hours	515	461	383	327	257	230	
Total, worst case		502	536	818			
Sun reduction		0.27	0.29	0.23			
Oper. time red.		1.00	1.00	1.00			
Wind dir. red.		0.59	0.59	0.58			
Total reduction		0.16	0.17	0.14			
Total, real		81	92	112			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: Q - H17  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:58	08:27	07:29	07:13	06:02	05:12	05:08	05:48	06:44	07:38	07:37	08:33
	16:24	17:16	18:13	20:12	21:09	22:00	22:15	21:38	20:31	19:16	17:05	16:19
2	08:58	08:25	07:26	07:10	06:00	05:11	05:09	05:50	06:46	07:40	07:39	08:35
	16:25	17:18	18:15	20:14	21:11	22:01	22:14	21:37	20:28	19:14	17:03	16:19
3	08:58	08:24	07:24	07:08	05:58	05:10	05:09	05:52	06:47	07:42	07:41	08:36
	16:26	17:20	18:17	20:16	21:12	22:02	22:14	21:35	20:26	19:11	17:01	16:18
4	08:58	08:22	07:22	07:05	05:56	05:09	05:10	05:54	06:49	07:44	07:43	08:38
	16:28	17:22	18:19	20:18	21:14	22:03	22:13	21:33	20:24	19:09	16:59	16:17
5	08:57	08:20	07:19	07:03	05:54	05:08	05:11	05:55	06:51	07:45	07:45	08:39
	16:29	17:24	18:21	20:20	21:16	22:04	22:13	21:31	20:21	19:06	16:57	16:17
6	08:57	08:18	07:17	07:00	05:52	05:08	05:12	05:57	06:53	07:47	07:47	08:41
	16:30	17:26	18:23	20:22	21:18	22:05	22:12	21:29	20:19	19:04	16:55	16:16
7	08:56	08:16	07:14	06:58	05:50	05:07	05:13	05:59	06:55	07:49	07:49	08:42
	16:32	17:28	18:25	20:24	21:20	22:06	22:11	21:27	20:16	19:01	16:53	16:15
8	08:56	08:14	07:12	06:55	05:48	05:06	05:14	06:01	06:56	07:51	07:51	08:43
	16:33	17:30	18:27	20:26	21:22	22:07	22:11	21:25	20:14	18:59	16:51	16:15
9	08:55	08:12	07:09	06:53	05:46	05:06	05:15	06:02	06:58	07:53	07:53	08:45
	16:34	17:32	18:29	20:27	21:23	22:08	22:10	21:23	20:11	18:57	16:49	16:15
10	08:55	08:10	07:07	06:50	05:44	05:05	05:16	06:04	07:00	07:55	07:55	08:46
	16:36	17:34	18:30	20:29	21:25	22:09	22:09	21:21	20:09	18:54	16:47	16:14
11	08:54	08:08	07:05	06:48	05:42	05:05	05:17	06:06	07:02	07:57	07:57	08:47
	16:38	17:37	18:32	20:31	21:27	22:10	22:08	21:19	20:06	18:52	16:46	16:14
12	08:53	08:06	07:02	06:46	05:41	05:04	05:19	06:08	07:04	07:59	07:59	08:48
	16:39	17:39	18:34	20:33	21:29	22:11	22:07	21:17	20:04	18:49	16:44	16:14
13	08:52	08:04	07:00	06:43	05:39	05:04	05:20	06:10	07:05	08:00	08:01	08:49
	16:41	17:41	18:36	20:35	21:30	22:12	22:06	21:15	20:01	18:47	16:42	16:14
14	08:51	08:02	06:57	06:41	05:37	05:04	05:21	06:11	07:07	08:02	08:03	08:50
	16:42	17:43	18:38	20:37	21:32	22:12	22:05	21:12	19:59	18:45	16:41	16:14
15	08:50	08:00	06:55	06:38	05:35	05:03	05:22	06:13	07:09	08:04	08:05	08:51
	16:44	17:45	18:40	20:39	21:34	22:13	22:04	21:10	19:56	18:42	16:39	16:14
16	08:49	07:58	06:52	06:36	05:34	05:03	05:24	06:15	07:11	08:06	08:07	08:52
	16:46	17:47	18:42	20:41	21:36	22:13	22:03	21:08	19:54	18:40	16:37	16:14
17	08:48	07:56	06:50	06:34	05:32	05:03	05:25	06:17	07:13	08:08	08:09	08:53
	16:48	17:49	18:44	20:42	21:37	22:14	22:02	21:06	19:51	18:37	16:36	16:14
18	08:47	07:54	06:47	06:31	05:30	05:03	05:26	06:19	07:14	08:10	08:10	08:54
	16:49	17:51	18:46	20:44	21:39	22:14	22:00	21:04	19:49	18:35	16:34	16:14
19	08:46	07:51	06:45	06:29	05:29	05:03	05:28	06:20	07:16	08:12	08:12	08:54
	16:51	17:53	18:48	20:46	21:41	22:15	21:59	21:01	19:46	18:33	16:33	16:14
20	08:45	07:49	06:42	06:27	05:27	05:03	05:29	06:22	07:18	08:14	08:14	08:55
	16:53	17:55	18:50	20:48	21:42	22:15	21:58	20:59	19:44	18:31	16:32	16:15
21	08:44	07:47	06:40	06:24	05:26	05:03	05:31	06:24	07:20	08:16	08:16	08:56
	16:55	17:57	18:52	20:50	21:44	22:15	21:56	20:57	19:41	18:28	16:30	16:15
22	08:42	07:45	06:37	06:22	05:24	05:04	05:32	06:26	07:22	08:18	08:18	08:56
	16:57	17:59	18:53	20:52	21:45	22:15	21:55	20:55	19:39	18:26	16:29	16:16
23	08:41	07:42	06:35	06:20	05:23	05:04	05:34	06:28	07:23	08:20	08:20	08:57
	16:59	18:01	18:55	20:54	21:47	22:16	21:53	20:52	19:36	18:24	16:28	16:16
24	08:40	07:40	06:32	06:18	05:21	05:04	05:35	06:29	07:25	08:22	08:21	08:57
	17:00	18:03	18:57	20:56	21:49	22:16	21:52	20:50	19:34	18:22	16:26	16:17
25	08:38	07:38	06:30	06:15	05:20	05:04	05:37	06:31	07:27	08:24	08:23	08:57
	17:02	18:05	18:59	20:58	21:50	22:16	21:50	20:48	19:31	17:19	16:25	16:17
26	08:37	07:36	06:27	06:13	05:19	05:05	05:39	06:33	07:29	08:26	08:25	08:58
	17:04	18:07	19:01	20:59	21:52	22:16	21:49	20:45	19:29	17:17	16:24	16:18
27	08:35	07:33	06:25	06:11	05:17	05:05	05:40	06:35	07:31	08:27	08:27	08:58
	17:06	18:09	19:03	21:01	21:53	22:16	21:47	20:43	19:26	17:15	16:23	16:19
28	08:34	07:31	06:22	06:09	05:16	05:06	05:42	06:37	07:33	08:29	08:28	08:58
	17:08	18:11	19:05	21:03	21:54	22:15	21:46	20:40	19:24	17:13	16:22	16:20
29	08:32		07:20	06:07	05:15	05:06	05:43	06:38	07:34	08:31	08:30	08:58
	17:10		20:07	21:05	21:56	22:15	21:44	20:38	19:21	17:11	16:21	16:21
30	08:30		07:17	06:04	05:14	05:07	05:45	06:40	07:36	08:33	08:32	08:58
	17:12		20:09	21:07	21:57	22:15	21:42	20:36	19:19	17:09	16:20	16:22
31	08:29		07:15		05:13		05:47	06:42		07:35		08:58
	17:14		20:10		21:58		21:40	20:33		17:07		16:23
Potential sun hours	248	272	367	421	496	513	515	461	382	328	257	231
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)





### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: R - H18  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January	February	March	April	May	June
1	08:58	08:27	07:29	07:12	18:20 (16)	05:11
	16:24	17:16	18:13	20:12	18:38 (16)	22:00
2	08:58	08:25	07:26	07:10	18:25 (16)	05:11
	16:25	17:18	18:15	20:14	18:34 (16)	22:01
3	08:58	08:24	07:24	07:07	05:58	05:10
	16:26	17:20	18:17	20:16	21:12	22:02
4	08:58	08:22	07:21	07:05	05:56	05:09
	16:27	17:22	18:19	20:18	21:14	22:03
5	08:57	08:20	07:19	07:02	05:54	05:08
	16:28	17:24	18:21	20:20	21:16	22:05
6	08:57	08:18	07:17	07:00	05:52	05:07
	16:30	17:26	18:23	20:22	21:18	22:06
7	08:56	08:16	07:14	06:58	05:50	05:06
	16:31	17:28	18:24	20:24	21:20	22:07
8	08:56	08:14	07:12	17:34 (16)	06:55	05:06
	16:33	17:30	18:26	17:37 (16)	20:25	22:08
9	08:55	08:12	07:09	17:28 (16)	06:53	05:05
	16:34	17:32	18:28	17:43 (16)	20:27	22:09
10	08:55	08:10	07:07	17:24 (16)	06:50	05:05
	16:36	17:34	18:30	17:46 (16)	20:29	22:09
11	08:54	08:08	07:05	17:22 (16)	06:48	05:04
	16:37	17:36	18:32	17:48 (16)	20:31	22:10
12	08:53	08:06	07:02	17:20 (16)	06:45	05:04
	16:39	17:38	18:34	17:49 (16)	20:33	22:11
13	08:52	08:04	07:00	17:19 (16)	06:43	05:04
	16:40	17:40	18:36	17:51 (16)	20:35	22:12
14	08:51	08:02	06:57	17:17 (16)	06:41	05:03
	16:42	17:42	18:38	17:51 (16)	20:37	22:12
15	08:50	08:00	06:55	17:16 (16)	06:38	05:03
	16:44	17:44	18:40	17:52 (16)	20:39	22:13
16	08:49	07:58	06:52	17:15 (16)	06:36	05:03
	16:45	17:46	18:42	17:52 (16)	20:41	22:14
17	08:48	07:56	06:50	17:14 (16)	06:33	05:03
	16:47	17:49	18:44	17:53 (16)	20:42	22:14
18	08:47	07:54	06:47	17:13 (16)	06:31	05:03
	16:49	17:51	18:46	17:52 (16)	20:44	22:15
19	08:46	07:51	06:45	17:13 (16)	06:29	05:03
	16:51	17:53	18:48	17:53 (16)	20:46	22:15
20	08:45	07:49	06:42	17:12 (16)	06:26	05:03
	16:53	17:55	18:50	17:52 (16)	20:48	22:15
21	08:44	07:47	06:40	17:12 (16)	06:24	05:03
	16:54	17:57	18:51	17:53 (16)	20:50	22:15
22	08:42	07:45	06:37	17:12 (16)	06:22	05:03
	16:56	17:59	18:53	17:52 (16)	20:52	22:16
23	08:41	07:42	06:35	17:12 (16)	06:20	05:03
	16:58	18:01	18:55	17:52 (16)	20:54	22:16
24	08:40	07:40	06:32	17:12 (16)	06:17	05:04
	17:00	18:03	18:57	17:50 (16)	20:56	22:16
25	08:38	07:38	06:30	17:13 (16)	06:15	05:04
	17:02	18:05	18:59	17:50 (16)	20:58	22:16
26	08:37	07:36	06:27	17:12 (16)	06:13	05:04
	17:04	18:07	19:01	17:49 (16)	20:59	22:16
27	08:35	07:33	06:25	17:14 (16)	06:11	05:05
	17:06	18:09	19:03	17:48 (16)	21:01	22:16
28	08:34	07:31	06:22	17:14 (16)	06:08	05:05
	17:08	18:11	19:05	17:46 (16)	21:03	22:16
29	08:32		07:20	18:15 (16)	06:06	05:06
	17:10		20:07	18:45 (16)	21:05	22:15
30	08:31		07:17	18:16 (16)	06:04	05:07
	17:12		20:08	18:43 (16)	21:07	22:15
31	08:29		07:15	18:18 (16)		05:12
	17:14		20:10	18:41 (16)		21:59
Potential sun hours	248	272	367	421	496	513
Total, worst case			771	590	314	
Sun reduction			0.22	0.34	0.36	
Oper. time red.			1.00	1.00	1.00	
Wind dir. red.			0.57	0.59	0.59	
Total reduction			0.13	0.20	0.21	
Total, real			99	119	67	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)



### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: R - H18  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	July	August	September	October	November	December		
1	05:07	05:48	19:50 (15)	06:44	07:38	17:59 (16)	07:37	08:33
	22:15	21:39	11 20:01 (15)	20:31	19:16	30 18:29 (16)	17:04	16:19
2	05:08	05:50	19:48 (15)	06:45	07:40	17:59 (16)	07:39	08:35
	22:14	21:37	16 20:04 (15)	20:28	19:14	28 18:27 (16)	17:02	16:18
3	05:09	05:52	19:45 (15)	06:47	07:42	18:01 (16)	07:41	08:36
	22:14	21:35	20 20:05 (15)	20:26	19:11	24 18:25 (16)	17:00	16:17
4	05:10	05:53	19:44 (15)	06:49	07:43	18:03 (16)	07:43	08:38
	22:13	21:33	23 20:07 (15)	20:23	19:09	19 18:22 (16)	16:58	16:17
5	05:11	05:55	19:43 (15)	06:51	07:45	18:07 (16)	07:45	08:39
	22:13	21:31	26 20:09 (15)	20:21	19:06	11 18:18 (16)	16:56	16:16
6	05:12	05:57	19:41 (15)	06:53	07:47		07:47	08:41
	22:12	21:29	28 20:09 (15)	20:19	19:04		16:54	16:16
7	05:12	05:59	19:40 (15)	06:54	07:49		07:49	08:42
	22:12	21:27	30 20:10 (15)	20:16	19:01		16:53	16:15
8	05:14	06:00	19:39 (15)	06:56	07:51		07:51	08:43
	22:11	21:25	31 20:10 (15)	20:14	18:59		16:51	16:15
9	05:15	06:02	19:38 (15)	06:58	07:53		07:53	08:45
	22:10	21:23	33 20:11 (15)	20:11	18:56		16:49	16:14
10	05:16	06:04	19:38 (15)	07:00	18:19 (16)	07:55	07:55	08:46
	22:09	21:21	34 20:12 (15)	20:09	7 18:26 (16)	18:54	16:47	16:14
11	05:17	06:06	19:36 (15)	07:02	18:14 (16)	07:57	07:57	08:47
	22:08	21:19	36 20:12 (15)	20:06	17 18:31 (16)	18:51	16:45	16:14
12	05:18	06:07	19:36 (15)	07:03	18:10 (16)	07:58	07:59	08:48
	22:07	21:17	36 20:12 (15)	20:04	22 18:32 (16)	18:49	16:44	16:14
13	05:19	06:09	19:36 (15)	07:05	18:08 (16)	08:00	08:01	08:49
	22:06	21:15	37 20:13 (15)	20:01	26 18:34 (16)	18:47	16:42	16:13
14	05:21	06:11	19:35 (15)	07:07	18:06 (16)	08:02	08:03	08:50
	22:05	21:13	37 20:12 (15)	19:59	29 18:35 (16)	18:44	16:40	16:13
15	05:22	06:13	19:35 (15)	07:09	18:04 (16)	08:04	08:05	08:51
	22:04	21:10	38 20:13 (15)	19:56	32 18:36 (16)	18:42	16:39	16:13
16	05:23	06:15	19:35 (15)	07:11	18:02 (16)	08:06	08:07	08:52
	22:03	21:08	38 20:13 (15)	19:54	34 18:36 (16)	18:40	16:37	16:13
17	05:25	06:16	19:35 (15)	07:12	18:01 (16)	08:08	08:09	08:53
	22:02	21:06	38 20:13 (15)	19:51	36 18:37 (16)	18:37	16:36	16:14
18	05:26	06:18	19:34 (15)	07:14	18:00 (16)	08:10	08:11	08:54
	22:01	21:04	38 20:12 (15)	19:49	37 18:37 (16)	18:35	16:34	16:14
19	05:27	06:20	19:34 (15)	07:16	17:59 (16)	08:12	08:12	08:55
	21:59	21:01	38 20:12 (15)	19:46	39 18:38 (16)	18:33	16:33	16:14
20	05:29	06:22	19:34 (15)	07:18	17:58 (16)	08:14	08:14	08:55
	21:58	20:59	37 20:11 (15)	19:44	39 18:37 (16)	18:30	16:31	16:14
21	05:30	06:24	19:34 (15)	07:20	17:57 (16)	08:16	08:16	08:56
	21:57	20:57	36 20:10 (15)	19:41	40 18:37 (16)	18:28	16:30	16:15
22	05:32	06:25	19:35 (15)	07:21	17:57 (16)	08:18	08:18	08:56
	21:55	20:55	34 20:09 (15)	19:39	40 18:37 (16)	18:26	16:29	16:15
23	05:33	06:27	19:35 (15)	07:23	17:57 (16)	08:20	08:20	08:57
	21:54	20:52	34 20:09 (15)	19:36	40 18:37 (16)	18:24	16:27	16:16
24	05:35	06:29	19:35 (15)	07:25	17:57 (16)	08:22	08:22	08:57
	21:52	20:50	32 20:07 (15)	19:33	40 18:37 (16)	18:21	16:26	16:16
25	05:37	06:31	19:36 (15)	07:27	17:56 (16)	07:24	08:23	08:58
	21:51	20:48	30 20:06 (15)	19:31	39 18:35 (16)	17:19	16:25	16:17
26	05:38	06:33	19:37 (15)	07:29	17:56 (16)	07:26	08:25	08:58
	21:49	20:45	28 20:05 (15)	19:28	39 18:35 (16)	17:17	16:24	16:18
27	05:40	06:35	19:39 (15)	07:31	17:56 (16)	07:27	08:27	08:58
	21:47	20:43	24 20:03 (15)	19:26	38 18:34 (16)	17:15	16:23	16:19
28	05:41	06:36	19:40 (15)	07:32	17:57 (16)	07:29	08:29	08:58
	21:46	20:40	20 20:00 (15)	19:23	36 18:33 (16)	17:13	16:22	16:19
29	05:43	06:38	19:42 (15)	07:34	17:57 (16)	07:31	08:30	08:58
	21:44	20:38	15 19:57 (15)	19:21	35 18:32 (16)	17:11	16:21	16:20
30	05:45	06:40	19:48 (15)	07:36	17:58 (16)	07:33	08:32	08:58
	21:42	20:36	4 19:52 (15)	19:18	33 18:31 (16)	17:08	16:20	16:21
31	05:46	06:42			07:35			08:58
	21:40	20:33			17:06			16:22
Potential sun hours	515	461	383	327	257	230		
Total, worst case		882	698	112				
Sun reduction		0.27	0.29	0.23				
Oper. time red.		1.00	1.00	1.00				
Wind dir. red.		0.59	0.57	0.57				
Total reduction		0.16	0.17	0.13				
Total, real		142	117	15				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)



## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: S - H19

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June
1	08:58 16:24	08:27 17:16	15:51 (16) 16:26 (16)	07:29 18:13	17:17 (15) 17:40 (15)	07:12 20:12
2	08:58 16:25	08:25 17:18	15:51 (16) 16:27 (16)	07:26 18:15	17:14 (15) 17:41 (15)	07:10 20:14
3	08:58 16:26	08:24 17:20	15:51 (16) 16:27 (16)	07:24 18:17	17:13 (15) 17:43 (15)	07:07 20:16
4	08:58 16:27	08:22 17:22	15:51 (16) 16:27 (16)	07:21 18:19	17:11 (15) 17:44 (15)	07:05 20:18
5	08:57 16:28	08:20 17:24	15:51 (16) 16:27 (16)	07:19 18:21	17:10 (15) 17:45 (15)	07:02 20:20
6	08:57 16:30	08:18 17:26	15:51 (16) 16:27 (16)	07:17 18:23	17:09 (15) 17:45 (15)	07:00 20:22
7	08:56 16:31	08:16 17:28	15:51 (16) 16:27 (16)	07:14 18:24	17:08 (15) 17:46 (15)	06:58 20:24
8	08:56 16:33	08:14 17:30	15:52 (16) 16:27 (16)	07:12 18:26	17:07 (15) 17:46 (15)	06:55 20:25
9	08:55 16:34	08:12 17:32	15:51 (16) 16:26 (16)	07:09 18:28	17:07 (15) 17:46 (15)	06:53 20:27
10	08:55 16:36	08:10 17:34	15:52 (16) 16:26 (16)	07:07 18:30	17:06 (15) 17:46 (15)	06:50 20:29
11	08:54 16:37	08:08 17:36	15:53 (16) 16:25 (16)	07:05 18:32	17:06 (15) 17:46 (15)	06:48 20:31
12	08:53 16:39	08:06 17:38	15:54 (16) 16:25 (16)	07:02 18:34	17:05 (15) 17:46 (15)	06:45 20:33
13	08:52 16:40	08:04 17:40	15:55 (16) 16:24 (16)	07:00 18:36	17:06 (15) 17:46 (15)	06:43 20:35
14	08:51 16:42	08:02 17:42	15:57 (16) 16:23 (16)	06:57 18:38	17:05 (15) 17:45 (15)	06:41 20:37
15	08:51 16:44	08:00 17:44	15:57 (16) 16:21 (16)	06:55 18:40	17:06 (15) 17:44 (15)	06:38 20:39
16	08:50 16:45	07:58 17:46	16:00 (16) 16:19 (16)	06:52 18:42	17:06 (15) 17:43 (15)	06:36 20:41
17	08:48 16:47	07:56 17:49	16:03 (16) 16:17 (16)	06:50 18:44	17:07 (15) 17:43 (15)	06:33 20:42
18	08:47 16:49	07:54 17:51	16:09 (16) 16:12 (16)	06:47 18:46	17:07 (15) 17:41 (15)	06:31 20:44
19	08:46 16:51	07:51 16:03 (16) 17:53	07:51 16:06 (16)	06:45 18:48	17:08 (15) 17:40 (15)	06:29 20:46
20	08:45 16:53	07:49 16:11 (16) 17:55	07:49 16:11 (16)	06:42 17:25 (14)	17:09 (15) 17:38 (15)	06:26 20:48
21	08:44 16:54	07:47 16:13 (16) 17:57	07:47 16:13 (16)	06:40 17:28 (14)	17:11 (15) 17:37 (15)	06:24 20:50
22	08:42 16:56	07:45 16:16 (16) 17:59	07:45 16:16 (16)	06:37 17:23 (14)	17:12 (15) 17:34 (15)	06:22 20:52
23	08:41 16:58	07:42 16:17 (16) 18:01	07:42 16:17 (16)	06:35 17:23 (14)	17:15 (15) 17:31 (15)	06:20 20:54
24	08:40 17:00	07:40 16:19 (16) 18:03	07:40 16:19 (16)	06:32 17:23 (14)	17:20 (15) 17:25 (15)	06:17 20:56
25	08:38 17:02	07:38 16:20 (16) 18:05	07:38 16:20 (16)	06:30 17:22 (14)	06:15 20:58	05:20 21:50
26	08:37 17:04	07:36 16:21 (16) 18:07	07:36 16:21 (16)	06:27 17:23 (14)	06:13 20:59	05:18 21:52
27	08:35 17:06	07:33 16:23 (16) 18:09	07:33 16:23 (16)	06:25 17:23 (14)	06:11 21:01	05:17 21:53
28	08:34 17:08	07:31 16:23 (16) 18:11	07:31 16:23 (16)	06:22 17:19 (15)	06:08 21:03	05:16 21:55
29	08:32 17:10	07:29 16:24 (16)	07:29 16:24 (16)	06:20 20:07	06:06 21:05	05:15 21:56
30	08:31 17:12	07:27 16:24 (16)	07:27 16:24 (16)	06:18 20:08	06:04 21:07	05:14 21:57
31	08:29 17:14	07:25 16:25 (16)	07:25 16:25 (16)	06:15 20:10	05:12 21:09	05:12 21:59
Potential sun hours	248	272	367	421	496	513
Total, worst case	316	625	776			
Sun reduction	0.17	0.22	0.22			
Oper. time red.	1.00	1.00	1.00			
Wind dir. red.	0.61	0.60	0.58			
Total reduction	0.10	0.13	0.13			
Total, real	33	84	101			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: S - H19

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	July	August	September	October	November	December
1	05:07 22:15	05:48 21:39	06:44 20:31	07:38 19:16	17:45 (15) 18:25 (15)	08:33 16:19
2	05:08 22:14	05:50 21:37	06:45 20:28	07:40 19:14	17:44 (15) 18:24 (15)	08:35 16:18
3	05:09 22:14	05:52 21:35	06:47 20:26	07:42 19:11	17:44 (15) 18:24 (15)	08:36 16:17
4	05:10 22:14	05:53 21:33	06:49 20:24	07:44 19:09	17:44 (15) 18:24 (15)	08:38 16:17
5	05:11 22:13	05:55 21:31	06:51 20:21	07:45 19:06	17:44 (15) 18:23 (15)	08:39 16:16
6	05:11 22:12	05:57 21:29	06:53 20:19	07:47 19:04	17:44 (15) 18:22 (15)	08:41 16:16
7	05:12 22:12	05:59 21:27	06:54 20:16	07:49 19:01	17:45 (15) 18:22 (15)	08:42 16:15
8	05:14 22:11	06:00 21:25	06:56 20:14	07:51 18:59	17:45 (15) 18:21 (15)	08:43 16:15
9	05:15 22:10	06:02 21:23	06:58 20:11	07:53 18:56	17:46 (15) 18:19 (15)	08:45 16:14
10	05:16 22:09	06:04 21:21	07:00 20:09	07:55 18:54	17:47 (15) 18:18 (15)	08:46 16:14
11	05:17 22:08	06:06 21:19	07:02 20:06	07:57 18:51	17:48 (15) 18:17 (15)	08:47 16:14
12	05:18 22:07	06:07 21:17	07:03 20:04	07:58 18:49	17:49 (15) 18:15 (15)	08:48 16:14
13	05:19 22:06	06:09 21:15	07:05 20:01	08:00 18:47	17:51 (15) 18:12 (15)	08:49 16:13
14	05:21 22:05	06:11 21:13	07:07 19:59	08:02 18:44	17:54 (15) 18:09 (14)	08:50 16:13
15	05:22 22:04	06:13 21:10	07:09 19:56	08:04 18:42	17:56 (14) 18:10 (14)	08:51 16:13
16	05:23 22:03	06:15 21:08	07:11 19:54	08:06 18:40	17:55 (14) 18:10 (14)	08:52 16:13
17	05:25 22:02	06:16 21:06	07:12 19:51	08:08 18:37	17:54 (14) 18:08 (14)	08:53 16:14
18	05:26 22:01	06:18 21:04	07:14 19:49	08:10 18:35	17:54 (14) 18:05 (14)	08:54 16:14
19	05:27 21:59	06:20 21:01	07:16 19:46	08:12 18:33	17:54 (14) 18:03 (14)	08:55 16:14
20	05:29 21:58	06:22 20:59	07:18 19:44	18:02 (15) 18:30	08:14 18:00 (14)	08:55 16:14
21	05:30 21:57	06:24 20:57	07:20 19:41	18:16 (15) 18:19 (15)	08:16 18:28	08:56 16:15
22	05:32 21:55	06:25 20:55	07:21 19:39	18:18 (15) 18:21 (15)	08:18 18:26	08:56 16:15
23	05:33 21:54	06:27 20:52	07:23 19:36	18:22 (15) 18:24	08:20 18:24	08:57 16:16
24	05:35 21:52	06:29 20:50	07:25 19:34	18:22 (15) 18:21	08:22 18:21	08:57 16:16
25	05:37 21:51	06:31 20:48	07:27 19:31	18:15 (15) 18:24 (15)	07:24 17:19	08:58 16:17
26	05:38 21:49	06:33 20:45	07:29 19:28	17:49 (15) 18:24 (15)	07:26 17:17	08:58 16:18
27	05:40 21:47	06:35 20:43	07:31 19:26	17:48 (15) 18:25 (15)	07:27 17:15	08:58 16:19
28	05:41 21:46	06:36 20:40	07:32 19:23	17:47 (15) 18:25 (15)	07:29 17:13	08:58 16:19
29	05:43 21:44	06:38 20:38	07:34 19:21	17:46 (15) 18:25 (15)	07:31 17:11	08:58 16:20
30	05:45 21:42	06:40 20:36	07:36 19:18	17:46 (15) 18:25 (15)	07:33 17:08	08:59 16:21
31	05:46 21:40	06:42 20:33		07:35 17:06	15:22 (16) 15:55 (16)	08:58 16:22
Potential sun hours	515	461	383	327	257	230
Total, worst case			340	727		673
Sun reduction			0.29			0.20
Oper. time red.			1.00			1.00
Wind dir. red.			0.58			0.61
Total reduction			0.17	0.14		0.12
Total, real			58	100		82

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: T - H20  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January	February	March	April	May	June	July	August	September	October	November	December	
1	08:58 16:24	08:27 17:16	07:29 18:13	07:13 20:12	19:03 (5) 21:09	06:02 22:00	05:12 22:15	05:08 21:39	05:48 20:31	06:44 20:31	07:38 19:16	07:37 17:04	08:33 16:19
2	08:58 16:25	08:25 17:18	07:26 18:15	07:10 20:14	19:05 (5) 21:11	06:00 22:01	05:11 22:14	05:08 21:37	05:50 20:28	06:46 20:28	07:40 19:14	07:39 17:02	08:35 16:18
3	08:58 16:26	08:24 17:20	07:24 18:17	07:08 20:16	19:08 (5) 21:13	05:58 22:02	05:10 22:14	05:09 21:35	05:52 20:26	06:47 20:26	07:42 19:11	07:41 17:00	08:36 16:18
4	08:58 16:27	08:22 17:22	07:22 18:19	07:05 20:18	19:12 (5) 21:14	05:56 22:03	05:09 22:13	05:10 21:33	05:54 20:24	06:49 20:24	07:44 19:09	07:43 16:59	08:38 16:17
5	08:57 16:29	08:20 17:24	07:19 18:21	07:03 20:20	19:15 (5) 21:14	05:54 22:05	05:08 22:13	05:11 21:31	05:55 20:21	06:51 20:21	07:45 19:06	07:45 16:57	08:39 16:16
6	08:57 16:30	08:18 17:26	07:17 18:23	07:00 20:22	19:08 (5) 21:18	05:52 22:06	05:07 22:12	05:12 21:29	05:57 20:19	06:53 20:19	07:47 19:04	07:47 16:55	08:41 16:16
7	08:56 16:31	08:16 17:28	07:14 18:25	06:58 20:24	19:12 (5) 21:20	05:50 22:07	05:13 22:12	05:59 21:27	06:55 20:16	06:55 20:16	07:49 19:01	07:49 16:53	08:42 16:15
8	08:56 16:33	08:14 17:30	07:12 18:27	06:55 20:26	19:12 (5) 21:22	05:50 22:08	05:14 22:11	06:01 21:25	06:56 20:14	06:56 20:14	07:51 18:59	07:51 16:51	08:43 16:15
9	08:55 16:34	08:12 17:32	07:09 18:29	06:53 20:27	19:12 (5) 21:23	05:46 22:09	05:15 22:10	06:02 21:23	06:58 20:11	19:01 (5) 19:14 (5)	07:53 18:56	07:53 16:49	08:45 16:15
10	08:55 16:36	08:10 17:34	07:07 18:30	06:50 20:29	19:12 (5) 21:25	05:44 22:09	05:16 22:09	06:04 21:21	07:00 20:09	13 19:16 (5)	07:55 18:54	07:55 16:47	08:46 16:14
11	08:54 16:37	08:08 17:36	07:05 18:32	06:48 20:31	19:12 (5) 21:27	05:42 22:10	05:17 22:08	06:06 21:19	07:02 20:06	17 19:18 (5)	07:57 18:52	07:57 16:46	08:47 16:14
12	08:53 16:39	08:06 17:39	07:02 18:34	06:46 20:33	19:12 (5) 21:29	05:41 22:11	05:18 22:07	06:08 21:17	07:04 20:04	24 19:18 (5)	07:59 18:49	07:59 16:44	08:48 16:14
13	08:52 16:41	08:04 17:41	07:00 18:36	06:43 20:35	19:12 (5) 21:31	05:39 22:12	05:20 22:06	06:09 21:15	07:05 20:01	26 19:19 (5)	08:00 18:47	08:01 16:42	08:49 16:14
14	08:51 16:42	08:02 17:43	06:57 18:38	18:10 (6) 06:41	19:12 (5) 21:32	05:37 22:12	05:21 22:05	06:11 21:13	07:07 19:59	28 19:20 (5)	08:02 18:44	08:03 16:40	08:50 16:14
15	08:50 16:44	08:00 17:45	06:55 18:40	18:08 (6) 06:38	19:12 (5) 21:34	05:35 22:13	05:22 22:04	06:13 21:10	07:09 19:56	29 18:51 (5)	08:04 18:42	08:05 16:39	08:51 16:14
16	08:49 16:46	07:58 17:47	06:52 18:42	18:06 (6) 06:36	19:12 (5) 21:36	05:33 22:14	05:23 22:03	06:15 21:08	07:11 19:54	29 18:50 (5)	08:06 18:40	08:07 16:37	08:52 16:14
17	08:48 16:47	07:56 17:49	06:50 18:44	18:05 (6) 06:34	19:12 (5) 21:37	05:32 22:14	05:25 22:02	06:17 21:06	07:13 19:51	29 18:50 (5)	08:08 18:37	08:09 16:36	08:53 16:14
18	08:47 16:49	07:54 17:51	06:47 18:46	18:04 (6) 06:31	19:12 (5) 21:39	05:30 22:14	05:26 22:01	06:18 21:04	07:14 19:49	30 18:49 (5)	08:10 18:35	08:11 16:34	08:54 16:14
19	08:46 16:51	07:51 17:53	06:45 18:48	18:04 (6) 06:29	19:12 (5) 21:41	05:29 22:15	05:28 21:59	06:20 21:01	07:16 19:46	29 18:49 (5)	08:12 18:33	08:12 16:33	08:54 16:14
20	08:45 16:53	07:49 17:55	06:42 18:50	18:03 (6) 06:27	19:12 (5) 21:42	05:27 22:15	05:29 21:58	06:22 20:59	07:18 19:44	27 18:49 (5)	08:14 18:31	08:14 16:31	08:55 16:15
21	08:44 16:55	07:47 17:57	06:40 18:52	18:03 (6) 06:24	19:12 (5) 21:44	05:26 22:15	05:31 21:56	06:24 20:57	07:20 19:41	24 18:48 (6)	08:16 18:28	08:16 16:30	08:56 16:15
22	08:42 16:57	07:45 17:59	06:37 18:53	18:03 (6) 06:22	19:12 (5) 21:46	05:24 22:16	05:32 21:55	06:26 20:55	07:22 19:39	22 19:10 (6)	08:18 18:26	08:18 16:29	08:56 16:16
23	08:41 16:58	07:43 18:01	06:35 18:55	18:03 (5) 06:20	19:12 (5) 21:47	05:23 22:16	05:34 21:54	06:27 20:52	07:23 19:36	20 18:48 (6)	08:20 18:24	08:20 16:28	08:57 16:16
24	08:40 17:00	07:40 18:03	06:32 18:57	18:02 (5) 06:18	19:12 (5) 21:49	05:21 22:16	05:35 21:52	06:29 20:50	07:25 19:34	18 19:05 (6)	08:22 18:48 (6)	08:22 16:26	08:57 16:17
25	08:38 17:02	07:38 18:05	06:30 18:59	18:02 (5) 06:15	19:12 (5) 21:50	05:20 22:16	05:37 21:51	06:31 20:48	07:27 19:31	15 19:03 (6)	08:24 17:19	08:23 16:25	08:58 16:17
26	08:37 17:04	07:36 18:07	06:27 19:01	18:01 (5) 06:13	19:12 (5) 21:51	05:19 22:16	05:38 21:49	06:33 20:45	07:29 19:29	13 19:00 (6)	08:26 17:17	08:25 16:24	08:58 16:18
27	08:35 17:06	07:33 18:09	06:25 19:03	18:01 (5) 06:11	19:12 (5) 21:52	05:17 22:16	05:40 21:47	06:35 20:43	07:31 19:26	10 18:57 (6)	08:27 17:15	08:27 16:23	08:58 16:19
28	08:34 17:08	07:31 18:11	06:22 19:05	18:01 (5) 06:09	19:12 (5) 21:55	05:16 22:16	05:42 21:46	06:37 20:41	07:33 19:24	7 18:55 (6)	08:28 17:13	08:28 16:22	08:58 16:20
29	08:32 17:10	07:20 18:07	06:20 19:05	19:02 (5) 06:07	19:12 (5) 21:55	05:15 22:15	05:43 21:44	06:38 20:38	07:34 19:21	3 18:53 (6)	08:30 17:11	08:30 16:21	08:58 16:21
30	08:31 17:12	07:17 18:09	06:19 19:04	19:02 (5) 06:04	19:12 (5) 21:57	05:14 22:15	05:45 21:42	06:40 20:36	07:36 19:19		08:32 17:09	08:32 16:20	08:58 16:21
31	08:29 17:14	07:15 18:10	06:15 19:05	19:03 (5) 21:07	19:12 (5) 21:59	05:13 21:59	05:47 21:40	06:42 20:33			08:35 17:07	08:35 16:23	08:58 16:23
Potential sun hours	248	272	367	421	496	513	515	461	382	434	328	257	231
Total, worst case			373	56									
Sun reduction			0.22	0.34						0.29			
Oper. time red.			1.00	1.00						1.00			
Wind dir. red.			0.58	0.58						0.58			
Total reduction			0.13	0.20						0.17			
Total, real			49	11						74			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: U - H21  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June
1	08:58 16:24	08:27 17:16	07:29 18:13	17:11 (9) 17:30 (9)	07:12 20:12	06:02 21:09
2	08:58 16:25	08:25 17:18	07:26 18:15	17:12 (9) 17:28 (9)	07:10 20:14	06:00 21:11
3	08:58 16:26	08:24 17:20	07:24 18:17	17:15 (9) 17:26 (9)	07:07 20:16	05:58 21:13
4	08:58 16:27	08:22 17:22	07:22 18:19	07:05 20:18	05:56 21:14	20:36 (13) 05:09
5	08:57 16:29	08:20 17:24	07:19 18:21	07:03 20:20	05:54 21:16	20:34 (13) 11 20:45 (13)
6	08:57 16:30	08:18 17:26	07:17 18:23	07:00 20:22	05:52 21:18	20:33 (13) 14 20:47 (13)
7	08:56 16:31	08:16 17:28	07:14 18:25	06:58 20:24	05:50 21:20	20:32 (13) 17 20:49 (12)
8	08:56 16:33	08:14 17:30	07:12 18:26	17:56 (10) 17:59 (10)	06:55 20:26	19:51 (11) 7 19:58 (11)
9	08:55 16:34	08:12 17:32	07:09 18:28	17:52 (10) 18:01 (10)	06:53 20:27	19:49 (11) 11 20:00 (11)
10	08:55 16:36	08:10 17:34	07:07 18:30	17:50 (10) 18:03 (10)	06:50 20:29	19:48 (11) 14 20:02 (11)
11	08:54 16:37	08:08 17:36	07:05 18:32	17:48 (10) 18:05 (10)	06:48 20:31	19:46 (11) 17 20:03 (11)
12	08:53 16:39	08:06 17:38	07:02 18:34	17:47 (10) 18:07 (10)	06:45 20:33	19:45 (11) 20 20:05 (11)
13	08:52 16:40	08:04 17:40	07:00 18:36	17:46 (10) 18:09 (10)	06:43 20:35	19:44 (11) 22 20:06 (11)
14	08:51 16:42	08:02 17:42	06:57 18:38	17:45 (10) 18:10 (10)	06:41 20:37	19:43 (11) 23 20:06 (11)
15	08:51 16:44	08:00 17:45	06:55 18:40	17:45 (10) 18:10 (10)	06:38 20:39	19:43 (11) 23 20:06 (11)
16	08:50 16:45	07:58 17:47	06:52 18:42	17:44 (10) 18:10 (10)	06:36 20:41	19:43 (11) 22 20:05 (11)
17	08:48 16:47	07:56 17:49	17:17 (9) 18:44	06:50 17:44 (10)	06:34 20:43	19:43 (11) 22 20:05 (11)
18	08:47 16:49	07:54 17:51	17:15 (9) 17:22 (9)	06:47 18:46	06:31 20:44	19:44 (11) 21 20:05 (11)
19	08:46 16:51	07:51 17:53	17:13 (9) 17:23 (9)	06:45 18:48	06:29 20:46	19:44 (11) 20 20:04 (11)
20	08:45 16:53	07:49 17:55	17:12 (9) 17:26 (9)	06:42 18:50	06:27 20:48	19:44 (11) 18 20:02 (11)
21	08:44 16:54	07:47 17:57	17:11 (9) 17:28 (9)	06:40 18:51	06:24 20:50	19:46 (11) 14 20:00 (11)
22	08:42 16:56	07:45 17:59	17:10 (9) 17:30 (9)	06:37 18:53	06:22 20:52	19:48 (11) 10 19:58 (11)
23	08:41 16:58	07:43 18:01	17:10 (9) 17:32 (9)	06:35 18:55	06:20 20:54	05:22 19 21:12 (14)
24	08:40 17:00	07:40 18:03	17:10 (9) 17:33 (9)	06:32 18:57	06:17 20:56	05:21 21 21:15 (14)
25	08:38 17:02	07:38 18:05	17:09 (9) 17:32 (9)	06:30 18:59	06:15 20:58	05:20 18 21:16 (14)
26	08:37 17:04	07:36 18:07	17:09 (9) 17:32 (9)	06:27 19:01	06:13 20:59	05:18 16 21:18 (14)
27	08:35 17:06	07:33 18:09	17:09 (9) 17:31 (9)	06:25 19:03	06:11 21:01	05:17 18 21:19 (14)
28	08:34 17:08	07:31 18:11	17:10 (9) 17:31 (9)	06:22 19:05	06:09 21:03	05:16 21 21:20 (14)
29	08:32 17:10		07:20 20:07	06:06 21:05	05:15 21:56	20:58 (14) 22 21:20 (14)
30	08:31 17:12		07:17 20:09	06:04 21:07	05:14 21:57	20:59 (14) 23 21:22 (14)
31	08:29 17:14		07:15 20:10	05:13 21:59	05:13 25 21:23 (14)	20:58 (14)
Potential sun hours	248	272	367	421	496	513
Total, worst case		204	360	421	496	513
Sun reduction		0.22	0.22	0.34	0.36	0.26
Oper. time red.		1.00	1.00	1.00	1.00	1.00
Wind dir. red.		0.58	0.57	0.59	0.62	0.63
Total reduction		0.13	0.13	0.20	0.23	0.16
Total, real		26	46	53	129	142

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: U - H21  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

Operational time  
 N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	July	August	September	October	November	December				
1	05:07 22:15	21:01 (14) 21:31 (14)	05:48 21:39	20:40 (13) 20:31	19:45 (11) 20:02 (11)	07:38 19:16	18:26 (10) 17:04	07:37 17:04	08:33 16:19	
2	05:08 22:14	21:02 (14) 21:31 (14)	05:50 21:37	20:40 (13) 20:28	19:46 (11) 20:00 (11)	07:40 19:14	18:26 (10) 18:44 (10)	07:39 17:02	08:35 16:18	
3	05:09 22:14	21:03 (14) 21:32 (14)	05:52 21:35	20:40 (13) 21:03 (12)	19:47 (11) 20:26	07:42 19:11	18:27 (10) 18:42 (10)	07:41 17:00	08:36 16:18	
4	05:10 22:14	21:02 (14) 21:31 (14)	05:53 21:33	20:41 (13) 21:02 (12)	19:48 (11) 19:55 (11)	07:44 19:09	18:28 (10) 18:39 (10)	07:43 16:58	08:38 16:17	
5	05:11 22:13	21:03 (14) 21:31 (14)	05:55 21:31	20:42 (13) 21:00 (12)	19:45 20:21	07:45 19:06	18:31 (10) 18:37 (10)	07:45 16:56	08:39 16:16	
6	05:12 22:12	21:03 (14) 21:31 (14)	05:57 21:29	20:42 (13) 20:58 (12)	19:47 20:19	07:47 19:04	16:57 16:55	07:47 16:55	08:41 16:16	
7	05:13 22:12	21:04 (14) 21:31 (14)	05:59 21:27	20:43 (13) 20:56 (13)	19:49 19:01	07:49 19:01	16:58 16:53	07:49 16:53	08:42 16:15	
8	05:14 22:11	21:04 (14) 21:31 (14)	06:00 21:25	20:44 (13) 20:54 (13)	19:50 20:14	07:51 18:59	16:59 16:51	07:51 16:15	08:43 16:15	
9	05:15 22:10	21:04 (14) 21:31 (14)	06:02 21:23	20:47 (13) 20:52 (13)	19:51 20:11	07:53 18:56	16:51 16:49	07:53 16:49	08:45 16:14	
10	05:16 22:09	21:05 (14) 21:31 (14)	06:04 21:21	07:00 20:09	19:52 18:54	07:55 18:54	17:51 (9) 17:58 (9)	07:55 16:47	08:46 16:14	
11	05:17 22:08	21:05 (14) 21:31 (14)	06:06 21:19	07:02 20:06	19:53 18:52	07:57 18:52	17:47 (9) 18:01 (9)	07:57 16:45	08:47 16:14	
12	05:18 22:07	21:06 (14) 21:30 (14)	06:08 21:17	07:03 20:04	19:54 18:49	07:59 18:49	17:45 (9) 18:02 (9)	07:59 16:44	08:48 16:14	
13	05:19 22:06	21:06 (14) 21:30 (14)	06:09 21:15	07:05 20:01	19:55 18:47	08:00 18:47	17:44 (9) 18:03 (9)	08:01 16:42	08:49 16:13	14:58 (8) 15:02 (8)
14	05:21 22:05	21:08 (14) 21:30 (14)	06:11 21:13	07:07 19:59	19:56 18:44	08:02 18:44	17:43 (9) 18:04 (9)	08:03 16:40	08:50 16:13	14:57 (8) 15:03 (8)
15	05:22 22:04	21:08 (14) 21:29 (14)	06:13 21:10	07:09 19:56	18:45 18:42	08:04 18:42	17:42 (9) 18:04 (9)	08:05 16:39	08:51 16:13	14:57 (8) 15:05 (8)
16	05:23 22:03	21:09 (14) 21:28 (14)	06:15 21:08	07:11 19:54	18:46 18:40	08:06 18:40	17:41 (9) 18:04 (9)	08:07 16:37	08:52 16:14	14:57 (8) 15:06 (8)
17	05:25 22:02	21:10 (14) 21:27 (14)	06:16 21:06	07:13 19:51	18:08 18:37	08:08 18:37	17:41 (9) 18:04 (9)	08:09 16:36	08:53 16:14	14:57 (8) 15:07 (8)
18	05:26 22:01	21:12 (14) 21:27 (14)	06:18 21:04	07:14 19:49	18:10 18:35	08:10 18:35	17:41 (9) 18:04 (9)	08:11 16:34	08:54 16:14	14:57 (8) 15:07 (8)
19	05:27 21:59	20:47 (13) 21:25 (14)	06:20 21:01	07:16 19:46	18:11 18:33	08:12 18:33	17:41 (9) 18:03 (9)	08:12 16:33	08:55 16:14	14:57 (8) 15:08 (8)
20	05:29 21:58	20:45 (13) 21:23 (14)	06:22 20:59	07:18 20:01 (11)	19:47 19:44	08:14 18:36 (10)	17:41 (9) 18:36 (10)	08:14 16:31	08:55 16:14	14:58 (8) 15:09 (8)
21	05:30 21:57	20:45 (13) 21:00 (12)	06:24 20:57	07:20 20:03 (11)	19:44 19:41	18:33 (10) 18:49 (10)	17:42 (9) 18:28	08:16 16:30	08:56 16:15	14:58 (8) 15:09 (8)
22	05:32 21:55	20:43 (13) 21:01 (12)	06:26 20:55	07:22 20:05 (11)	19:42 19:39	18:31 (10) 18:50 (10)	17:42 (9) 17:55 (9)	08:18 16:29	08:56 16:15	14:59 (8) 15:10 (8)
23	05:33 21:54	20:43 (13) 21:03 (12)	06:27 20:52	07:23 19:49 (11)	19:38 19:36	18:29 (10) 18:51 (10)	17:43 (9) 17:53 (9)	08:20 16:27	08:57 16:16	14:59 (8) 15:10 (8)
24	05:35 21:52	20:42 (13) 21:03 (12)	06:29 20:50	07:25 20:08 (11)	19:34 19:34	18:28 (10) 18:52 (10)	17:45 (9) 17:51 (9)	08:22 16:26	08:57 16:16	14:59 (8) 15:10 (8)
25	05:37 21:51	20:41 (13) 21:04 (12)	06:31 20:48	07:27 20:07 (11)	19:32 19:31	18:28 (10) 18:52 (10)	17:42 (9) 16:25	08:23 16:17	08:58 16:11	15:00 (8) 15:11 (8)
26	05:38 21:49	20:41 (13) 21:05 (12)	06:33 20:45	07:29 20:08 (11)	19:29 19:29	18:26 (10) 18:51 (10)	17:41 (9) 16:24	08:25 16:18	08:58 16:18	15:01 (8) 15:11 (8)
27	05:40 21:47	20:40 (13) 21:04 (12)	06:35 20:43	07:31 20:08 (11)	19:26 19:26	18:26 (10) 18:51 (10)	17:19 16:23	16:25 16:19	11 9	15:11 (8) 15:11 (8)
28	05:41 21:46	20:40 (13) 21:05 (12)	06:36 20:41	07:32 20:07 (11)	19:24 19:24	18:25 (10) 18:51 (10)	17:29 17:13	08:29 16:22	08:58 16:19	15:03 (8) 15:11 (8)
29	05:43 21:44	20:39 (12) 21:05 (12)	06:38 20:38	07:34 20:07 (11)	19:21 19:21	18:26 (10) 18:51 (10)	17:31 17:11	08:30 16:21	08:58 16:20	15:04 (8) 15:10 (8)
30	05:45 21:42	20:40 (13) 21:05 (12)	06:40 20:36	07:36 20:07 (11)	19:19 19:19	18:26 (10) 18:50 (10)	17:33 17:08	08:32 16:20	08:59 16:21	15:06 (8) 15:10 (8)
31	05:46 21:40	20:40 (13) 21:06 (12)	06:42 20:33	07:35 20:05 (11)	19:18 19:18	17:08 17:06	16:20 16:22	08:58 16:22	4 12	15:10 (8) 15:10 (8)
Potential sun hours	515	461	383	291	327	257	231	161		
Total, worst case	733	378	291	327						
Sun reduction	0.27	0.27	0.29	0.23				0.12		
Oper. time red.	1.00	1.00	1.00	1.00				1.00		
Wind dir. red.	0.63	0.60	0.57	0.58				0.64		
Total reduction	0.17	0.16	0.17	0.14				0.08		
Total, real	122	62	49	44				12		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: V - H22  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January	February	March	April	May	June
1	08:59 16:24	08:27 17:16	09:00 (9) 09:15 (9)	07:29 18:13	07:13 20:12	06:02 21:09
2	08:58 16:25	08:26 17:18	09:02 (9) 09:14 (9)	07:26 18:15	07:10 20:14	06:00 21:11
3	08:58 16:26	08:24 17:20	09:05 (9) 09:11 (9)	07:24 18:17	07:08 20:16	05:58 21:13
4	08:58 16:27	08:22 17:22	07:22 18:19	07:05 20:18	05:56 21:15	06:37 (13) 07:00 (13)
5	08:58 16:29	08:20 17:24	07:19 18:21	07:03 20:20	05:54 21:16	06:39 (13) 07:00 (13)
6	08:57 16:30	08:18 17:26	07:17 18:23	07:00 20:22	05:52 21:18	06:40 (13) 06:58 (13)
7	08:57 16:31	08:16 17:28	07:14 18:25	06:58 20:24	05:50 21:20	06:42 (13) 06:56 (13)
8	08:56 16:33	08:14 17:30	07:12 18:27	06:55 20:26	05:48 21:22	06:44 (13) 06:53 (13)
9	08:55 16:34	08:13 17:32	07:10 18:29	06:53 20:28	05:46 21:24	05:05 22:09
10	08:55 16:36	08:11 17:34	07:07 18:31	06:50 20:29	07:15 (14) 07:17 (14)	05:44 21:25
11	08:54 16:37	08:09 17:36	07:05 18:32	06:48 20:31	07:12 (14) 07:17 (14)	05:42 21:27
12	08:53 16:39	08:06 17:38	08:33 (10) 08:34 (10)	07:02 18:34	06:46 20:33	05:40 21:29
13	08:52 16:41	08:04 17:41	08:31 (10) 08:35 (10)	07:00 18:36	07:24 (11) 07:25 (11)	06:43 20:35
14	08:52 16:42	08:02 17:43	06:57 08:36 (10)	06:57 18:38	07:22 (11) 07:27 (11)	06:41 20:37
15	08:51 16:44	08:00 17:45	06:55 08:27 (10)	06:55 18:40	07:19 (11) 07:27 (11)	06:38 20:39
16	08:50 16:46	07:58 17:47	06:52 08:24 (10)	06:52 18:42	07:17 (11) 07:29 (11)	06:36 20:41
17	08:49 16:47	07:56 17:49	06:50 08:22 (10)	06:50 18:44	07:14 (11) 07:28 (11)	06:34 20:43
18	08:47 16:49	07:54 17:51	06:47 08:35 (10)	06:47 18:46	07:11 (11) 07:28 (11)	06:31 20:45
19	08:46 16:51	07:52 17:53	06:45 08:17 (10)	06:45 18:48	07:09 (11) 07:29 (11)	06:29 20:46
20	08:45 16:53	07:49 17:55	06:42 08:15 (10)	06:42 18:50	07:06 (11) 07:28 (11)	06:27 20:48
21	08:44 16:55	09:14 (9) 09:16 (9)	07:47 17:57	06:40 18:52	07:04 (11) 07:28 (11)	06:24 20:50
22	08:43 16:56	09:13 (9) 09:17 (9)	07:45 17:59	06:37 18:54	07:01 (11) 07:27 (11)	06:22 20:52
23	08:41 16:58	09:11 (9) 09:17 (9)	07:43 18:01	06:35 18:55	06:59 (11) 07:27 (11)	06:20 20:54
24	08:40 17:00	09:10 (9) 09:18 (9)	07:40 18:03	06:32 18:57	06:56 (11) 07:26 (11)	06:18 20:56
25	08:38 17:02	09:08 (9) 09:18 (9)	07:38 18:05	06:30 18:59	06:56 (11) 07:25 (11)	06:15 20:58
26	08:37 17:04	09:07 (9) 09:18 (9)	07:36 18:07	06:27 19:01	06:56 (11) 07:23 (11)	06:13 21:00
27	08:35 17:06	09:05 (9) 09:18 (9)	07:33 18:09	06:25 19:03	06:58 (11) 07:22 (11)	06:11 21:01
28	08:34 17:08	09:03 (9) 09:18 (9)	07:31 18:11	06:22 19:05	06:58 (11) 07:20 (11)	06:09 21:03
29	08:32 17:10	09:01 (9) 09:17 (9)	07:20 18:07	06:06 19:01	08:00 (11) 08:18 (11)	06:06 21:05
30	08:31 17:12	08:59 (9) 09:16 (9)	07:18 18:09	06:04 19:02	08:02 (11) 08:14 (11)	06:04 21:07
31	08:29 17:14	08:59 (9) 09:17 (9)	07:15 18:11	06:03 19:03	07:04 (13) 07:04 (13)	05:13 21:59
Potential sun hours	248	272	367	421	496	513
Total, worst case	120	189	339	381	165	
Sun reduction	0.17	0.22	0.22	0.34	0.36	
Oper. time red.	1.00	1.00	1.00	1.00	1.00	
Wind dir. red.	0.64	0.63	0.59	0.57	0.58	
Total reduction	0.11	0.14	0.13	0.20	0.21	
Total, real	13	26	45	75	34	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: V - H22

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	July	August	September	October	November	December
1	05:08	05:48	06:44	07:11 (14)	07:38	07:38
	22:15	21:39	20:31	5 07:16 (14)	19:16	17:04
2	05:08	05:50	06:46	07:13 (14)	07:40	07:40
	22:15	21:37	20:29	2 07:15 (14)	19:14	17:02
3	05:09	05:52	06:47		07:42	07:41
	22:14	21:35	20:26		19:11	17:00
4	05:10	05:53	06:49		07:44	07:43
	22:14	21:33	20:24		19:09	16:58
5	05:11	05:55	06:50 (13)	06:51	07:46	07:45
	22:13	21:31	11 07:04 (13)	20:21	19:06	16:57
6	05:12	05:57	06:50 (13)	06:53	07:47	07:47
	22:12	21:29	16 07:06 (13)	20:19	19:04	16:55
7	05:13	05:59	06:49 (13)	06:55	07:49	07:49
	22:12	21:27	19 07:08 (13)	20:16	19:01	16:53
8	05:14	06:00	06:48 (13)	06:56	07:51	07:51
	22:11	21:25	22 07:10 (13)	20:14	18:59	7 08:34 (9)
9	05:15	06:02	06:46 (13)	06:58	07:53	07:53
	22:10	21:23	24 07:10 (13)	20:11	18:57	13 08:45 (9)
10	05:16	06:04	06:45 (13)	07:00	07:55	07:55
	22:09	21:21	26 07:11 (13)	20:09	18:54	15 08:46 (9)
11	05:17	06:06	06:45 (13)	07:02	07:57	07:57
	22:08	21:19	27 07:12 (13)	20:06	18:52	18 08:47 (9)
12	05:18	06:08	06:43 (13)	07:04	07:59	07:59
	22:08	21:17	29 07:12 (13)	20:04	18:49	16:44
13	05:20	06:09	06:43 (13)	07:05	08:01	08:01
	22:07	21:15	30 07:13 (13)	20:01	18:47	16:42
14	05:21	06:11	06:43 (13)	07:07	07:51 (11)	08:02
	22:05	21:13	30 07:13 (13)	19:59	18:45	16:40
15	05:22	06:13	06:42 (13)	07:09	07:49 (11)	08:04
	22:04	21:10	31 07:13 (13)	19:56	21 08:10 (11)	18:42
16	05:23	06:15	06:44 (13)	07:11	07:47 (11)	08:06
	22:03	21:08	29 07:13 (13)	19:54	25 08:12 (11)	18:40
17	05:25	06:17	06:46 (13)	07:13	07:45 (11)	08:08
	22:02	21:06	27 07:13 (13)	19:51	27 08:12 (11)	18:37
18	05:26	06:18	06:47 (13)	07:14	07:44 (11)	08:10
	22:01	21:04	25 07:12 (13)	19:49	29 08:13 (11)	18:35
19	05:28	06:20	06:49 (13)	07:16	07:43 (11)	08:12
	21:59	21:02	23 07:12 (13)	19:46	30 08:13 (11)	18:33
20	05:29	06:22	06:51 (13)	07:18	07:45 (11)	08:14
	21:58	20:59	21 07:12 (13)	19:44	29 08:14 (11)	18:31
21	05:31	06:24	06:53 (13)	07:20	07:46 (11)	08:16
	21:57	20:57	19 07:12 (13)	19:41	27 08:13 (11)	18:28
22	05:32	06:26	06:54 (13)	07:22	07:48 (11)	08:18
	21:55	20:55	16 07:10 (13)	19:39	25 08:13 (11)	18:26
23	05:34	06:27	06:56 (13)	07:23	07:50 (11)	08:20
	21:54	20:52	17 07:13 (14)	19:36	23 08:13 (11)	18:24
24	05:35	06:29	06:58 (13)	07:25	07:52 (11)	08:22
	21:52	20:50	17 07:15 (14)	19:34	20 08:12 (11)	18:22
25	05:37	06:31	06:59 (14)	07:27	07:54 (11)	08:24
	21:51	20:48	16 07:15 (14)	19:31	18 08:12 (11)	17:19
26	05:38	06:33	07:01 (14)	07:29	07:55 (11)	08:26
	21:49	20:45	15 07:16 (14)	19:29	15 08:10 (11)	17:17
27	05:40	06:35	07:03 (14)	07:31	07:57 (11)	08:28
	21:47	20:43	14 07:17 (14)	19:26	13 08:10 (11)	17:15
28	05:42	06:37	07:05 (14)	07:33	07:59 (11)	08:29
	21:46	20:41	13 07:18 (14)	19:24	10 08:09 (11)	17:13
29	05:43	06:38	07:06 (14)	07:34	08:01 (11)	08:30
	21:44	20:38	11 07:17 (14)	19:21	6 08:07 (11)	17:11
30	05:45	06:40	07:08 (14)	07:36	08:03 (11)	08:34
	21:42	20:36	9 07:17 (14)	19:19	3 08:06 (11)	17:09
31	05:47	06:42	07:10 (14)		07:36	
	21:41	20:33	7 07:17 (14)		17:07	
Potential sun hours	515	461	383	327	257	230
Total, worst case		544	356	157	155	
Sun reduction		0.27	0.29		0.20	
Oper. time red.		1.00	1.00		1.00	
Wind dir. red.		0.57	0.59		0.64	
Total reduction		0.16	0.17		0.13	
Total, real		85	61	23	20	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: W - H23  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:58 16:24	08:27 17:16	07:29 18:13	07:12 20:12	06:02 21:09	05:12 22:00	05:08 22:15	05:48 21:39	06:44 20:31	07:38 19:16	07:37 17:04	08:33 16:19
2	08:58 16:25	08:25 17:18	07:26 18:15	07:10 20:14	06:00 21:11	05:11 22:01	05:08 22:14	05:50 21:37	06:46 20:28	07:40 19:14	07:39 17:02	08:35 16:18
3	08:58 16:26	08:24 17:20	07:24 18:17	07:08 20:16	05:58 21:12	05:10 22:02	05:09 22:14	05:52 21:35	06:47 20:26	07:42 19:11	07:41 17:00	08:36 16:18
4	08:58 16:27	08:22 17:22	07:22 18:19	07:05 20:18	05:56 21:14	05:09 22:03	05:10 22:13	05:53 21:33	06:49 20:24	07:44 19:09	07:43 16:58	08:38 16:17
5	08:57 16:29	08:20 17:24	07:19 18:21	07:03 20:20	05:54 21:16	05:08 22:05	05:11 22:13	05:55 21:31	06:51 20:21	07:45 19:06	07:45 16:57	08:39 16:16
6	08:57 16:30	08:18 17:26	07:17 18:23	07:00 20:22	05:52 21:18	05:07 22:06	05:12 22:12	05:57 21:29	06:53 20:19	07:47 19:04	07:47 16:55	08:41 16:16
7	08:56 16:31	08:16 17:28	07:14 18:25	06:58 20:24	05:50 21:20	05:07 22:07	05:13 22:12	05:59 21:27	06:55 20:16	07:49 19:01	07:49 16:53	08:42 16:15
8	08:56 16:33	08:14 17:30	07:12 18:27	06:55 20:26	05:48 21:22	05:06 22:08	05:14 22:11	06:01 21:25	06:56 20:14	07:51 18:59	07:51 16:51	08:43 16:15
9	08:55 16:34	08:12 17:32	07:09 18:29	06:53 20:27	05:46 21:23	05:06 22:08	05:15 22:10	06:02 21:23	06:58 20:11	07:53 18:56	07:53 16:49	08:45 16:15
10	08:55 16:36	08:10 17:34	07:07 18:30	06:50 20:29	05:44 21:25	05:05 22:09	05:16 22:09	06:04 21:21	07:00 20:09	07:55 18:54	07:55 16:47	08:46 16:14
11	08:54 16:37	08:08 17:36	07:05 18:32	06:48 20:31	05:42 21:27	05:05 22:10	05:17 22:08	06:06 21:19	07:02 20:06	07:57 18:52	07:57 16:46	08:47 16:14
12	08:53 16:39	08:06 17:38	07:02 18:34	06:46 20:33	05:40 21:29	05:04 22:11	05:18 22:07	06:08 21:17	07:04 20:04	07:59 18:49	07:59 16:59	08:48 16:14
13	08:52 16:41	08:04 17:41	07:00 18:36	06:43 20:35	05:39 21:31	05:04 22:12	05:20 22:06	06:09 21:15	07:05 20:01	19:03 (5) 08:00	08:01 16:42	08:49 16:14
14	08:51 16:42	08:02 17:43	06:57 18:38	06:41 20:37	05:37 21:32	05:04 22:12	05:21 22:05	06:11 21:13	07:07 19:59	7 19:10 (5) 19:00 (5)	08:02 18:44	08:03 16:40
15	08:50 16:44	08:00 17:45	06:55 18:40	18:10 (6) 18:13 (6)	06:38 20:39	05:35 21:34	05:03 22:13	05:22 22:04	06:13 21:10	13 19:13 (5) 18:58 (5)	08:04 18:42	08:05 16:39
16	08:49 16:46	07:58 17:47	06:52 18:42	18:08 (6) 18:15 (6)	06:36 20:41	05:33 21:36	05:03 22:14	05:23 22:03	06:15 21:08	17 19:15 (5) 18:55 (5)	08:06 18:40	08:07 16:37
17	08:48 16:47	07:56 17:49	06:50 18:44	18:08 (6) 18:17 (6)	06:34 20:43	05:32 21:37	05:03 22:14	05:25 22:02	06:17 21:06	20 19:15 (5) 18:54 (5)	08:08 18:37	08:09 16:36
18	08:47 16:49	07:54 17:51	06:47 18:46	18:06 (6) 18:19 (6)	06:31 20:44	05:30 21:39	05:03 22:14	05:26 21:04	06:18 21:04	21 19:15 (5) 18:53 (5)	08:10 18:35	08:11 16:34
19	08:46 16:51	07:51 17:53	06:45 18:48	18:06 (6) 18:21 (6)	06:29 20:46	05:29 21:41	05:03 22:15	05:28 21:59	06:20 21:01	23 19:16 (5) 19:46	08:12 18:33	08:12 16:33
20	08:45 16:53	07:49 17:55	06:42 18:50	18:06 (6) 18:22 (6)	06:27 20:48	05:27 21:42	05:03 22:15	05:29 21:58	06:22 20:59	23 19:16 (5) 19:44	08:14 18:31	08:14 16:31
21	08:44 16:55	07:47 17:57	06:40 18:52	18:06 (6) 18:25 (6)	06:24 20:50	05:26 21:44	05:03 22:15	05:31 21:56	06:24 20:57	23 19:16 (5) 19:12 (5)	08:16 18:28	08:16 16:30
22	08:42 16:56	07:45 17:59	06:37 18:53	18:06 (6) 18:26 (5)	06:22 20:52	05:24 21:46	05:03 22:16	05:32 21:55	06:26 20:55	21 19:12 (5) 19:39	08:18 18:26	08:18 16:29
23	08:41 16:58	07:43 18:01	06:35 18:55	18:06 (5) 18:29 (5)	06:20 20:54	05:23 21:47	05:04 22:16	05:34 21:54	06:27 20:52	19 19:10 (5) 19:08 (6)	08:20 18:24	08:20 16:28
24	08:40 17:00	07:40 18:03	06:32 18:57	18:05 (5) 18:29 (5)	06:18 20:56	05:21 21:49	05:04 22:16	05:35 21:52	06:29 20:50	17 19:08 (6) 19:05 (6)	08:22 18:22	08:22 16:26
25	08:38 17:02	07:38 18:05	06:30 18:59	18:06 (5) 18:28 (5)	06:15 20:58	05:20 21:50	05:04 22:16	05:37 21:50	06:31 20:48	15 19:03 (6) 19:31	08:23 17:19	08:23 16:25
26	08:37 17:04	07:36 18:07	06:27 19:01	18:06 (5) 18:27 (5)	06:13 20:59	05:19 21:52	05:05 22:16	05:38 21:49	06:33 20:45	13 19:03 (6) 19:29	08:25 17:17	08:25 16:24
27	08:35 17:06	07:33 18:09	06:25 19:03	18:07 (5) 18:26 (5)	06:11 21:01	05:17 21:53	05:05 22:16	05:40 21:47	06:35 20:43	11 19:00 (6) 18:50 (6)	07:28 17:15	08:27 16:23
28	08:34 17:08	07:31 18:11	06:22 19:05	18:07 (5) 18:24 (5)	06:09 21:03	05:16 21:54	05:06 22:16	05:42 21:46	06:37 20:41	7 18:57 (6) 18:55 (6)	07:29 17:13	08:28 16:22
29	08:32 17:10	07:29 18:11	06:20 19:05	19:09 (5) 19:23 (5)	06:07 21:05	05:15 21:56	05:06 22:15	05:43 21:44	06:38 20:38	5 18:52 (6) 18:53 (6)	07:31 17:11	08:30 16:21
30	08:31 17:12	07:27 18:09	06:17 19:03	19:11 (5) 19:19 (5)	06:04 21:07	05:14 21:57	05:07 22:15	05:45 21:42	06:40 20:36	1 18:53 (6) 19:19	07:33 17:09	08:32 16:20
31	08:29 17:14	07:25 18:10	06:15 19:05	21:07	21:07	05:13 21:59	05:47 21:40	06:42 20:33	07:35 17:07			08:58 16:22
Potential sun hours	248	272	367	421	496	513	515	461	382	328	257	231
Total, worst case			250						256			
Sun reduction			0.22						0.29			
Oper. time red.			1.00						1.00			
Wind dir. red.			0.58						0.58			
Total reduction			0.13						0.17			
Total, real			33						43			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: X - H24

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January	February	March	April	May	June
1	08:58 16:24	08:27 17:16	16:09 (16) 16:35 (16)	07:29 18:13		05:11 22:00
2	08:58 16:25	08:25 17:18	16:08 (16) 16:36 (16)	07:26 18:15		05:10 22:01
3	08:58 16:26	08:24 17:20	16:07 (16) 16:37 (16)	07:24 18:17		05:10 22:02
4	08:58 16:27	08:22 17:22	16:06 (16) 16:38 (16)	07:21 18:19		05:09 22:03
5	08:57 16:28	08:20 17:24	16:06 (16) 16:39 (16)	07:19 18:21	7 17:37 (15) 17:44 (15)	05:08 22:05
6	08:57 16:30	08:18 17:26	16:06 (16) 16:39 (16)	07:17 18:23	16 17:32 (15) 17:48 (15)	05:52 22:06
7	08:56 16:31	08:16 17:28	16:05 (16) 16:40 (16)	07:14 18:24	22 17:29 (15) 17:51 (15)	05:50 22:07
8	08:56 16:33	08:14 17:30	16:05 (16) 16:41 (16)	07:12 18:26	26 17:27 (15) 17:53 (15)	05:48 22:08
9	08:55 16:34	08:12 17:32	16:04 (16) 16:40 (16)	07:09 18:28	29 17:25 (15) 17:54 (15)	05:46 22:09
10	08:55 16:36	08:10 17:34	16:04 (16) 16:40 (16)	07:07 18:30	32 17:23 (15) 17:55 (15)	05:44 22:09
11	08:54 16:37	08:08 17:36	16:04 (16) 16:41 (16)	07:05 18:32	33 17:23 (15) 17:56 (15)	05:42 22:10
12	08:53 16:39	08:06 17:38	16:04 (16) 16:41 (16)	07:02 18:34	35 17:21 (15) 17:56 (15)	05:40 22:11
13	08:52 16:40	08:04 17:40	16:05 (16) 16:41 (16)	07:00 18:36	36 17:21 (15) 17:57 (15)	05:38 22:12
14	08:51 16:42	08:02 17:42	16:05 (16) 16:41 (16)	06:57 18:38	38 17:19 (15) 17:57 (15)	05:37 22:12
15	08:51 16:44	08:00 17:44	16:05 (16) 16:39 (16)	06:55 18:40	39 17:19 (15) 17:58 (15)	05:35 22:13
16	08:50 16:45	07:58 17:46	16:06 (16) 16:39 (16)	06:52 18:42	39 17:18 (15) 17:57 (15)	05:33 22:14
17	08:48 16:47	07:56 17:49	16:07 (16) 16:39 (16)	06:50 18:44	39 17:18 (15) 17:57 (15)	05:32 22:14
18	08:47 16:49	07:54 17:51	16:08 (16) 16:38 (16)	06:47 18:46	39 17:18 (15) 17:57 (15)	05:30 22:15
19	08:46 16:51	07:51 17:53	16:08 (16) 16:36 (16)	06:45 18:48	39 17:18 (15) 17:57 (15)	05:28 22:15
20	08:45 16:53	07:49 17:55	16:10 (16) 16:35 (16)	06:42 18:50	39 17:17 (15) 17:56 (15)	05:26 22:15
21	08:44 16:54	07:47 17:57	16:12 (16) 16:34 (16)	06:40 18:51	37 17:18 (15) 17:55 (15)	05:25 22:16
22	08:42 16:56	07:45 17:59	16:14 (16) 16:31 (16)	06:37 18:53	36 17:18 (15) 17:54 (15)	05:24 22:16
23	08:41 16:58	07:42 18:01	16:17 (16) 16:28 (16)	06:35 18:55	34 17:19 (15) 17:53 (15)	05:22 22:16
24	08:40 17:00	07:40 18:03	06:32 18:57	33 17:19 (15) 17:52 (15)	06:17 20:56	05:21 22:16
25	08:38 17:02	07:38 18:05	06:30 18:59	30 17:21 (15) 17:51 (15)	06:15 20:58	05:20 22:16
26	08:37 17:04	07:36 18:07	06:27 19:01	28 17:21 (15) 17:49 (15)	06:13 20:59	05:18 22:16
27	08:35 17:06	07:33 18:09	06:25 19:03	23 17:24 (15) 17:47 (15)	06:11 21:01	05:17 22:16
28	08:34 17:08	07:31 18:11	06:22 19:05	19 17:25 (15) 17:44 (15)	06:08 21:03	05:16 22:16
29	08:32 17:10	11 16:26 (16) 16:12 (16)	07:20 20:07	12 18:29 (15) 18:41 (15)	06:06 21:05	05:15 22:15
30	08:31 17:12	17 16:29 (16) 16:11 (16)	07:17 20:08	06:04 21:07	05:14 21:57	05:07 22:15
31	08:29 17:14	20 16:31 (16) 24 16:33 (16)	07:15 20:10		05:12 21:59	
Potential sun hours	248	272	367	421	496	513
Total, worst case	72	703	760			
Sun reduction	0.17	0.22	0.22			
Oper. time red.	1.00	1.00	1.00			
Wind dir. red.	0.59	0.59	0.57			
Total reduction	0.10	0.13	0.13			
Total, real	7	93	97			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: X - H24

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	July	August	September	October	November	December		
1	05:07 22:15	05:48 21:39	06:44 20:31	07:38 19:16	18:01 (15) 18:37 (15)	07:37 17:04	15:34 (16) 16:10 (16)	08:33 16:19
2	05:08 22:14	05:50 21:37	06:45 20:28	07:40 19:14	18:00 (15) 18:35 (15)	07:39 17:02	15:34 (16) 16:10 (16)	08:35 16:18
3	05:09 22:14	05:52 21:35	06:47 20:26	07:42 19:11	18:01 (15) 18:33 (15)	07:41 17:00	15:34 (16) 16:09 (16)	08:36 16:17
4	05:10 22:14	05:53 21:33	06:49 20:24	07:44 19:09	18:02 (15) 18:32 (15)	07:43 16:58	15:35 (16) 16:10 (16)	08:38 16:17
5	05:11 22:13	05:55 21:31	06:51 20:21	07:45 19:07	18:03 (15) 18:30 (15)	07:45 16:56	15:35 (16) 16:09 (16)	08:39 16:16
6	05:11 22:12	05:57 21:29	06:53 20:19	07:47 19:04	18:04 (15) 18:28 (15)	07:47 16:54	15:36 (16) 16:08 (16)	08:41 16:16
7	05:12 22:12	05:59 21:27	06:54 20:16	07:49 19:01	18:06 (15) 18:26 (15)	07:49 16:53	15:36 (16) 16:08 (16)	08:42 16:15
8	05:14 22:11	06:00 21:25	06:56 20:14	07:51 18:59	18:10 (15) 18:22 (15)	07:51 16:51	15:37 (16) 16:07 (16)	08:43 16:15
9	05:15 22:10	06:02 21:23	06:58 20:11	07:53 18:56	07:53 16:49	15:38 (16) 16:06 (16)	08:45 16:14	
10	05:16 22:09	06:04 21:21	07:00 20:09	07:55 18:54	07:55 16:47	15:40 (16) 16:06 (16)	08:46 16:14	
11	05:17 22:08	06:06 21:19	07:02 20:06	07:57 18:51	07:57 16:45	15:41 (16) 16:04 (16)	08:47 16:14	
12	05:18 22:07	06:07 21:17	07:03 20:04	07:58 18:49	07:59 16:44	15:42 (16) 16:03 (16)	08:48 16:14	
13	05:19 22:06	06:09 21:15	07:05 20:01	08:00 18:47	08:01 16:42	15:44 (16) 16:01 (16)	08:49 16:13	
14	05:21 22:05	06:11 21:13	07:07 19:59	08:02 18:30 (15)	08:02 16:40	15:47 (16) 15:58 (16)	08:50 16:13	
15	05:22 22:04	06:13 21:10	07:09 19:56	08:04 18:16 (15)	08:05 16:39	08:51 16:13		
16	05:23 22:03	06:15 21:08	07:11 19:54	08:06 18:35 (15)	08:07 16:37	08:52 16:13		
17	05:25 22:02	06:16 21:06	07:12 19:51	08:08 18:10 (15)	08:09 16:36	08:53 16:14		
18	05:26 22:01	06:18 21:04	07:14 19:49	08:10 18:38 (15)	08:11 16:34	08:54 16:14		
19	05:27 21:59	06:20 21:01	07:16 19:46	08:12 18:07 (15)	08:12 17:01 (16)	08:55 16:14		
20	05:29 21:58	06:22 20:59	07:18 19:44	08:14 18:39 (15)	08:14 17:03 (16)	08:55 16:14		
21	05:30 21:57	06:24 20:57	07:20 19:41	08:16 18:04 (15)	08:16 16:42 (16)	08:56 16:15		
22	05:32 21:55	06:25 20:55	07:21 19:39	08:18 18:03 (15)	08:18 17:06 (16)	08:56 16:15		
23	05:33 21:54	06:27 20:52	07:23 19:36	08:20 18:02 (15)	08:20 16:38 (16)	08:57 16:16		
24	05:35 21:52	06:29 20:50	07:25 19:33	08:22 18:40 (15)	08:22 17:08 (16)	08:57 16:16		
25	05:37 21:51	06:31 20:48	07:27 19:31	08:24 18:01 (15)	08:23 15:36 (16)	08:58 16:17		
26	05:38 21:49	06:33 20:45	07:29 19:28	08:26 18:00 (15)	08:25 15:35 (16)	08:58 16:18		
27	05:40 21:47	06:35 20:43	07:31 19:26	08:27 18:39 (15)	08:27 15:34 (16)	08:58 16:19		
28	05:41 21:46	06:36 20:40	07:32 19:23	08:29 18:00 (15)	08:29 15:35 (16)	08:58 16:19		
29	05:43 21:44	06:38 20:38	07:34 19:21	08:30 18:39 (15)	08:30 16:10 (16)	08:58 16:20		
30	05:45 21:42	06:40 20:36	07:36 19:18	08:33 18:00 (15)	08:32 15:34 (16)	08:59 16:21		
31	05:46 21:40	06:42 20:33		08:35 18:37 (15)	08:35 16:10 (16)	08:58 16:22		
Potential sun hours	515	461	383	327	257	230		
Total, worst case			553	602	396			
Sun reduction			0.29	0.23	0.20			
Oper. time red.			1.00	1.00	1.00			
Wind dir. red.			0.57	0.59	0.59			
Total reduction			0.17	0.14	0.12			
Total, real			93	83	47			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)



### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: Y - H25  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June
1	08:58 16:24	08:27 17:16	07:29 18:13	17:00 (2) 20:12	07:13 19:02 (3)	06:02 20:19 (4)
2	08:58 16:25	08:25 17:18	07:26 18:15	38 17:38 (2) 20:14	35 19:37 (3) 21:11	19 20:38 (4) 22:01
3	08:58 16:26	08:24 17:20	07:24 18:17	38 17:37 (2) 20:16	34 19:37 (3) 21:12	22 20:40 (4) 22:02
4	08:58 16:28	08:22 17:22	07:22 18:19	37 17:36 (2) 20:18	33 19:35 (3) 21:14	27 20:44 (4) 22:03
5	08:57 16:29	08:20 17:24	07:19 18:21	37 17:36 (2) 20:20	32 19:35 (3) 21:16	30 20:46 (4) 22:04
6	08:57 16:30	08:18 17:26	07:17 18:23	36 17:35 (2) 20:22	30 19:33 (3) 21:18	31 20:47 (4) 22:05
7	08:56 16:32	08:16 17:28	07:14 18:25	34 17:34 (2) 20:24	28 19:32 (3) 21:20	34 20:49 (4) 22:06
8	08:56 16:33	08:14 17:30	07:12 18:27	33 17:33 (2) 20:26	26 19:30 (3) 21:22	34 20:49 (4) 22:07
9	08:55 16:34	08:12 17:32	07:09 18:29	30 17:32 (2) 20:27	23 19:29 (3) 21:23	35 20:49 (4) 22:08
10	08:55 16:36	08:10 17:34	07:07 18:30	27 17:30 (2) 20:29	19 19:27 (3) 21:25	35 20:50 (4) 22:09
11	08:54 16:37	08:08 17:37	07:05 18:32	23 17:28 (2) 20:31	14 19:24 (3) 21:27	35 20:49 (4) 22:10
12	08:53 16:39	08:06 17:39	07:02 18:34	19 17:25 (2) 20:33	19 21:29 (3) 21:29	35 20:49 (4) 22:11
13	08:52 16:41	08:04 17:41	07:00 18:36	12 17:22 (2) 20:35	12 20:35 21:30	34 20:49 (4) 22:12
14	08:51 16:42	08:02 17:43	06:57 18:38	06:41 20:37	05:37 21:32	34 20:49 (4) 22:12
15	08:50 16:44	08:00 17:45	06:55 18:40	06:38 20:39	05:35 21:34	34 20:48 (4) 22:13
16	08:49 16:46	07:58 17:47	06:52 18:42	06:36 20:41	05:34 21:36	33 20:48 (4) 22:13
17	08:48 16:47	07:56 17:49	17:14 (2) 18:44	06:50 20:42	06:34 21:37	33 20:48 (4) 22:14
18	08:47 16:49	07:54 17:51	17:11 (2) 18:46	06:47 20:44	06:31 21:39	32 20:48 (4) 22:14
19	08:46 16:51	07:51 17:53	17:08 (2) 18:48	06:45 20:46	06:29 21:41	31 20:48 (4) 22:15
20	08:45 16:53	07:49 17:55	17:06 (2) 18:50	06:42 20:48	06:27 21:42	30 20:47 (4) 22:15
21	08:44 16:55	07:47 17:57	17:05 (2) 18:52	06:40 20:50	7 18:18 (3) 21:44	29 20:46 (4) 22:15
22	08:42 16:57	07:45 17:59	17:03 (2) 18:53	06:37 20:52	12 18:14 (3) 21:45	28 20:46 (4) 22:16
23	08:41 16:58	07:42 18:01	17:03 (2) 18:55	06:35 20:54	17 18:12 (3) 21:47	26 20:45 (4) 22:16
24	08:40 17:00	07:40 18:03	17:02 (2) 18:57	06:32 20:56	21 18:09 (3) 21:49	25 20:45 (4) 22:16
25	08:38 17:02	07:38 18:05	17:01 (2) 18:59	06:30 20:58	24 18:08 (3) 21:50	23 20:44 (4) 22:16
26	08:37 17:04	07:36 18:07	17:00 (2) 19:01	06:27 20:59	28 18:06 (3) 21:52	21 20:43 (4) 22:16
27	08:35 17:06	07:33 18:09	16:59 (2) 19:03	06:25 21:01	30 18:06 (3) 21:53	20 20:43 (4) 22:16
28	08:34 17:08	07:31 18:11	16:59 (2) 19:05	06:22 21:03	8 18:04 (3) 21:54	18 20:42 (4) 22:15
29	08:32 17:10		07:20 20:07	34 19:38 (3) 21:05	12 20:35 (4) 21:56	15 20:41 (4) 22:15
30	08:30 17:12		07:17 20:09	34 19:37 (3) 21:07	15 20:36 (4) 21:57	12 20:39 (4) 22:15
31	08:29 17:14		07:15 20:10	35 19:38 (3) 21:09		8 20:37 (4) 22:15
Potential sun hours	248	272	367	421	496	513
Total, worst case		317	677	346	848	
Sun reduction		0.22	0.22	0.34	0.36	
Oper. time red.		1.00	1.00	1.00	1.00	
Wind dir. red.		0.58	0.58	0.59	0.62	
Total reduction		0.13	0.13	0.20	0.22	
Total, real		41	88	70	190	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: Y - H25  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	July	August	September	October	November	December							
1	05:08	05:48	20:24 (4)	06:44	19:09 (3)	07:38	17:48 (2)	07:37	08:33				
	22:15	21:39	35	20:59 (4)	20:31	14	19:23 (3)	19:16	18:04 (2)	17:05	16:19		
2	05:08	05:50	20:25 (4)	06:46	19:06 (3)	07:40	17:44 (2)	07:39	08:35				
	22:14	21:37	35	21:00 (4)	20:28	19	19:25 (3)	19:14	18:05 (2)	17:03	16:19		
3	05:09	05:52	20:25 (4)	06:47	19:04 (3)	07:42	17:41 (2)	07:41	08:36				
	22:14	21:35	35	21:00 (4)	20:26	23	19:27 (3)	19:11	18:07 (2)	17:01	16:18		
4	05:10	05:54	20:24 (4)	06:49	19:02 (3)	07:44	17:40 (2)	07:43	08:38				
	22:13	21:33	35	20:59 (4)	20:24	26	19:28 (3)	19:09	18:08 (2)	16:59	16:17		
5	05:11	05:55	20:25 (4)	06:51	19:00 (3)	07:45	17:38 (2)	07:45	08:39				
	22:13	21:31	34	20:59 (4)	20:21	28	19:28 (3)	19:06	18:09 (2)	16:57	16:16		
6	05:12	05:57	20:25 (4)	06:53	18:59 (3)	07:47	17:37 (2)	07:47	08:41				
	22:12	21:29	32	20:57 (4)	20:19	30	19:29 (3)	19:04	18:10 (2)	16:55	16:16		
7	05:13	05:59	20:25 (4)	06:55	18:58 (3)	07:49	17:36 (2)	07:49	08:42				
	22:11	21:27	31	20:56 (4)	20:16	32	19:30 (3)	19:01	18:11 (2)	16:53	16:15		
8	05:14	06:01	20:26 (4)	06:56	18:57 (3)	07:51	17:35 (2)	07:51	08:43				
	22:11	21:25	28	20:54 (4)	20:14	33	19:30 (3)	18:59	18:11 (2)	16:51	16:15		
9	05:15	06:02	20:26 (4)	06:58	18:56 (3)	07:53	17:34 (2)	07:53	08:45				
	22:10	21:23	26	20:52 (4)	20:11	34	19:30 (3)	18:56	18:11 (2)	16:49	16:15		
10	05:16	06:04	20:27 (4)	07:00	18:55 (3)	07:55	17:34 (2)	07:55	08:46				
	22:09	21:21	23	20:50 (4)	20:09	35	19:30 (3)	18:54	18:11 (2)	16:47	16:14		
11	05:17	06:06	20:28 (4)	07:02	18:55 (3)	07:57	17:33 (2)	07:57	08:47				
	22:08	21:19	21	20:49 (4)	20:06	35	19:30 (3)	18:52	18:11 (2)	16:46	16:14		
12	05:18	20:39 (4)	06:08	20:28 (4)	07:04	18:54 (3)	07:59	17:33 (2)	07:59	08:48			
	22:07	5	20:44 (4)	21:17	18	20:46 (4)	20:04	35	19:29 (3)	18:49	18:11 (2)	16:44	16:14
13	05:20	20:37 (4)	06:09	20:30 (4)	07:05	18:54 (3)	08:00	38	18:11 (2)	16:44	16:14		
	22:06	10	20:47 (4)	21:15	14	20:44 (4)	20:01	35	19:29 (3)	18:47	18:11 (2)	16:42	16:14
14	05:21	20:35 (4)	06:11	20:32 (4)	07:07	18:54 (3)	08:02	38	18:11 (2)	16:41	16:14		
	22:05	13	20:48 (4)	21:12	11	20:43 (4)	19:59	34	19:28 (3)	18:45	18:11 (2)	16:41	16:14
15	05:22	20:33 (4)	06:13	20:33 (4)	07:09	18:54 (3)	08:04	37	18:10 (2)	16:39	16:14		
	22:04	17	20:50 (4)	21:10	7	20:40 (4)	19:56	34	19:28 (3)	18:42	18:11 (2)	16:39	16:14
16	05:24	20:32 (4)	06:15	07:11	18:54 (3)	08:06	17:33 (2)	08:07	08:52				
	22:03	19	20:51 (4)	21:08	19:54	31	19:25 (3)	18:40	18:09 (2)	16:37	16:14		
17	05:25	20:32 (4)	06:17	07:13	18:55 (3)	08:08	17:33 (2)	08:09	08:53				
	22:02	21	20:53 (4)	21:06	19:51	28	19:23 (3)	18:37	18:08 (2)	16:36	16:14		
18	05:26	20:31 (4)	06:18	07:14	18:55 (3)	08:10	17:34 (2)	08:11	08:54				
	22:00	22	20:53 (4)	21:04	19:49	25	19:20 (3)	18:35	18:05 (2)	16:34	16:14		
19	05:28	20:30 (4)	06:20	07:16	18:56 (3)	08:12	17:34 (2)	08:12	08:54				
	21:59	24	20:54 (4)	21:01	19:46	22	19:18 (3)	18:33	18:03 (2)	16:33	16:14		
20	05:29	20:30 (4)	06:22	07:18	18:58 (3)	08:14	17:35 (2)	08:14	08:55				
	21:58	25	20:55 (4)	20:59	19:44	18	19:16 (3)	18:31	18:01 (2)	16:32	16:15		
21	05:31	20:29 (4)	06:24	07:20	18:59 (3)	08:16	17:36 (2)	08:16	08:56				
	21:56	27	20:56 (4)	20:57	19:41	13	19:12 (3)	18:28	17:58 (2)	16:30	16:15		
22	05:32	20:28 (4)	06:26	07:22	19:01 (3)	08:18	17:37 (2)	08:18	08:56				
	21:55	28	20:56 (4)	20:55	19:39	9	19:10 (3)	18:26	17:56 (2)	16:29	16:16		
23	05:34	20:28 (4)	06:28	07:23	08:20	17:39 (2)	08:20	08:57					
	21:53	29	20:57 (4)	20:52	19:36	14	17:53 (2)	16:28	16:16				
24	05:35	20:27 (4)	06:29	07:25	08:22	17:41 (2)	08:22	08:57					
	21:52	30	20:57 (4)	20:50	19:34	10	18:22	16:26	16:17				
25	05:37	20:27 (4)	06:31	07:27	07:24	16:45 (2)	08:23	08:58					
	21:50	31	20:58 (4)	20:48	19:31	3	16:48 (2)	16:25	16:17				
26	05:38	20:26 (4)	06:33	07:29	07:26	08:25	08:58						
	21:49	32	20:58 (4)	20:45	19:29	17:17	16:24	16:18					
27	05:40	20:26 (4)	06:35	07:31	07:27	08:27	08:58						
	21:47	33	20:59 (4)	20:43	19:26	17:15	16:23	16:19					
28	05:42	20:25 (4)	06:37	07:33	07:29	08:28	08:58						
	21:46	34	20:59 (4)	20:40	19:24	17:13	16:22	16:20					
29	05:43	20:25 (4)	06:38	07:34	07:31	08:30	08:58						
	21:44	35	21:00 (4)	20:38	19:21	17:11	16:21	16:21					
30	05:45	20:25 (4)	06:40	07:36	17:52 (2)	07:33	08:32	08:58					
	21:42	34	20:59 (4)	20:36	19:19	8	18:00 (2)	17:09	16:20	16:22			
31	05:47	20:25 (4)	06:42	07:35	07:35	08:58							
	21:40	35	21:00 (4)	20:33	17:07	16:23							
Potential sun hours	515	461	382	328	257	231							
Total, worst case	504	385	601	714									
Sun reduction	0.27	0.27	0.29	0.23									
Oper. time red.	1.00	1.00	1.00	1.00									
Wind dir. red.	0.62	0.62	0.59	0.58									
Total reduction	0.16	0.17	0.17	0.14									
Total, real	83	65	103	97									

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)



### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: Z - H26  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June	July	August	September	October	November	December		
1	08:58	08:27	07:29	07:12	06:02	05:12	05:08	05:48	06:44	07:38	18:34 (5)	07:37	08:33	
	16:24	17:16	18:13	20:12	21:09	22:00	22:15	21:39	20:31	19:16	14	18:48 (6)	17:04	16:19
2	08:58	08:25	07:26	07:10	06:00	05:11	05:08	05:50	06:46	07:40	18:34 (5)	07:39	08:35	
	16:25	17:18	18:15	20:14	21:11	22:01	22:14	21:37	20:28	19:14	11	18:45 (6)	17:02	16:18
3	08:58	08:24	07:24	07:08	05:58	05:10	05:09	05:52	06:47	07:42	18:34 (5)	07:41	08:36	
	16:26	17:20	18:17	20:16	21:12	22:02	22:14	21:35	20:26	19:11	8	18:42 (6)	17:00	16:18
4	08:58	08:22	07:22	07:05	05:56	05:09	05:10	05:53	06:49	07:44	18:35 (6)	07:43	08:38	
	16:27	17:22	18:19	20:18	21:14	22:03	22:13	21:33	20:24	19:09	5	18:40 (6)	16:58	16:17
5	08:57	08:20	07:19	07:03	05:54	05:08	05:11	05:55	06:51	07:45	18:36 (6)	07:45	08:39	
	16:29	17:24	18:21	20:20	21:16	22:05	22:13	21:31	20:21	19:06	1	18:37 (6)	16:57	16:16
6	08:57	08:18	07:17	07:00	05:52	05:07	05:12	05:57	06:53	07:47	18:37 (6)	07:47	08:41	
	16:30	17:26	18:23	20:22	21:18	22:06	22:12	21:29	20:19	19:04		16:55	16:16	
7	08:56	08:16	07:14	06:58	05:50	05:07	05:13	05:59	06:55	07:49		16:55	16:16	
	16:31	17:28	18:25	20:24	21:20	22:07	22:12	21:27	20:16	19:01		16:53	16:15	
8	08:56	08:14	07:12	06:55	05:48	05:06	05:14	06:01	06:56	07:51		16:51	16:15	
	16:33	17:30	18:27	20:26	21:22	22:08	22:11	21:25	20:14	18:59		16:51	16:15	
9	08:55	08:12	07:09	17:58 (6)	06:53	05:46	05:06	05:15	06:02	06:58		16:51	16:15	
	16:34	17:32	18:29	3	18:01 (6)	20:27	21:23	22:08	22:10	21:23		16:49	16:15	
10	08:55	08:10	07:07	17:56 (5)	06:50	05:44	05:05	05:16	06:04	07:00		16:49	16:15	
	16:36	17:34	18:30	7	18:03 (6)	20:29	21:25	22:09	22:09	21:21		16:47	16:14	
11	08:54	08:08	07:05	17:56 (5)	06:48	05:42	05:05	05:17	06:06	07:02		16:47	16:14	
	16:37	17:36	18:32	9	18:05 (6)	20:31	21:27	22:10	22:08	21:19		16:46	16:14	
12	08:53	08:06	07:02	17:54 (5)	06:46	05:40	05:04	05:18	06:08	07:04		16:46	16:14	
	16:39	17:38	18:34	13	18:07 (6)	20:33	21:29	22:11	22:07	21:17		16:44	16:14	
13	08:52	08:04	07:00	17:54 (5)	06:43	05:39	05:04	05:20	06:09	07:05		16:44	16:14	
	16:41	17:41	18:36	15	18:09 (6)	20:35	21:31	22:12	22:06	21:15		16:42	16:14	
14	08:51	08:02	06:57	17:54 (5)	06:41	05:37	05:04	05:21	06:11	07:07		16:42	16:14	
	16:42	17:43	18:38	17	18:11 (6)	20:37	21:32	22:12	22:05	21:13		16:40	16:14	
15	08:50	08:00	06:55	17:54 (5)	06:38	05:35	05:03	05:22	06:13	07:09		16:40	16:14	
	16:44	17:45	18:40	19	18:13 (5)	20:39	21:34	22:13	22:04	21:10		16:39	16:14	
16	08:49	07:58	06:52	17:54 (5)	06:36	05:33	05:03	05:23	06:15	07:11		16:39	16:14	
	16:46	17:47	18:42	19	18:13 (5)	20:41	21:36	22:14	22:03	21:08		16:37	16:14	
17	08:48	07:56	06:50	17:55 (5)	06:34	05:32	05:03	05:25	06:17	07:13		16:37	16:14	
	16:47	17:49	18:44	17	18:12 (5)	20:43	21:37	22:14	22:02	21:06		16:36	16:14	
18	08:47	07:54	06:47	17:56 (5)	06:31	05:30	05:03	05:26	06:18	07:14		16:36	16:14	
	16:49	17:51	18:46	14	18:10 (5)	20:44	21:39	22:14	22:01	21:04		16:34	16:14	
19	08:46	07:51	06:45	17:58 (5)	06:29	05:29	05:03	05:28	06:20	07:16		16:34	16:14	
	16:51	17:53	18:48	11	18:09 (5)	20:46	21:41	22:15	21:59	21:01		16:33	16:14	
20	08:45	07:49	06:42	06:27	05:27	05:03	05:29	06:22	07:18	08:14		16:33	16:14	
	16:53	17:55	18:50	20:48	21:42	22:15	21:58	20:59	19:44	18:30		16:31	16:15	
21	08:44	07:47	06:40	06:24	05:25	05:03	05:31	06:24	07:20	08:16		16:31	16:15	
	16:55	17:57	18:52	20:50	21:44	22:15	21:56	20:57	19:41	18:28		16:30	16:15	
22	08:42	07:45	06:37	06:22	05:24	05:03	05:32	06:26	07:22	08:18		16:30	16:15	
	16:56	17:59	18:53	20:52	21:46	22:16	21:55	20:55	19:39	18:26		16:29	16:16	
23	08:41	07:43	06:35	06:20	05:23	05:04	05:34	06:27	07:23	08:20		16:29	16:16	
	16:58	18:01	18:55	20:54	21:47	22:16	21:54	20:52	19:36	18:24		16:27	16:16	
24	08:40	07:40	06:32	06:18	05:21	05:04	05:35	06:29	07:25	08:22		16:27	16:16	
	17:00	18:03	18:57	20:56	21:49	22:16	21:52	20:50	19:34	8	18:51 (5)	18:21	16:26	16:17
25	08:38	07:38	06:30	06:15	05:20	05:04	05:37	06:31	07:27	18:40 (5)	07:24	18:40 (5)	17:19	16:17
	17:02	18:05	18:59	20:58	21:50	22:16	21:50	20:48	19:31	13	18:53 (5)	17:19	16:25	16:17
26	08:37	07:36	06:27	06:13	05:19	05:05	05:38	06:33	07:29	18:37 (5)	07:26	18:37 (5)	17:19	16:17
	17:04	18:07	19:01	20:59	21:52	22:16	21:49	20:45	19:29	17	18:54 (5)	17:17	16:24	16:18
27	08:35	07:33	06:25	06:11	05:17	05:05	05:40	06:35	07:31	18:36 (5)	07:28	18:36 (5)	17:19	16:18
	17:06	18:09	19:03	21:01	21:53	22:16	21:47	20:43	19:26	19	18:55 (5)	17:15	16:23	16:19
28	08:34	07:31	06:22	06:09	05:16	05:06	05:42	06:36	07:33	18:35 (5)	07:29	18:35 (5)	17:15	16:19
	17:08	18:11	19:05	21:03	21:54	22:16	21:46	20:41	19:24	20	18:55 (5)	17:13	16:22	16:20
29	08:32	07:20	06:20	06:06	05:15	05:06	05:43	06:38	07:34	18:35 (5)	07:31	18:35 (5)	17:13	16:20
	17:10		20:07	21:05	21:56	22:15	21:44	20:38	19:21	18	18:53 (5)	17:11	16:21	16:21
30	08:31	07:17	06:21	06:04	05:14	05:07	05:45	06:40	07:36	18:34 (5)	07:33	18:34 (5)	17:11	16:21
	17:12	20:09		21:07	21:57	22:15	21:42	20:36	19:19	16	18:50 (6)	17:09	16:20	16:21
31	08:29	07:15	06:21		05:13		05:47	06:42				07:35		16:21
	17:14		07:15		21:59		21:40	20:33				17:07		16:22
Potential sun hours	248	272	367	421	496	513	515	461	382	328		257	231	
Total, worst case			144						111		39			
Sun reduction			0.22						0.29		0.23			
Oper. time red.			1.00						1.00		1.00			
Wind dir. red.			0.57						0.57		0.57			
Total reduction			0.13						0.17		0.13			
Total, real			18					18		5				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)



## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: AA - H27

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June
1	08:58 16:24	08:27 17:16	16:10 (16) 18:13	07:29 18:13	07:12 20:12	06:02 21:09
2	08:58 16:25	08:25 17:18	16:09 (16) 18:15	07:26 18:15	07:10 20:14	06:00 21:11
3	08:58 16:26	08:24 17:20	16:08 (16) 18:17	07:24 18:17	07:07 20:16	05:58 21:13
4	08:58 16:27	08:22 17:22	16:08 (16) 18:19	07:21 18:19	17:35 (15) 20:18	05:56 21:14
5	08:57 16:28	08:20 17:24	16:07 (16) 18:21	07:19 18:21	17:30 (15) 20:20	05:54 21:16
6	08:57 16:30	08:18 17:26	16:07 (16) 18:23	07:17 18:23	17:27 (15) 20:22	05:52 21:18
7	08:56 16:31	08:16 17:28	16:07 (16) 18:24	07:14 18:24	17:25 (15) 20:24	05:50 21:20
8	08:56 16:33	08:14 17:30	16:06 (16) 18:26	07:12 18:26	17:23 (15) 20:25	05:48 21:22
9	08:55 16:34	08:12 17:32	16:05 (16) 18:28	07:09 18:28	17:22 (15) 20:27	05:46 21:23
10	08:55 16:36	08:10 17:34	16:05 (16) 18:30	07:07 18:30	17:20 (15) 20:29	05:44 21:25
11	08:54 16:37	08:08 17:36	16:05 (16) 18:32	07:05 18:32	17:20 (15) 20:31	05:42 21:27
12	08:53 16:39	08:06 17:38	16:06 (16) 18:34	07:02 18:34	17:18 (15) 20:33	05:40 21:29
13	08:52 16:40	08:04 17:40	16:06 (16) 18:36	07:00 18:36	17:18 (15) 20:35	05:38 21:31
14	08:51 16:42	08:02 17:42	16:07 (16) 18:38	06:57 18:38	17:17 (15) 20:37	05:37 21:32
15	08:51 16:44	08:00 17:44	16:06 (16) 18:40	06:55 18:40	17:17 (15) 20:39	05:35 21:34
16	08:50 16:45	07:58 17:46	16:07 (16) 18:42	06:52 18:42	17:16 (15) 20:41	05:33 21:36
17	08:48 16:47	07:56 17:49	16:08 (16) 18:44	06:50 18:44	17:17 (15) 20:42	05:32 21:37
18	08:47 16:49	07:54 17:51	16:09 (16) 18:46	06:47 18:46	17:16 (15) 20:44	05:30 21:39
19	08:46 16:51	07:51 17:53	16:38 (16) 18:48	06:45 18:48	17:15 (15) 20:46	05:28 21:41
20	08:45 16:53	07:49 17:55	16:12 (16) 18:50	06:42 18:50	17:15 (15) 20:48	05:26 21:42
21	08:44 16:54	07:47 17:57	16:14 (16) 18:51	06:40 18:51	17:18 (15) 20:50	05:25 21:44
22	08:42 16:56	07:45 17:59	16:16 (16) 18:53	06:37 18:53	17:18 (15) 20:52	05:24 21:46
23	08:41 16:58	07:42 18:01	16:30 (16) 18:55	06:35 18:55	17:19 (15) 20:54	05:22 21:47
24	08:40 17:00	07:40 18:03	06:32 18:57	06:32 18:57	17:20 (15) 20:56	05:21 21:49
25	08:38 17:02	07:38 18:05	06:30 18:59	06:30 18:59	17:22 (15) 20:58	05:20 21:50
26	08:37 17:04	07:36 18:07	06:27 19:01	06:27 19:01	17:23 (15) 20:59	05:18 21:52
27	08:35 17:06	07:33 18:09	06:25 19:03	06:25 19:03	17:27 (15) 21:01	05:17 21:53
28	08:34 17:08	07:31 16:18 (16) 18:11	06:22 19:05	06:22 19:05	17:39 (15) 21:03	05:16 21:55
29	08:32 17:10	7 16:14 (16) 16:28 (16)	06:20 20:07	06:20 20:07	21:05 21:05	05:15 21:56
30	08:31 17:12	14 16:12 (16) 16:31 (16)	06:17 20:08	06:17 20:08	21:07 21:07	05:14 21:57
31	08:29 17:14	19 16:11 (16) 16:32 (16)	06:15 20:10	06:15 20:10	05:12 21:59	22:15 21:59
Potential sun hours	248	272	367	421	496	513
Total, worst case	61	660	700			
Sun reduction	0.17	0.22	0.22			
Oper. time red.	1.00	1.00	1.00			
Wind dir. red.	0.59	0.59	0.57			
Total reduction	0.10	0.13	0.13			
Total, real	6	87	90			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: AA - H27

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	July	August	September	October	November	December
1	05:07 22:15	05:48 21:39	06:44 20:31	07:38 19:16	17:58 (15) 18:34 (15)	08:33 16:19
2	05:08 22:14	05:50 21:37	06:45 20:28	07:40 19:14	17:57 (15) 18:32 (15)	08:35 16:18
3	05:09 22:14	05:52 21:35	06:47 20:26	07:42 19:11	17:58 (15) 18:31 (15)	08:36 16:17
4	05:10 22:14	05:53 21:33	06:49 20:24	07:44 19:09	17:59 (15) 18:30 (15)	08:38 16:17
5	05:11 22:13	05:55 21:31	06:51 20:21	07:45 19:06	17:59 (15) 18:29 (15)	08:39 16:16
6	05:11 22:12	05:57 21:29	06:53 20:19	07:47 19:04	18:01 (15) 18:27 (15)	08:41 16:16
7	05:12 22:12	05:59 21:27	06:54 20:16	07:49 19:01	18:02 (15) 18:25 (15)	08:42 16:15
8	05:14 22:11	06:00 21:25	06:56 20:14	07:51 18:59	18:04 (15) 18:23 (15)	08:43 16:15
9	05:15 22:10	06:02 21:23	06:58 20:11	07:53 18:56	18:07 (15) 18:20 (15)	08:45 16:14
10	05:16 22:09	06:04 21:21	07:00 20:09	07:55 18:54	07:55 16:47	08:46 16:14
11	05:17 22:08	06:06 21:19	07:02 20:06	07:57 18:51	07:57 16:45	08:47 16:14
12	05:18 22:07	06:07 21:17	07:03 20:04	07:58 18:49	07:59 16:44	08:48 16:14
13	05:19 22:06	06:09 21:15	07:05 20:01	08:00 18:47	08:01 16:42	08:49 16:13
14	05:21 22:05	06:11 21:13	07:07 19:59	08:02 18:44	08:03 16:40	08:50 16:13
15	05:22 22:04	06:13 21:10	07:09 19:56	08:04 18:42	08:05 16:39	08:51 16:13
16	05:23 22:03	06:15 21:08	07:11 19:54	18:16 (15) 18:26 (15)	08:06 16:37	08:52 16:13
17	05:25 22:02	06:16 21:06	07:12 19:51	18:12 (15) 18:30 (15)	08:08 18:37	08:53 16:14
18	05:26 22:01	06:18 21:04	07:14 19:49	18:10 (15) 18:32 (15)	08:10 18:35	08:54 16:14
19	05:27 21:59	06:20 21:01	07:16 19:46	18:08 (15) 18:34 (15)	08:12 18:33	08:55 16:14
20	05:29 21:58	06:22 20:59	07:18 19:44	18:05 (15) 18:34 (15)	08:14 18:30	08:55 16:14
21	05:30 21:57	06:24 20:57	07:20 19:41	18:04 (15) 18:35 (15)	08:16 18:28	08:56 16:15
22	05:32 21:55	06:25 20:55	07:21 19:39	18:02 (15) 18:35 (15)	08:18 18:26	08:56 16:15
23	05:33 21:54	06:27 20:52	07:23 19:36	18:01 (15) 18:36 (15)	08:20 18:24	08:57 16:16
24	05:35 21:52	06:29 20:50	07:25 19:33	18:01 (15) 18:36 (15)	08:22 18:21	08:57 16:16
25	05:37 21:51	06:31 20:48	07:27 19:31	18:00 (15) 18:37 (15)	07:24 17:19	08:23 16:17
26	05:38 21:49	06:33 20:45	07:29 19:28	17:58 (15) 18:36 (15)	07:26 17:17	08:25 16:18
27	05:40 21:47	06:35 20:43	07:31 19:26	17:58 (15) 18:36 (15)	07:27 17:15	08:27 16:23
28	05:41 21:46	06:36 20:40	07:32 19:23	17:58 (15) 18:36 (15)	07:29 17:13	08:29 16:22
29	05:43 21:44	06:38 20:38	07:34 19:21	17:58 (15) 18:35 (15)	07:31 17:11	08:30 16:20
30	05:45 21:42	06:40 20:36	07:36 19:18	17:58 (15) 18:35 (15)	07:33 17:08	08:32 16:21
31	05:46 21:40	06:42 20:33		07:35 17:06	15:35 (16) 16:10 (16)	08:58 16:22
Potential sun hours	515	461	383	327	257	230
Total, worst case			464	603	371	
Sun reduction			0.29	0.23	0.20	
Oper. time red.			1.00	1.00	1.00	
Wind dir. red.			0.57	0.59	0.59	
Total reduction			0.17	0.14	0.12	
Total, real			78	83	44	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: AB - H28  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June	July	August	September	October	November	December	
1	08:58 16:24	08:27 17:16	07:29 18:13	07:12 20:12	06:02 21:09	05:12 22:00	05:08 22:15	05:48 21:39	06:44 20:31	07:38 19:16	07:37 17:04	08:33 16:19	
2	08:58 16:25	08:25 17:18	07:26 18:15	07:10 20:14	06:00 21:11	05:11 22:01	05:08 22:14	05:50 21:37	06:46 20:28	07:40 19:14	07:39 17:02	08:35 16:18	
3	08:58 16:26	08:24 17:20	07:24 18:17	07:08 20:16	05:58 21:12	05:10 22:02	05:09 22:14	05:52 21:35	06:47 20:26	07:42 19:11	07:41 17:00	08:36 16:18	
4	08:58 16:27	08:22 17:22	07:22 18:19	07:05 20:18	05:56 21:14	05:09 22:03	05:10 22:13	05:53 21:33	06:49 20:24	07:44 19:09	07:43 16:58	08:38 16:17	
5	08:57 16:29	08:20 17:24	07:19 18:21	07:03 20:20	05:54 21:16	05:08 22:05	05:11 22:13	05:55 21:31	06:51 20:21	07:45 19:06	07:45 16:57	08:39 16:16	
6	08:57 16:30	08:18 17:26	07:17 18:23	07:00 20:22	05:52 21:18	05:07 22:06	05:12 22:12	05:57 21:29	06:53 20:19	07:47 19:04	07:47 16:55	08:41 16:16	
7	08:56 16:31	08:16 17:28	07:14 18:25	06:58 20:24	05:50 21:20	05:07 22:07	05:13 22:12	05:59 21:27	06:55 20:16	07:49 19:01	07:49 16:53	08:42 16:15	
8	08:56 16:33	08:14 17:30	07:12 18:27	06:55 20:26	05:48 21:22	05:06 22:08	05:14 22:11	06:01 21:25	06:56 20:14	07:51 18:59	07:51 16:51	08:43 16:15	
9	08:55 16:34	08:12 17:32	07:09 18:29	06:53 20:27	05:46 21:23	05:06 22:08	05:15 22:10	06:02 21:23	06:58 20:11	07:53 18:56	07:53 16:49	08:45 16:15	
10	08:55 16:36	08:10 17:34	07:07 18:30	06:50 20:29	05:44 21:25	05:05 22:09	05:16 22:09	06:04 21:21	07:00 20:09	07:55 18:54	07:55 16:47	08:46 16:14	
11	08:54 16:37	08:08 17:36	07:05 18:32	06:48 20:31	05:42 21:27	05:05 22:10	05:17 22:08	06:06 21:19	07:02 20:06	07:57 18:52	07:57 16:46	08:47 16:14	
12	08:53 16:39	08:06 17:38	07:02 18:34	06:46 20:33	05:40 21:29	05:04 22:11	05:18 22:07	06:08 21:17	07:04 20:04	07:59 18:49	07:59 16:59	08:48 16:14	
13	08:52 16:41	08:04 17:41	07:00 18:36	06:43 20:35	05:39 21:31	05:04 22:12	05:20 22:06	06:09 21:15	07:05 20:01	08:00 18:47	08:01 16:42	08:49 16:14	
14	08:51 16:42	08:02 17:43	06:57 18:38	18:08 (6) 18:11 (6)	06:41 20:37	05:37 21:32	05:04 22:12	05:21 22:05	07:07 21:13	08:02 19:59	08:03 16:40	08:50 16:14	
15	08:50 16:44	08:00 17:45	06:55 18:40	18:07 (6) 18:13 (6)	06:38 20:39	05:35 21:34	05:03 22:13	05:22 22:04	06:13 21:10	07:09 19:56	08:04 18:42	08:05 16:39	
16	08:49 16:46	07:58 17:47	06:52 18:42	18:06 (6) 18:15 (6)	06:36 20:41	05:33 21:36	05:03 22:14	05:23 22:03	06:15 21:08	07:11 19:54	18:57 (5) 19:07 (5)	08:06 18:40	08:07 16:37
17	08:48 16:47	07:56 17:49	06:50 18:44	18:06 (6) 18:17 (6)	06:34 20:43	05:32 21:37	05:03 22:14	05:25 22:02	06:17 21:06	07:13 19:51	18:55 (5) 19:09 (5)	08:08 18:37	08:09 16:36
18	08:47 16:49	07:54 17:51	06:47 18:46	18:05 (6) 18:19 (6)	06:31 20:44	05:30 21:39	05:03 22:14	05:26 22:01	06:18 21:04	07:14 19:49	18:53 (5) 19:11 (5)	08:10 18:35	08:11 16:34
19	08:46 16:51	07:51 17:53	06:45 18:48	18:05 (6) 18:21 (6)	06:29 20:46	05:29 21:41	05:03 22:15	05:28 21:59	06:20 21:01	07:16 19:46	18:52 (5) 19:12 (5)	08:12 18:33	08:12 16:33
20	08:45 16:53	07:49 17:55	06:42 18:50	18:05 (6) 18:22 (5)	06:27 20:48	05:27 21:42	05:03 22:15	05:29 21:58	06:22 20:59	07:18 19:44	18:51 (5) 19:12 (5)	08:14 18:30	08:14 16:31
21	08:44 16:55	07:47 17:57	06:40 18:52	18:05 (5) 18:25 (5)	06:24 20:50	05:26 21:44	05:03 22:15	05:31 21:56	06:24 20:57	07:20 19:41	18:50 (5) 19:11 (5)	08:16 18:28	08:16 16:30
22	08:42 16:56	07:45 17:59	06:37 18:53	18:04 (5) 18:26 (5)	06:22 20:52	05:24 21:46	05:03 22:16	05:32 21:55	06:26 20:55	07:22 19:39	18:49 (5) 19:10 (5)	08:18 18:26	08:18 16:29
23	08:41 16:58	07:43 18:01	06:35 18:55	18:04 (5) 18:26 (5)	06:20 20:54	05:23 21:47	05:04 22:16	05:34 21:54	06:27 20:52	07:23 19:36	18:49 (5) 19:08 (5)	08:20 18:24	08:20 16:28
24	08:40 17:00	07:40 18:03	06:32 18:57	18:04 (5) 18:24 (5)	06:18 20:56	05:21 21:49	05:04 22:16	05:35 21:52	06:29 20:50	07:25 19:34	18:49 (6) 19:05 (6)	08:22 18:22	08:22 16:26
25	08:38 17:02	07:38 18:05	06:30 18:59	18:05 (5) 18:23 (5)	06:15 20:58	05:20 21:50	05:04 22:16	05:37 21:50	06:31 20:48	07:27 19:31	18:49 (6) 19:03 (6)	07:24 17:19	08:23 16:25
26	08:37 17:04	07:36 18:07	06:27 19:01	18:06 (5) 18:21 (5)	06:13 20:59	05:19 21:52	05:05 22:16	05:38 21:49	06:33 20:45	07:29 19:29	18:47 (6) 19:00 (6)	07:26 17:17	08:25 16:24
27	08:35 17:06	07:33 18:09	06:25 19:03	18:08 (5) 18:20 (5)	06:11 21:01	05:17 21:53	05:05 22:16	05:40 21:47	06:35 20:43	07:31 19:26	18:47 (6) 18:57 (6)	07:28 17:15	08:27 16:23
28	08:34 17:08	07:31 18:11	06:22 19:05	18:12 (5) 18:14 (5)	06:09 21:03	05:16 21:54	05:06 22:16	05:42 21:46	06:36 20:41	07:33 19:24	18:48 (6) 18:55 (6)	07:29 17:13	08:28 16:22
29	08:32 17:10		07:20 20:07	06:06 21:05	05:15 21:56	05:06 22:15	05:43 21:44	06:38 20:38	07:34 19:21	07:34 18:53 (6)	18:48 (6) 18:53 (6)	07:31 17:11	08:30 16:21
30	08:31 17:12		07:17 20:09	06:04 21:07	05:14 21:57	05:07 22:15	05:45 21:42	06:40 20:36	07:36 19:19	18:49 (6) 18:50 (6)	07:33 17:09	07:33 16:20	08:32 16:21
31	08:29 17:14		07:15 20:10	05:13 21:59	05:13 21:59	05:47 21:40	06:42 21:30	07:35 20:33	17:07	07:35 17:07	07:35 17:07	08:58 16:22	
Potential sun hours	248	272	367	421	496	513	515	461	382	210	328	257	231
Total, worst case			207							210			
Sun reduction			0.22							0.29			
Oper. time red.			1.00							1.00			
Wind dir. red.			0.58							0.58			
Total reduction			0.13							0.17			
Total, real			27							36			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)



### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: AC - H29

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January	February	March	April	May	June				
1	08:58	14:48 (16)	08:27	16:03 (15)	07:29	07:12	06:02	05:11		
	16:24	32	15:20 (16)	17:16	34	16:37 (15)	18:13	20:12	21:09	22:00
2	08:58	14:49 (16)	08:25	16:02 (15)	07:26	07:10	06:00	05:10		
	16:25	32	15:21 (16)	17:18	36	16:38 (15)	18:15	20:14	21:11	22:01
3	08:58	14:50 (16)	08:24	16:02 (15)	07:24	07:07	05:58	05:10		
	16:26	31	15:21 (16)	17:20	36	16:38 (15)	18:17	20:16	21:13	22:02
4	08:58	14:50 (16)	08:22	16:02 (15)	07:21	07:05	05:56	05:09		
	16:27	31	15:21 (16)	17:22	37	16:39 (15)	18:19	20:18	21:14	22:04
5	08:57	14:51 (16)	08:20	16:02 (15)	07:19	07:02	05:54	05:08		
	16:28	31	15:22 (16)	17:24	37	16:39 (15)	18:21	20:20	21:16	22:05
6	08:57	14:51 (16)	08:18	16:02 (15)	07:17	07:00	05:52	05:07		
	16:30	31	15:22 (16)	17:26	37	16:39 (15)	18:23	20:22	21:18	22:06
7	08:56	14:51 (16)	08:16	16:02 (15)	07:14	06:58	05:50	05:06		
	16:31	31	15:22 (16)	17:28	38	16:40 (15)	18:24	20:24	21:20	22:07
8	08:56	14:52 (16)	08:14	16:02 (15)	07:12	06:55	05:48	05:06		
	16:33	30	15:22 (16)	17:30	38	16:40 (15)	18:26	20:26	21:22	22:08
9	08:55	14:53 (16)	08:12	16:01 (15)	07:09	06:53	05:46	05:05		
	16:34	30	15:23 (16)	17:32	38	16:39 (15)	18:28	20:27	21:24	22:09
10	08:55	14:54 (16)	08:10	16:02 (15)	07:07	06:50	05:44	05:05		
	16:36	29	15:23 (16)	17:34	37	16:39 (15)	18:30	20:29	21:25	22:09
11	08:54	14:54 (16)	08:08	16:02 (15)	07:05	06:48	05:42	05:04		
	16:37	29	15:23 (16)	17:36	37	16:39 (15)	18:32	20:31	21:27	22:10
12	08:53	14:55 (16)	08:06	16:03 (15)	07:02	06:45	05:40	05:04		
	16:39	28	15:23 (16)	17:38	35	16:38 (15)	18:34	20:33	21:29	22:11
13	08:52	14:56 (16)	08:04	16:04 (15)	07:00	06:43	05:38	05:03		
	16:40	27	15:23 (16)	17:40	34	16:38 (15)	18:36	20:35	21:31	22:12
14	08:51	14:57 (16)	08:02	16:05 (15)	06:57	06:41	05:37	05:03		
	16:42	26	15:23 (16)	17:42	32	16:37 (15)	18:38	20:37	21:32	22:12
15	08:51	14:57 (16)	08:00	16:05 (15)	06:55	06:38	05:35	05:03		
	16:44	25	15:22 (16)	17:44	31	16:36 (15)	18:40	20:39	21:34	22:13
16	08:50	14:58 (16)	07:58	16:06 (15)	06:52	06:36	05:33	05:03		
	16:45	24	15:22 (16)	17:46	29	16:35 (15)	18:42	20:41	21:36	22:14
17	08:48	15:00 (16)	07:56	16:08 (15)	06:50	06:33	05:32	05:03		
	16:47	22	15:22 (16)	17:49	26	16:34 (15)	18:44	20:43	21:37	22:14
18	08:47	15:01 (16)	07:54	16:10 (15)	06:47	06:31	05:30	05:03		
	16:49	21	15:22 (16)	17:51	23	16:33 (15)	18:46	20:44	21:39	22:15
19	08:46	15:02 (16)	07:51	16:11 (15)	06:45	06:29	05:28	05:03		
	16:51	18	15:20 (16)	17:53	19	16:30 (15)	18:48	20:46	21:41	22:15
20	08:45	15:05 (16)	07:49	16:15 (15)	06:42	06:26	05:27	05:03		
	16:53	14	15:19 (16)	17:55	12	16:27 (15)	18:50	20:48	21:42	22:15
21	08:44	15:07 (16)	07:47	16:40	06:40	06:24	05:25	05:03		
	16:54	10	15:17 (16)	17:57		18:51	20:50	21:44	22:16	
22	08:42	16:13 (15)	07:45	16:37	06:37	06:22	05:24	05:03		
	16:56	8	16:21 (15)	17:59		18:53	20:52	21:46	22:16	
23	08:41	16:10 (15)	07:42	16:35	06:35	06:20	05:22	05:03		
	16:58	13	16:23 (15)	18:01		18:55	20:54	21:47	22:16	
24	08:40	16:09 (15)	07:40	16:32	06:32	06:17	05:21	05:04		
	17:00	17	16:26 (15)	18:03		18:57	20:56	21:49	22:16	
25	08:38	16:07 (15)	07:38	16:30	06:30	06:15	05:20	05:04		
	17:02	21	16:28 (15)	18:05		18:59	20:58	21:50	22:16	
26	08:37	16:05 (15)	07:36	16:27	06:27	06:13	05:18	05:04		
	17:04	25	16:30 (15)	18:07		19:01	20:59	21:52	22:16	
27	08:35	16:05 (15)	07:33	16:25	06:25	06:11	05:17	05:05		
	17:06	27	16:32 (15)	18:09		19:03	21:01	21:53	22:16	
28	08:34	16:04 (15)	07:31	16:22	06:22	06:08	05:16	05:05		
	17:08	29	16:33 (15)	18:11		19:05	21:03	21:55	22:16	
29	08:32	16:03 (15)		16:20	07:20	06:06	05:15	05:06		
	17:10	31	16:34 (15)		20:07	21:05	21:56	22:16		
30	08:31	16:03 (15)		16:17	07:17	06:04	05:14	05:07		
	17:12	32	16:35 (15)		20:09	21:07	21:57	22:15		
31	08:29	16:02 (15)		16:15	07:15		05:12			
	17:14	34	16:36 (15)		20:10		21:59			
Potential sun hours	248		272	367	421	496	513			
Total, worst case	789		646							
Sun reduction	0.17		0.22							
Oper. time red.	1.00		1.00							
Wind dir. red.	0.63		0.60							
Total reduction	0.11		0.13							
Total, real	84		86							

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: AC - H29

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	July	August	September	October	November	December
1	05:07	05:48	06:44	07:38	07:37	15:31 (15) 08:33 14:36 (16)
	22:15	21:39	20:31	19:16	17:04	37 16:08 (15) 16:19 29 15:05 (16)
2	05:08	05:50	06:45	07:40	07:39	15:31 (15) 08:35 14:36 (16)
	22:15	21:37	20:28	19:14	17:02	37 16:08 (15) 16:18 29 15:05 (16)
3	05:09	05:52	06:47	07:42	07:41	15:31 (15) 08:36 14:36 (16)
	22:14	21:35	20:26	19:11	17:00	38 16:09 (15) 16:17 30 15:06 (16)
4	05:10	05:53	06:49	07:44	07:43	15:31 (15) 08:38 14:37 (16)
	22:14	21:33	20:24	19:09	16:58	38 16:09 (15) 16:17 30 15:07 (16)
5	05:11	05:55	06:51	07:45	07:45	15:31 (15) 08:39 14:36 (16)
	22:13	21:31	20:21	19:06	16:56	38 16:09 (15) 16:16 31 15:07 (16)
6	05:11	05:57	06:53	07:47	07:47	15:31 (15) 08:41 14:37 (16)
	22:12	21:29	20:19	19:04	16:54	38 16:09 (15) 16:16 31 15:08 (16)
7	05:12	05:59	06:54	07:49	07:49	15:31 (15) 08:42 14:37 (16)
	22:12	21:27	20:16	19:01	16:53	37 16:08 (15) 16:15 31 15:08 (16)
8	05:13	06:00	06:56	07:51	07:51	15:32 (15) 08:43 14:38 (16)
	22:11	21:25	20:14	18:59	16:51	36 16:08 (15) 16:15 31 15:09 (16)
9	05:15	06:02	06:58	07:53	07:53	15:33 (15) 08:45 14:38 (16)
	22:10	21:23	20:11	18:56	16:49	36 16:09 (15) 16:14 31 15:09 (16)
10	05:16	06:04	07:00	07:55	07:55	15:33 (15) 08:46 14:38 (16)
	22:09	21:21	20:09	18:54	16:47	35 16:08 (15) 16:14 32 15:10 (16)
11	05:17	06:06	07:02	07:57	07:57	15:34 (15) 08:47 14:39 (16)
	22:08	21:19	20:06	18:51	16:45	33 16:07 (15) 16:14 32 15:11 (16)
12	05:18	06:07	07:03	07:59	07:59	15:35 (15) 08:48 14:39 (16)
	22:07	21:17	20:04	18:49	16:44	32 16:07 (15) 16:13 32 15:11 (16)
13	05:19	06:09	07:05	08:00	08:01	15:35 (15) 08:49 14:40 (16)
	22:06	21:15	20:01	18:47	16:42	31 16:06 (15) 16:13 32 15:12 (16)
14	05:21	06:11	07:07	08:02	08:03	15:36 (15) 08:50 14:40 (16)
	22:05	21:13	19:59	18:44	16:40	29 16:05 (15) 16:13 32 15:12 (16)
15	05:22	06:13	07:09	08:04	08:05	15:37 (15) 08:51 14:40 (16)
	22:04	21:10	19:56	18:42	16:39	27 16:04 (15) 16:13 32 15:12 (16)
16	05:23	06:15	07:11	08:06	08:07	15:39 (15) 08:52 14:41 (16)
	22:03	21:08	19:54	18:40	16:37	25 16:04 (15) 16:13 32 15:13 (16)
17	05:25	06:16	07:12	08:08	08:09	15:41 (15) 08:53 14:42 (16)
	22:02	21:06	19:51	18:37	16:36	21 16:02 (15) 16:14 32 15:14 (16)
18	05:26	06:18	07:14	08:10	08:11	15:43 (15) 08:54 14:41 (16)
	22:01	21:04	19:49	18:35	16:34	17 16:00 (15) 16:14 32 15:13 (16)
19	05:27	06:20	07:16	08:12	08:13	15:45 (15) 08:55 14:42 (16)
	21:59	21:01	19:46	18:33	16:33	13 15:58 (15) 16:14 32 15:14 (16)
20	05:29	06:22	07:18	08:14	08:14	15:48 (15) 08:55 14:43 (16)
	21:58	20:59	19:44	18:30	16:31	8 15:56 (15) 16:14 32 15:15 (16)
21	05:30	06:24	07:20	08:16	08:16	14:43 (16) 08:56 14:43 (16)
	21:57	20:57	19:41	18:28	16:30	10 14:53 (16) 16:15 32 15:15 (16)
22	05:32	06:25	07:21	08:18	08:18	14:41 (16) 08:56 14:44 (16)
	21:55	20:55	19:39	18:26	14 16:58 (15) 16:29 14 14:55 (16) 16:15 32 15:16 (16)	
23	05:33	06:27	07:23	08:20	08:20	16:41 (15) 08:20 14:39 (16) 08:57 14:44 (16)
	21:54	20:52	19:36	18:24	20 17:01 (15) 16:27 18 14:57 (16) 16:16 32 15:16 (16)	
24	05:35	06:29	07:25	08:22	08:22	16:39 (15) 08:22 14:38 (16) 08:57 14:44 (16)
	21:52	20:50	19:34	18:21	23 17:02 (15) 16:26 21 14:59 (16) 16:16 32 15:16 (16)	
25	05:37	06:31	07:27	08:24	08:23	15:37 (15) 08:23 14:38 (16) 08:58 14:45 (16)
	21:51	20:48	19:31	17:19	27 16:04 (15) 16:25 22 15:00 (16) 16:17 32 15:17 (16)	
26	05:38	06:33	07:29	08:26	08:25	15:35 (15) 08:25 14:37 (16) 08:58 14:45 (16)
	21:49	20:45	19:28	17:17	30 16:05 (15) 16:24 24 15:01 (16) 16:18 32 15:17 (16)	
27	05:40	06:35	07:31	08:28	08:27	15:34 (15) 08:27 14:37 (16) 08:58 14:46 (16)
	21:47	20:43	19:26	17:15	32 16:06 (15) 16:23 25 15:02 (16) 16:18 32 15:18 (16)	
28	05:41	06:36	07:32	08:29	08:29	15:34 (15) 08:29 14:36 (16) 08:58 14:46 (16)
	21:46	20:40	19:23	17:13	33 16:07 (15) 16:22 26 15:02 (16) 16:19 32 15:18 (16)	
29	05:43	06:38	07:34	08:31	08:30	15:33 (15) 08:30 14:36 (16) 08:58 14:47 (16)
	21:44	20:38	19:21	17:11	35 16:08 (15) 16:21 27 15:03 (16) 16:20 32 15:19 (16)	
30	05:45	06:40	07:36	08:33	08:32	15:32 (15) 08:32 14:36 (16) 08:59 14:47 (16)
	21:42	20:36	19:18	17:08	36 16:08 (15) 16:20 28 15:04 (16) 16:21 32 15:19 (16)	
31	05:46	06:42	07:35	08:35	08:35	15:32 (15) 08:35 14:36 (16) 08:59 14:48 (16)
	21:40	20:33	17:06	36 16:08 (15) 16:22 32 15:20 (16)		
Potential sun hours	515	461	383	327	257	230
Total, worst case				286	821	977
Sun reduction				0.23	0.20	0.12
Oper. time red.				1.00	1.00	1.00
Wind dir. red.				0.60	0.61	0.64
Total reduction				0.14	0.12	0.08
Total, real				40	100	74

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6289 Tirawley WF 16 no. turbine windfarm at Tirawley, Co. Mayo

Description:

Licensed user:

Jennings O'Donovan
Finisklin Business Park
F91 RHH9 Sligo
+353719161416
kfeeney / kfeeney@jodireland.com

Calculated:

13/04/2026 12:25/4.2.285

SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: AD - H30

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum
263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

Table with columns for months (January to December) and rows for time slots (08:58 to 17:14). Includes summary rows for Potential sun hours, Total, worst case, Sun reduction, Oper. time red., Wind dir. red., Total reduction, and Total, real.

Table layout: For each day in each month the following matrix apply

Day in month Sun rise (hh:mm) Sun set (hh:mm) Minutes with flicker First time (hh:mm) with flicker Last time (hh:mm) with flicker (WTG causing flicker first time) (WTG causing flicker last time)



### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: AE - H31  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June	July	August	September	October	November	December	
1	08:58 16:24	08:27 17:16	07:29 18:13	07:12 20:12	06:02 21:09	05:12 22:00	05:08 22:15	05:48 21:39	06:44 20:31	07:38 19:16	18:42 (5) 6 18:48 (5)	07:37 17:04	08:33 16:19
2	08:58 16:25	08:25 17:18	07:26 18:15	07:10 20:14	06:00 21:11	05:11 22:01	05:08 22:14	05:50 21:37	06:46 20:28	07:40 19:14	18:42 (5) 2 18:44 (5)	07:39 17:02	08:35 16:18
3	08:58 16:26	08:24 17:20	07:24 18:17	07:08 20:16	05:58 21:12	05:10 22:02	05:09 22:14	05:52 21:35	06:47 20:26	07:42 19:11		07:41 17:00	08:36 16:18
4	08:58 16:27	08:22 17:22	07:22 18:19	07:05 20:18	05:56 21:14	05:09 22:03	05:10 22:13	05:53 21:33	06:49 20:24	07:44 19:09		07:43 16:58	08:38 16:17
5	08:57 16:29	08:20 17:24	07:19 18:21	07:03 20:20	05:54 21:16	05:08 22:04	05:11 22:13	05:55 21:31	06:51 20:21	07:45 19:06		07:45 16:57	08:39 16:16
6	08:57 16:30	08:18 17:26	07:17 18:23	07:00 20:22	05:52 21:18	05:07 22:06	05:12 22:12	05:57 21:29	06:53 20:19	07:47 19:04		07:47 16:55	08:41 16:16
7	08:56 16:31	08:16 17:28	07:14 18:25	06:58 20:24	05:50 21:20	05:07 22:07	05:13 22:12	05:59 21:27	06:55 20:16	07:49 19:01		07:49 16:53	08:42 16:15
8	08:56 16:33	08:14 17:30	07:12 18:27	06:55 20:26	05:48 21:22	05:06 22:08	05:14 22:11	06:00 21:25	06:56 20:14	07:51 18:59		07:51 16:51	08:43 16:15
9	08:55 16:34	08:12 17:32	07:09 18:28	06:53 20:27	05:46 21:23	05:06 22:08	05:15 22:10	06:02 21:23	06:58 20:11	07:53 18:56		07:53 16:49	08:45 16:15
10	08:55 16:36	08:10 17:34	07:07 18:30	06:50 20:29	05:44 21:25	05:05 22:09	05:16 22:09	06:04 21:21	07:00 20:09	07:55 18:54		07:55 16:47	08:46 16:14
11	08:54 16:37	08:08 17:36	07:05 18:32	06:48 20:31	05:42 21:27	05:05 22:10	05:17 22:08	06:06 21:19	07:02 20:06	07:57 18:52		07:57 16:46	08:47 16:14
12	08:53 16:39	08:06 17:38	07:02 18:34	18:03 (5) 06:46	18:07 (5) 20:33	05:40 21:29	05:18 22:11	06:08 21:17	07:04 20:04	07:59 18:49		07:59 16:44	08:48 16:14
13	08:52 16:41	08:04 17:41	07:00 18:36	18:02 (5) 06:43	18:09 (5) 20:35	05:39 21:31	05:04 22:12	06:09 21:15	07:05 20:01	08:00 18:47		08:01 16:42	08:49 16:14
14	08:51 16:42	08:02 17:43	06:57 18:38	18:01 (5) 06:41	18:11 (5) 20:37	05:37 21:32	05:04 22:12	06:11 22:05	07:07 19:59	08:02 18:44		08:03 16:40	08:50 16:14
15	08:50 16:44	08:00 17:45	06:55 18:40	18:01 (5) 06:38	18:13 (5) 20:39	05:35 21:34	05:03 22:13	06:13 21:10	07:09 19:56	08:04 18:42		08:05 16:39	08:51 16:14
16	08:49 16:46	07:58 17:47	06:52 18:42	18:00 (5) 06:36	18:15 (5) 20:41	05:33 21:36	05:03 22:13	06:15 21:08	07:11 19:54	08:06 18:40		08:07 16:37	08:52 16:14
17	08:48 16:47	07:56 17:51	06:50 18:44	18:01 (5) 06:34	18:17 (5) 20:43	05:32 21:37	05:03 22:14	06:17 21:06	07:13 19:51	08:08 18:37		08:09 16:36	08:53 16:14
18	08:47 16:49	07:54 17:51	06:47 18:46	18:01 (5) 06:31	18:17 (5) 20:44	05:30 21:39	05:03 22:14	06:18 21:04	07:14 19:49	08:10 18:35		08:11 16:34	08:54 16:14
19	08:46 16:51	07:51 17:53	06:45 18:48	18:02 (5) 06:29	18:16 (5) 20:46	05:29 21:41	05:03 22:15	06:20 21:59	07:16 19:46	08:12 18:33		08:12 16:33	08:54 16:14
20	08:45 16:53	07:49 17:55	06:42 18:50	18:03 (5) 06:27	18:14 (5) 20:48	05:27 21:42	05:03 22:15	06:22 21:58	07:18 19:44	08:14 18:30		08:14 16:31	08:55 16:15
21	08:44 16:55	07:47 17:57	06:40 18:52	18:07 (5) 06:24	18:14 (5) 20:48	05:25 21:42	05:03 22:15	06:24 21:56	07:20 19:41	08:16 18:28		08:16 16:30	08:56 16:15
22	08:42 16:56	07:45 17:59	06:37 18:53	18:10 (5) 06:22	18:10 (5) 20:50	05:24 21:44	05:03 22:15	06:26 21:56	07:22 19:39	08:18 18:26		08:18 16:29	08:56 16:16
23	08:41 16:58	07:43 18:01	06:35 18:55	06:20 20:52	05:23 21:46	05:04 22:16	05:34 21:54	06:27 20:52	07:23 19:36	08:20 18:58 (5)	18:49 (5)	08:20 18:24	08:57 16:16
24	08:40 17:00	07:40 18:03	06:32 18:57	06:18 20:54	05:21 21:47	05:04 22:16	05:35 21:54	06:29 20:52	07:25 19:36	08:22 18:46 (5)	08:22	08:22 18:21	08:57 16:17
25	08:38 17:02	07:38 18:05	06:30 18:59	06:15 20:58	05:20 21:50	05:04 22:16	05:37 21:50	06:31 20:48	07:27 19:34	08:45 (5) 13 18:59 (5)	07:24 19:01 (5)	07:24 17:19	08:58 16:17
26	08:37 17:04	07:36 18:07	06:27 19:01	06:13 20:59	05:19 21:52	05:05 22:16	05:38 21:49	06:33 20:45	07:29 19:29	18:43 (5) 16 19:01 (5)	07:26 18:42 (5)	07:26 17:17	08:58 16:18
27	08:35 17:06	07:33 18:09	06:25 19:03	06:11 21:01	05:17 21:53	05:05 22:16	05:40 21:47	06:35 20:43	07:31 19:26	18:42 (5) 15 18:57 (5)	07:27 17:15	07:27 16:23	08:58 16:19
28	08:34 17:08	07:31 18:11	06:22 19:05	06:09 21:03	05:16 21:54	05:06 22:16	05:42 21:46	06:36 20:40	07:33 19:24	18:42 (5) 13 18:55 (5)	07:29 17:13	07:29 16:22	08:58 16:20
29	08:32 17:10	07:29 18:07	06:20 19:07	06:06 21:05	05:15 21:56	05:06 22:15	05:43 21:44	06:38 20:38	07:34 19:21	18:42 (5) 11 18:53 (5)	07:31 17:11	07:31 16:21	08:58 16:21
30	08:30 17:12	07:27 18:09	06:17 19:09	06:04 21:07	05:14 21:57	05:07 22:15	05:45 21:42	06:40 20:36	07:36 19:19	18:42 (5) 8 18:50 (5)	07:33 17:09	07:33 16:20	08:58 16:21
31	08:29 17:14	07:15 18:00	06:15 19:05	05:13 21:59	05:13 21:59	05:13 21:59	05:47 21:40	06:42 20:33	07:35 19:07	07:35 17:07		07:35 16:22	08:58 16:22
Potential sun hours	248	272	367	421	496	513	515	461	382	328		257	231
Total, worst case			108						102		8		
Sun reduction			0.22						0.29		0.23		
Oper. time red.			1.00						1.00		1.00		
Wind dir. red.			0.57						0.57		0.57		
Total reduction			0.13						0.17		0.13		
Total, real			14						17		1		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)



### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: AF - H32

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January	February	March	April	May	June
1	08:58 16:24	08:27 17:16	15:37 (16) 16:06 (16)	07:29 18:13	16:44 (15) 17:19 (15)	07:12 20:12
2	08:58 16:25	08:25 17:18	15:38 (16) 16:05 (16)	07:26 18:15	16:43 (15) 17:17 (15)	07:10 20:14
3	08:58 16:26	08:24 17:20	15:39 (16) 16:04 (16)	07:24 18:17	16:44 (15) 17:17 (15)	07:07 20:16
4	08:58 16:27	08:22 17:22	15:41 (16) 16:03 (16)	07:21 18:19	16:45 (15) 17:15 (15)	07:05 20:18
5	08:57 16:28	4 15:44 (16) 08:20	17:22 15:42 (16)	07:19 18:21	16:46 (15) 17:14 (15)	07:02 20:20
6	08:57 16:30	9 15:47 (16) 08:18	17:24 15:44 (16)	18:21 17:17 (15)	16:47 (15) 17:12 (15)	07:00 20:22
7	08:56 16:31	12 15:49 (16) 08:16	17:26 15:48 (16)	18:23 07:14	16:49 (15) 17:11 (15)	06:58 20:24
8	08:56 16:33	14 15:50 (16) 08:14	17:28 07:12	18:24 16:51 (15)	17:04 (15) 06:55	20:27 21:23
9	08:55 16:34	16 15:51 (16) 08:12	17:30 07:09	18:26 16:55 (15)	20:26 06:53	21:22 21:23
10	08:55 16:36	19 15:54 (16) 08:10	17:32 07:07	18:28 18:30	17:04 (15) 06:50	20:27 21:25
11	08:54 16:37	20 15:55 (16) 08:08	17:34 07:05	18:30 18:32	20:29 20:31	21:25 21:27
12	08:53 16:39	22 15:56 (16) 08:06	17:36 07:02	18:32 18:34	20:31 20:33	21:27 21:29
13	08:52 16:40	23 15:57 (16) 08:04	17:38 07:00	18:34 18:36	20:33 20:35	21:29 21:31
14	08:51 16:42	24 15:58 (16) 08:02	17:40 16:56 (15)	18:36 17:09 (15)	20:35 06:57	21:31 21:32
15	08:51 16:44	25 15:59 (16) 08:00	17:42 16:52 (15)	18:38 06:55	20:37 06:38	21:32 05:35
16	08:50 16:45	26 15:59 (16) 07:58	17:44 16:50 (15)	18:40 06:52	20:39 06:36	21:34 05:33
17	08:48 16:47	28 16:01 (16) 07:46	23 17:13 (15) 16:49 (15)	18:42 06:50	20:41 06:33	21:36 05:32
18	08:47 16:49	29 16:02 (16) 07:49	26 17:15 (15) 16:48 (15)	18:44 06:47	20:42 06:31	21:37 05:30
19	08:46 16:51	30 16:03 (16) 07:51	28 17:16 (15) 16:46 (15)	18:46 06:45	20:44 06:29	21:39 05:28
20	08:45 16:53	31 16:03 (16) 07:51	31 17:17 (15) 16:44 (15)	18:48 06:42	20:46 06:26	21:41 05:27
21	08:44 16:54	31 16:04 (16) 07:49	32 17:18 (15) 16:45 (15)	18:50 06:40	20:48 06:24	21:42 05:25
22	08:42 16:56	32 16:04 (16) 07:45	34 17:19 (15) 16:44 (15)	18:51 06:37	20:50 06:22	21:44 05:24
23	08:41 16:58	32 16:05 (16) 07:42	35 17:19 (15) 16:44 (15)	18:53 06:35	20:52 06:20	21:46 05:22
24	08:40 17:00	32 16:05 (16) 07:42	35 17:19 (15) 16:44 (15)	18:55 06:32	20:54 06:17	21:47 05:21
25	08:38 17:02	33 16:06 (16) 07:40	36 17:20 (15) 16:43 (15)	18:57 06:30	20:56 06:15	21:49 05:20
26	08:37 17:04	33 16:06 (16) 07:36	36 17:19 (15) 16:43 (15)	18:59 06:27	20:58 06:13	21:50 05:18
27	08:35 17:06	33 16:06 (16) 07:33	36 17:19 (15) 16:42 (15)	19:01 06:25	20:59 06:11	21:52 05:17
28	08:34 17:08	32 16:06 (16) 07:31	37 17:19 (15) 16:43 (15)	19:03 06:22	21:01 06:08	21:53 05:16
29	08:32 17:10	32 16:06 (16) 07:31	36 17:19 (15) 16:43 (15)	19:05 06:22	21:03 06:06	21:55 05:15
30	08:31 17:12	31 16:06 (16) 07:31	36 17:19 (15) 16:43 (15)	19:05 06:22	21:03 06:04	21:55 05:14
31	08:29 17:14	31 16:06 (16) 07:31	36 17:19 (15) 16:43 (15)	19:05 06:22	21:03 06:04	21:55 05:14
Potential sun hours	248	272	367	421	496	513
Total, worst case	713	606	233			
Sun reduction	0.17	0.22	0.22			
Oper. time red.	1.00	1.00	1.00			
Wind dir. red.	0.62	0.59	0.58			
Total reduction	0.11	0.13	0.13			
Total, real	76	80	30			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: AF - H32

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	July	August	September	October	November	December	
1	05:07	05:48	06:44	07:38	07:37	08:33	
	22:15	21:39	20:31	19:16	17:04	16:19	
2	05:08	05:50	06:45	07:40	07:39	08:35	
	22:14	21:37	20:28	19:14	17:02	16:18	
3	05:09	05:52	06:47	07:42	07:41	08:36	
	22:14	21:35	20:26	19:11	17:00	16:17	
4	05:10	05:53	06:49	07:44	07:43	08:38	
	22:14	21:33	20:24	19:09	16:58	15:17 (16)	
5	05:11	05:55	06:51	07:45	17:29 (15)	07:45	
	22:13	21:31	20:21	19:06	14	17:43 (15)	
6	05:11	05:57	06:53	07:47	17:26 (15)	07:47	
	22:12	21:29	20:19	19:04	20	17:46 (15)	
7	05:12	05:59	06:54	07:49	17:24 (15)	07:49	
	22:12	21:27	20:16	19:01	24	17:48 (15)	
8	05:14	06:00	06:56	07:51	17:22 (15)	07:51	
	22:11	21:25	20:14	18:59	27	17:49 (15)	
9	05:15	06:02	06:58	07:53	17:20 (15)	07:53	
	22:10	21:23	20:11	18:56	30	17:50 (15)	
10	05:16	06:04	07:00	07:55	17:19 (15)	07:55	
	22:09	21:21	20:09	18:54	32	17:51 (15)	
11	05:17	06:06	07:02	07:57	17:18 (15)	07:57	
	22:08	21:19	20:06	18:51	33	17:51 (15)	
12	05:18	06:07	07:03	07:58	17:17 (15)	07:59	
	22:07	21:17	20:04	18:49	35	17:52 (15)	
13	05:19	06:09	07:05	08:00	17:16 (15)	08:01	
	22:06	21:15	20:01	18:47	36	17:52 (15)	
14	05:21	06:11	07:07	08:02	17:16 (15)	08:03	
	22:05	21:13	19:59	18:44	36	17:52 (15)	
15	05:22	06:13	07:09	08:04	17:15 (15)	08:05	
	22:04	21:10	19:56	18:42	37	17:52 (15)	
16	05:23	06:15	07:11	08:06	17:15 (15)	08:07	
	22:03	21:08	19:54	18:40	37	17:52 (15)	
17	05:25	06:16	07:12	08:08	17:15 (15)	08:09	
	22:02	21:06	19:51	18:37	36	17:51 (15)	
18	05:26	06:18	07:14	08:10	17:15 (15)	08:11	
	22:01	21:04	19:49	18:35	36	17:51 (15)	
19	05:27	06:20	07:16	08:12	17:15 (15)	08:12	
	21:59	21:01	19:46	18:33	35	17:50 (15)	
20	05:29	06:22	07:18	08:14	17:15 (15)	08:14	
	21:58	20:59	19:44	18:30	35	17:50 (15)	
21	05:30	06:24	07:20	08:16	17:16 (15)	08:16	
	21:57	20:57	19:41	18:28	33	17:49 (15)	
22	05:32	06:25	07:21	08:18	17:16 (15)	08:18	
	21:55	20:55	19:39	18:26	32	17:48 (15)	
23	05:33	06:27	07:23	08:20	17:17 (15)	08:20	
	21:54	20:52	19:36	18:24	30	17:47 (15)	
24	05:35	06:29	07:25	08:22	17:18 (15)	08:22	
	21:52	20:50	19:33	18:21	28	17:46 (15)	
25	05:37	06:31	07:27	07:24	16:19 (15)	08:23	
	21:51	20:48	19:31	17:19	25	16:44 (15)	
26	05:38	06:33	07:29	07:26	16:20 (15)	08:25	
	21:49	20:45	19:28	17:17	22	16:42 (15)	
27	05:40	06:35	07:31	07:27	16:22 (15)	08:27	
	21:47	20:43	19:26	17:15	18	16:40 (15)	
28	05:41	06:36	07:32	07:29	16:26 (15)	08:29	
	21:46	20:40	19:23	17:13	11	16:37 (15)	
29	05:43	06:38	07:34	07:31	08:30	15:14 (16)	
	21:44	20:38	19:21	17:11	16:21	24	15:38 (16)
30	05:45	06:40	07:36	07:33	08:32	15:15 (16)	08:59
	21:42	20:36	19:18	17:08	16:20	23	15:38 (16)
31	05:46	06:42		07:35			08:59
	21:40	20:33		17:06			16:22
Potential sun hours	515	461	383	327	257	230	
Total, worst case				702	749	120	
Sun reduction				0.23	0.20	0.12	
Oper. time red.				1.00	1.00	1.00	
Wind dir. red.				0.58	0.62	0.62	
Total reduction				0.14	0.12	0.07	
Total, real				96	93	9	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: AG - H33

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET] Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

Table with columns for months (January to December) and rows for shadow reduction metrics (Potential sun hours, Total, worst case, Sun reduction, Oper. time red., Wind dir. red., Total reduction, Total, real). Each cell contains numerical values representing shadow reduction for specific days and months.

Table layout: For each day in each month the following matrix apply

Matrix for table layout: Day in month, Sun rise (hh:mm), Sun set (hh:mm), Minutes with flicker, First time (hh:mm) with flicker, Last time (hh:mm) with flicker, (WTG causing flicker first time), (WTG causing flicker last time).



## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: AH - H34

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June
1	08:58	08:27	07:29	07:12	06:02	19:15 (16) 05:11 20:20 (15)
	16:24	17:16	18:13	20:12	21:09	23 19:38 (16) 22:00 31 20:51 (15)
2	08:58	08:25	07:26	07:10	06:00	19:16 (16) 05:11 20:20 (15)
	16:25	17:18	18:15	20:14	21:11	21 19:37 (16) 22:01 31 20:51 (15)
3	08:58	08:24	07:24	07:07	05:58	19:18 (16) 05:10 20:20 (15)
	16:26	17:20	18:17	20:16	21:12	17 19:35 (16) 22:02 31 20:51 (15)
4	08:58	08:22	07:21	07:05	05:56	19:21 (16) 05:09 20:20 (15)
	16:27	17:22	18:19	20:18	21:14	11 19:32 (16) 22:03 30 20:50 (15)
5	08:57	08:20	07:19	07:02	05:54	05:08 20:21 (15)
	16:28	17:24	18:21	20:20	21:16	22:05 30 20:51 (15)
6	08:57	08:18	07:17	07:00	05:52	05:07 20:21 (15)
	16:30	17:26	18:23	20:22	21:18	22:06 29 20:50 (15)
7	08:56	08:16	07:14	06:58	05:50	05:06 20:22 (15)
	16:31	17:28	18:24	20:24	21:20	22:07 29 20:51 (15)
8	08:56	08:14	07:12	06:55	05:48	05:06 20:22 (15)
	16:33	17:30	18:26	20:25	21:22	22:08 29 20:51 (15)
9	08:55	08:12	07:09	06:53	19:26 (16) 05:46	05:05 20:23 (15)
	16:34	17:32	18:28	20:27	10 19:36 (16) 21:23	22:09 28 20:51 (15)
10	08:55	08:10	07:07	06:50	19:22 (16) 05:44	20:28 (15) 05:05 20:23 (15)
	16:36	17:34	18:30	20:29	17 19:39 (16) 21:25	10 20:38 (15) 22:09 27 20:50 (15)
11	08:54	08:08	07:05	06:48	19:19 (16) 05:42	20:27 (15) 05:04 20:23 (15)
	16:37	17:36	18:32	20:31	22 19:41 (16) 21:27	14 20:41 (15) 22:10 28 20:51 (15)
12	08:53	08:06	07:02	06:45	19:18 (16) 05:40	20:24 (15) 05:04 20:24 (15)
	16:39	17:38	18:34	20:33	25 19:43 (16) 21:29	19 20:43 (15) 22:11 27 20:51 (15)
13	08:52	08:04	07:00	06:43	19:16 (16) 05:38	20:23 (15) 05:04 20:24 (15)
	16:40	17:40	18:36	20:35	28 19:44 (16) 21:31	21 20:44 (15) 22:12 26 20:50 (15)
14	08:51	08:02	06:57	06:41	19:15 (16) 05:37	20:22 (15) 05:03 20:24 (15)
	16:42	17:42	18:38	20:37	30 19:45 (16) 21:32	24 20:46 (15) 22:12 27 20:51 (15)
15	08:50	08:00	06:55	06:38	19:14 (16) 05:35	20:21 (15) 05:03 20:25 (15)
	16:44	17:44	18:40	20:39	32 19:46 (16) 21:34	25 20:46 (15) 22:13 26 20:51 (15)
16	08:49	07:58	06:52	06:36	19:12 (16) 05:33	20:21 (15) 05:03 20:25 (15)
	16:45	17:46	18:42	20:41	33 19:45 (16) 21:36	26 20:47 (15) 22:14 26 20:51 (15)
17	08:48	07:56	06:50	06:33	19:12 (16) 05:32	20:20 (15) 05:03 20:25 (15)
	16:47	17:49	18:44	20:42	34 19:46 (16) 21:37	27 20:47 (15) 22:14 26 20:51 (15)
18	08:47	07:54	06:47	06:31	19:11 (16) 05:30	20:20 (15) 05:03 20:26 (15)
	16:49	17:51	18:46	20:44	35 19:46 (16) 21:39	28 20:48 (15) 22:14 25 20:51 (15)
19	08:46	07:51	06:45	06:29	19:11 (16) 05:28	20:19 (15) 05:03 20:26 (15)
	16:51	17:53	18:48	20:46	36 19:47 (16) 21:41	29 20:48 (15) 22:15 25 20:51 (15)
20	08:45	07:49	06:42	06:26	19:10 (16) 05:27	20:19 (15) 05:03 20:26 (15)
	16:53	17:55	18:50	20:48	36 19:46 (16) 21:42	30 20:49 (15) 22:15 25 20:51 (15)
21	08:44	07:47	06:40	06:24	19:10 (16) 05:25	20:19 (15) 05:03 20:26 (15)
	16:54	17:57	18:51	20:50	36 19:46 (16) 21:44	31 20:50 (15) 22:15 25 20:51 (15)
22	08:42	07:45	06:37	06:22	19:10 (16) 05:24	20:18 (15) 05:03 20:27 (15)
	16:56	17:59	18:53	20:52	36 19:46 (16) 21:46	31 20:49 (15) 22:16 25 20:52 (15)
23	08:41	07:42	06:35	06:20	19:10 (16) 05:22	20:18 (15) 05:03 20:27 (15)
	16:58	18:01	18:55	20:54	36 19:46 (16) 21:47	32 20:50 (15) 22:16 25 20:52 (15)
24	08:40	07:40	06:32	06:17	19:10 (16) 05:21	20:18 (15) 05:04 20:27 (15)
	17:00	18:03	18:57	20:56	35 19:45 (16) 21:49	32 20:50 (15) 22:16 25 20:52 (15)
25	08:38	07:38	06:30	06:15	19:10 (16) 05:20	20:19 (15) 05:04 20:28 (15)
	17:02	18:05	18:59	20:58	34 19:44 (16) 21:50	32 20:51 (15) 22:16 25 20:53 (15)
26	08:37	07:36	06:27	06:13	19:10 (16) 05:18	20:19 (15) 05:04 20:27 (15)
	17:04	18:07	19:01	20:59	33 19:43 (16) 21:52	32 20:51 (15) 22:16 26 20:53 (15)
27	08:35	07:33	06:25	06:11	19:11 (16) 05:17	20:18 (15) 05:05 20:28 (15)
	17:06	18:09	19:03	21:01	32 19:43 (16) 21:53	32 20:50 (15) 22:16 26 20:54 (15)
28	08:34	07:31	06:22	06:08	19:12 (16) 05:16	20:18 (15) 05:05 20:27 (15)
	17:08	18:11	19:05	21:03	30 19:42 (16) 21:55	32 20:50 (15) 22:16 27 20:54 (15)
29	08:32		07:20	06:06	19:12 (16) 05:15	20:18 (15) 05:06 20:28 (15)
	17:10		20:07	21:05	29 19:41 (16) 21:56	32 20:50 (15) 22:15 26 20:54 (15)
30	08:30		07:17	06:04	19:13 (16) 05:14	20:19 (15) 05:07 20:27 (15)
	17:12		20:08	21:07	27 19:40 (16) 21:57	31 20:50 (15) 22:15 27 20:54 (15)
31	08:29		07:15		05:12	20:20 (15)
	17:14		20:10		21:59	31 20:51 (15)
Potential sun hours	248	272	367	421	496	513
Total, worst case				666	673	813
Sun reduction				0.34	0.36	0.26
Oper. time red.				1.00	1.00	1.00
Wind dir. red.				0.59	0.62	0.62
Total reduction				0.20	0.22	0.16
Total, real				135	151	130

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: AH - H34

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	July	August	September	October	November	December						
1	05:07	20:28 (15)	05:48	20:35 (15)	06:44	19:18 (16)	07:38	07:37	08:33			
	22:15	27	20:55 (15)	21:39	18	20:53 (15)	20:31	22	19:40 (16)	19:16	17:04	16:19
2	05:08	20:28 (15)	05:50	20:38 (15)	06:45	19:21 (16)	07:40	07:39	08:35			
	22:14	27	20:55 (15)	21:37	13	20:51 (15)	20:28	17	19:38 (16)	19:14	17:02	16:18
3	05:09	20:28 (15)	05:52	20:40 (15)	06:47	19:24 (16)	07:42	07:41	08:36			
	22:14	28	20:56 (15)	21:35	7	20:47 (15)	20:26	10	19:34 (16)	19:11	17:00	16:17
4	05:10	20:27 (15)	05:53		06:49		07:43	07:43	08:38			
	22:13	29	20:56 (15)	21:33		20:23		19:09	16:58	16:17		
5	05:11	20:27 (15)	05:55		06:51		07:45	07:45	08:39			
	22:13	29	20:56 (15)	21:31		20:21		19:06	16:56	16:16		
6	05:12	20:27 (15)	05:57		06:53		07:47	07:47	08:41			
	22:12	30	20:57 (15)	21:29		20:19		19:04	16:54	16:16		
7	05:13	20:28 (15)	05:59		06:54		07:49	07:49	08:42			
	22:12	29	20:57 (15)	21:27		20:16		19:01	16:53	16:15		
8	05:14	20:28 (15)	06:00	19:33 (16)	06:56		07:51	07:51	08:43			
	22:11	30	20:58 (15)	21:25	4	19:37 (16)	20:14		18:59	16:51	16:15	
9	05:15	20:28 (15)	06:02	19:29 (16)	06:58		07:53	07:53	08:45			
	22:10	30	20:58 (15)	21:23	13	19:42 (16)	20:11		18:56	16:49	16:14	
10	05:16	20:27 (15)	06:04	19:27 (16)	07:00		07:55	07:55	08:46			
	22:09	31	20:58 (15)	21:21	18	19:45 (16)	20:09		18:54	16:47	16:14	
11	05:17	20:27 (15)	06:06	19:24 (16)	07:02		07:57	07:57	08:47			
	22:08	31	20:58 (15)	21:19	22	19:46 (16)	20:06		18:51	16:45	16:14	
12	05:18	20:27 (15)	06:07	19:23 (16)	07:03		07:58	07:59	08:48			
	22:07	32	20:59 (15)	21:17	24	19:47 (16)	20:04		18:49	16:44	16:14	
13	05:19	20:27 (15)	06:09	19:22 (16)	07:05		08:00	08:01	08:49			
	22:06	32	20:59 (15)	21:15	27	19:49 (16)	20:01		18:47	16:42	16:13	
14	05:21	20:28 (15)	06:11	19:20 (16)	07:07		08:02	08:03	08:50			
	22:05	32	21:00 (15)	21:12	29	19:49 (16)	19:59		18:44	16:40	16:13	
15	05:22	20:28 (15)	06:13	19:19 (16)	07:09		08:04	08:05	08:51			
	22:04	32	21:00 (15)	21:10	31	19:50 (16)	19:56		18:42	16:39	16:13	
16	05:23	20:28 (15)	06:15	19:18 (16)	07:11		08:06	08:07	08:52			
	22:03	32	21:00 (15)	21:08	32	19:50 (16)	19:54		18:40	16:37	16:13	
17	05:25	20:27 (15)	06:16	19:18 (16)	07:12		08:08	08:09	08:53			
	22:02	32	20:59 (15)	21:06	33	19:51 (16)	19:51		18:37	16:36	16:14	
18	05:26	20:28 (15)	06:18	19:16 (16)	07:14		08:10	08:11	08:54			
	22:01	32	21:00 (15)	21:04	35	19:51 (16)	19:49		18:35	16:34	16:14	
19	05:27	20:28 (15)	06:20	19:16 (16)	07:16		08:12	08:12	08:55			
	21:59	32	21:00 (15)	21:01	35	19:51 (16)	19:46		18:33	16:33	16:14	
20	05:29	20:28 (15)	06:22	19:16 (16)	07:18		08:14	08:14	08:55			
	21:58	32	21:00 (15)	20:59	35	19:51 (16)	19:44		18:30	16:31	16:14	
21	05:30	20:29 (15)	06:24	19:15 (16)	07:20		08:16	08:16	08:56			
	21:56	31	21:00 (15)	20:57	36	19:51 (16)	19:41		18:28	16:30	16:15	
22	05:32	20:29 (15)	06:25	19:15 (16)	07:21		08:18	08:18	08:56			
	21:55	31	21:00 (15)	20:55	36	19:51 (16)	19:39		18:26	16:29	16:15	
23	05:33	20:28 (15)	06:27	19:15 (16)	07:23		08:20	08:20	08:57			
	21:54	31	20:59 (15)	20:52	36	19:51 (16)	19:36		18:24	16:27	16:16	
24	05:35	20:29 (15)	06:29	19:14 (16)	07:25		08:22	08:22	08:57			
	21:52	30	20:59 (15)	20:50	35	19:49 (16)	19:33		18:21	16:26	16:16	
25	05:37	20:29 (15)	06:31	19:14 (16)	07:27		07:24	08:23	08:58			
	21:51	29	20:58 (15)	20:48	35	19:49 (16)	19:31		17:19	16:25	16:17	
26	05:38	20:30 (15)	06:33	19:14 (16)	07:29		07:25	08:25	08:58			
	21:49	29	20:59 (15)	20:45	35	19:49 (16)	19:28		17:17	16:24	16:18	
27	05:40	20:30 (15)	06:35	19:15 (16)	07:31		07:27	08:27	08:58			
	21:47	28	20:58 (15)	20:43	33	19:48 (16)	19:26		17:15	16:23	16:19	
28	05:41	20:31 (15)	06:36	19:15 (16)	07:32		07:29	08:28	08:58			
	21:46	26	20:57 (15)	20:40	31	19:46 (16)	19:23		17:13	16:22	16:19	
29	05:43	20:32 (15)	06:38	19:15 (16)	07:34		07:31	08:30	08:58			
	21:44	24	20:56 (15)	20:38	31	19:46 (16)	19:21		17:11	16:21	16:20	
30	05:45	20:33 (15)	06:40	19:17 (16)	07:36		07:33	08:32	08:58			
	21:42	22	20:55 (15)	20:36	27	19:44 (16)	19:18		17:08	16:20	16:21	
31	05:46	20:35 (15)	06:42	19:17 (16)			07:35		08:58			
	21:40	20	20:55 (15)	20:33	25	19:42 (16)	17:06		17:06	16:22	16:22	
Potential sun hours	515		461		383		327		257		230	
Total, worst case	910		736		49							
Sun reduction	0.27		0.27		0.29							
Oper. time red.	1.00		1.00		1.00							
Wind dir. red.	0.62		0.59		0.59							
Total reduction	0.17		0.16		0.17							
Total, real	151		119		8							

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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**SHADOW - Calendar**

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: AI - H35

Sunshine probability S (Average daily sunshine hours) [BELMULLET]

Assumptions for shadow calculations

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.36	2.16	2.65	4.82	5.79	4.41	4.42	4.07	3.73	2.48	1.71	0.89

**Operational time**

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
	263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760
1   08:58			14:31 (16)	08:27													
16:24	34		15:45 (15)	17:16	34												15:12 (15)
2   08:58			14:32 (16)	08:25													
16:25	34		15:46 (15)	17:18	32												16:19
3   08:58			14:34 (16)	08:24													
16:26	35		15:48 (15)	17:20	31												15:13 (15)
4   08:58			14:34 (16)	08:22													
16:27	35		15:49 (15)	17:22	29												16:17
5   08:57			14:36 (16)	08:20													
16:28	35		15:51 (15)	17:24	27												14:24 (16)
6   08:57			14:37 (16)	08:18													
16:30	35		15:52 (15)	17:26	24												15:38 (15)
7   08:56			14:39 (16)	08:16													
16:31	33		15:53 (15)	17:28	20												14:22 (16)
8   08:56			14:41 (16)	08:14													
16:33	31		15:55 (15)	17:30	15												15:06 (15)
9   08:55			15:30 (15)	08:12													
16:34	27		15:57 (15)	17:32	5												16:15
10   08:55			15:30 (15)	08:10													
16:36	29		15:59 (15)	17:34													15:38 (15)
11   08:54			15:30 (15)	08:08													
16:37	30		16:00 (15)	17:36													16:14
12   08:53			15:30 (15)	08:06													
16:39	31		16:01 (15)	17:38													15:04 (15)
13   08:52			15:30 (15)	08:04													
16:40	32		16:02 (15)	17:40													15:16 (15)
14   08:51			15:30 (15)	08:02													
16:42	32		16:02 (15)	17:42													16:13
15   08:51			15:29 (15)	08:00													
16:44	33		16:02 (15)	17:44													15:03 (15)
16   08:50			15:29 (15)	07:58													
16:45	34		16:03 (15)	17:46													16:13
17   08:48			15:29 (15)	07:56													
16:47	35		16:04 (15)	17:49													15:04 (15)
18   08:47			15:30 (15)	07:54													
16:49	35		16:05 (15)	17:51													16:14
19   08:46			15:29 (15)	07:51													
16:51	36		16:05 (15)	17:53													15:04 (15)
20   08:45			15:29 (15)	07:49													
16:53	37		16:06 (15)	17:55													16:14
21   08:44			15:29 (15)	07:47													
16:54	37		16:06 (15)	17:57													15:05 (15)
22   08:42			15:30 (15)	07:45													
16:56	37		16:07 (15)	17:59													16:15
23   08:41			15:29 (15)	07:42													
16:58	38		16:07 (15)	18:01													15:06 (15)
24   08:40			15:30 (15)	07:40													
17:00	38		16:08 (15)	18:03													16:16
25   08:38			15:30 (15)	07:38													
17:02	38		16:08 (15)	18:05													15:07 (15)
26   08:37			15:30 (15)	07:36													
17:04	38		16:08 (15)	18:07													16:17
27   08:35			15:31 (15)	07:33													
17:06	38		16:09 (15)	18:09													15:08 (15)
28   08:34			15:31 (15)	07:31													
17:08	37		16:08 (15)	18:11													16:18
29   08:32			15:32 (15)														
17:10	36		16:08 (15)														15:09 (15)
30   08:31			15:32 (15)														
17:12	36		16:08 (15)														16:20
31   08:29			15:33 (15)														
17:14	34		16:07 (15)														15:11 (15)
Potential sun hours	248																
Total, worst case		1070															
- Sun reduction		0.17															
Oper. time red.		1.00															
Wind dir. red.		0.63															
Total reduction		0.11															
Total, real		114															

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: AJ - H36  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June
1	08:58 16:24	08:27 17:16	07:29 18:13	07:12 20:12	06:02 19:55 (16)	05:11 19:54 (16)
2	08:58 16:25	08:25 17:18	07:26 18:15	07:10 20:14	06:00 21:11	19 23
3	08:58 16:26	08:24 17:20	07:24 18:17	07:07 20:16	05:58 21:12	19:52 (16) 20:17 (16)
4	08:58 16:27	08:22 17:22	07:21 18:19	07:05 20:18	05:56 21:14	19:50 (16) 22:03
5	08:57 16:28	08:20 17:24	07:19 18:21	07:02 20:20	05:54 21:16	19:49 (16) 22:05
6	08:57 16:30	08:18 17:26	07:17 18:23	07:00 20:22	05:52 21:18	19:49 (16) 22:06
7	08:56 16:31	08:16 17:28	07:14 18:24	06:58 20:24	05:50 21:20	19:48 (16) 22:07
8	08:56 16:33	08:14 17:30	07:12 18:26	06:55 20:25	05:48 21:22	19:47 (16) 22:08
9	08:55 16:34	08:12 17:32	07:09 18:28	06:53 20:27	05:46 21:23	19:47 (16) 22:09
10	08:55 16:36	08:10 17:34	07:07 18:30	06:50 20:29	05:44 21:25	19:46 (16) 22:09
11	08:54 16:37	08:08 17:36	07:05 18:32	06:48 20:31	05:42 21:27	19:46 (16) 22:10
12	08:53 16:39	08:06 17:38	07:02 18:34	06:45 20:33	05:40 21:29	19:46 (16) 22:11
13	08:52 16:40	08:04 17:40	07:00 18:36	06:43 20:35	05:38 21:31	19:45 (16) 22:12
14	08:51 16:42	08:02 17:42	06:57 18:38	06:41 20:37	05:37 21:32	19:46 (16) 22:12
15	08:50 16:44	08:00 17:44	06:55 18:40	06:38 20:39	05:35 21:34	19:45 (16) 22:13
16	08:49 16:45	07:58 17:46	06:52 18:42	06:36 20:41	05:33 21:36	19:46 (16) 22:14
17	08:48 16:47	07:56 17:49	06:50 18:44	06:33 20:42	05:32 21:37	19:46 (16) 22:14
18	08:47 16:49	07:54 17:51	06:47 18:46	06:31 20:44	05:30 21:39	19:46 (16) 22:14
19	08:46 16:51	07:51 17:53	06:45 18:48	06:29 20:46	05:28 21:41	19:46 (16) 22:15
20	08:45 16:53	07:49 17:55	06:42 18:50	06:26 20:48	05:27 21:42	19:47 (16) 22:15
21	08:44 16:54	07:47 17:57	06:40 18:51	06:24 20:50	05:25 21:44	19:47 (16) 22:15
22	08:42 16:56	07:45 17:59	06:37 18:53	06:22 20:52	05:24 21:46	19:47 (16) 22:16
23	08:41 16:58	07:42 18:01	06:35 18:55	06:20 20:54	05:22 21:47	19:48 (16) 22:16
24	08:40 17:00	07:40 18:03	06:32 18:57	06:17 20:56	05:21 21:49	19:48 (16) 22:16
25	08:38 17:02	07:38 18:05	06:30 18:59	06:15 20:58	05:20 21:50	19:49 (16) 22:16
26	08:37 17:04	07:36 18:07	06:27 19:01	06:13 20:59	05:18 21:52	19:50 (16) 22:16
27	08:35 17:06	07:33 18:09	06:25 19:03	06:11 21:01	05:17 21:53	19:50 (16) 22:16
28	08:34 17:08	07:31 18:11	06:22 19:05	06:08 21:03	05:16 21:55	19:50 (16) 22:16
29	08:32 17:10		07:20 20:07	06:06 21:05	05:15 21:56	19:51 (16) 20:19 (16)
30	08:30 17:12		07:17 20:08	06:04 21:07	05:14 21:57	19:52 (16) 20:18 (16)
31	08:29 17:14		07:15 20:10		05:12 21:59	19:53 (16) 20:19 (16)
Potential sun hours	248	272	367	421	496	513
Total, worst case				20	997	688
Sun reduction				0.34	0.36	0.26
Oper. time red.				1.00	1.00	1.00
Wind dir. red.				0.61	0.61	0.62
Total reduction				0.21	0.22	0.16
Total, real				4	219	110

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: AJ - H36

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	July	August	September	October	November	December				
1	05:07	20:11 (16)	05:48	19:56 (16)	06:44	07:38	07:37	08:33		
	22:15	21	21:24 (15)	21:39	37	20:33 (16)	20:31	19:16	17:04	16:19
2	05:08	20:09 (16)	05:50	19:57 (16)	06:45	07:40	07:39	08:35		
	22:14	25	21:24 (15)	21:37	36	20:33 (16)	20:28	19:14	17:02	16:18
3	05:09	20:08 (16)	05:52	19:56 (16)	06:47	07:42	07:41	08:36		
	22:14	27	21:24 (15)	21:35	36	20:32 (16)	20:26	19:11	17:00	16:17
4	05:10	20:06 (16)	05:53	19:57 (16)	06:49	07:43	07:43	08:38		
	22:13	28	21:23 (15)	21:33	35	20:32 (16)	20:23	19:09	16:58	16:17
5	05:11	20:06 (16)	05:55	19:58 (16)	06:51	07:45	07:45	08:39		
	22:13	28	21:22 (15)	21:31	34	20:32 (16)	20:21	19:06	16:56	16:16
6	05:12	20:05 (16)	05:57	19:58 (16)	06:53	07:47	07:47	08:41		
	22:12	29	21:22 (15)	21:29	32	20:30 (16)	20:19	19:04	16:54	16:16
7	05:13	20:04 (16)	05:59	19:59 (16)	06:54	07:49	07:49	08:42		
	22:12	29	21:21 (15)	21:27	31	20:30 (16)	20:16	19:01	16:53	16:15
8	05:14	20:04 (16)	06:00	19:59 (16)	06:56	07:51	07:51	08:43		
	22:11	27	21:20 (15)	21:25	29	20:28 (16)	20:14	18:59	16:51	16:15
9	05:15	20:03 (16)	06:02	20:00 (16)	06:58	07:53	07:53	08:45		
	22:10	21	20:24 (16)	21:23	27	20:27 (16)	20:11	18:56	16:49	16:14
10	05:16	20:03 (16)	06:04	20:01 (16)	07:00	07:55	07:55	08:46		
	22:09	22	20:25 (16)	21:21	25	20:26 (16)	20:09	18:54	16:47	16:14
11	05:17	20:02 (16)	06:06	20:02 (16)	07:02	07:57	07:57	08:47		
	22:08	23	20:25 (16)	21:19	22	20:24 (16)	20:06	18:51	16:45	16:14
12	05:18	20:01 (16)	06:07	20:04 (16)	07:03	07:58	07:59	08:48		
	22:07	25	20:26 (16)	21:17	18	20:22 (16)	20:04	18:49	16:44	16:14
13	05:19	20:01 (16)	06:09	20:07 (16)	07:05	08:00	08:01	08:49		
	22:06	26	20:27 (16)	21:15	13	20:20 (16)	20:01	18:47	16:42	16:13
14	05:21	20:01 (16)	06:11	20:07 (16)	07:07	08:02	08:03	08:50		
	22:05	27	20:28 (16)	21:12		19:59	18:44	16:40	16:13	
15	05:22	20:00 (16)	06:13	20:09 (16)	07:09	08:04	08:05	08:51		
	22:04	29	20:29 (16)	21:10		19:56	18:42	16:39	16:13	
16	05:23	19:59 (16)	06:15	20:11 (16)	07:11	08:06	08:07	08:52		
	22:03	30	20:29 (16)	21:08		19:54	18:40	16:37	16:13	
17	05:25	19:59 (16)	06:16	20:12 (16)	07:12	08:08	08:09	08:53		
	22:02	30	20:29 (16)	21:06		19:51	18:37	16:36	16:14	
18	05:26	19:59 (16)	06:18	20:14 (16)	07:14	08:10	08:11	08:54		
	22:01	32	20:31 (16)	21:04		19:49	18:35	16:34	16:14	
19	05:27	19:58 (16)	06:20	20:16 (16)	07:16	08:12	08:12	08:55		
	21:59	33	20:31 (16)	21:01		19:46	18:33	16:33	16:14	
20	05:29	19:58 (16)	06:22	20:18 (16)	07:18	08:14	08:14	08:55		
	21:58	33	20:31 (16)	20:59		19:44	18:30	16:31	16:14	
21	05:30	19:58 (16)	06:24	20:20 (16)	07:20	08:16	08:16	08:56		
	21:56	34	20:32 (16)	20:57		19:41	18:28	16:30	16:15	
22	05:32	19:57 (16)	06:25	20:21 (16)	07:21	08:18	08:18	08:56		
	21:55	35	20:32 (16)	20:55		19:39	18:26	16:29	16:15	
23	05:33	19:57 (16)	06:27	20:22 (16)	07:23	08:20	08:20	08:57		
	21:54	35	20:32 (16)	20:52		19:36	18:24	16:27	16:16	
24	05:35	19:57 (16)	06:29	20:23 (16)	07:25	08:22	08:22	08:57		
	21:52	36	20:33 (16)	20:50		19:33	18:21	16:26	16:16	
25	05:37	19:56 (16)	06:31	20:24 (16)	07:27	07:24	08:23	08:58		
	21:51	36	20:32 (16)	20:48		19:31	17:19	16:25	16:17	
26	05:38	19:57 (16)	06:33	20:25 (16)	07:29	07:25	08:25	08:58		
	21:49	36	20:33 (16)	20:45		19:28	17:17	16:24	16:18	
27	05:40	19:56 (16)	06:35	20:26 (16)	07:31	07:27	08:27	08:58		
	21:47	37	20:33 (16)	20:43		19:26	17:15	16:23	16:19	
28	05:41	19:56 (16)	06:36	20:27 (16)	07:32	07:29	08:28	08:58		
	21:46	37	20:33 (16)	20:40		19:23	17:13	16:22	16:19	
29	05:43	19:56 (16)	06:38	20:28 (16)	07:34	07:31	08:30	08:58		
	21:44	37	20:33 (16)	20:38		19:21	17:11	16:21	16:20	
30	05:45	19:56 (16)	06:40	20:29 (16)	07:36	07:33	08:32	08:58		
	21:42	37	20:33 (16)	20:36		19:18	17:08	16:20	16:21	
31	05:46	19:57 (16)	06:42	20:30 (16)		07:35		08:58		
	21:40	37	20:34 (16)	20:33		17:06		16:22		
Potential sun hours	515		461		383	327	257	230		
Total, worst case	942		375							
Sun reduction	0.27		0.27							
Oper. time red.	1.00		1.00							
Wind dir. red.	0.61		0.61							
Total reduction	0.16		0.17							
Total, real	153		62							

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: AK - H37  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June						
1	08:58	09:44 (3)	08:27	09:04 (4)	07:29	07:13						
	16:24	17	10:01 (3)	17:16	23	09:27 (4)	18:13	20:12	06:02	05:12		
2	08:58	09:45 (3)	08:25	09:04 (4)	07:26	07:10	21:09	22:00	06:00	05:11		
	16:25	16	10:01 (3)	17:18	22	09:26 (4)	18:15	20:14	21:11	22:01		
3	08:58	09:46 (3)	08:24	09:06 (4)	07:24	07:08	05:58	05:10	21:13	22:02		
	16:26	15	10:01 (3)	17:20	19	09:25 (4)	18:17	20:16	21:13	22:02		
4	08:58	09:47 (3)	08:22	09:07 (4)	07:22	07:05	05:56	05:09	21:14	22:03		
	16:28	14	10:01 (3)	17:22	16	09:23 (4)	18:19	20:18	21:14	22:03		
5	08:57	09:48 (3)	08:20	09:10 (4)	07:19	07:03	05:54	05:08	07:27 (1)	05:58		
	16:29	12	10:00 (3)	17:24	11	09:21 (4)	18:21	20:20	2	07:29 (1)	21:16	22:05
6	08:57	09:50 (3)	08:18	07:17	07:00	07:17	05:52	05:08	07:24 (1)	05:52	05:08	
	16:30	10	10:00 (3)	17:26	18:23	20:22	4	07:28 (1)	21:18	22:06		
7	08:56	09:51 (3)	08:16	07:14	06:58	07:22 (1)	05:50	05:07	07:22 (1)	21:20	22:07	
	16:32	8	09:59 (3)	17:28	18:25	20:24	5	07:27 (1)	21:20	22:07		
8	08:56	09:54 (3)	08:14	07:12	06:55	07:20 (1)	05:48	05:06	07:20 (1)	21:22	22:08	
	16:33	3	09:57 (3)	17:30	18:27	20:26	6	07:26 (1)	21:22	22:08		
9	08:55	08:12	08:12	07:10	06:53	07:17 (1)	05:46	05:06	07:17 (1)	21:24	22:09	
	16:34	17:32	18:29	20:28	6	07:23 (1)	21:24	22:09	05:44	05:05		
10	08:55	08:10	07:07	06:51	06:51	05:44	05:05	05:05	21:25	22:09		
	16:36	17:35	18:31	20:29	21:25	22:09	05:42	05:05	21:27	22:10		
11	08:54	08:08	07:05	06:48	05:42	05:05	21:27	22:10	21:27	22:10		
	16:38	17:37	18:33	20:31	21:27	22:10	05:41	05:04	21:29	22:11		
12	08:53	08:06	07:02	06:46	05:41	05:04	21:29	22:11	21:29	22:11		
	16:39	17:39	18:34	20:33	21:29	22:11	05:39	05:04	21:31	22:12		
13	08:52	08:04	07:00	06:43	05:39	05:04	21:31	22:12	21:31	22:12		
	16:41	17:41	18:36	20:35	21:31	22:12	05:37	05:04	21:32	22:12		
14	08:51	08:02	06:57	06:41	05:37	05:04	21:32	22:12	21:32	22:12		
	16:42	17:43	18:38	20:37	21:32	22:12	05:35	05:03	21:34	22:13		
15	08:51	08:00	06:55	06:39	05:35	05:03	21:34	22:13	21:34	22:13		
	16:44	17:45	18:40	20:39	21:34	22:13	05:34	05:03	21:36	22:14		
16	08:50	09:21 (4)	07:58	06:52	06:36	05:34	05:03	05:03	21:36	22:14		
	16:46	1	09:22 (4)	17:47	18:42	20:41	21:36	22:14	21:36	22:14		
17	08:48	09:20 (4)	07:56	06:50	06:34	05:32	05:03	05:03	21:37	22:14		
	16:48	3	09:23 (4)	17:49	18:44	20:43	21:37	22:14	21:37	22:14		
18	08:47	09:19 (4)	07:54	06:47	06:31	05:30	05:03	05:03	21:39	22:14		
	16:49	5	09:24 (4)	17:51	18:46	20:44	21:39	22:14	21:39	22:14		
19	08:46	09:17 (4)	07:52	06:45	06:29	05:29	05:03	05:03	21:41	22:15		
	16:51	8	09:25 (4)	17:53	18:48	20:46	21:41	22:15	21:41	22:15		
20	08:45	09:16 (4)	07:49	06:42	06:27	05:27	05:03	05:03	21:42	22:15		
	16:53	10	09:26 (4)	17:55	18:50	20:48	21:42	22:15	21:42	22:15		
21	08:44	09:14 (4)	07:47	06:40	06:24	05:26	05:03	05:03	21:44	22:15		
	16:55	12	09:26 (4)	17:57	18:52	20:50	21:44	22:15	21:44	22:15		
22	08:42	09:13 (4)	07:45	06:37	06:22	05:24	05:04	05:04	21:46	22:16		
	16:57	14	09:27 (4)	17:59	18:54	20:52	21:46	22:16	21:46	22:16		
23	08:41	09:11 (4)	07:43	06:35	06:20	05:23	05:04	05:04	21:47	22:16		
	16:59	16	09:27 (4)	18:01	18:55	20:54	21:47	22:16	21:47	22:16		
24	08:40	09:10 (4)	07:40	06:32	06:18	05:21	05:04	05:04	21:49	22:16		
	17:00	18	09:28 (4)	18:03	18:57	20:56	21:49	22:16	21:49	22:16		
25	08:38	09:08 (4)	07:38	06:30	06:15	05:20	05:04	05:04	21:50	22:16		
	17:02	20	09:28 (4)	18:05	18:59	20:58	21:50	22:16	21:50	22:16		
26	08:37	09:06 (4)	07:36	06:28	06:13	05:19	05:05	05:05	21:52	22:16		
	17:04	21	09:27 (4)	18:07	19:01	21:00	21:52	22:16	21:52	22:16		
27	08:35	09:05 (4)	07:33	06:25	06:11	05:17	05:05	05:05	21:53	22:16		
	17:06	23	09:28 (4)	18:09	19:03	21:01	21:53	22:16	21:53	22:16		
28	08:34	09:03 (4)	07:31	06:23	06:09	05:16	05:06	05:06	21:55	22:16		
	17:08	25	09:28 (4)	18:11	19:05	21:03	21:55	22:16	21:55	22:16		
29	08:32	09:01 (4)	07:29	06:20	06:07	05:15	05:06	05:06	21:56	22:15		
	17:10	27	09:28 (4)	18:10	20:07	21:05	21:56	22:15	21:56	22:15		
30	08:31	09:01 (4)	07:28	06:18	06:04	05:14	05:07	05:07	21:57	22:15		
	17:12	26	09:27 (4)	18:09	20:09	21:07	21:57	22:15	21:57	22:15		
31	08:29	09:02 (4)	07:25	07:15	07:15	05:13	05:07	05:07	21:59	22:15		
	17:14	25	09:27 (4)	18:08	20:11	21:11	21:59	22:15	21:59	22:15		
Potential sun hours	248		272	367	421	496	513					
Total, worst case	349		91			23						
Sun reduction	0.17		0.22			0.34						
Oper. time red.	1.00		1.00			1.00						
Wind dir. red.	0.65		0.65			0.58						
Total reduction	0.11		0.14			0.20						
Total, real	39		13			5						

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: AK - H37  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	July	August	September	October	November	December
1	05:08	05:48	06:44	07:38	07:37	08:33
	22:15	21:39	20:31	19:16	17:05	16:19
2	05:08	05:50	06:46	07:40	07:39	08:35
	22:14	21:37	20:29	19:14	17:03	16:19
3	05:09	05:52	06:47	07:42	07:41	08:36
	22:14	21:35	20:26	19:11	17:01	16:18
4	05:10	05:54	06:49	07:44	07:43	08:38
	22:13	21:33	20:24	19:09	16:59	16:17
5	05:11	05:55	06:51	07:46	07:45	08:43 (4)
	22:13	21:31	20:21	19:06	16:57	16:17
6	05:12	05:57	06:53	07:20 (1)	07:47	08:39 (4)
	22:12	21:29	20:19	19:04	16:55	16:16
7	05:13	05:59	06:55	07:22 (1)	07:49	08:37 (4)
	22:12	21:27	20:16	19:01	16:53	16:15
8	05:14	06:01	06:56	07:51	07:51	08:35 (4)
	22:11	21:25	20:14	18:59	16:51	16:15
9	05:15	06:02	06:58	07:53	07:53	08:35 (4)
	22:10	21:23	20:11	18:57	16:49	16:15
10	05:16	06:04	07:00	07:55	07:55	08:34 (4)
	22:09	21:21	20:09	18:54	16:47	16:14
11	05:17	06:06	07:02	07:57	07:57	08:34 (4)
	22:08	21:19	20:06	18:52	16:46	16:14
12	05:18	06:08	07:04	07:59	07:59	08:33 (4)
	22:07	21:17	20:04	18:49	16:44	16:14
13	05:20	06:10	07:05	08:01	08:01	08:33 (4)
	22:06	21:15	20:01	18:47	16:42	16:14
14	05:21	06:11	07:07	08:02	08:03	08:35 (4)
	22:05	21:13	19:59	18:45	16:41	16:14
15	05:22	06:13	07:09	08:04	08:05	08:37 (4)
	22:04	21:10	19:56	18:42	16:39	16:14
16	05:24	06:15	07:11	08:06	08:07	08:39 (4)
	22:03	21:08	19:54	18:40	16:37	16:14
17	05:25	06:17	07:13	08:08	08:09	08:42 (4)
	22:02	21:06	19:51	18:38	16:36	16:14
18	05:26	06:19	07:14	08:10	08:11	08:44 (4)
	22:01	21:04	19:49	18:35	16:34	16:14
19	05:28	06:20	07:16	08:12	08:13	08:46 (4)
	21:59	21:02	19:46	18:33	16:33	16:14
20	05:29	06:22	07:18	08:14	08:14	08:48 (4)
	21:58	20:59	19:44	18:31	16:32	16:15
21	05:31	06:24	07:20	08:16	08:16	08:50 (4)
	21:57	20:57	19:41	18:28	16:30	16:15
22	05:32	06:26	07:22	08:18	08:18	08:52 (4)
	21:55	20:55	19:39	18:26	16:29	16:16
23	05:34	06:28	07:24	08:20	08:20	08:54 (4)
	21:54	20:52	19:36	18:24	16:28	16:16
24	05:35	06:29	07:25	08:22	08:22	08:56 (4)
	21:52	20:50	19:34	18:22	16:26	16:17
25	05:37	06:31	07:27	07:24	08:23	08:58 (4)
	21:51	20:48	19:31	17:19	16:25	16:17
26	05:39	06:33	07:29	07:26	08:25	09:00 (4)
	21:49	20:45	19:29	17:17	16:24	16:18
27	05:40	06:35	07:31	07:28	08:27	08:58
	21:47	20:43	19:26	17:15	16:23	16:19
28	05:42	06:37	07:33	07:30	08:29	08:58
	21:46	20:41	19:24	17:13	16:22	16:20
29	05:43	06:38	07:34	07:32	08:30	08:58
	21:44	20:38	19:21	17:11	16:21	16:21
30	05:45	06:40	07:36	07:34	08:32	08:58
	21:42	20:36	19:19	17:09	16:20	16:22
31	05:47	06:42		07:35		08:58
	21:40	20:33		17:07		16:23
Potential sun hours	515	461	382	328	257	231
Total, worst case			23		353	483
Sun reduction			0.29		0.20	0.12
Oper. time red.			1.00		1.00	1.00
Wind dir. red.			0.58		0.65	0.66
Total reduction			0.17		0.13	0.08
Total, real			4		46	38

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: AL - H38

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June
1	08:58 16:24	08:27 17:16	07:29 18:13	07:12 20:12	06:02 21:09	19:21 (16) 22:00
2	08:58 16:25	08:25 17:18	07:26 18:15	07:10 20:14	06:00 21:11	34 19:55 (16) 22:01
3	08:58 16:26	08:24 17:20	07:24 18:17	07:07 20:16	05:58 21:12	32 19:55 (16) 22:02
4	08:58 16:27	08:22 17:22	07:21 18:19	07:05 20:18	05:56 21:14	30 19:53 (16) 22:03
5	08:57 16:28	08:20 17:24	07:19 18:21	07:02 20:20	05:54 21:16	29 19:52 (16) 22:05
6	08:57 16:30	08:18 17:26	07:17 18:23	07:00 20:22	05:52 21:18	27 19:52 (16) 22:06
7	08:56 16:31	08:16 17:28	07:14 18:24	06:58 20:24	05:50 21:20	25 19:51 (16) 22:07
8	08:56 16:33	08:14 17:30	07:12 18:26	06:55 20:25	05:48 21:22	23 19:50 (16) 22:08
9	08:55 16:34	08:12 17:32	07:09 18:28	06:53 20:27	05:46 21:23	20 19:48 (16) 22:09
10	08:55 16:36	08:10 17:34	07:07 18:30	06:50 20:29	05:44 21:25	16 19:46 (16) 22:09
11	08:54 16:37	08:08 17:36	07:05 18:32	06:48 20:31	05:42 21:27	11 19:44 (16) 22:10
12	08:53 16:39	08:06 17:38	07:02 18:34	06:45 20:33	05:40 21:29	05:04 22:11
13	08:52 16:40	08:04 17:40	07:00 18:36	06:43 20:35	05:38 21:31	30 21:01 (15) 22:12
14	08:51 16:42	08:02 17:42	06:57 18:38	06:41 20:37	05:37 21:32	30 21:01 (15) 22:12
15	08:50 16:44	08:00 17:44	06:55 18:40	06:38 20:39	11 19:36 (16) 21:34	7 20:39 (15) 22:13
16	08:49 16:45	07:58 17:46	06:52 18:42	06:36 20:41	18 19:32 (16) 21:36	12 20:37 (15) 22:14
17	08:48 16:47	07:56 17:49	06:50 18:44	06:33 20:42	22 19:30 (16) 21:37	17 20:34 (15) 22:14
18	08:47 16:49	07:54 17:51	06:47 18:46	06:31 20:44	25 19:28 (16) 21:39	18 20:31 (15) 22:14
19	08:46 16:51	07:51 17:53	06:45 18:48	06:29 20:46	28 19:27 (16) 21:41	21 20:32 (15) 22:15
20	08:45 16:53	07:49 17:55	06:42 18:50	06:26 20:48	30 19:25 (16) 21:42	22 20:33 (15) 22:15
21	08:44 16:54	07:47 17:57	06:40 18:51	06:24 20:50	32 19:24 (16) 21:44	25 20:34 (15) 22:15
22	08:42 16:56	07:45 17:59	06:37 18:53	06:22 20:52	32 19:24 (16) 21:46	26 20:30 (15) 22:16
23	08:41 16:58	07:42 18:01	06:35 18:55	06:20 20:54	34 19:23 (16) 21:47	26 20:30 (15) 22:16
24	08:40 17:00	07:40 18:03	06:32 18:57	06:17 20:56	34 19:23 (16) 21:49	27 20:30 (15) 22:16
25	08:38 17:02	07:38 18:05	06:30 18:59	06:15 20:58	35 19:21 (16) 21:50	29 20:29 (15) 22:16
26	08:37 17:04	07:36 18:07	06:27 19:01	06:13 20:59	36 19:21 (16) 21:52	29 20:29 (15) 22:16
27	08:35 17:06	07:33 18:09	06:25 19:03	06:11 21:01	35 19:21 (16) 21:53	30 20:28 (15) 22:16
28	08:34 17:08	07:31 18:11	06:22 19:05	06:08 21:03	35 19:21 (16) 21:55	30 20:28 (15) 22:16
29	08:32 17:10	07:29 20:07	06:20 21:05	06:06 21:05	35 19:21 (16) 21:56	30 20:28 (15) 22:15
30	08:30 17:12	07:27 20:08	06:17 21:07	06:04 21:07	35 19:21 (16) 21:57	31 20:28 (15) 22:15
31	08:29 17:14	07:25 20:10	06:15 21:09	06:03 21:09	31 19:21 (16) 21:59	31 20:29 (15) 21:00 (15)
Potential sun hours	248	272	367	421	496	513
Total, worst case				477	691	906
Sun reduction				0.34	0.36	0.26
Oper. time red.				1.00	1.00	1.00
Wind dir. red.				0.59	0.61	0.63
Total reduction				0.20	0.22	0.16
Total, real				97	153	146

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: AL - H38

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	July	August	September	October	November	December					
1	05:07	20:35 (15)	05:48	19:46 (16)	06:44	07:38	07:37	08:33			
	22:15	30	21:05 (15)	21:39	5	19:51 (16)	20:31	19:16	17:04	16:19	
2	05:08	20:35 (15)	05:50	19:42 (16)	06:45	07:40	07:39	08:35			
	22:14	31	21:06 (15)	21:37	13	19:55 (16)	20:28	19:14	17:02	16:18	
3	05:09	20:36 (15)	05:52	19:39 (16)	06:47	07:42	07:41	08:36			
	22:14	30	21:06 (15)	21:35	18	19:57 (16)	20:26	19:11	17:00	16:17	
4	05:10	20:35 (15)	05:53	19:38 (16)	06:49	07:43	07:43	08:38			
	22:13	31	21:06 (15)	21:33	21	19:59 (16)	20:23	19:09	16:58	16:17	
5	05:11	20:35 (15)	05:55	19:37 (16)	06:51	07:45	07:45	08:39			
	22:13	31	21:06 (15)	21:31	23	20:00 (16)	20:21	19:06	16:56	16:16	
6	05:12	20:36 (15)	05:57	19:35 (16)	06:53	07:47	07:47	08:41			
	22:12	31	21:07 (15)	21:29	26	20:01 (16)	20:19	19:04	16:54	16:16	
7	05:13	20:36 (15)	05:59	19:34 (16)	06:54	07:49	07:49	08:42			
	22:12	31	21:07 (15)	21:27	28	20:02 (16)	20:16	19:01	16:53	16:15	
8	05:14	20:36 (15)	06:00	19:32 (16)	06:56	07:51	07:51	08:43			
	22:11	31	21:07 (15)	21:25	30	20:02 (16)	20:14	18:59	16:51	16:15	
9	05:15	20:36 (15)	06:02	19:32 (16)	06:58	07:53	07:53	08:45			
	22:10	31	21:07 (15)	21:23	31	20:03 (16)	20:11	18:56	16:49	16:14	
10	05:16	20:36 (15)	06:04	19:31 (16)	07:00	07:55	07:55	08:46			
	22:09	31	21:07 (15)	21:21	33	20:04 (16)	20:09	18:54	16:47	16:14	
11	05:17	20:36 (15)	06:06	19:30 (16)	07:02	07:57	07:57	08:47			
	22:08	31	21:07 (15)	21:19	33	20:03 (16)	20:06	18:51	16:45	16:14	
12	05:18	20:36 (15)	06:07	19:30 (16)	07:03	07:58	07:59	08:48			
	22:07	31	21:07 (15)	21:17	34	20:04 (16)	20:04	18:49	16:44	16:14	
13	05:19	20:36 (15)	06:09	19:30 (16)	07:05	08:00	08:01	08:49			
	22:06	31	21:07 (15)	21:15	34	20:04 (16)	20:01	18:47	16:42	16:13	
14	05:21	20:38 (15)	06:11	19:29 (16)	07:07	08:02	08:03	08:50			
	22:05	30	21:08 (15)	21:12	35	20:04 (16)	19:59	18:44	16:40	16:13	
15	05:22	20:38 (15)	06:13	19:29 (16)	07:09	08:04	08:05	08:51			
	22:04	30	21:08 (15)	21:10	35	20:04 (16)	19:56	18:42	16:39	16:13	
16	05:23	20:38 (15)	06:15	19:29 (16)	07:11	08:06	08:07	08:52			
	22:03	29	21:07 (15)	21:08	35	20:04 (16)	19:54	18:40	16:37	16:13	
17	05:25	20:38 (15)	06:16	19:29 (16)	07:12	08:08	08:09	08:53			
	22:02	29	21:07 (15)	21:06	35	20:04 (16)	19:51	18:37	16:36	16:14	
18	05:26	20:39 (15)	06:18	19:28 (16)	07:14	08:10	08:11	08:54			
	22:01	29	21:08 (15)	21:04	35	20:03 (16)	19:49	18:35	16:34	16:14	
19	05:27	20:39 (15)	06:20	19:28 (16)	07:16	08:12	08:12	08:55			
	21:59	28	21:07 (15)	21:01	35	20:03 (16)	19:46	18:33	16:33	16:14	
20	05:29	20:39 (15)	06:22	19:29 (16)	07:18	08:14	08:14	08:55			
	21:58	27	21:06 (15)	20:59	33	20:02 (16)	19:44	18:30	16:31	16:14	
21	05:30	20:40 (15)	06:24	19:28 (16)	07:20	08:16	08:16	08:56			
	21:56	27	21:07 (15)	20:57	33	20:01 (16)	19:41	18:28	16:30	16:15	
22	05:32	20:41 (15)	06:25	19:29 (16)	07:21	08:18	08:18	08:56			
	21:55	25	21:06 (15)	20:55	31	20:00 (16)	19:39	18:26	16:29	16:15	
23	05:33	20:41 (15)	06:27	19:30 (16)	07:23	08:20	08:20	08:57			
	21:54	24	21:05 (15)	20:52	29	19:59 (16)	19:36	18:24	16:27	16:16	
24	05:35	20:42 (15)	06:29	19:30 (16)	07:25	08:22	08:22	08:57			
	21:52	22	21:04 (15)	20:50	27	19:57 (16)	19:33	18:21	16:26	16:16	
25	05:37	20:43 (15)	06:31	19:31 (16)	07:27	07:24	08:23	08:58			
	21:51	20	21:03 (15)	20:48	25	19:56 (16)	19:31	17:19	16:25	16:17	
26	05:38	20:44 (15)	06:33	19:33 (16)	07:29	07:25	08:25	08:58			
	21:49	18	21:02 (15)	20:45	21	19:54 (16)	19:28	17:17	16:24	16:18	
27	05:40	20:46 (15)	06:35	19:35 (16)	07:31	07:27	08:27	08:58			
	21:47	14	21:00 (15)	20:43	17	19:52 (16)	19:26	17:15	16:23	16:19	
28	05:41	20:48 (15)	06:36	19:37 (16)	07:32	07:29	08:28	08:58			
	21:46	10	20:58 (15)	20:40	11	19:48 (16)	19:23	17:13	16:22	16:19	
29	05:43		06:38			07:34	07:31	08:30	08:58		
	21:44		20:38			19:21	17:11	16:21	16:20		
30	05:45		06:40			07:36	07:33	08:32	08:58		
	21:42		20:36			19:18	17:08	16:20	16:21		
31	05:46		06:42				07:35		08:58		
	21:40		20:33				17:06		16:22		
Potential sun hours	515		461		383		327		257		230
Total, worst case		763		766							
Sun reduction		0.27		0.27							
Oper. time red.		1.00		1.00							
Wind dir. red.		0.63		0.59							
Total reduction		0.17		0.16							
Total, real		127		123							

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: AM - H39

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January	February	March	April	May	June
1	08:58 16:24	08:27 17:16	07:29 18:13	07:12 20:12	18:56 (16) 06:02	05:11 22:00
2	08:58 16:25	08:25 17:18	07:26 18:15	07:10 20:14	18:55 (16) 06:00	05:11 22:01
3	08:58 16:26	08:24 17:20	07:24 18:17	07:07 20:16	18:54 (16) 05:58	05:10 22:02
4	08:58 16:27	08:22 17:22	07:21 18:19	07:05 20:18	18:53 (16) 05:56	05:09 22:03
5	08:57 16:28	08:20 17:24	07:19 18:21	07:02 20:20	18:53 (16) 05:54	05:08 22:05
6	08:57 16:30	08:18 17:26	07:17 18:23	07:00 20:22	18:52 (16) 05:52	05:07 22:06
7	08:56 16:31	08:16 17:28	07:14 18:24	06:58 20:24	18:52 (16) 05:50	05:06 22:07
8	08:56 16:33	08:14 17:30	07:12 18:26	06:55 20:25	18:51 (16) 05:48	05:06 22:08
9	08:55 16:34	08:12 17:32	07:09 18:28	06:53 20:27	18:51 (16) 05:46	05:05 22:09
10	08:55 16:36	08:10 17:34	07:07 18:30	06:50 20:29	18:50 (16) 05:44	05:05 22:09
11	08:54 16:37	08:08 17:36	07:05 18:32	06:48 20:31	18:51 (16) 05:42	05:04 22:10
12	08:53 16:39	08:06 17:38	07:02 18:34	06:45 20:33	18:52 (16) 05:40	05:04 22:11
13	08:52 16:40	08:04 17:40	07:00 18:36	06:43 20:35	18:52 (16) 05:38	05:04 22:12
14	08:51 16:42	08:02 17:42	06:57 18:38	06:41 20:37	18:53 (16) 05:37	05:03 22:12
15	08:50 16:44	08:00 17:44	06:55 18:40	06:38 20:39	18:54 (16) 05:35	05:03 22:13
16	08:49 16:45	07:58 17:46	06:52 18:42	06:36 20:41	18:54 (16) 05:33	05:03 22:14
17	08:48 16:47	07:56 17:49	06:50 18:44	06:33 20:42	18:56 (16) 05:32	05:03 22:14
18	08:47 16:49	07:54 17:51	06:47 18:46	06:31 20:44	18:59 (16) 05:30	05:03 22:15
19	08:46 16:51	07:51 17:53	06:45 18:48	06:29 20:46	19:04 (16) 05:28	05:03 22:15
20	08:45 16:53	07:49 17:55	06:42 18:50	06:26 20:48	19:09 (16) 05:27	05:03 22:15
21	08:44 16:54	07:47 17:57	06:40 18:51	06:24 20:50	21:42 05:25	05:03 22:15
22	08:42 16:56	07:45 17:59	06:37 18:53	06:22 20:52	21:44 05:24	05:03 22:16
23	08:41 16:58	07:42 18:01	06:35 18:55	06:20 20:54	21:46 05:22	05:03 22:16
24	08:40 17:00	07:40 18:03	06:32 18:57	06:17 20:56	21:47 05:21	05:04 22:16
25	08:38 17:02	07:38 18:05	06:30 18:59	06:15 20:58	21:49 05:20	05:04 22:16
26	08:37 17:04	07:36 18:07	06:27 19:01	06:13 20:59	21:50 05:18	05:04 22:16
27	08:35 17:06	07:33 18:09	06:25 19:03	06:11 21:01	20:05 (15) 20:18 (15)	05:17 21:53
28	08:34 17:08	07:31 18:11	06:22 19:05	06:08 18:06 (16) 21:03	20:03 (15) 20:20 (15)	05:16 21:55
29	08:32 17:10	07:29 18:13	06:20 19:07	06:06 18:17 (16) 21:05	20:01 (15) 20:22 (15)	05:15 21:56
30	08:31 17:12	07:27 18:15	06:17 19:09	06:04 19:20 (16) 21:07	20:00 (15) 20:23 (15)	05:14 21:57
31	08:29 17:14	07:25 18:17	06:15 19:11	06:03 18:58 (16) 21:09	05:12 21:59	05:07 22:15
Potential sun hours	248	272	367	421	496	513
Total, worst case			75	608	635	
Sun reduction			0.22	0.34	0.36	
Oper. time red.			1.00	1.00	1.00	
Wind dir. red.			0.59	0.59	0.61	
Total reduction			0.13	0.20	0.22	
Total, real			10	123	140	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: AM - H39

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	July	August	September	October	November	December	
1	05:07 22:15	05:48 21:39	20:05 (15) 20:36 (15)	06:44 20:31	18:50 (16) 19:16	07:37 17:04	08:33 16:19
2	05:08 22:14	05:50 21:37	20:06 (15) 20:37 (15)	06:45 20:28	18:49 (16) 19:14	07:39 17:02	08:35 16:18
3	05:09 22:14	05:52 21:35	20:05 (15) 20:36 (15)	06:47 20:26	18:49 (16) 19:23 (16)	07:42 19:11	08:36 17:00
4	05:10 22:13	05:53 21:33	20:05 (15) 20:37 (15)	06:49 20:23	18:48 (16) 19:22 (16)	07:43 19:09	08:38 16:17
5	05:11 22:13	05:55 21:31	20:04 (15) 20:36 (15)	06:51 20:21	18:48 (16) 19:22 (16)	07:45 19:06	08:39 16:16
6	05:12 22:12	05:57 21:29	20:05 (15) 20:36 (15)	06:53 20:19	18:48 (16) 19:22 (16)	07:47 19:04	08:41 16:16
7	05:12 22:12	05:59 21:27	20:05 (15) 20:36 (15)	06:54 20:16	18:48 (16) 19:21 (16)	07:49 19:01	08:42 16:15
8	05:14 22:11	06:00 21:25	20:05 (15) 20:35 (15)	06:56 20:14	18:47 (16) 19:20 (16)	07:51 18:59	08:43 16:15
9	05:15 22:10	06:02 21:23	20:06 (15) 20:35 (15)	06:58 20:11	18:48 (16) 19:19 (16)	07:53 18:56	08:45 16:14
10	05:16 22:09	06:04 21:21	20:06 (15) 20:34 (15)	07:00 20:09	18:48 (16) 19:18 (16)	07:55 18:54	08:46 16:14
11	05:17 22:08	06:06 21:19	20:06 (15) 20:33 (15)	07:02 20:06	18:49 (16) 19:17 (16)	07:57 18:51	08:47 16:14
12	05:18 22:07	06:07 21:17	20:07 (15) 20:32 (15)	07:03 20:04	18:49 (16) 19:15 (16)	07:58 18:49	08:48 16:14
13	05:19 22:06	06:09 21:15	20:09 (15) 20:31 (15)	07:05 20:01	18:51 (16) 19:13 (16)	08:00 18:47	08:49 16:13
14	05:21 22:05	06:11 21:12	20:09 (15) 20:29 (15)	07:07 19:59	18:52 (16) 19:11 (16)	08:02 18:44	08:50 16:13
15	05:22 22:04	06:13 21:10	20:11 (15) 20:27 (15)	07:09 19:56	18:55 (16) 19:08 (16)	08:04 18:42	08:51 16:13
16	05:23 22:03	06:15 21:08	20:14 (15) 20:25 (15)	07:11 19:54	19:08 (16)	08:06 18:40	08:52 16:13
17	05:25 22:02	06:16 21:06	07:12 19:51	07:12 19:51	08:08 18:37	08:09 16:36	08:53 16:14
18	05:26 22:01	06:18 21:04	07:14 19:49	07:14 19:49	08:10 18:35	08:11 16:34	08:54 16:14
19	05:27 21:59	20:17 (15) 20:25 (15)	06:20 21:01	07:16 19:46	08:12 18:33	08:12 16:33	08:55 16:14
20	05:29 21:58	20:14 (15) 20:27 (15)	06:22 20:59	07:18 19:44	08:14 18:30	08:14 16:31	08:55 16:14
21	05:30 21:56	13 20:27 (15) 20:14 (15)	20:59 06:24	19:44 07:20	18:30 08:16	16:31 08:16	16:14 08:56
22	05:32 21:55	15 20:29 (15) 20:12 (15)	20:57 06:25	19:41 07:21	18:28 08:18	16:30 08:18	16:15 08:56
23	05:33 21:54	18 20:30 (15) 20:10 (15)	20:55 06:27	19:39 07:23	18:26 08:20	16:29 08:20	16:15 08:57
24	05:35 21:52	21 20:31 (15) 20:32 (15)	20:52 20:50	19:36 19:12 (16)	18:24 18:21	16:27 16:26	16:16 16:16
25	05:37 21:51	22 20:32 (15) 20:09 (15)	20:50 06:31	19:33 19:01 (16)	18:21 07:24	16:26 08:23	16:16 08:58
26	05:38 21:49	24 20:33 (15) 20:09 (15)	20:48 06:33	19:31 18:59 (16)	17:19 07:25	16:25 08:25	16:17 08:58
27	05:40 21:47	25 20:34 (15) 20:07 (15)	20:45 06:35	19:28 18:57 (16)	17:17 07:27	16:24 08:27	16:18 08:58
28	05:41 21:46	27 20:34 (15) 20:35 (15)	20:43 20:40	19:26 19:20 (16)	17:15 17:13	16:23 16:22	16:19 16:19
29	05:43 21:44	28 20:35 (15) 20:06 (15)	20:40 06:38	19:23 18:53 (16)	17:13 07:31	16:22 08:30	16:19 08:58
30	05:45 21:42	29 20:35 (15) 20:06 (15)	20:38 06:40	19:21 18:52 (16)	17:11 07:33	16:21 08:32	16:20 08:58
31	05:46 21:40	30 20:36 (15) 20:05 (15)	20:36 06:42	19:18 18:51 (16)	17:08 07:35	16:20 16:20	16:21 08:58
Potential sun hours	515	461	383	327	257	230	
Total, worst case	291	607	438				
Sun reduction	0.27	0.27	0.29				
Oper. time red.	1.00	1.00	1.00				
Wind dir. red.	0.61	0.60	0.59				
Total reduction	0.16	0.16	0.17				
Total, real	47	100	75				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)



## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: AN - H40

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January	February	March	April	May	June		
1	08:58 16:24	08:27 17:16	16:08 (16) 18:13	07:29 16	17:22 (15) 17:38 (15)	07:12 20:12	06:02 21:09	05:11 22:00
2	08:58 16:25	08:25 17:18	16:07 (16) 18:15	07:26 21	17:19 (15) 17:40 (15)	07:10 20:14	06:00 21:11	05:10 22:01
3	08:58 16:26	08:24 17:20	16:06 (16) 18:17	07:24 25	17:17 (15) 17:42 (15)	07:07 20:16	05:58 21:13	05:10 22:02
4	08:58 16:27	08:22 17:22	16:06 (16) 18:19	07:21 27	17:15 (15) 17:42 (15)	07:05 20:18	05:56 21:14	05:09 22:03
5	08:57 16:28	08:20 17:24	16:06 (16) 18:21	07:19 30	17:14 (15) 17:44 (15)	07:02 20:20	05:54 21:16	05:08 22:05
6	08:57 16:30	08:18 17:26	16:05 (16) 18:23	07:17 31	17:13 (15) 17:44 (15)	07:00 20:22	05:52 21:18	05:07 22:06
7	08:56 16:31	08:16 17:28	16:05 (16) 18:24	07:14 33	17:12 (15) 17:45 (15)	06:58 20:24	05:50 21:20	05:06 22:07
8	08:56 16:33	08:14 17:30	16:05 (16) 18:26	07:12 34	17:11 (15) 17:45 (15)	06:55 20:25	05:48 21:22	05:06 22:08
9	08:55 16:34	08:12 17:32	16:05 (16) 18:28	07:09 34	17:11 (15) 17:45 (15)	06:53 20:27	05:46 21:23	05:05 22:09
10	08:55 16:36	08:10 17:34	16:05 (16) 18:30	07:07 34	17:10 (15) 17:44 (15)	06:50 20:29	05:44 21:25	05:05 22:09
11	08:54 16:37	08:08 17:36	16:05 (16) 18:32	07:05 35	17:10 (15) 17:45 (15)	06:48 20:31	05:42 21:27	05:04 22:10
12	08:53 16:39	08:06 17:38	16:06 (16) 18:34	07:02 34	17:10 (15) 17:44 (15)	06:45 20:33	05:40 21:29	05:04 22:11
13	08:52 16:40	08:04 17:40	16:07 (16) 18:36	07:00 34	17:10 (15) 17:44 (15)	06:43 20:35	05:38 21:31	05:04 22:12
14	08:51 16:42	08:02 17:42	16:07 (16) 18:38	06:57 33	17:10 (15) 17:43 (15)	06:41 20:37	05:37 21:32	05:03 22:12
15	08:51 16:44	08:00 17:44	16:08 (16) 18:40	06:55 31	17:11 (15) 17:42 (15)	06:38 20:39	05:35 21:34	05:03 22:13
16	08:50 16:45	07:58 17:46	16:09 (16) 18:42	06:52 30	17:11 (15) 17:41 (15)	06:36 20:41	05:33 21:36	05:03 22:14
17	08:48 16:47	07:56 17:49	16:11 (16) 18:44	06:50 28	17:12 (15) 17:40 (15)	06:33 20:42	05:32 21:37	05:03 22:14
18	08:47 16:49	07:54 17:51	16:13 (16) 18:46	06:47 25	17:13 (15) 17:38 (15)	06:31 20:44	05:30 21:39	05:03 22:15
19	08:46 16:51	07:51 17:53	16:15 (16) 18:48	06:45 21	17:15 (15) 17:36 (15)	06:29 20:46	05:28 21:41	05:03 22:15
20	08:45 16:53	07:49 17:55	16:17 (16) 18:50	06:42 16	17:17 (15) 17:33 (15)	06:26 20:48	05:27 21:42	05:03 22:15
21	08:44 16:54	07:47 17:57	16:19 (16) 18:51	06:40 9	17:21 (15) 17:30 (15)	06:24 20:50	05:25 21:44	05:03 22:16
22	08:42 16:56	07:45 17:59	16:21 (16) 18:53	06:37 18:51	17:23 (15) 20:52	06:22 21:46	05:24 21:46	05:03 22:16
23	08:41 16:58	07:42 18:01	16:23 (16) 18:55	06:35 18:55	17:25 (15) 20:54	06:20 21:47	05:22 21:47	05:03 22:16
24	08:40 17:00	07:40 18:03	16:25 (16) 18:57	06:32 18:57	17:27 (15) 20:56	06:17 21:49	05:21 21:49	05:04 22:16
25	08:38 17:02	07:38 18:05	16:27 (16) 18:59	06:30 18:59	17:29 (15) 20:58	06:15 21:50	05:20 21:50	05:04 22:16
26	08:37 17:04	07:36 18:07	16:29 (16) 19:01	06:27 19:01	17:31 (15) 20:59	06:13 21:52	05:18 21:52	05:04 22:16
27	08:35 17:06	16:15 (16) 18:09	07:33 19:03	06:25 19:03	17:33 (15) 21:01	06:11 21:53	05:17 21:53	05:05 22:16
28	08:34 17:08	16:12 (16) 18:11	07:31 17:25 (15) 17:34 (15)	06:22 19:05	17:35 (15) 21:03	06:08 21:55	05:16 21:55	05:05 22:16
29	08:32 17:10	16:10 (16) 16:28 (16)	07:20 20:07	07:20 20:07	17:37 (15) 21:05	06:06 21:56	05:15 21:56	05:06 22:15
30	08:31 17:12	16:09 (16) 16:30 (16)	07:17 20:08	07:17 20:08	17:39 (15) 21:07	06:04 21:57	05:14 21:57	05:07 22:15
31	08:29 17:14	16:08 (16) 16:31 (16)	07:15 20:10	07:15 20:10	17:41 (15) 21:09	05:12 21:59	05:12 21:59	05:07 22:15
Potential sun hours	248	272	367	421	496	513		
Total, worst case	85	530	581					
Sun reduction	0.17	0.22	0.22					
Oper. time red.	1.00	1.00	1.00					
Wind dir. red.	0.60	0.60	0.58					
Total reduction	0.10	0.13	0.13					
Total, real	9	70	75					

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: AN - H40

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	July	August	September	October	November	December
1	05:07 22:15	05:48 21:39	06:44 20:31	07:38 19:16	17:50 (15) 18:24 (15)	08:33 16:19
2	05:08 22:14	05:50 21:37	06:45 20:28	07:40 19:14	17:48 (15) 18:23 (15)	08:35 16:18
3	05:09 22:14	05:52 21:35	06:47 20:26	07:42 19:11	17:48 (15) 18:22 (15)	08:36 16:17
4	05:10 22:14	05:53 21:33	06:49 20:23	07:43 19:09	17:48 (15) 18:22 (15)	08:38 16:17
5	05:11 22:13	05:55 21:31	06:51 20:21	07:45 19:06	17:48 (15) 18:22 (15)	08:39 16:16
6	05:11 22:12	05:57 21:29	06:53 20:19	07:47 19:04	17:48 (15) 18:21 (15)	08:41 16:16
7	05:12 22:12	05:59 21:27	06:54 20:16	07:49 19:01	17:49 (15) 18:20 (15)	08:42 16:15
8	05:14 22:11	06:00 21:25	06:56 20:14	07:51 18:59	17:49 (15) 18:19 (15)	08:43 16:15
9	05:15 22:10	06:02 21:23	06:58 20:11	07:53 18:56	17:50 (15) 18:18 (15)	08:45 16:14
10	05:16 22:09	06:04 21:21	07:00 20:09	07:55 18:54	17:51 (15) 18:17 (15)	08:46 16:14
11	05:17 22:08	06:06 21:19	07:02 20:06	07:57 18:51	17:52 (15) 18:15 (15)	08:47 16:14
12	05:18 22:07	06:07 21:17	07:03 20:04	07:58 18:49	17:54 (15) 18:13 (15)	08:48 16:13
13	05:19 22:06	06:09 21:15	07:05 20:01	08:00 18:47	17:56 (15) 18:10 (15)	08:49 16:13
14	05:21 22:05	06:11 21:13	07:07 19:59	08:02 18:44	18:02 (15) 18:04 (15)	08:50 16:13
15	05:22 22:04	06:13 21:10	07:09 19:56	08:04 18:42	08:05 16:39	08:51 16:13
16	05:23 22:03	06:15 21:08	07:11 19:54	08:06 18:40	08:07 16:37	08:52 16:13
17	05:25 22:02	06:16 21:06	07:12 19:51	08:08 18:37	08:09 16:36	08:53 16:14
18	05:26 22:01	06:18 21:04	07:14 19:49	08:10 18:35	08:11 16:34	08:54 16:14
19	05:27 21:59	06:20 21:01	07:16 19:46	08:12 18:33	08:12 16:33	08:55 16:14
20	05:29 21:58	06:22 20:59	07:18 19:44	08:14 18:30	08:14 16:31	08:55 16:14
21	05:30 21:57	06:24 20:57	07:20 19:41	08:16 18:28	08:16 16:30	08:56 16:15
22	05:32 21:55	06:25 20:55	07:21 19:39	08:18 18:13 (15)	16:48 (16) 16:55 (16)	08:18 16:29
23	05:33 21:54	06:27 20:52	07:23 19:36	08:20 18:17 (15)	16:44 (16) 16:59 (16)	08:20 16:27
24	05:35 21:52	06:29 20:50	07:25 19:33	08:22 18:19 (15)	16:42 (16) 17:01 (16)	08:22 16:26
25	05:37 21:51	06:31 20:48	07:27 19:31	08:24 18:20 (15)	15:40 (16) 16:02 (16)	08:23 16:25
26	05:38 21:49	06:33 20:45	07:29 19:28	08:26 18:21 (15)	15:38 (16) 16:03 (16)	08:25 16:24
27	05:40 21:47	06:35 20:43	07:31 19:26	08:27 18:22 (15)	15:37 (16) 16:04 (16)	08:27 16:23
28	05:41 21:46	06:36 20:40	07:32 19:23	08:29 18:23 (15)	15:37 (16) 16:05 (16)	08:29 16:22
29	05:43 21:44	06:38 20:38	07:34 19:21	08:30 18:23 (15)	15:36 (16) 16:06 (16)	08:30 16:21
30	05:45 21:42	06:40 20:36	07:36 19:18	08:33 18:24 (15)	15:35 (16) 16:06 (16)	08:32 16:21
31	05:46 21:40	06:42 20:33		08:35 17:06	15:35 (16) 16:06 (16)	08:58 16:22
Potential sun hours	515	461	383	327	257	230
Total, worst case			217	612	385	
Sun reduction			0.29	0.23	0.20	
Oper. time red.			1.00	1.00	1.00	
Wind dir. red.			0.58	0.59	0.60	
Total reduction			0.17	0.14	0.12	
Total, real			37	84	46	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: AO - H41

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June						
1	08:58	08:27	07:29	07:12	19:16 (16)	06:02	20:14 (15)	05:11	20:17 (15)			
	16:24	17:16	18:13	20:12	7	19:23 (16)	21:09	11	20:25 (15)	22:00	7	20:24 (15)
2	08:58	08:25	07:26	07:10	19:12 (16)	06:00	20:11 (15)	05:11				
	16:25	17:18	18:15	20:14	15	19:27 (16)	21:11	16	20:27 (15)	22:01		
3	08:58	08:24	07:24	07:07	19:09 (16)	05:58	20:09 (15)	05:10				
	16:26	17:20	18:17	20:16	20	19:29 (16)	21:12	20	20:29 (15)	22:02		
4	08:58	08:22	07:21	07:05	19:07 (16)	05:56	20:08 (15)	05:09				
	16:27	17:22	18:19	20:18	24	19:31 (16)	21:14	22	20:30 (15)	22:03		
5	08:57	08:20	07:19	07:02	19:06 (16)	05:54	20:07 (15)	05:08				
	16:28	17:24	18:21	20:20	26	19:32 (16)	21:16	24	20:31 (15)	22:05		
6	08:57	08:18	07:17	07:00	19:04 (16)	05:52	20:06 (15)	05:07				
	16:30	17:26	18:23	20:22	29	19:33 (16)	21:18	27	20:33 (15)	22:06		
7	08:56	08:16	07:14	06:58	19:03 (16)	05:50	20:06 (15)	05:06				
	16:31	17:28	18:24	20:24	31	19:34 (16)	21:20	27	20:33 (15)	22:07		
8	08:56	08:14	07:12	06:55	19:01 (16)	05:48	20:05 (15)	05:06				
	16:33	17:30	18:26	20:25	32	19:33 (16)	21:22	28	20:33 (15)	22:08		
9	08:55	08:12	07:09	06:53	19:01 (16)	05:46	20:04 (15)	05:05				
	16:34	17:32	18:28	20:27	33	19:34 (16)	21:23	29	20:33 (15)	22:09		
10	08:55	08:10	07:07	06:50	19:00 (16)	05:44	20:03 (15)	05:05				
	16:36	17:34	18:30	20:29	34	19:34 (16)	21:25	30	20:33 (15)	22:09		
11	08:54	08:08	07:05	06:48	19:00 (16)	05:42	20:04 (15)	05:04				
	16:37	17:36	18:32	20:31	34	19:34 (16)	21:27	30	20:34 (15)	22:10		
12	08:53	08:06	07:02	06:45	19:00 (16)	05:40	20:03 (15)	05:04				
	16:39	17:38	18:34	20:33	34	19:34 (16)	21:29	31	20:34 (15)	22:11		
13	08:52	08:04	07:00	06:43	18:59 (16)	05:38	20:03 (15)	05:04				
	16:40	17:40	18:36	20:35	34	19:33 (16)	21:31	31	20:34 (15)	22:12		
14	08:51	08:02	06:57	06:41	18:59 (16)	05:37	20:03 (15)	05:03				
	16:42	17:42	18:38	20:37	34	19:33 (16)	21:32	31	20:34 (15)	22:12		
15	08:50	08:00	06:55	06:38	19:00 (16)	05:35	20:03 (15)	05:03				
	16:44	17:44	18:40	20:39	33	19:33 (16)	21:34	31	20:34 (15)	22:13		
16	08:49	07:58	06:52	06:36	18:59 (16)	05:33	20:04 (15)	05:03				
	16:45	17:46	18:42	20:41	32	19:31 (16)	21:36	30	20:34 (15)	22:14		
17	08:48	07:56	06:50	06:33	19:00 (16)	05:32	20:03 (15)	05:03				
	16:47	17:49	18:44	20:42	31	19:31 (16)	21:37	31	20:34 (15)	22:14		
18	08:47	07:54	06:47	06:31	19:01 (16)	05:30	20:04 (15)	05:03				
	16:49	17:51	18:46	20:44	29	19:30 (16)	21:39	30	20:34 (15)	22:15		
19	08:46	07:51	06:45	06:29	19:02 (16)	05:28	20:04 (15)	05:03				
	16:51	17:53	18:48	20:46	27	19:29 (16)	21:41	29	20:33 (15)	22:15		
20	08:45	07:49	06:42	06:26	19:02 (16)	05:27	20:05 (15)	05:03				
	16:53	17:55	18:50	20:48	25	19:27 (16)	21:42	28	20:33 (15)	22:15		
21	08:44	07:47	06:40	06:24	19:03 (16)	05:25	20:06 (15)	05:03				
	16:54	17:57	18:51	20:50	23	19:26 (16)	21:44	27	20:33 (15)	22:15		
22	08:42	07:45	06:37	06:22	19:05 (16)	05:24	20:05 (15)	05:03				
	16:56	17:59	18:53	20:52	19	19:24 (16)	21:46	27	20:32 (15)	22:16		
23	08:41	07:42	06:35	06:20	19:08 (16)	05:22	20:06 (15)	05:03				
	16:58	18:01	18:55	20:54	13	19:21 (16)	21:47	26	20:32 (15)	22:16		
24	08:40	07:40	06:32	06:17	19:13 (16)	05:21	20:07 (15)	05:04				
	17:00	18:03	18:57	20:56	4	19:17 (16)	21:49	25	20:32 (15)	22:16		
25	08:38	07:38	06:30	06:15		05:20	20:08 (15)	05:04				
	17:02	18:05	18:59	20:58		21:50	23	20:31 (15)	22:16			
26	08:37	07:36	06:27	06:13		05:18	20:09 (15)	05:04				
	17:04	18:07	19:01	20:59		21:52	22	20:31 (15)	22:16			
27	08:35	07:33	06:25	06:11		05:17	20:09 (15)	05:05				
	17:06	18:09	19:03	21:01		21:53	20	20:29 (15)	22:16			
28	08:34	07:31	06:22	06:08		05:16	20:10 (15)	05:05				
	17:08	18:11	19:05	21:03		21:55	18	20:28 (15)	22:16			
29	08:32		07:20	06:06		05:15	20:12 (15)	05:06				
	17:10		20:07	21:05		21:56	16	20:28 (15)	22:15			
30	08:30		07:17	06:04		05:14	20:13 (15)	05:07				
	17:12		20:08	21:07		21:57	14	20:27 (15)	22:15			
31	08:29		07:15			05:12	20:15 (15)					
	17:14		20:10			21:59	11	20:26 (15)				
Potential sun hours	248	272	367	421	496	513						
Total, worst case				623	765	7						
Sun reduction				0.34	0.36	0.26						
Oper. time red.				1.00	1.00	1.00						
Wind dir. red.				0.59	0.61	0.61						
Total reduction				0.20	0.22	0.16						
Total, real				126	170	1						

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: AO - H41

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	July	August	September	October	November	December
1	05:07 22:15	05:48 21:39	20:14 (15) 20:44 (15)	06:44 20:31	18:59 (16) 19:33 (16)	07:38 17:04
2	05:08 22:14	05:50 21:37	20:14 (15) 20:45 (15)	06:45 20:28	18:59 (16) 19:14	07:39 17:02
3	05:09 22:14	05:52 21:35	20:14 (15) 20:44 (15)	06:47 20:26	18:59 (16) 19:32 (16)	07:41 17:00
4	05:10 22:13	05:53 21:33	20:14 (15) 20:44 (15)	06:49 20:23	18:58 (16) 19:31 (16)	07:43 16:58
5	05:11 22:13	05:55 21:31	20:14 (15) 20:42 (15)	06:51 20:21	18:59 (16) 19:30 (16)	07:45 16:56
6	05:12 22:12	05:57 21:29	20:15 (15) 20:42 (15)	06:53 20:19	19:00 (16) 19:29 (16)	07:47 16:54
7	05:12 22:12	05:59 21:27	20:16 (15) 20:42 (15)	06:54 20:16	19:01 (16) 19:28 (16)	07:49 16:53
8	05:14 22:11	06:00 21:25	20:16 (15) 20:40 (15)	06:56 20:14	19:01 (16) 19:25 (16)	07:51 16:51
9	05:15 22:10	06:02 21:23	20:18 (15) 20:39 (15)	06:58 20:11	19:03 (16) 19:23 (16)	07:53 16:49
10	05:16 22:09	06:04 21:21	20:19 (15) 20:38 (15)	07:00 20:09	19:05 (16) 19:21 (16)	07:55 16:47
11	05:17 22:08	20:26 (15) 06:06 21:19	20:20 (15) 20:35 (15)	07:02 20:06	19:09 (16) 19:17 (16)	07:57 16:45
12	05:18 22:07	20:24 (15) 06:07 21:17	20:23 (15) 20:33 (15)	07:03 20:04	07:58 18:49	07:59 16:44
13	05:19 22:06	20:33 (15) 06:09 21:15	20:33 (15) 20:04	07:05 20:01	18:49 18:47	16:44 16:41
14	05:21 22:05	20:22 (15) 06:11 21:12	07:07 19:59	07:07 18:44	18:47 16:40	16:42 16:13
15	05:22 22:04	20:37 (15) 06:13 21:10	07:09 19:56	07:09 18:42	18:44 16:39	16:13 16:13
16	05:23 22:03	20:34 (15) 06:15 21:08	07:11 19:54	07:11 18:40	18:46 16:37	16:13 16:13
17	05:25 22:02	20:38 (15) 06:16 21:06	07:12 19:51	07:12 18:37	18:08 16:36	16:14 16:14
18	05:26 22:01	20:39 (15) 06:18 21:04	07:14 19:49	07:14 18:35	18:10 16:34	16:14 16:14
19	05:27 21:59	20:40 (15) 06:20 21:01	19:17 (16) 07:16 19:46	07:16 18:33	18:12 16:33	16:14 16:14
20	05:29 21:58	20:41 (15) 06:22 20:59	19:13 (16) 07:18 19:28 (16)	07:18 19:44 18:30	18:14 16:31 16:14	16:14 16:14 16:14
21	05:30 21:56	20:42 (15) 06:24 20:57	19:10 (16) 07:20 19:41	07:20 18:28	18:16 16:30	16:15 16:15
22	05:32 21:55	20:42 (15) 06:25 20:55	19:08 (16) 07:21 19:31 (16)	07:21 18:26	18:18 16:29	16:15 16:15
23	05:33 21:54	20:43 (15) 06:27 20:52	19:06 (16) 07:23 19:36	07:23 18:24	18:20 16:27	16:16 16:16
24	05:35 21:52	20:43 (15) 06:29 20:50	19:04 (16) 07:25 19:32 (16)	07:25 18:21	18:22 16:26	16:17 16:16
25	05:37 21:51	20:44 (15) 06:31 20:48	19:03 (16) 07:27 19:33 (16)	07:27 18:19	18:23 16:25	16:17 16:17
26	05:38 21:49	20:44 (15) 06:33 20:45	19:03 (16) 07:29 19:34 (16)	07:29 17:17	18:25 16:24	16:18 16:18
27	05:40 21:47	20:44 (15) 06:35 20:43	19:02 (16) 07:31 19:34 (16)	07:31 17:15	18:27 16:23	16:19 16:19
28	05:41 21:46	20:44 (15) 06:36 20:40	19:00 (16) 07:32 19:34 (16)	07:32 17:13	18:28 16:22	16:19 16:19
29	05:43 21:44	20:45 (15) 06:38 20:38	19:00 (16) 07:34 19:34 (16)	07:34 17:11	18:30 16:21	16:20 16:20
30	05:45 21:42	20:44 (15) 06:40 20:36	19:00 (16) 07:36 19:34 (16)	07:36 17:08	18:32 16:20	16:21 16:21
31	05:46 21:40	20:45 (15) 06:42 20:33	18:59 (16) 19:33 (16)	07:35 17:06	18:35 16:22	16:22 16:22
Potential sun hours	515	461	383	327	257	230
Total, worst case	493	638	289			
Sun reduction	0.27	0.27	0.29			
Oper. time red.	1.00	1.00	1.00			
Wind dir. red.	0.61	0.60	0.59			
Total reduction	0.16	0.16	0.17			
Total, real	81	105	50			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: AP - H42

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June
1	08:58	08:27	07:29	07:12	06:02	19:19 (16) 05:11 20:19 (15)
	16:24	17:16	18:13	20:12	21:09	15 19:34 (16) 22:00 27 20:46 (15)
2	08:58	08:25	07:26	07:10	06:00	19:22 (16) 05:11 20:19 (15)
	16:25	17:18	18:15	20:14	21:11	9 19:31 (16) 22:01 27 20:46 (15)
3	08:58	08:24	07:24	07:07	05:58	05:10 20:19 (15)
	16:26	17:20	18:17	20:16	21:12	22:02 27 20:46 (15)
4	08:58	08:22	07:21	07:05	05:56	05:09 20:19 (15)
	16:27	17:22	18:19	20:18	21:14	22:03 26 20:45 (15)
5	08:57	08:20	07:19	07:02	05:54	05:08 20:21 (15)
	16:28	17:24	18:21	20:20	21:16	22:05 25 20:46 (15)
6	08:57	08:18	07:17	07:00	05:52	05:07 20:21 (15)
	16:30	17:26	18:23	20:22	21:18	22:06 24 20:45 (15)
7	08:56	08:16	07:14	06:58	05:50	05:06 20:22 (15)
	16:31	17:28	18:24	20:24	21:20	22:07 23 20:45 (15)
8	08:56	08:14	07:12	06:55	19:28 (16) 05:48	20:26 (15) 05:06 20:22 (15)
	16:33	17:30	18:26	20:25	6 19:34 (16) 21:22	10 20:36 (15) 22:08 23 20:45 (15)
9	08:55	08:12	07:09	06:53	19:23 (16) 05:46	20:23 (15) 05:05 20:23 (15)
	16:34	17:32	18:28	20:27	16 19:39 (16) 21:23	15 20:38 (15) 22:09 22 20:45 (15)
10	08:55	08:10	07:07	06:50	19:20 (16) 05:44	20:21 (15) 05:05 20:23 (15)
	16:36	17:34	18:30	20:29	20 19:40 (16) 21:25	19 20:40 (15) 22:09 21 20:44 (15)
11	08:54	08:08	07:04	06:48	19:18 (16) 05:42	20:21 (15) 05:04 20:24 (15)
	16:37	17:36	18:32	20:31	24 19:42 (16) 21:27	21 20:42 (15) 22:10 21 20:45 (15)
12	08:53	08:06	07:02	06:45	19:17 (16) 05:40	20:19 (15) 05:04 20:25 (15)
	16:39	17:38	18:34	20:33	27 19:44 (16) 21:29	23 20:42 (15) 22:11 20 20:45 (15)
13	08:52	08:04	07:00	06:43	19:15 (16) 05:38	20:18 (15) 05:04 20:24 (15)
	16:40	17:40	18:36	20:35	29 19:44 (16) 21:31	25 20:43 (15) 22:12 20 20:44 (15)
14	08:51	08:02	06:57	06:41	19:14 (16) 05:37	20:18 (15) 05:03 20:25 (15)
	16:42	17:42	18:38	20:37	31 19:45 (16) 21:32	26 20:44 (15) 22:12 19 20:44 (15)
15	08:50	08:00	06:55	06:38	19:14 (16) 05:35	20:17 (15) 05:03 20:26 (15)
	16:44	17:44	18:40	20:39	32 19:46 (16) 21:34	27 20:44 (15) 22:13 18 20:44 (15)
16	08:49	07:58	06:52	06:36	19:12 (16) 05:33	20:17 (15) 05:03 20:26 (15)
	16:45	17:46	18:42	20:41	33 19:45 (16) 21:36	28 20:45 (15) 22:14 18 20:44 (15)
17	08:48	07:56	06:50	06:33	19:12 (16) 05:32	20:16 (15) 05:03 20:27 (15)
	16:47	17:49	18:44	20:42	34 19:46 (16) 21:37	29 20:45 (15) 22:14 17 20:44 (15)
18	08:47	07:54	06:47	06:31	19:12 (16) 05:30	20:16 (15) 05:03 20:27 (15)
	16:49	17:51	18:46	20:44	34 19:46 (16) 21:39	30 20:46 (15) 22:14 17 20:44 (15)
19	08:46	07:51	06:45	06:29	19:12 (16) 05:28	20:16 (15) 05:03 20:27 (15)
	16:51	17:53	18:48	20:46	34 19:46 (16) 21:41	30 20:46 (15) 22:15 17 20:44 (15)
20	08:45	07:49	06:42	06:26	19:11 (16) 05:27	20:16 (15) 05:03 20:27 (15)
	16:53	17:55	18:50	20:48	34 19:45 (16) 21:42	30 20:46 (15) 22:15 17 20:44 (15)
21	08:44	07:47	06:40	06:24	19:11 (16) 05:25	20:16 (15) 05:03 20:27 (15)
	16:54	17:57	18:51	20:50	34 19:45 (16) 21:44	31 20:47 (15) 22:15 17 20:44 (15)
22	08:42	07:45	06:37	06:22	19:11 (16) 05:24	20:15 (15) 05:03 20:28 (15)
	16:56	17:59	18:53	20:52	34 19:45 (16) 21:46	31 20:46 (15) 22:16 17 20:45 (15)
23	08:41	07:42	06:35	06:20	19:11 (16) 05:22	20:16 (15) 05:03 20:28 (15)
	16:58	18:01	18:55	20:54	33 19:44 (16) 21:47	31 20:47 (15) 22:16 17 20:45 (15)
24	08:40	07:40	06:32	06:17	19:12 (16) 05:21	20:16 (15) 05:04 20:28 (15)
	17:00	18:03	18:57	20:56	32 19:44 (16) 21:49	31 20:47 (15) 22:16 17 20:45 (15)
25	08:38	07:38	06:30	06:15	19:11 (16) 05:20	20:16 (15) 05:04 20:29 (15)
	17:02	18:05	18:59	20:58	31 19:42 (16) 21:50	31 20:47 (15) 22:16 17 20:46 (15)
26	08:37	07:36	06:27	06:13	19:12 (16) 05:18	20:17 (15) 05:04 20:28 (15)
	17:04	18:07	19:01	20:59	29 19:41 (16) 21:52	30 20:47 (15) 22:16 18 20:46 (15)
27	08:35	07:33	06:25	06:11	19:13 (16) 05:17	20:16 (15) 05:05 20:29 (15)
	17:06	18:09	19:03	21:01	27 19:40 (16) 21:53	30 20:46 (15) 22:16 18 20:47 (15)
28	08:34	07:31	06:22	06:08	19:14 (16) 05:16	20:16 (15) 05:05 20:28 (15)
	17:08	18:11	19:05	21:03	25 19:39 (16) 21:55	30 20:46 (15) 22:16 19 20:47 (15)
29	08:32		07:20	06:06	19:15 (16) 05:15	20:17 (15) 05:06 20:29 (15)
	17:10		20:07	21:05	23 19:38 (16) 21:56	29 20:46 (15) 22:15 19 20:48 (15)
30	08:30		07:17	06:04	19:17 (16) 05:14	20:17 (15) 05:07 20:28 (15)
	17:12		20:08	21:07	19 19:36 (16) 21:57	29 20:46 (15) 22:15 20 20:48 (15)
31	08:29		07:15		05:12	20:18 (15)
	17:14		20:10		21:59	29 20:47 (15)
Potential sun hours	248	272	367	421	496	513
Total, worst case				641	669	608
Sun reduction				0.34	0.36	0.26
Oper. time red.				1.00	1.00	1.00
Wind dir. red.				0.59	0.62	0.62
Total reduction				0.20	0.22	0.16
Total, real				130	150	97

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: AP - H42

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	July	August	September	October	November	December						
1	05:07	20:28 (15)	05:48	20:30 (15)	06:44	19:17 (16)	07:38	07:37	08:33			
	22:15	21	20:49 (15)	21:39	22	20:52 (15)	20:31	24	19:41 (16)	19:16	17:04	16:19
2	05:08	20:28 (15)	05:50	20:31 (15)	06:45	19:19 (16)	07:40	07:39	08:35			
	22:14	21	20:49 (15)	21:37	21	20:52 (15)	20:28	20	19:39 (16)	19:14	17:02	16:18
3	05:09	20:28 (15)	05:52	20:32 (15)	06:47	19:21 (16)	07:42	07:41	08:36			
	22:14	22	20:50 (15)	21:35	18	20:50 (15)	20:26	16	19:37 (16)	19:11	17:00	16:17
4	05:10	20:27 (15)	05:53	20:34 (15)	06:49	19:25 (16)	07:43	07:43	08:38			
	22:13	23	20:50 (15)	21:33	14	20:48 (15)	20:23	6	19:31 (16)	19:09	16:58	16:17
5	05:11	20:27 (15)	05:55	20:37 (15)	06:51	19:27 (16)	07:45	07:45	08:39			
	22:13	24	20:51 (15)	21:31	8	20:45 (15)	20:21		19:06	16:56	16:16	
6	05:12	20:27 (15)	05:57	20:38 (15)	06:53	19:29 (16)	07:47	07:47	08:41			
	22:12	24	20:51 (15)	21:29		20:19	19:04	16:54	16:16			
7	05:12	20:27 (15)	05:59	20:39 (15)	06:54	19:31 (16)	07:49	07:49	08:42			
	22:12	25	20:52 (15)	21:27		20:16	19:01	16:53	16:15			
8	05:14	20:27 (15)	06:00	20:40 (15)	06:56	19:33 (16)	07:51	07:51	08:43			
	22:11	25	20:52 (15)	21:25		20:14	18:59	16:51	16:15			
9	05:15	20:27 (15)	06:02	20:41 (15)	06:58	19:35 (16)	07:53	07:53	08:45			
	22:10	26	20:53 (15)	21:23		20:11	18:56	16:49	16:14			
10	05:16	20:27 (15)	06:04	20:42 (15)	07:00	19:37 (16)	07:55	07:55	08:46			
	22:09	26	20:53 (15)	21:21		20:09	18:54	16:47	16:14			
11	05:17	20:26 (15)	06:06	19:29 (16)	07:02	19:41 (16)	07:57	07:57	08:47			
	22:08	28	20:54 (15)	21:19	12	19:41 (16)	20:06	18:51	16:45	16:14		
12	05:18	20:26 (15)	06:07	19:27 (16)	07:03	19:43 (16)	07:58	07:59	08:48			
	22:07	28	20:54 (15)	21:17	16	19:43 (16)	20:04	18:49	16:44	16:14		
13	05:19	20:26 (15)	06:09	19:25 (16)	07:05	19:45 (16)	08:00	08:01	08:49			
	22:06	28	20:54 (15)	21:15	20	19:45 (16)	20:01	18:47	16:42	16:13		
14	05:21	20:26 (15)	06:11	19:22 (16)	07:07	19:46 (16)	08:02	08:03	08:50			
	22:05	29	20:55 (15)	21:12	24	19:46 (16)	19:59	18:44	16:40	16:13		
15	05:22	20:26 (15)	06:13	19:21 (16)	07:09	19:47 (16)	08:04	08:05	08:51			
	22:04	30	20:56 (15)	21:10	26	19:47 (16)	19:56	18:42	16:39	16:13		
16	05:23	20:26 (15)	06:15	19:20 (16)	07:11	19:48 (16)	08:06	08:07	08:52			
	22:03	30	20:56 (15)	21:08	28	19:48 (16)	19:54	18:40	16:37	16:13		
17	05:25	20:25 (15)	06:16	19:19 (16)	07:12	19:49 (16)	08:08	08:09	08:53			
	22:02	31	20:56 (15)	21:06	30	19:49 (16)	19:51	18:37	16:36	16:14		
18	05:26	20:26 (15)	06:18	19:18 (16)	07:14	19:50 (16)	08:10	08:11	08:54			
	22:01	31	20:57 (15)	21:04	31	19:49 (16)	19:49	18:35	16:34	16:14		
19	05:27	20:26 (15)	06:20	19:17 (16)	07:16	19:50 (16)	08:12	08:12	08:55			
	21:59	30	20:56 (15)	21:01	33	19:50 (16)	19:46	18:33	16:33	16:14		
20	05:29	20:25 (15)	06:22	19:17 (16)	07:18	19:51 (16)	08:14	08:14	08:55			
	21:58	31	20:56 (15)	20:59	33	19:50 (16)	19:44	18:30	16:31	16:14		
21	05:30	20:26 (15)	06:24	19:16 (16)	07:20	19:51 (16)	08:16	08:16	08:56			
	21:56	31	20:57 (15)	20:57	33	19:49 (16)	19:41	18:28	16:30	16:15		
22	05:32	20:26 (15)	06:25	19:15 (16)	07:21	19:52 (16)	08:18	08:18	08:56			
	21:55	31	20:57 (15)	20:55	35	19:50 (16)	19:39	18:26	16:29	16:15		
23	05:33	20:25 (15)	06:27	19:15 (16)	07:23	19:51 (16)	08:20	08:20	08:57			
	21:54	31	20:56 (15)	20:52	35	19:50 (16)	19:36	18:24	16:27	16:16		
24	05:35	20:26 (15)	06:29	19:14 (16)	07:25	19:51 (16)	08:22	08:22	08:57			
	21:52	31	20:57 (15)	20:50	35	19:49 (16)	19:33	18:21	16:26	16:16		
25	05:37	20:26 (15)	06:31	19:14 (16)	07:27	19:52 (16)	07:24	08:23	08:58			
	21:51	30	20:56 (15)	20:48	35	19:49 (16)	19:31	17:19	16:25	16:17		
26	05:38	20:27 (15)	06:33	19:15 (16)	07:29	19:52 (16)	07:25	08:25	08:58			
	21:49	29	20:56 (15)	20:45	33	19:48 (16)	19:28	17:17	16:24	16:18		
27	05:40	20:27 (15)	06:35	19:15 (16)	07:31	19:53 (16)	07:27	08:27	08:58			
	21:47	28	20:55 (15)	20:43	33	19:48 (16)	19:26	17:15	16:23	16:19		
28	05:41	20:27 (15)	06:36	19:15 (16)	07:32	19:54 (16)	07:29	08:28	08:58			
	21:46	28	20:55 (15)	20:40	31	19:46 (16)	19:23	17:13	16:22	16:19		
29	05:43	20:27 (15)	06:38	19:15 (16)	07:34	19:54 (16)	07:31	08:30	08:58			
	21:44	27	20:54 (15)	20:38	31	19:46 (16)	19:21	17:11	16:21	16:20		
30	05:45	20:29 (15)	06:40	19:16 (16)	07:36	19:55 (16)	07:33	08:32	08:58			
	21:42	25	20:54 (15)	20:36	29	19:45 (16)	19:18	17:08	16:20	16:21		
31	05:46	20:29 (15)	06:42	19:16 (16)		19:56 (16)	07:35		08:58			
	21:40	24	20:53 (15)	20:33	27	19:43 (16)	17:06		16:22			
Potential sun hours	515		461		383		327		257		230	
Total, worst case		848		693		66						
Sun reduction		0.27		0.27		0.29						
Oper. time red.		1.00		1.00		1.00						
Wind dir. red.		0.62		0.59		0.59						
Total reduction		0.17		0.16		0.17						
Total, real		140		113		11						

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: AQ - H43

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January	February	March	April	May	June
1	08:58 16:24	08:27 17:16	07:29 18:13	07:12 20:12	19:05 (16) 06:02	20:06 (15) 05:11
2	08:58 16:25	08:25 17:18	07:26 18:15	07:10 20:14	19:04 (16) 06:00	20:04 (15) 05:11
3	08:58 16:26	08:24 17:20	07:24 18:17	07:07 20:16	19:01 (16) 05:58	20:03 (15) 05:10
4	08:58 16:27	08:22 17:22	07:21 18:19	07:05 20:18	19:00 (16) 05:56	20:02 (15) 05:09
5	08:57 16:28	08:20 17:24	07:19 18:21	07:02 20:20	19:00 (16) 05:54	20:01 (15) 05:08
6	08:57 16:30	08:18 17:26	07:17 18:23	07:00 20:22	18:58 (16) 05:52	20:01 (15) 05:07
7	08:56 16:31	08:16 17:28	07:14 18:24	06:58 20:24	18:58 (16) 05:50	20:01 (15) 05:06
8	08:56 16:33	08:14 17:30	07:12 18:26	06:55 20:25	18:57 (16) 05:48	20:00 (15) 05:06
9	08:55 16:34	08:12 17:32	07:09 18:28	06:53 20:27	18:56 (16) 05:46	20:00 (15) 05:05
10	08:55 16:36	08:10 17:34	07:07 18:30	06:50 20:29	18:55 (16) 05:44	19:59 (15) 05:05
11	08:54 16:37	08:08 17:36	07:05 18:32	06:48 20:31	18:56 (16) 05:42	20:00 (15) 05:04
12	08:53 16:39	08:06 17:38	07:02 18:34	06:45 20:33	18:56 (16) 05:40	19:59 (15) 05:04
13	08:52 16:40	08:04 17:40	07:00 18:36	06:43 20:35	18:55 (16) 05:38	19:59 (15) 05:04
14	08:51 16:42	08:02 17:42	06:57 18:38	06:41 20:37	18:56 (16) 05:37	20:00 (15) 05:03
15	08:50 16:44	08:00 17:44	06:55 18:40	06:38 20:39	18:57 (16) 05:35	20:00 (15) 05:03
16	08:49 16:45	07:58 17:46	06:52 18:42	06:36 20:41	18:57 (16) 05:33	20:01 (15) 05:03
17	08:48 16:47	07:56 17:49	06:50 18:44	06:33 20:42	18:58 (16) 05:32	20:00 (15) 05:03
18	08:47 16:49	07:54 17:51	06:47 18:46	06:31 20:44	18:59 (16) 05:30	20:01 (15) 05:03
19	08:46 16:51	07:51 17:53	06:45 18:48	06:29 20:46	19:01 (16) 05:28	20:01 (15) 05:03
20	08:45 16:53	07:49 17:55	06:42 18:50	06:26 20:48	19:22 (16) 05:27	20:28 (15) 05:03
21	08:44 16:54	07:47 17:57	06:40 18:51	06:24 20:50	19:02 (16) 05:27	20:02 (15) 05:03
22	08:42 16:56	07:45 17:59	06:37 18:53	06:22 20:52	19:19 (16) 05:25	20:28 (15) 05:03
23	08:41 16:58	07:42 18:01	06:35 18:55	06:20 20:54	19:05 (16) 05:25	20:03 (15) 05:03
24	08:40 17:00	07:40 18:03	06:32 18:57	06:17 20:56	19:16 (16) 05:24	20:28 (15) 05:03
25	08:38 17:02	07:38 18:05	06:30 18:59	06:15 20:58	05:22 21:47	20:05 (15) 05:03
26	08:37 17:04	07:36 18:07	06:27 19:01	06:13 20:59	21:49 20:26 (15)	20:26 (15) 05:04
27	08:35 17:06	07:33 18:09	06:25 19:03	06:11 21:01	05:20 21:50	20:07 (15) 05:04
28	08:34 17:08	07:31 18:11	06:22 19:05	06:08 21:03	18 20:25 (15)	20:25 (15) 05:04
29	08:32 17:10	07:29 18:13	06:20 19:07	06:06 21:05	15 20:18 (15)	20:09 (15) 05:04
30	08:30 17:12	07:27 18:15	06:17 19:09	06:04 21:07	13 20:22 (15)	20:22 (15) 05:05
31	08:29 17:14	07:25 18:17	06:15 19:11	06:02 21:09	8 20:26 (15)	20:12 (15) 05:05
Potential sun hours	248	272	367	421	496	513
Total, worst case			21	616	706	
Sun reduction			0.22	0.34	0.36	
Oper. time red.			1.00	1.00	1.00	
Wind dir. red.			0.59	0.59	0.61	
Total reduction			0.13	0.20	0.22	
Total, real			3	125	156	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: AQ - H43

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	July	August	September	October	November	December
1	05:07 22:15	05:48 21:39	20:10 (15) 20:41 (15)	06:44 20:31	18:55 (16) 19:29 (16)	07:37 17:04
2	05:08 22:14	05:50 21:37	20:10 (15) 20:41 (15)	06:45 20:28	18:54 (16) 19:29 (16)	07:39 17:02
3	05:09 22:14	05:52 21:35	20:10 (15) 20:40 (15)	06:47 20:26	18:54 (16) 19:28 (16)	07:41 17:00
4	05:10 22:13	05:53 21:33	20:10 (15) 20:41 (15)	06:49 20:23	18:54 (16) 19:27 (16)	07:43 16:58
5	05:11 22:13	05:55 21:31	20:10 (15) 20:40 (15)	06:51 20:21	18:54 (16) 19:27 (16)	07:45 16:56
6	05:12 22:12	05:57 21:29	20:10 (15) 20:40 (15)	06:53 20:19	18:54 (16) 19:26 (16)	07:47 16:54
7	05:12 22:12	05:59 21:27	20:11 (15) 20:39 (15)	06:54 20:16	18:55 (16) 19:25 (16)	07:49 16:53
8	05:14 22:11	06:00 21:25	20:11 (15) 20:38 (15)	06:56 20:14	18:55 (16) 19:23 (16)	07:51 16:51
9	05:15 22:10	06:02 21:23	20:12 (15) 20:37 (15)	06:58 20:11	18:55 (16) 19:22 (16)	07:53 16:49
10	05:16 22:09	06:04 21:21	20:13 (15) 20:37 (15)	07:00 20:09	18:57 (16) 19:21 (16)	07:55 16:47
11	05:17 22:08	06:06 21:19	20:13 (15) 20:35 (15)	07:02 20:06	18:58 (16) 19:19 (16)	07:57 16:45
12	05:18 22:07	06:07 21:17	20:15 (15) 20:33 (15)	07:03 20:04	19:00 (16) 19:15 (16)	07:59 16:44
13	05:19 22:06	06:09 21:15	20:17 (15) 20:32 (15)	07:05 20:01	19:03 (16) 19:11 (16)	08:00 16:42
14	05:21 22:05	06:11 21:12	20:19 (15) 20:28 (15)	07:07 19:59	08:02 18:44	08:03 16:40
15	05:22 22:04	20:23 (15) 20:28 (15)	06:13 21:10	07:09 19:56	08:04 18:42	08:05 16:39
16	05:23 22:03	20:20 (15) 20:30 (15)	06:15 21:08	07:11 19:54	08:06 18:40	08:07 16:37
17	05:25 22:02	20:18 (15) 20:32 (15)	06:16 21:06	07:12 19:51	08:08 18:37	08:09 16:36
18	05:26 22:01	20:18 (15) 20:34 (15)	06:18 21:04	07:14 19:49	08:10 18:35	08:11 16:34
19	05:27 21:59	20:16 (15) 20:35 (15)	06:20 21:01	07:16 19:46	08:12 18:33	08:12 16:33
20	05:29 21:58	20:15 (15) 20:35 (15)	06:22 20:59	07:18 19:44	08:14 18:30	08:14 16:31
21	05:30 21:56	20:15 (15) 20:37 (15)	06:24 20:57	07:20 19:41	08:16 18:28	08:16 16:30
22	05:32 21:55	20:14 (15) 20:37 (15)	06:25 20:55	19:09 (16) 19:39	07:21 18:26	08:18 16:29
23	05:33 21:54	20:12 (15) 20:38 (15)	06:27 20:52	19:06 (16) 19:36	07:23 18:24	08:20 16:27
24	05:35 21:52	20:12 (15) 20:39 (15)	06:29 20:50	19:03 (16) 19:33	07:25 18:21	08:22 16:26
25	05:37 21:51	20:11 (15) 20:39 (15)	06:31 20:48	19:02 (16) 19:31	07:27 17:19	08:23 16:25
26	05:38 21:49	20:12 (15) 20:40 (15)	06:33 20:45	19:00 (16) 19:28	07:29 17:17	08:25 16:24
27	05:40 21:47	20:11 (15) 20:40 (15)	06:35 20:43	18:59 (16) 19:26	07:31 17:15	08:27 16:23
28	05:41 21:46	20:11 (15) 20:41 (15)	06:36 20:40	18:58 (16) 19:23	07:32 17:13	08:28 16:22
29	05:43 21:44	20:10 (15) 20:40 (15)	06:38 20:38	18:57 (16) 19:21	07:34 17:11	08:30 16:21
30	05:45 21:42	20:10 (15) 20:41 (15)	06:40 20:36	18:56 (16) 19:18	07:36 17:08	08:32 16:20
31	05:46 21:40	20:09 (15) 20:40 (15)	06:42 20:33	18:55 (16) 19:28 (16)	07:35 17:06	08:58 16:22
Potential sun hours	515	461	383	327	257	230
Total, worst case	389	613	354			
Sun reduction	0.27	0.27	0.29			
Oper. time red.	1.00	1.00	1.00			
Wind dir. red.	0.61	0.60	0.59			
Total reduction	0.16	0.16	0.17			
Total, real	63	101	61			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: AR - H44  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June
1	08:58 16:24	08:27 17:16	07:29 18:13	07:12 20:12	06:02 21:09	19:37 (16) 22:00
2	08:58 16:25	08:25 17:18	07:26 18:15	07:10 20:14	06:00 21:11	33 20:10 (16) 22:01
3	08:58 16:26	08:24 17:20	07:24 18:17	07:07 20:16	05:58 21:12	34 20:11 (16) 22:02
4	08:58 16:27	08:22 17:22	07:21 18:19	07:05 20:18	05:56 21:14	35 20:11 (16) 22:03
5	08:57 16:28	08:20 17:24	07:19 18:21	07:02 20:20	05:54 21:16	35 19:35 (16) 22:05
6	08:57 16:30	08:18 17:26	07:17 18:23	07:00 20:22	05:52 21:18	36 20:11 (16) 22:06
7	08:56 16:31	08:16 17:28	07:14 18:24	06:58 20:24	05:50 21:20	35 19:36 (16) 22:07
8	08:56 16:33	08:14 17:30	07:12 18:26	06:55 20:25	05:48 21:22	35 20:11 (16) 22:08
9	08:55 16:34	08:12 17:32	07:09 18:28	06:53 20:27	05:46 21:23	34 20:10 (16) 22:09
10	08:55 16:36	08:10 17:34	07:07 18:30	06:50 20:29	05:44 21:25	34 20:10 (16) 22:09
11	08:54 16:37	08:08 17:36	07:05 18:32	06:48 20:31	05:42 21:27	33 20:10 (16) 22:10
12	08:53 16:39	08:06 17:38	07:02 18:34	06:45 20:33	05:40 21:29	32 20:09 (16) 22:11
13	08:52 16:40	08:04 17:40	07:00 18:36	06:43 20:35	05:38 21:31	31 20:08 (16) 22:12
14	08:51 16:42	08:02 17:42	06:57 18:38	06:41 20:37	05:37 21:32	30 20:08 (16) 22:12
15	08:50 16:44	08:00 17:44	06:55 18:40	06:38 20:39	05:35 21:34	28 20:07 (16) 22:13
16	08:49 16:45	07:58 17:46	06:52 18:42	06:36 20:41	05:33 21:36	27 20:07 (16) 22:14
17	08:48 16:47	07:56 17:49	06:50 18:44	06:33 20:42	05:32 21:37	26 20:06 (16) 22:14
18	08:47 16:49	07:54 17:51	06:47 18:46	06:31 20:44	05:30 21:39	24 20:06 (16) 22:14
19	08:46 16:51	07:51 17:53	06:45 18:48	06:29 20:46	05:28 21:41	22 20:04 (16) 22:15
20	08:45 16:53	07:49 17:55	06:42 18:50	06:26 20:48	05:27 21:42	19 20:03 (16) 22:15
21	08:44 16:54	07:47 17:57	06:40 18:51	06:24 20:50	05:25 21:44	16 20:02 (16) 22:15
22	08:42 16:56	07:45 17:59	06:37 18:53	06:22 20:52	05:24 21:46	13 20:00 (16) 22:16
23	08:41 16:58	07:42 18:01	06:35 18:55	06:20 20:54	11 19:50 (16) 21:47	7 19:50 (16) 22:16
24	08:40 17:00	07:40 18:03	06:32 18:57	06:17 20:56	17 19:47 (16) 21:49	8 20:52 (15) 22:16
25	08:38 17:02	07:38 18:05	06:30 18:59	06:15 20:58	21 19:44 (16) 21:50	12 20:50 (15) 22:16
26	08:37 17:04	07:36 18:07	06:27 19:01	06:13 20:59	24 19:42 (16) 21:52	15 20:49 (15) 22:16
27	08:35 17:06	07:33 18:09	06:25 19:03	06:11 21:01	27 19:41 (16) 21:53	17 21:04 (15) 22:16
28	08:34 17:08	07:31 18:11	06:22 19:05	06:08 21:03	29 19:40 (16) 21:55	19 20:46 (15) 22:16
29	08:32 17:10		07:20 20:07	06:06 21:05	30 19:39 (16) 21:56	21 20:45 (15) 22:15
30	08:30 17:12		07:17 20:08	06:04 21:07	32 19:38 (16) 21:57	22 20:45 (15) 22:15
31	08:29 17:14		07:15 20:10			24 20:45 (15) 21:09 (15)
Potential sun hours	248	272	367	421	496	513
Total, worst case				191	792	863
Sun reduction				0.34	0.36	0.26
Oper. time red.				1.00	1.00	1.00
Wind dir. red.				0.60	0.60	0.63
Total reduction				0.21	0.22	0.16
Total, real				39	173	140

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: AR - H44

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	July	August	September	October	November	December				
1	05:07	20:48 (15)	05:48	19:47 (16)	06:44	07:38	07:37	08:33		
	22:15	29	21:17 (15)	21:39	33	20:20 (16)	20:31	19:16	17:04	16:19
2	05:08	20:49 (15)	05:50	19:47 (16)	06:45	07:40	07:39	08:35		
	22:14	29	21:18 (15)	21:37	34	20:21 (16)	20:28	19:14	17:02	16:18
3	05:09	20:49 (15)	05:52	19:46 (16)	06:47	07:42	07:41	08:36		
	22:14	29	21:18 (15)	21:35	34	20:20 (16)	20:26	19:11	17:00	16:17
4	05:10	20:49 (15)	05:53	19:46 (16)	06:49	07:43	07:43	08:38		
	22:13	28	21:17 (15)	21:33	35	20:21 (16)	20:23	19:09	16:58	16:17
5	05:11	20:49 (15)	05:55	19:46 (16)	06:51	07:45	07:45	08:39		
	22:13	28	21:17 (15)	21:31	35	20:21 (16)	20:21	19:06	16:56	16:16
6	05:12	20:50 (15)	05:57	19:45 (16)	06:53	07:47	07:47	08:41		
	22:12	27	21:17 (15)	21:29	36	20:21 (16)	20:19	19:04	16:54	16:16
7	05:13	20:50 (15)	05:59	19:46 (16)	06:54	07:49	07:49	08:42		
	22:12	27	21:17 (15)	21:27	35	20:21 (16)	20:16	19:01	16:53	16:15
8	05:14	20:51 (15)	06:00	19:45 (16)	06:56	07:51	07:51	08:43		
	22:11	26	21:17 (15)	21:25	35	20:20 (16)	20:14	18:59	16:51	16:15
9	05:15	20:51 (15)	06:02	19:45 (16)	06:58	07:53	07:53	08:45		
	22:10	26	21:17 (15)	21:23	35	20:20 (16)	20:11	18:56	16:49	16:14
10	05:16	20:52 (15)	06:04	19:46 (16)	07:00	07:55	07:55	08:46		
	22:09	25	21:17 (15)	21:21	34	20:20 (16)	20:09	18:54	16:47	16:14
11	05:17	20:52 (15)	06:06	19:45 (16)	07:02	07:57	07:57	08:47		
	22:08	25	21:17 (15)	21:19	34	20:19 (16)	20:06	18:51	16:45	16:14
12	05:18	20:53 (15)	06:07	19:46 (16)	07:03	07:58	07:59	08:48		
	22:07	23	21:16 (15)	21:17	33	20:19 (16)	20:04	18:49	16:44	16:14
13	05:19	20:53 (15)	06:09	19:47 (16)	07:05	08:00	08:01	08:49		
	22:06	23	21:16 (15)	21:15	31	20:18 (16)	20:01	18:47	16:42	16:13
14	05:21	20:55 (15)	06:11	19:46 (16)	07:07	08:02	08:03	08:50		
	22:05	21	21:16 (15)	21:12	31	20:17 (16)	19:59	18:44	16:40	16:13
15	05:22	20:55 (15)	06:13	19:47 (16)	07:09	08:04	08:05	08:51		
	22:04	20	21:15 (15)	21:10	29	20:16 (16)	19:56	18:42	16:39	16:13
16	05:23	20:56 (15)	06:15	19:49 (16)	07:11	08:06	08:07	08:52		
	22:03	18	21:14 (15)	21:08	26	20:15 (16)	19:54	18:40	16:37	16:13
17	05:25	20:57 (15)	06:16	19:50 (16)	07:12	08:08	08:09	08:53		
	22:02	16	21:13 (15)	21:06	24	20:14 (16)	19:51	18:37	16:36	16:14
18	05:26	20:59 (15)	06:18	19:51 (16)	07:14	08:10	08:11	08:54		
	22:01	14	21:13 (15)	21:04	20	20:11 (16)	19:49	18:35	16:34	16:14
19	05:27	21:00 (15)	06:20	19:53 (16)	07:16	08:12	08:12	08:55		
	21:59	11	21:11 (15)	21:01	16	20:09 (16)	19:46	18:33	16:33	16:14
20	05:29	21:03 (15)	06:22	19:56 (16)	07:18	08:14	08:14	08:55		
	21:58	5	21:08 (15)	20:59	10	20:06 (16)	19:44	18:30	16:31	16:14
21	05:30	19:59 (16)	06:24	07:20	08:16	08:16	08:56			
	21:56	10	20:09 (16)	20:57	19:41	18:28	16:30	16:15		
22	05:32	19:57 (16)	06:25	07:21	08:18	08:18	08:56			
	21:55	14	20:11 (16)	20:55	19:39	18:26	16:29	16:15		
23	05:33	19:55 (16)	06:27	07:23	08:20	08:20	08:57			
	21:54	17	20:12 (16)	20:52	19:36	18:24	16:27	16:16		
24	05:35	19:54 (16)	06:29	07:25	08:22	08:22	08:57			
	21:52	20	20:14 (16)	20:50	19:33	18:21	16:26	16:16		
25	05:37	19:52 (16)	06:31	07:27	08:24	08:23	08:58			
	21:51	23	20:15 (16)	20:48	19:31	17:19	16:25	16:17		
26	05:38	19:52 (16)	06:33	07:29	08:25	08:25	08:58			
	21:49	24	20:16 (16)	20:45	19:28	17:17	16:24	16:18		
27	05:40	19:50 (16)	06:35	07:31	08:27	08:27	08:58			
	21:47	27	20:17 (16)	20:43	19:26	17:15	16:23	16:19		
28	05:41	19:50 (16)	06:36	07:32	08:29	08:28	08:58			
	21:46	28	20:18 (16)	20:40	19:23	17:13	16:22	16:19		
29	05:43	19:49 (16)	06:38	07:34	08:30	08:30	08:58			
	21:44	29	20:18 (16)	20:38	19:21	17:11	16:21	16:20		
30	05:45	19:48 (16)	06:40	07:36	08:32	08:32	08:58			
	21:42	31	20:19 (16)	20:36	19:18	17:08	16:20	16:21		
31	05:46	19:48 (16)	06:42	07:35	08:35	08:35	08:58			
	21:40	32	20:20 (16)	20:33	19:16	17:06	16:22	16:22		
Potential sun hours	515		461	383	327	257	230			
Total, worst case	705		600							
Sun reduction	0.27		0.27							
Oper. time red.	1.00		1.00							
Wind dir. red.	0.62		0.60							
Total reduction	0.16		0.16							
Total, real	116		98							

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: AS - H45  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January	February	March	April	May	June		
1	08:58 16:24	08:27 17:16	16:21 (2) 16:43 (2)	07:29 18:13	17:13 (3) 25	07:12 19:04 (4)	06:02 21:09	05:12 22:00
2	08:58 16:25	08:25 17:18	16:22 (2) 16:46 (2)	07:26 18:15	17:13 (3) 24	07:10 19:21 (4)	06:00 21:11	05:11 22:01
3	08:58 16:26	08:24 17:20	16:22 (2) 16:48 (2)	07:24 18:17	17:14 (3) 22	07:08 19:09 (4)	05:58 21:12	05:10 22:02
4	08:58 16:28	08:22 17:22	16:22 (2) 16:48 (2)	07:22 18:19	17:14 (3) 20	07:05 19:18 (4)	05:56 21:14	05:09 22:03
5	08:57 16:29	08:20 17:24	16:22 (2) 16:48 (2)	07:19 18:21	17:16 (3) 17	07:03 17:33 (3)	05:54 21:16	05:08 22:04
6	08:57 16:30	08:18 17:26	16:23 (2) 16:48 (2)	07:17 18:23	17:17 (3) 14	07:00 17:31 (3)	05:52 21:18	05:08 22:05
7	08:56 16:31	08:16 17:28	16:23 (2) 16:48 (2)	07:14 18:25	17:21 (3) 6	06:58 17:27 (3)	05:50 21:20	05:07 22:07
8	08:56 16:33	08:14 17:30	16:23 (2) 16:46 (2)	07:12 18:27	06:55 20:26	06:55 21:22	05:48 21:22	05:06 22:07
9	08:55 16:34	08:12 17:32	16:24 (2) 16:46 (2)	07:09 18:29	06:53 20:27	06:53 21:23	05:46 21:23	05:06 22:08
10	08:55 16:36	08:10 17:34	16:25 (2) 16:45 (2)	07:07 18:30	06:50 20:29	06:50 21:25	05:44 21:25	05:05 22:09
11	08:54 16:37	08:08 17:36	16:26 (2) 16:44 (2)	07:05 18:32	06:48 20:31	06:48 21:27	05:42 21:27	05:05 22:10
12	08:53 16:39	08:06 17:39	16:28 (2) 16:42 (2)	07:02 18:34	06:46 20:33	06:46 21:29	05:41 21:29	05:04 22:11
13	08:52 16:41	08:04 17:41	16:31 (2) 16:40 (2)	07:00 18:36	06:43 20:35	06:39 21:30	05:39 21:30	05:04 22:12
14	08:51 16:42	08:02 17:43	06:57 18:38	06:57 20:37	06:41 20:37	05:37 21:32	05:37 21:32	05:04 22:12
15	08:50 16:44	08:00 17:45	06:55 18:40	06:55 20:38	06:38 20:39	05:35 21:34	05:35 21:34	05:03 22:13
16	08:49 16:46	07:58 17:47	06:52 18:42	06:52 20:41	06:36 20:41	05:34 21:36	05:34 21:36	05:03 22:13
17	08:48 16:47	07:56 17:49	06:50 18:44	06:50 18:16 (4)	06:34 18:17 (4)	05:32 21:37	05:32 21:37	05:03 22:14
18	08:47 16:49	07:54 17:51	06:47 18:46	06:47 18:19 (4)	06:31 20:44	05:30 21:39	05:30 21:39	05:03 22:14
19	08:46 16:51	07:51 17:53	17:22 (3) 18:48	06:45 18:09 (4)	06:29 18:21 (4)	05:29 21:41	05:29 21:41	05:03 22:15
20	08:45 16:53	07:49 17:55	17:19 (3) 17:26 (3)	06:42 18:50	06:27 18:07 (4)	05:27 21:42	05:27 21:42	05:03 22:15
21	08:44 16:55	07:47 17:57	17:18 (3) 17:29 (3)	06:40 18:52	06:24 18:06 (4)	05:26 21:44	05:26 21:44	05:03 22:15
22	08:42 16:57	07:45 17:59	17:16 (3) 17:30 (3)	06:37 18:53	06:22 18:04 (4)	05:24 21:45	05:24 21:45	05:03 22:16
23	08:41 16:58	07:42 18:01	17:15 (3) 17:33 (3)	06:35 18:55	06:20 18:04 (4)	05:23 21:47	05:23 21:47	05:04 22:16
24	08:40 17:00	07:40 18:03	17:14 (3) 17:35 (3)	06:32 18:57	06:18 18:02 (4)	05:21 21:49	05:21 21:49	05:04 22:16
25	08:38 17:02	16:26 (2) 18:05	07:38 17:13 (3)	06:30 18:59	06:15 18:02 (4)	05:20 21:50	05:20 21:50	05:04 22:16
26	08:37 17:04	16:25 (2) 16:30 (2)	07:36 18:07	06:27 17:38 (3)	06:13 19:01	05:19 21:52	05:19 21:52	05:05 22:16
27	08:35 17:06	16:25 (2) 16:33 (2)	07:33 18:09	06:25 17:12 (3)	06:11 18:02 (4)	05:17 21:53	05:17 21:53	05:05 22:16
28	08:34 17:08	16:24 (2) 16:35 (2)	07:31 18:11	06:22 17:38 (3)	06:09 19:03	05:16 21:54	05:16 21:54	05:06 22:16
29	08:32 17:10	16:23 (2) 16:37 (2)	07:20 18:07	07:20 20:07	06:07 19:02 (4)	05:15 21:56	05:15 21:56	05:06 22:15
30	08:30 17:12	16:22 (2) 16:39 (2)	07:17 18:09	07:17 20:09	06:04 19:02 (4)	05:14 21:57	05:14 21:57	05:07 22:15
31	08:29 17:14	16:22 (2) 16:41 (2)	07:15 20:10	07:15 20:10	06:04 19:03 (4)	05:13 21:58	05:13 21:58	05:07 22:15
Potential sun hours	248	272	367	421	496	513		
Total, worst case	76	453	439	43				
Sun reduction	0.17	0.22	0.22	0.34				
Oper. time red.	1.00	1.00	1.00	1.00				
Wind dir. red.	0.59	0.59	0.58	0.58				
Total reduction	0.10	0.13	0.13	0.20				
Total, real	8	59	57	9				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: AS - H45

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	July	August	September	October	November	December			
1	05:08	05:48	06:44	07:38	07:37	15:54 (2)	08:33		
	22:15	21:39	20:31	19:16	17:05	21 16:15 (2)	16:19		
2	05:08	05:50	06:46	07:40	07:39	15:53 (2)	08:35		
	22:14	21:37	20:28	19:14	17:02	22 16:15 (2)	16:18		
3	05:09	05:52	06:47	07:42	07:41	15:52 (2)	08:36		
	22:14	21:35	20:26	19:11	17:00	24 16:16 (2)	16:18		
4	05:10	05:54	06:49	07:44	07:43	15:53 (2)	08:38		
	22:13	21:33	20:24	19:09	16:59	24 16:17 (2)	16:17		
5	05:11	05:55	06:51	07:45	07:45	15:52 (2)	08:39		
	22:13	21:31	20:21	19:06	16:57	26 16:18 (2)	16:16		
6	05:12	05:57	06:53	07:47	07:47	15:52 (2)	08:41		
	22:12	21:29	20:19	19:04	16:55	26 16:18 (2)	16:16		
7	05:13	05:59	06:55	07:49	17:55 (3)	07:49	15:52 (2)	08:42	
	22:11	21:27	20:16	19:01	18:05 (3)	16:53	26 16:18 (2)	16:15	
8	05:14	06:01	06:56	07:51	17:52 (3)	07:51	15:52 (2)	08:43	
	22:11	21:25	20:14	18:59	16 18:08 (3)	16:51	26 16:18 (2)	16:15	
9	05:15	06:02	06:58	19:03 (4)	07:53	17:50 (3)	07:53	15:52 (2)	08:45
	22:10	21:23	20:11	19:11 (4)	18:56	19 18:09 (3)	16:49	24 16:16 (2)	16:15
10	05:16	06:04	07:00	19:00 (4)	07:55	17:49 (3)	07:55	15:53 (2)	08:46
	22:09	21:21	20:09	14 19:14 (4)	18:54	21 18:10 (3)	16:47	22 16:15 (2)	16:14
11	05:17	06:06	07:02	18:57 (4)	07:57	17:48 (3)	07:57	15:54 (2)	08:47
	22:08	21:19	20:06	19 19:16 (4)	18:52	23 18:11 (3)	16:46	19 16:13 (2)	16:14
12	05:18	06:08	07:04	18:55 (4)	07:59	17:47 (3)	07:59	15:54 (2)	08:48
	22:07	21:17	20:04	21 19:16 (4)	18:49	24 18:11 (3)	16:44	17 16:11 (2)	16:14
13	05:20	06:09	07:05	18:54 (4)	08:00	17:46 (3)	08:01	15:55 (2)	08:49
	22:06	21:15	20:01	23 19:17 (4)	18:47	25 18:11 (3)	16:42	14 16:09 (2)	16:14
14	05:21	06:11	07:07	18:53 (4)	08:02	17:46 (3)	08:03	15:56 (2)	08:50
	22:05	21:12	19:59	25 19:18 (4)	18:44	25 18:11 (3)	16:41	11 16:07 (2)	16:14
15	05:22	06:13	07:09	18:52 (4)	08:04	17:45 (3)	08:05	15:57 (2)	08:51
	22:04	21:10	19:56	26 19:18 (4)	18:42	26 18:11 (3)	16:39	8 16:05 (2)	16:14
16	05:24	06:15	07:11	18:50 (4)	08:06	17:45 (3)	08:07	15:58 (2)	08:52
	22:03	21:08	19:54	28 19:18 (4)	18:40	25 18:10 (3)	16:37	5 16:03 (2)	16:14
17	05:25	06:17	07:13	18:50 (4)	08:08	17:46 (3)	08:09	15:59 (2)	08:53
	22:02	21:06	19:51	28 19:18 (4)	18:37	22 18:08 (3)	16:36	2 16:01 (2)	16:14
18	05:26	06:18	07:14	18:50 (4)	08:10	17:46 (3)	08:11		08:54
	22:00	21:04	19:49	27 19:17 (4)	18:35	19 18:05 (3)	16:34		16:14
19	05:28	06:20	07:16	18:50 (4)	08:12	17:47 (3)	08:12		08:54
	21:59	21:01	19:46	27 19:17 (4)	18:33	16 18:03 (3)	16:33		16:14
20	05:29	06:22	07:18	18:50 (4)	08:14	17:47 (3)	08:14		08:55
	21:58	20:59	19:44	26 19:16 (4)	18:31	14 18:01 (3)	16:31		16:15
21	05:31	06:24	07:20	18:49 (4)	08:16	17:49 (3)	08:16		08:56
	21:56	20:57	19:41	23 19:12 (4)	18:28	9 17:58 (3)	16:30		16:15
22	05:32	06:26	07:22	18:50 (4)	08:18	17:50 (3)	08:18		08:56
	21:55	20:55	19:39	20 19:10 (4)	18:26	6 17:56 (3)	16:29		16:16
23	05:34	06:27	07:23	18:51 (4)	08:20		08:20		08:57
	21:53	20:52	19:36	17 19:08 (4)	18:24		16:28		16:16
24	05:35	06:29	07:25	18:52 (4)	08:22		08:22		08:57
	21:52	20:50	19:34	13 19:05 (4)	18:22		16:26		16:17
25	05:37	06:31	07:27	18:54 (4)	07:24		08:23		08:58
	21:50	20:48	19:31	9 19:03 (4)	17:19		16:25		16:17
26	05:38	06:33	07:29	18:56 (4)	07:26		08:25		08:58
	21:49	20:45	19:29	4 19:00 (4)	17:17		16:24		16:18
27	05:40	06:35	07:31		07:27		08:27		08:58
	21:47	20:43	19:26		17:15		16:23		16:19
28	05:42	06:37	07:33		07:29		08:28		08:58
	21:46	20:40	19:24		17:13		16:22		16:20
29	05:43	06:38	07:34		07:31	16:00 (2)	08:30		08:58
	21:44	20:38	19:21		17:11	10 16:10 (2)	16:21		16:21
30	05:45	06:40	07:36		07:33	15:58 (2)	08:32		08:58
	21:42	20:36	19:19		17:09	14 16:12 (2)	16:20		16:22
31	05:47	06:42			07:35	15:56 (2)			08:58
	21:40	20:33			17:07	18 16:14 (2)			16:23
Potential sun hours	515	461	382	328	257		231		
Total, worst case			358	342	317				
Sun reduction			0.29	0.23	0.20				
Oper. time red.			1.00	1.00	1.00				
Wind dir. red.			0.58	0.58	0.59				
Total reduction			0.17	0.14	0.12				
Total, real			61	47	37				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: AT - H46  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June										
1	08:58	15:21 (7)	08:27	16:09 (8)	07:29	07:12	06:02	05:12	20:31 (10)							
	16:24	22	15:43 (7)	17:16	29	16:38 (8)	18:13	20:12	18	20:49 (10)						
2	08:58	15:21 (7)	08:25	16:09 (8)	07:26	07:10	06:00	05:11	20:32 (10)							
	16:25	23	15:44 (7)	17:18	30	16:39 (8)	18:15	20:14	16	20:48 (10)						
3	08:58	15:22 (7)	08:24	16:08 (8)	07:24	07:07	05:58	05:10	20:32 (10)							
	16:26	23	15:45 (7)	17:20	32	16:40 (8)	18:17	20:16	15	20:47 (10)						
4	08:58	15:21 (7)	08:22	16:08 (8)	07:22	07:05	05:56	05:09	20:34 (10)							
	16:27	24	15:45 (7)	17:22	33	16:41 (8)	18:19	20:18	13	20:47 (10)						
5	08:57	15:21 (7)	08:20	16:07 (8)	07:19	07:03	05:54	20:37 (10)	05:08	20:35 (10)						
	16:29	25	15:46 (7)	17:24	34	16:41 (8)	18:21	20:20	11	20:46 (10)						
6	08:57	15:22 (7)	08:18	16:07 (8)	07:17	07:00	05:52	20:33 (10)	05:07	20:36 (10)						
	16:30	25	15:47 (7)	17:26	35	16:42 (8)	18:23	20:22	12	20:45 (10)						
7	08:56	15:22 (7)	08:16	16:07 (8)	07:14	06:58	05:50	20:31 (10)	05:07	20:38 (10)						
	16:31	25	15:47 (7)	17:28	35	16:42 (8)	18:25	20:24	16	21:20	22:07	9	21:31 (11)			
8	08:56	15:22 (7)	08:14	16:07 (8)	07:12	06:55	19:49 (9)	05:48	20:29 (10)	05:06	21:26 (11)					
	16:33	26	15:48 (7)	17:30	35	16:42 (8)	18:27	20:26	3	19:52 (9)	21:22	19	20:48 (10)	22:08	5	21:31 (11)
9	08:55	15:23 (7)	08:12	16:06 (8)	07:09	06:53	19:44 (9)	05:46	20:28 (10)	05:05	21:26 (11)					
	16:34	26	15:49 (7)	17:32	35	16:41 (8)	18:28	20:27	13	19:57 (9)	21:23	21	20:49 (10)	22:09	7	21:33 (11)
10	08:55	15:23 (7)	08:10	16:07 (8)	07:07	06:50	19:42 (9)	05:44	20:27 (10)	05:05	21:25 (11)					
	16:36	27	15:50 (7)	17:34	35	16:42 (8)	18:30	20:29	17	19:59 (9)	21:25	23	20:50 (10)	22:09	8	21:33 (11)
11	08:54	15:23 (7)	08:08	16:07 (8)	07:05	06:48	19:40 (9)	05:42	20:26 (10)	05:04	21:25 (11)					
	16:37	27	15:50 (7)	17:36	35	16:42 (8)	18:32	20:31	20	20:00 (9)	21:27	25	20:51 (10)	22:10	9	21:34 (11)
12	08:53	15:23 (7)	08:06	16:07 (8)	07:02	06:45	19:38 (9)	05:40	20:25 (10)	05:04	21:25 (11)					
	16:39	28	15:51 (7)	17:38	34	16:41 (8)	18:34	20:33	23	20:01 (9)	21:29	26	20:51 (10)	22:11	10	21:35 (11)
13	08:52	15:23 (7)	08:04	16:08 (8)	07:00	06:43	19:37 (9)	05:39	20:25 (10)	05:04	21:25 (11)					
	16:40	28	15:51 (7)	17:40	33	16:41 (8)	18:36	20:35	24	20:01 (9)	21:31	26	20:51 (10)	22:12	11	21:36 (11)
14	08:51	15:24 (7)	08:02	16:09 (8)	06:57	06:41	19:36 (9)	05:37	20:25 (10)	05:03	21:24 (11)					
	16:42	28	15:52 (7)	17:42	32	16:41 (8)	18:38	20:37	26	20:02 (9)	21:32	27	20:52 (10)	22:12	12	21:36 (11)
15	08:50	15:23 (7)	08:00	16:09 (8)	06:55	06:38	19:36 (9)	05:35	20:24 (10)	05:03	21:24 (11)					
	16:44	29	15:52 (7)	17:45	30	16:39 (8)	18:40	20:39	27	20:03 (9)	21:34	28	20:52 (10)	22:13	12	21:36 (11)
16	08:49	15:24 (7)	07:58	16:10 (8)	06:52	06:36	19:35 (9)	05:33	20:25 (10)	05:03	21:24 (11)					
	16:46	28	15:52 (7)	17:47	29	16:39 (8)	18:42	20:41	28	20:03 (9)	21:36	27	20:52 (10)	22:14	13	21:37 (11)
17	08:48	15:24 (7)	07:56	16:11 (8)	06:50	06:34	19:34 (9)	05:32	20:24 (10)	05:03	21:24 (11)					
	16:47	29	15:53 (7)	17:49	27	16:38 (8)	18:44	20:43	28	20:02 (9)	21:37	28	20:52 (10)	22:14	13	21:37 (11)
18	08:47	15:25 (7)	07:54	16:13 (8)	06:47	06:31	19:34 (9)	05:30	20:24 (10)	05:03	21:24 (11)					
	16:49	28	15:53 (7)	17:51	24	16:37 (8)	18:46	20:44	28	20:02 (9)	21:39	29	20:53 (10)	22:14	14	21:38 (11)
19	08:46	15:25 (7)	07:51	16:14 (8)	06:45	06:29	19:34 (9)	05:28	20:24 (10)	05:03	21:24 (11)					
	16:51	28	15:53 (7)	17:53	20	16:34 (8)	18:48	20:46	28	20:02 (9)	21:41	28	20:52 (10)	22:15	14	21:38 (11)
20	08:45	15:26 (7)	07:49	16:17 (8)	06:42	06:27	19:34 (9)	05:27	20:24 (10)	05:03	21:24 (11)					
	16:53	27	15:53 (7)	17:55	15	16:32 (8)	18:50	20:48	27	20:01 (9)	21:42	28	20:52 (10)	22:15	14	21:38 (11)
21	08:44	15:26 (7)	07:47	16:22 (8)	06:40	06:24	19:34 (9)	05:25	20:25 (10)	05:03	21:25 (11)					
	16:54	27	15:53 (7)	17:57	6	16:28 (8)	18:52	20:50	26	20:00 (9)	21:44	28	20:53 (10)	22:15	14	21:39 (11)
22	08:42	15:27 (7)	07:45	06:37	06:22	06:17	19:35 (9)	05:24	20:24 (10)	05:03	21:25 (11)					
	16:56	26	15:53 (7)	17:59	06:35	06:20	19:36 (9)	05:22	20:25 (10)	05:03	21:25 (11)					
23	08:41	15:27 (7)	07:43	18:55	20:54	23	19:59 (9)	21:47	27	20:52 (10)	22:16	14	21:39 (11)			
	16:58	26	15:53 (7)	18:01	06:32	06:17	19:37 (9)	05:21	20:26 (10)	05:04	21:25 (11)					
24	08:40	15:28 (7)	07:40	18:57	20:56	20	19:57 (9)	21:49	26	20:52 (10)	22:16	14	21:39 (11)			
	17:00	25	15:53 (7)	18:03	06:30	06:15	19:38 (9)	05:20	20:26 (10)	05:04	21:26 (11)					
25	08:38	15:29 (7)	07:38	18:59	20:58	18	19:56 (9)	21:50	26	20:52 (10)	22:16	13	21:39 (11)			
	17:02	23	15:52 (7)	18:05	06:27	06:13	19:39 (9)	05:18	20:27 (10)	05:05	21:26 (11)					
26	08:37	15:30 (7)	07:36	19:01	20:59	14	19:53 (9)	21:52	25	20:52 (10)	22:16	13	21:39 (11)			
	17:04	33	16:27 (8)	18:07	06:25	06:11	19:42 (9)	05:17	20:28 (10)	05:05	21:27 (11)					
27	08:35	15:32 (7)	07:33	19:03	21:01	8	19:50 (9)	21:53	23	20:51 (10)	22:16	12	21:39 (11)			
	17:06	37	16:31 (8)	18:09	06:22	06:09	05:16	20:28 (10)	05:06	21:27 (11)						
28	08:34	15:33 (7)	07:31	19:05	21:03	23	20:51 (10)	22:16	12	21:39 (11)						
	17:08	37	16:33 (8)	18:11	07:20	06:06	05:15	20:29 (10)	05:06	21:28 (11)						
29	08:32	15:35 (7)	07:28	20:07	21:05	22	20:51 (10)	22:15	11	21:39 (11)						
	17:10	36	16:34 (8)	07:17	06:04	05:14	20:29 (10)	05:07	21:28 (11)							
30	08:31	15:38 (7)	07:25	20:09	21:07	21	20:50 (10)	22:15	10	21:38 (11)						
	17:12	33	16:35 (8)	07:15	06:03	05:13	20:30 (10)	05:07	21:28 (11)							
31	08:29	16:09 (8)	07:22	20:10	21:09	20	20:50 (10)	22:15	10	21:38 (11)						
	17:14	27	16:36 (8)	06:36	06:21	06:06	19:36 (9)	05:21	20:26 (10)	05:04	21:25 (11)					
Potential sun hours	248		272	367	421		496		513		360					
Total, worst case		856		618		425		636		513		360				
Sun reduction		0.17		0.22		0.34		0.36		0.26		0.26				
Oper. time red.		1.00		1.00		1.00		1.00		1.00		1.00				
Wind dir. red.		0.62		0.59		0.59		0.62		0.64		0.64				
Total reduction		0.11		0.13		0.20		0.23		0.16		0.16				
Total, real		91		82		86		143		59		59				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: AU - H47

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January	February	March	April	May	June
1	08:58 16:24	08:27 17:16	07:29 18:13	07:12 20:12	18:30 (16) 06:02	19:31 (15) 05:11
2	08:58 16:25	08:25 17:18	07:26 18:15	07:10 20:14	20 18:50 (16) 21:09	24 19:55 (15) 22:00
3	08:58 16:26	08:24 17:20	07:24 18:17	07:07 20:16	15 18:48 (16) 21:11	22 19:54 (15) 22:01
4	08:58 16:27	08:22 17:22	07:21 18:19	07:05 20:18	6 18:42 (16) 05:58	19 19:52 (15) 22:02
5	08:57 16:28	08:20 17:24	07:19 18:21	07:02 20:20	15 19:50 (15) 22:03	05:08
6	08:57 16:30	08:18 17:26	07:17 18:23	07:00 20:22	9 19:47 (15) 22:05	05:07
7	08:56 16:31	08:16 17:28	07:14 18:24	06:58 20:24	21:18 22:06	05:06
8	08:56 16:33	08:14 17:30	07:12 18:26	06:55 20:25	05:48 21:22	05:06
9	08:55 16:34	08:12 17:32	07:09 18:28	06:53 20:27	05:46 21:23	22:08
10	08:55 16:36	08:10 17:34	07:07 18:30	06:50 20:29	05:44 21:25	05:05
11	08:54 16:37	08:08 17:36	07:05 18:32	06:48 20:31	05:42 21:27	22:09
12	08:53 16:39	08:06 17:38	07:02 18:34	06:45 20:33	19:44 (15) 05:40	05:04
13	08:52 16:40	08:04 17:40	07:00 18:36	6 17:43 (16) 06:43	6 19:50 (15) 21:29	22:11
14	08:51 16:42	08:02 17:42	06:57 18:38	15 17:49 (16) 20:35	14 19:53 (15) 21:31	05:04
15	08:50 16:44	08:00 17:44	06:55 18:40	20 17:55 (16) 20:39	19 19:56 (15) 21:32	22:12
16	08:49 16:45	07:58 17:46	06:52 18:42	24 17:52 (16) 20:37	23 19:58 (15) 21:34	05:03
17	08:48 16:47	07:56 17:49	06:50 18:44	27 17:58 (16) 20:42	25 19:58 (15) 21:36	22:14
18	08:47 16:49	07:54 17:51	06:47 18:46	29 17:59 (16) 20:46	27 19:59 (15) 21:37	05:03
19	08:46 16:51	07:51 17:53	06:45 18:48	30 17:59 (16) 20:48	29 20:00 (15) 21:39	22:15
20	08:45 16:53	07:49 17:55	06:42 18:50	32 17:59 (16) 20:48	30 20:01 (15) 21:41	05:03
21	08:44 16:54	07:47 17:57	06:40 18:52	33 18:00 (16) 20:50	31 20:00 (15) 21:42	22:15
22	08:42 16:56	07:45 17:59	06:37 18:53	33 17:59 (16) 20:52	31 20:00 (15) 21:46	05:03
23	08:41 16:58	07:42 18:01	06:35 18:55	34 17:26 (16) 06:20	33 20:01 (15) 21:47	22:16
24	08:40 17:00	07:40 18:03	06:32 18:57	34 17:25 (16) 06:17	32 20:01 (15) 21:49	05:04
25	08:38 17:02	07:38 18:05	06:30 18:59	33 17:59 (16) 20:58	31 19:59 (15) 21:50	22:16
26	08:37 17:04	07:36 18:07	06:27 19:01	33 17:25 (16) 06:13	31 19:28 (15) 05:18	05:04
27	08:35 17:06	07:33 18:09	06:25 19:03	32 17:58 (16) 21:01	30 19:59 (15) 21:52	22:16
28	08:34 17:08	07:31 18:11	06:22 19:05	32 17:26 (16) 06:08	30 19:58 (15) 21:53	05:05
29	08:32 17:10	07:29 18:13	06:20 19:07	30 17:56 (16) 21:03	29 19:58 (15) 21:55	22:16
30	08:31 17:12	07:27 18:15	06:18 19:09	28 18:27 (16) 06:04	29 19:29 (15) 05:15	05:06
31	08:29 17:14	07:25 18:17	06:16 19:11	26 18:53 (16) 21:07	28 19:57 (15) 21:56	22:15
Potential sun hours	248	272	367	421	496	513
Total, worst case			522	547	89	
Sun reduction			0.22	0.34	0.36	
Oper. time red.			1.00	1.00	1.00	
Wind dir. red.			0.57	0.59	0.59	
Total reduction			0.13	0.20	0.21	
Total, real			66	110	19	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: AU - H47

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	July	August	September	October	November	December
1	05:07 22:15	05:48 21:39	06:44 20:31	07:38 19:16	07:37 17:04	08:33 16:19
2	05:08 22:14	05:50 21:37	06:45 20:28	07:40 19:14	07:39 17:02	08:35 16:18
3	05:09 22:14	05:52 21:35	06:47 20:26	07:42 19:11	07:41 17:00	08:36 16:17
4	05:10 22:13	05:53 21:33	06:49 20:23	07:43 19:09	07:43 16:58	08:38 16:17
5	05:11 22:13	05:55 21:31	06:51 20:21	07:45 19:06	07:45 16:56	08:39 16:16
6	05:12 22:12	05:57 21:29	06:53 20:19	07:47 19:04	07:47 16:54	08:41 16:16
7	05:12 22:12	05:59 21:27	06:54 20:16	07:49 19:01	07:49 16:53	08:42 16:15
8	05:14 22:11	06:00 21:25	19:46 (15) 06:56 20:14	07:51 18:59	07:51 16:51	08:43 16:15
9	05:15 22:10	06:02 21:23	19:44 (15) 06:58 20:11	18:32 (16) 07:53 18:35 (16)	07:53 16:49	08:45 16:14
10	05:16 22:09	06:04 21:21	19:42 (15) 07:00 20:09	18:26 (16) 07:55 18:40 (16)	07:55 16:47	08:46 16:14
11	05:17 22:08	06:06 21:19	19:40 (15) 07:02 20:06	18:23 (16) 07:57 18:43 (16)	07:57 16:45	08:47 16:14
12	05:18 22:07	06:07 21:17	19:39 (15) 07:03 20:04	18:20 (16) 07:58 18:43 (16)	07:59 16:44	08:48 16:14
13	05:19 22:06	06:09 21:15	19:38 (15) 07:05 20:01	18:19 (16) 08:00 18:45 (16)	08:00 16:42	08:49 16:13
14	05:21 22:05	06:11 21:12	19:37 (15) 07:07 19:59	18:17 (16) 08:02 18:46 (16)	08:03 16:40	08:50 16:13
15	05:22 22:04	06:13 21:10	19:36 (15) 07:09 19:56	18:16 (16) 08:04 18:46 (16)	08:05 16:39	08:51 16:13
16	05:23 22:03	06:15 21:08	19:36 (15) 07:11 19:54	18:14 (16) 08:06 18:46 (16)	08:07 16:37	08:52 16:13
17	05:25 22:02	06:16 21:06	19:35 (15) 07:12 19:51	18:14 (16) 08:08 18:46 (16)	08:09 16:36	08:53 16:14
18	05:26 22:01	06:18 21:04	19:34 (15) 07:14 19:49	18:13 (16) 08:10 18:46 (16)	08:11 16:34	08:54 16:14
19	05:27 21:59	06:20 21:01	19:34 (15) 07:16 19:46	18:13 (16) 08:12 18:46 (16)	08:12 16:33	08:55 16:14
20	05:29 21:58	06:22 20:59	19:34 (15) 07:18 19:44	18:12 (16) 08:14 18:45 (16)	08:14 16:31	08:55 16:14
21	05:30 21:57	06:24 20:57	19:33 (15) 07:20 19:41	18:12 (16) 08:16 18:45 (16)	08:16 16:30	08:56 16:15
22	05:32 21:55	06:25 20:55	19:33 (15) 07:21 19:39	18:12 (16) 08:18 18:45 (16)	08:18 16:29	08:56 16:15
23	05:33 21:54	06:27 20:52	19:34 (15) 07:23 19:36	18:12 (16) 08:20 18:44 (16)	08:20 16:27	08:57 16:16
24	05:35 21:52	06:29 20:50	19:33 (15) 07:25 19:33	18:12 (16) 08:22 18:43 (16)	08:22 16:26	08:57 16:16
25	05:37 21:51	06:31 20:48	19:34 (15) 07:27 19:31	18:12 (16) 07:24 18:41 (16)	08:23 16:25	08:58 16:17
26	05:38 21:49	06:33 20:45	19:35 (15) 07:29 19:28	18:13 (16) 07:26 18:40 (16)	08:25 16:24	08:58 16:18
27	05:40 21:47	06:35 20:43	19:36 (15) 07:31 19:26	18:14 (16) 07:27 18:39 (16)	08:27 16:23	08:58 16:19
28	05:41 21:46	06:36 20:40	19:36 (15) 07:32 19:23	18:15 (16) 07:29 18:37 (16)	08:28 16:22	08:58 16:19
29	05:43 21:44	06:38 20:38	19:38 (15) 07:34 19:21	18:17 (16) 07:31 18:34 (16)	08:30 16:21	08:58 16:20
30	05:45 21:42	06:40 20:36	19:40 (15) 07:36 19:18	18:20 (16) 07:33 18:31 (16)	08:32 16:20	08:58 16:21
31	05:46 21:40	06:42 20:33	19:44 (15) 07:35 19:48 (15)	07:35 17:06	08:58 16:22	08:58 16:22
Potential sun hours	515	461	383	327	257	230
Total, worst case		602	568			
Sun reduction		0.27	0.29			
Oper. time red.		1.00	1.00			
Wind dir. red.		0.59	0.57			
Total reduction		0.16	0.17			
Total, real		97	94			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: AV - H48 Sunshine probability S (Average daily sunshine hours) [BELMULLET] Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

Operational time

Table with 17 columns: N, NNE, NE, ENE, E, ESE, SE, SSE, S, SSW, SW, WSW, W, WNW, NW, NNW, Sum. Values range from 263 to 8,760.

Main shadow calculation table with columns for months (January to June) and rows for days (1 to 31). Includes columns for sun rise/set times, minutes with flicker, and total reduction. Summary rows at the bottom show totals for potential sun hours, sun reduction, and total reduction.

Table layout: For each day in each month the following matrix apply

Day in month Sun rise (hh:mm) Sun set (hh:mm) Minutes with flicker First time (hh:mm) with flicker Last time (hh:mm) with flicker (WTG causing flicker first time) (WTG causing flicker last time)

## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: AV - H48  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	July	August	September	October	November	December	
1	05:07 22:15	05:48 21:39	20:11 (8) 20:44 (8)	06:44 20:31	19:01 (7) 19:28 (7)	07:37 17:04	08:33 16:19
2	05:08 22:14	05:50 21:37	20:11 (8) 20:45 (8)	06:45 20:28	19:00 (7) 19:29 (7)	07:40 17:02	08:35 16:18
3	05:09 22:14	05:52 21:35	20:10 (8) 20:44 (8)	06:47 20:26	18:59 (7) 19:29 (7)	07:42 19:11	08:36 16:18
4	05:10 22:13	05:53 21:33	20:10 (8) 20:45 (8)	06:49 20:24	18:57 (7) 19:29 (7)	07:44 19:09	08:38 16:17
5	05:11 22:13	05:55 21:31	20:11 (8) 20:45 (8)	06:51 20:21	18:56 (7) 19:29 (7)	07:45 19:06	08:39 16:16
6	05:12 22:12	05:57 21:29	20:10 (8) 20:44 (8)	06:53 20:19	18:56 (7) 19:29 (7)	07:47 19:04	08:41 16:16
7	05:13 22:12	05:59 21:27	20:10 (8) 20:44 (8)	06:54 20:16	18:56 (7) 19:30 (7)	07:49 19:01	08:42 16:15
8	05:14 22:11	06:00 21:25	20:11 (8) 20:44 (8)	06:56 20:14	18:55 (7) 19:28 (7)	07:51 18:59	08:43 16:15
9	05:15 22:10	06:02 21:23	20:10 (8) 20:43 (8)	06:58 20:11	18:55 (7) 19:28 (7)	07:53 18:56	08:45 16:14
10	05:16 22:09	06:04 21:21	20:11 (8) 20:43 (8)	07:00 20:09	18:55 (7) 19:28 (7)	07:55 18:54	08:46 16:14
11	05:17 22:08	06:06 21:19	20:12 (8) 20:43 (8)	07:02 20:06	18:55 (7) 19:27 (7)	07:57 18:52	08:47 16:14
12	05:18 22:07	06:08 21:17	20:11 (8) 20:41 (8)	07:04 20:04	18:55 (7) 19:26 (7)	07:59 18:49	08:48 16:14
13	05:19 22:06	06:09 21:15	20:12 (8) 20:41 (8)	07:05 20:01	18:55 (7) 19:25 (7)	08:00 18:47	08:49 16:14
14	05:21 22:05	06:11 21:12	20:14 (8) 20:40 (8)	07:07 19:59	18:56 (7) 19:24 (7)	08:02 18:44	08:50 16:14
15	05:22 22:04	06:13 21:10	20:14 (8) 20:38 (8)	07:09 19:56	18:57 (7) 19:22 (7)	08:04 18:42	08:51 16:14
16	05:23 22:03	06:15 21:08	20:15 (8) 20:36 (8)	07:11 19:54	18:58 (7) 19:19 (7)	08:06 18:40	08:52 16:14
17	05:25 22:02	06:17 21:06	20:17 (8) 20:34 (8)	07:13 19:51	18:59 (7) 19:17 (7)	08:08 18:37	08:53 16:14
18	05:26 22:00	20:24 (8) 20:31 (8)	06:18 21:04	07:14 19:49	19:02 (7) 19:14 (7)	08:10 18:35	08:54 16:14
19	05:28 21:59	20:22 (8) 20:34 (8)	06:20 21:01	07:16 19:46	08:12 18:33	08:12 16:33	08:54 16:14
20	05:29 21:58	20:20 (8) 20:35 (8)	06:22 20:59	07:18 19:44	08:14 18:30	08:14 16:31	08:55 16:15
21	05:31 21:56	15 20:19 (8) 18 20:37 (8)	20:52 20:57	19:44 19:41	18:30 18:28	16:31 16:30	16:15 16:15
22	05:32 21:55	20:17 (8) 21 20:38 (8)	06:26 20:55	07:22 19:39	08:18 18:26	08:18 16:29	08:56 16:15
23	05:34 21:54	20:17 (8) 23 20:40 (8)	06:27 20:52	07:23 19:36	08:20 18:24	08:20 16:27	08:57 16:16
24	05:35 21:52	20:16 (8) 24 20:40 (8)	06:29 20:50	07:25 19:34	08:22 18:21	08:22 16:26	08:57 16:17
25	05:37 21:50	20:14 (8) 27 20:41 (8)	06:31 20:48	07:27 19:31	07:24 17:19	08:23 16:25	08:58 16:17
26	05:38 21:49	20:14 (8) 28 20:42 (8)	06:33 20:45	07:29 19:29	07:26 17:17	08:25 16:24	08:58 16:18
27	05:40 21:47	20:13 (8) 29 20:42 (8)	06:35 20:43	07:31 19:26	07:27 17:15	08:27 16:23	08:58 16:19
28	05:42 21:46	20:13 (8) 30 20:43 (8)	06:36 20:40	19:10 (7) 07:32	07:29 19:24	08:28 17:13	08:58 16:20
29	05:43 21:44	20:13 (8) 31 20:44 (8)	06:38 20:38	19:07 (7) 19:24 (7)	07:34 19:21	07:31 17:11	08:58 16:20
30	05:45 21:42	20:12 (8) 32 20:44 (8)	06:40 20:36	19:05 (7) 19:26 (7)	07:36 19:19	07:33 17:09	08:58 16:21
31	05:47 21:40	20:12 (8) 33 20:45 (8)	06:42 20:33	19:03 (7) 19:28 (7)	07:35 17:06	16:20 17:06	08:58 16:22
Potential sun hours	515	461	382	328	257	231	
Total, worst case	330	601	514				
Sun reduction	0.27	0.27	0.29				
Oper. time red.	1.00	1.00	1.00				
Wind dir. red.	0.61	0.61	0.59				
Total reduction	0.16	0.17	0.17				
Total, real	54	100	88				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: AW - H49

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June
1	08:58 16:24	08:27 17:16	15:41 (16) 16:08 (16)	07:29 18:13	16:44 (15) 17:14 (15)	07:12 20:12
2	08:58 16:25	08:25 17:18	15:42 (16) 16:07 (16)	07:26 18:15	16:44 (15) 17:13 (15)	07:10 20:14
3	08:58 16:26	08:24 17:20	15:43 (16) 16:06 (16)	07:24 18:17	16:46 (15) 17:12 (15)	07:07 20:16
4	08:58 16:27	08:22 17:22	15:44 (16) 16:05 (16)	07:21 18:19	16:46 (15) 17:10 (15)	07:05 20:18
5	08:57 16:28	08:20 17:24	15:46 (16) 16:04 (16)	07:19 18:21	16:49 (15) 17:09 (15)	07:02 20:20
6	08:57 16:30	08:18 17:26	15:48 (16) 16:02 (16)	07:17 18:23	16:50 (15) 17:05 (15)	07:00 20:22
7	08:56 16:31	08:16 17:28	15:52 (16) 15:59 (16)	07:14 18:24	16:55 (15) 17:01 (15)	06:58 20:24
8	08:56 16:33	15:42 (16) 15:50 (16)	08:14 17:30	07:12 18:26	06:55 20:25	05:48 21:22
9	08:55 16:34	15:42 (16) 15:53 (16)	08:12 17:32	07:09 18:28	06:53 20:27	05:46 21:23
10	08:55 16:36	15:41 (16) 15:55 (16)	08:10 17:34	07:07 18:30	06:50 20:29	05:44 21:25
11	08:54 16:37	15:40 (16) 15:56 (16)	08:08 17:36	07:05 18:32	06:48 20:31	05:42 21:27
12	08:53 16:39	15:39 (16) 15:58 (16)	08:06 17:38	07:02 18:34	06:45 20:33	05:40 21:29
13	08:52 16:40	15:39 (16) 15:59 (16)	08:04 17:40	07:00 18:36	06:43 20:35	05:38 21:31
14	08:51 16:42	15:38 (16) 16:00 (16)	08:02 17:42	06:57 17:08 (15)	06:41 20:37	05:37 21:32
15	08:51 16:44	15:37 (16) 16:00 (16)	08:00 17:44	06:55 16:49 (15)	06:38 20:39	05:35 21:34
16	08:50 16:45	15:37 (16) 16:02 (16)	07:58 17:46	06:52 17:12 (15)	06:36 20:41	05:33 21:36
17	08:48 16:47	15:37 (16) 16:03 (16)	07:56 17:49	06:50 17:13 (15)	06:33 20:42	05:32 21:37
18	08:47 16:49	15:37 (16) 16:04 (16)	07:54 17:51	06:47 17:15 (15)	06:31 20:44	05:30 21:39
19	08:46 16:51	15:37 (16) 16:04 (16)	07:51 17:53	06:45 16:45 (15)	06:29 20:46	05:28 21:41
20	08:45 16:53	15:37 (16) 16:05 (16)	07:49 17:55	06:42 17:16 (15)	06:26 20:48	05:27 21:42
21	08:44 16:54	15:36 (16) 16:05 (16)	07:47 17:57	06:40 16:44 (15)	06:24 20:50	05:25 21:44
22	08:42 16:56	15:37 (16) 16:07 (16)	07:45 17:59	06:37 16:43 (15)	06:22 20:52	05:24 21:46
23	08:41 16:58	15:37 (16) 16:07 (16)	07:42 18:01	06:35 16:43 (15)	06:20 20:54	05:22 21:47
24	08:40 17:00	15:37 (16) 16:08 (16)	07:40 18:03	06:32 17:17 (15)	06:17 20:56	05:21 21:49
25	08:38 17:02	15:37 (16) 16:08 (16)	07:38 18:05	06:30 16:42 (15)	06:15 20:58	05:20 21:50
26	08:37 17:04	15:37 (16) 16:08 (16)	07:36 18:07	06:27 16:43 (15)	06:13 20:59	05:18 21:52
27	08:35 17:06	15:38 (16) 16:08 (16)	07:33 18:09	06:25 16:42 (15)	06:11 21:01	05:17 21:53
28	08:34 17:08	15:38 (16) 16:08 (16)	07:31 18:11	06:22 17:15 (15)	06:08 21:03	05:16 21:55
29	08:32 17:10	15:38 (16) 16:08 (16)	07:20 18:03	07:20 20:07	06:06 21:05	05:15 21:57
30	08:31 17:12	15:39 (16) 16:08 (16)	07:17 18:05	07:17 20:08	06:04 21:07	05:14 21:57
31	08:29 17:14	15:39 (16) 16:07 (16)	07:15 18:07	07:15 20:10	05:12 21:59	05:12 21:59
Potential sun hours	248	272	367	421	496	513
Total, worst case	595	588	510	510	510	510
Sun reduction	0.17	0.22	0.22	0.22	0.22	0.22
Oper. time red.	1.00	1.00	1.00	1.00	1.00	1.00
Wind dir. red.	0.62	0.59	0.58	0.58	0.58	0.58
Total reduction	0.11	0.13	0.13	0.13	0.13	0.13
Total, real	63	77	20	20	20	20

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: AW - H49

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	July	August	September	October	November	December
1	05:07	05:48	06:44	07:38	07:37	08:33
	22:15	21:39	20:31	19:16	17:04	16:19
2	05:08	05:50	06:45	07:40	07:39	08:35
	22:14	21:37	20:28	19:14	17:02	16:18
3	05:09	05:52	06:47	07:42	07:41	08:36
	22:14	21:35	20:26	19:11	17:00	16:17
4	05:10	05:53	06:49	07:44	07:43	08:38
	22:14	21:33	20:24	19:09	16:58	16:17
5	05:11	05:55	06:51	07:45	07:45	08:39
	22:13	21:31	20:21	19:06	16:56	16:16
6	05:11	05:57	06:53	07:47	07:47	08:41
	22:12	21:29	20:19	19:04	16:54	16:16
7	05:12	05:59	06:54	07:49	17:28 (15)	08:42
	22:12	21:27	20:16	19:01	17:40 (15)	16:15
8	05:13	06:00	06:56	07:51	17:25 (15)	08:43
	22:11	21:25	20:14	18:59	17:43 (15)	16:15
9	05:15	06:02	06:58	07:53	17:22 (15)	08:45
	22:10	21:23	20:11	18:56	17:44 (15)	16:14
10	05:16	06:04	07:00	07:55	17:21 (15)	08:46
	22:09	21:21	20:09	18:54	17:46 (15)	16:14
11	05:17	06:06	07:02	07:57	17:19 (15)	08:47
	22:08	21:19	20:06	18:51	17:47 (15)	16:14
12	05:18	06:07	07:03	07:58	17:18 (15)	08:48
	22:07	21:17	20:04	18:49	17:47 (15)	16:13
13	05:19	06:09	07:05	08:00	17:17 (15)	08:49
	22:06	21:15	20:01	18:47	17:48 (15)	16:13
14	05:21	06:11	07:07	08:02	17:16 (15)	08:50
	22:05	21:13	19:59	18:44	17:48 (15)	16:13
15	05:22	06:13	07:09	08:04	17:15 (15)	08:51
	22:04	21:10	19:56	18:42	17:48 (15)	16:13
16	05:23	06:15	07:11	08:06	17:15 (15)	08:52
	22:03	21:08	19:54	18:40	17:48 (15)	16:13
17	05:25	06:16	07:12	08:08	17:14 (15)	08:53
	22:02	21:06	19:51	18:37	17:48 (15)	16:14
18	05:26	06:18	07:14	08:10	17:14 (15)	08:54
	22:01	21:04	19:49	18:35	17:48 (15)	16:14
19	05:27	06:20	07:16	08:12	17:14 (15)	08:55
	21:59	21:01	19:46	18:33	17:48 (15)	16:14
20	05:29	06:22	07:18	08:14	17:14 (15)	08:55
	21:58	20:59	19:44	18:30	17:47 (15)	16:14
21	05:30	06:24	07:20	08:16	17:14 (15)	08:56
	21:57	20:57	19:41	18:28	17:47 (15)	16:15
22	05:32	06:25	07:21	08:18	17:15 (15)	08:56
	21:55	20:55	19:39	18:26	17:46 (15)	16:15
23	05:33	06:27	07:23	08:20	17:15 (15)	08:57
	21:54	20:52	19:36	18:24	17:45 (15)	16:16
24	05:35	06:29	07:25	08:22	17:16 (15)	08:57
	21:52	20:50	19:33	18:21	17:44 (15)	16:16
25	05:37	06:31	07:27	07:24	16:17 (15)	08:58
	21:51	20:48	19:31	17:19	16:42 (15)	16:17
26	05:38	06:33	07:29	07:26	16:18 (15)	08:58
	21:49	20:45	19:28	17:17	16:41 (15)	16:18
27	05:40	06:35	07:31	07:27	16:19 (15)	08:58
	21:47	20:43	19:26	17:15	16:39 (15)	16:18
28	05:41	06:36	07:32	07:29	16:22 (15)	08:58
	21:46	20:40	19:23	17:13	16:37 (15)	16:19
29	05:43	06:38	07:34	07:31	16:26 (15)	08:58
	21:44	20:38	19:21	17:10	16:33 (15)	16:20
30	05:45	06:40	07:36	07:33	08:32	08:59
	21:42	20:36	19:18	17:08	16:20	16:21
31	05:46	06:42		07:35		08:59
	21:40	20:33		17:06		16:22
Potential sun hours	515	461	383	327	257	230
Total, worst case				610	681	51
Sun reduction				0.23	0.20	0.12
Oper. time red.				1.00	1.00	1.00
Wind dir. red.				0.58	0.62	0.62
Total reduction				0.14	0.12	0.07
Total, real				83	84	4

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: AX - H50  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:58	08:27	07:29	07:12	06:02	05:11	05:07	05:48	06:44	07:38	07:37	08:33
	16:24	17:16	18:13	20:12	21:09	22:00	22:15	21:39	20:31	19:16	17:04	16:19
2	08:58	08:25	07:26	07:10	06:00	05:11	05:08	05:50	06:45	07:40	07:39	08:35
	16:25	17:18	18:15	20:14	21:11	22:01	22:14	21:37	20:28	19:14	17:02	16:18
3	08:58	08:24	07:24	07:07	05:58	05:10	05:09	05:52	06:47	07:42	07:41	08:36
	16:26	17:20	18:17	20:16	21:12	22:02	22:14	21:35	20:26	19:11	17:00	16:17
4	08:58	08:22	07:21	07:05	05:56	05:09	05:10	05:53	06:49	07:43	07:43	08:38
	16:27	17:22	18:19	20:18	21:14	22:03	22:13	21:33	20:23	19:09	16:58	16:17
5	08:57	08:20	07:19	07:02	05:54	05:08	05:11	05:55	06:51	07:45	07:45	08:39
	16:28	17:24	18:21	20:20	21:16	22:05	22:13	21:31	20:21	19:06	16:56	16:16
6	08:57	08:18	07:17	07:00	05:52	05:07	05:12	05:57	06:53	07:47	07:47	08:41
	16:30	17:26	18:23	20:22	21:18	22:06	22:12	21:29	20:19	19:04	16:54	16:16
7	08:56	08:16	07:14	06:58	05:50	05:07	05:13	05:59	06:54	07:49	07:49	08:42
	16:31	17:28	18:24	20:24	21:20	22:07	22:12	21:27	20:16	19:01	16:53	16:15
8	08:56	08:14	07:12	06:55	05:48	05:06	05:14	06:00	06:56	07:51	07:51	08:43
	16:33	17:30	18:26	20:25	21:22	22:08	22:11	21:25	20:14	18:59	16:51	16:15
9	08:55	08:12	07:09	06:53	05:46	05:05	05:15	06:02	06:58	07:53	07:53	08:45
	16:34	17:32	18:28	20:27	21:23	22:09	22:10	21:23	20:11	18:56	16:49	16:14
10	08:55	08:10	07:07	06:50	05:44	05:05	05:16	06:04	07:00	07:55	07:55	08:46
	16:36	17:34	18:30	20:29	21:25	22:09	22:09	21:21	20:09	18:54	16:47	16:14
11	08:54	08:08	07:05	06:48	05:42	05:04	05:17	06:06	07:02	07:57	07:57	08:47
	16:37	17:36	18:32	20:31	21:27	22:10	22:08	21:19	20:06	18:51	16:45	16:14
12	08:53	08:06	07:02	06:45	05:40	05:04	05:18	06:07	07:03	07:58	07:59	08:48
	16:39	17:38	18:34	20:33	21:29	22:11	22:07	21:17	20:04	18:49	16:44	16:14
13	08:52	08:04	07:00	06:43	05:38	05:04	05:19	06:09	07:05	08:00	08:01	08:49
	16:40	17:40	18:36	20:35	21:31	22:12	22:06	21:15	20:01	18:47	16:42	16:13
14	08:51	08:02	06:57	06:41	05:37	05:03	05:21	06:11	07:07	08:02	08:03	08:50
	16:42	17:42	18:38	20:37	21:32	22:12	22:05	21:12	19:59	18:44	16:40	16:13
15	08:50	08:00	06:55	06:38	05:35	05:03	05:22	06:13	07:09	08:04	08:05	08:51
	16:44	17:44	18:40	20:39	21:34	22:13	22:04	21:10	19:56	18:42	16:39	16:13
16	08:49	07:58	06:52	06:36	05:33	05:03	05:23	06:15	07:11	08:06	08:07	08:52
	16:45	17:46	18:42	20:41	21:36	22:14	22:03	21:08	19:54	18:40	16:37	16:13
17	08:48	07:56	06:50	06:34	05:32	05:03	05:25	06:16	07:12	08:08	08:09	08:53
	16:47	17:49	18:44	20:42	21:37	22:14	22:02	21:06	19:51	18:37	16:36	16:14
18	08:47	07:54	06:47	06:31	05:30	05:03	05:26	06:18	07:14	08:10	08:11	08:54
	16:49	17:51	18:46	20:44	21:39	22:14	22:01	21:04	19:49	18:35	16:34	16:14
19	08:46	07:51	06:45	06:29	05:28	05:03	05:27	06:20	07:16	08:12	08:12	08:55
	16:51	17:53	18:48	20:46	21:41	22:15	21:59	21:01	19:46	18:33	16:33	16:14
20	08:45	07:49	06:42	06:26	05:27	05:03	05:29	06:22	07:18	08:14	08:14	08:55
	16:53	17:55	18:50	20:48	21:42	22:15	21:58	20:59	19:44	18:30	16:31	16:14
21	08:44	07:47	06:40	06:24	05:25	05:03	05:30	06:24	07:20	08:16	08:16	08:56
	16:54	17:57	18:51	20:50	21:44	22:15	21:56	20:57	19:41	18:28	16:30	16:15
22	08:42	07:45	06:37	06:22	05:24	05:03	05:32	06:25	07:21	08:18	08:18	08:56
	16:56	17:59	18:53	20:52	21:46	22:16	21:55	20:55	19:39	18:26	16:29	16:15
23	08:41	07:42	06:35	06:20	05:22	05:03	05:33	06:27	07:23	08:20	08:20	08:57
	16:58	18:01	18:55	20:54	21:47	22:16	21:54	20:52	19:36	18:24	16:27	16:16
24	08:40	07:40	06:32	06:17	05:21	05:04	05:35	06:29	07:25	08:22	08:22	08:57
	17:00	18:03	18:57	20:56	21:49	22:16	21:52	20:50	19:33	18:21	16:26	16:16
25	08:38	07:38	06:30	06:15	05:20	05:04	05:37	06:31	07:27	08:24	08:23	08:58
	17:02	18:05	18:59	20:58	21:50	22:16	21:50	20:48	19:31	17:19	16:25	16:17
26	08:37	07:36	06:27	06:13	05:18	05:04	05:38	06:33	07:29	08:25	08:25	08:58
	17:04	18:07	19:01	20:59	21:52	22:16	21:49	20:45	19:28	17:17	16:24	16:18
27	08:35	07:33	06:25	06:11	05:17	05:05	05:40	06:35	07:31	08:27	08:27	08:58
	17:06	18:09	19:03	21:01	21:53	22:16	21:47	20:43	19:26	17:15	16:23	16:19
28	08:34	07:31	06:22	06:08	05:16	05:05	05:41	06:36	07:32	08:29	08:28	08:58
	17:08	18:11	19:05	21:03	21:55	22:16	21:46	20:40	19:23	17:13	16:22	16:19
29	08:32		07:20	06:06	05:15	05:06	05:43	06:38	07:34	08:31	08:30	08:58
	17:10		20:07	21:05	21:56	22:15	21:44	20:38	19:21	17:11	16:21	16:20
30	08:30		07:17	06:04	05:14	05:07	05:45	06:40	07:36	08:33	08:32	08:58
	17:12		20:08	21:07	21:57	22:15	21:42	20:36	19:18	17:08	16:20	16:21
31	08:29		07:15		05:13		05:46	06:42		07:35		08:58
	17:14		20:10		21:59		21:40	20:33		17:06		16:22
Potential sun hours	248	272	367	421	496	513	515	461	383	327	257	231
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

6289 Tirawley WF 16 no. turbine windfarm at Tirawley, Co. Mayo

Jennings O'Donovan
Finisklin Business Park
F91 RHH9 Sligo
+353719161416
kfeeney / kfeeney@jodireland.com

Calculated:
13/04/2026 12:25/4.2.285

SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: AY - H51
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

Operational time

Table with 16 columns: N, NNE, NE, ENE, E, ESE, SE, SSE, S, SSW, SW, WSW, W, WNW, NW, NNW, Sum. Values range from 263 to 8,760.

Main shadow calculation table with columns for months (January-December) and rows for each day (1-31). Includes summary rows for 'Potential sun hours', 'Total, worst case', 'Sun reduction', 'Oper. time red.', 'Wind dir. red.', 'Total reduction', and 'Total, real'.

Table layout: For each day in each month the following matrix apply

Matrix with 4 columns: Day in month, Sun rise (hh:mm), Sun set (hh:mm), Minutes with flicker, First time (hh:mm) with flicker, Last time (hh:mm) with flicker, (WTG causing flicker first time), (WTG causing flicker last time).



Project:

Description:

6289 Tirawley WF 16 no. turbine windfarm at Tirawley, Co. Mayo

Licensed user:

Jennings O'Donovan
Finisklin Business Park
F91 RHH9 Sligo
+353719161416
kfeeny / kfeeny@jodireland.com

Calculated:

13/04/2026 12:25/4.2.285

SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: AZ - H52

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum
263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

Table with columns for months (January-December), time slots (08:58-17:14), and shadow reduction metrics (Potential sun hours, Total, worst case, Sun reduction, Oper. time red., Wind dir. red., Total reduction, Total, real).

Table layout: For each day in each month the following matrix apply

Table with 4 columns: Day in month, Sun rise (hh:mm) / Sun set (hh:mm), First time (hh:mm) with flicker / Last time (hh:mm) with flicker, (WTG causing flicker first time) / (WTG causing flicker last time)

### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: BA - H53  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January	February	March	April	May	June		
1	08:58 16:24	08:27 17:16	15:56 (7) 16:22 (7)	07:29 18:13	16:45 (8) 20:12	07:12 21:09	06:02 22:00	20:38 (10)
2	08:58 16:25	08:25 17:18	15:56 (7) 16:21 (7)	07:26 18:15	16:49 (8) 20:14	07:10 21:11	06:00 22:01	9 20:47 (10) 20:40 (10)
3	08:58 16:26	08:24 17:20	15:57 (7) 16:21 (7)	07:24 18:17	16:54 (8) 20:16	07:07 21:12	05:58 22:02	5 20:45 (10) 21:24 (11)
4	08:58 16:27	08:22 17:22	15:58 (7) 16:20 (7)	07:21 18:19	20:18	07:05 21:14	05:56 22:03	3 21:27 (11) 21:23 (11)
5	08:57 16:29	08:20 17:24	15:59 (7) 16:20 (7)	07:19 18:21	20:20	07:03 21:16	05:54 22:05	5 21:28 (11) 21:22 (11)
6	08:57 16:30	08:18 17:26	16:00 (7) 16:19 (7)	07:17 18:23	20:22	07:00 21:18	05:52 22:06	7 21:29 (11) 21:21 (11)
7	08:56 16:31	08:16 17:28	16:02 (7) 16:17 (7)	07:14 18:25	20:24	06:58 21:20	05:50 22:07	9 21:30 (11) 21:21 (11)
8	08:56 16:33	08:14 17:30	16:05 (7) 16:55 (8)	07:12 18:26	20:26	06:55 21:22	05:48 22:08	10 21:31 (11) 21:20 (11)
9	08:55 16:34	08:12 17:32	16:45 (8) 16:59 (8)	07:09 18:28	20:27	06:53 21:23	05:46 22:09	11 21:31 (11) 21:21 (11)
10	08:55 16:36	08:10 17:34	16:43 (8) 17:01 (8)	07:07 18:30	20:29	06:50 21:25	05:44 22:09	12 21:33 (11) 21:20 (11)
11	08:54 16:37	08:08 17:36	16:42 (8) 17:03 (8)	07:05 18:32	20:31	06:48 21:27	05:42 22:10	13 21:33 (11) 21:20 (11)
12	08:53 16:39	08:06 17:38	16:41 (8) 17:05 (8)	07:02 18:34	20:33	06:45 20:03 (9)	05:40 21:29	14 21:34 (11) 21:20 (11)
13	08:52 16:40	08:04 17:40	16:40 (8) 17:06 (8)	07:00 18:36	20:35	06:43 20:05 (9)	05:39 21:31	15 21:35 (11) 21:21 (11)
14	08:51 16:42	08:02 17:42	16:39 (8) 17:07 (8)	06:57 18:38	20:37	06:41 20:06 (9)	05:37 21:32	16 21:36 (11) 21:20 (11)
15	08:50 16:44	16:01 (7) 17:45	08:00 17:47	06:55 18:40	20:39	06:38 19:47 (9)	05:35 21:34	17 21:37 (11) 21:20 (11)
16	08:49 16:46	16:06 (7) 17:47	15:59 (7) 17:47	06:52 18:42	20:41	06:36 19:46 (9)	05:33 21:36	18 21:38 (11) 21:20 (11)
17	08:48 16:47	16:09 (7) 17:49	15:58 (7) 17:49	06:50 18:44	20:42	06:34 19:44 (9)	05:32 21:37	19 21:39 (11) 21:20 (11)
18	08:47 16:49	16:11 (7) 17:51	15:57 (7) 17:51	06:47 18:46	20:44	06:31 19:44 (9)	05:30 21:39	20 21:40 (11) 21:21 (11)
19	08:46 16:51	16:13 (7) 17:53	15:56 (7) 17:53	06:45 18:48	20:46	06:29 19:44 (9)	05:28 21:41	21 21:41 (11) 21:21 (11)
20	08:45 16:53	16:14 (7) 17:55	15:56 (7) 17:55	06:42 18:50	20:48	06:27 19:43 (9)	05:27 21:42	22 21:42 (11) 21:21 (11)
21	08:44 16:54	16:16 (7) 17:57	16:16 (7) 17:57	06:40 18:51	20:50	06:25 19:43 (9)	05:25 21:44	23 21:43 (11) 21:22 (11)
22	08:42 16:56	16:18 (7) 17:59	15:55 (7) 17:59	06:37 18:53	20:52	06:22 19:43 (9)	05:24 21:46	24 21:44 (11) 21:22 (11)
23	08:41 16:58	16:18 (7) 18:01	15:54 (7) 18:01	06:35 18:55	20:54	06:20 19:44 (9)	05:22 21:47	25 21:45 (11) 21:22 (11)
24	08:40 17:00	16:18 (7) 18:03	15:54 (7) 18:03	06:32 18:57	20:56	06:17 19:44 (9)	05:21 21:49	26 21:46 (11) 21:22 (11)
25	08:38 17:02	16:19 (7) 18:05	15:54 (7) 18:05	06:30 18:59	20:58	06:15 19:45 (9)	05:20 21:50	27 21:47 (11) 21:23 (11)
26	08:37 17:04	16:20 (7) 18:07	15:53 (7) 18:07	06:27 19:01	20:58	06:13 19:45 (9)	05:18 21:51	28 21:48 (11) 21:23 (11)
27	08:35 17:06	16:21 (7) 18:09	15:53 (7) 18:09	06:25 19:03	21:00	06:11 19:47 (9)	05:17 21:52	29 21:49 (11) 21:23 (11)
28	08:34 17:08	16:21 (7) 18:11	15:54 (7) 18:11	06:22 19:05	21:02	06:09 19:49 (9)	05:16 21:53	30 21:50 (11) 21:23 (11)
29	08:32 17:10	16:21 (7) 18:13	15:54 (7) 18:13	06:20 19:07	21:04	06:07 19:51 (9)	05:15 21:54	31 21:51 (11) 21:24 (11)
30	08:31 17:12	16:21 (7) 18:15	15:54 (7) 18:15	06:17 19:09	21:06	06:05 19:53 (9)	05:14 21:55	21:24 (11) 21:24 (11)
31	08:29 17:14	16:21 (7) 18:17	15:54 (7) 18:17	06:15 19:11	21:08	06:03 19:55 (9)	05:13 21:56	14 21:38 (11) 21:24 (11)
Potential sun hours	248	272	367	421	496	513	526	407
Total, worst case	363	704	19	343	526	407	0.17	0.26
Sun reduction	0.17	0.22	0.22	0.34	0.36	0.26	1.00	1.00
Oper. time red.	1.00	1.00	1.00	1.00	1.00	1.00	0.61	0.64
Wind dir. red.	0.61	0.59	0.58	0.59	0.62	0.64	0.10	0.16
Total reduction	0.10	0.13	0.13	0.20	0.23	0.16	0.38	0.67
Total, real	38	92	2	69	119	67		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: BA - H53

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

July		August		September		October		November		December				
1	05:07	21:24 (11)	05:48	20:40 (10)	06:44	07:38		07:37	16:13 (8)	08:33				
	22:15	14	21:38 (11)	21:39	22	21:02 (10)	20:31	19:16	17:04	17	16:30 (8)	16:19		
2	05:08	21:25 (11)	05:50	20:41 (10)	06:45	07:40		07:39	15:38 (7)	08:35				
	22:14	13	21:38 (11)	21:37	21	21:02 (10)	20:28	19:14	17:02	14	16:28 (8)	16:18		
3	05:09	21:26 (11)	05:52	20:41 (10)	06:47	07:42		07:41	15:33 (7)	08:36				
	22:14	12	21:38 (11)	21:35	19	21:00 (10)	20:26	19:11	17:00	11	15:44 (7)	16:18		
4	05:10	21:25 (11)	05:53	20:42 (10)	06:49	07:44		07:43	15:31 (7)	08:38				
	22:13	12	21:37 (11)	21:33	18	21:00 (10)	20:24	19:09	16:58	16	15:47 (7)	16:17		
5	05:11	21:26 (11)	05:55	20:43 (10)	06:51	07:45		07:45	15:30 (7)	08:39				
	22:13	11	21:37 (11)	21:31	16	20:59 (10)	20:21	19:06	16:56	19	15:49 (7)	16:16		
6	05:12	21:27 (11)	05:57	20:44 (10)	06:53	07:47		07:47	15:28 (7)	08:41				
	22:12	9	21:36 (11)	21:29	12	20:56 (10)	20:19	19:04	16:55	22	15:50 (7)	16:16		
7	05:13	21:28 (11)	05:59	20:48 (10)	06:54	07:49		07:49	15:27 (7)	08:42				
	22:12	8	21:36 (11)	21:27	6	20:54 (10)	20:16	19:01	16:53	23	15:50 (7)	16:15		
8	05:14	21:29 (11)	06:00			06:56	07:51	07:51	15:26 (7)	08:43				
	22:11	6	21:35 (11)	21:25		20:14	18:59	16:51	25	15:51 (7)	16:15			
9	05:15	21:30 (11)	06:02			06:58	07:53	07:53	15:26 (7)	08:45				
	22:10	4	21:34 (11)	21:23		20:11	18:56	16:49	25	15:51 (7)	16:14			
10	05:16		06:04			07:00	07:55	07:55	15:26 (7)	08:46				
	22:09		21:21			20:09	18:54	16:47	27	15:53 (7)	16:14			
11	05:17		06:06			07:02	07:57	07:57	15:26 (7)	08:47				
	22:08	7	20:53 (10)	21:19		20:06	18:52	16:45	27	15:53 (7)	16:14			
12	05:18		06:08			07:03	07:59	17:20 (8)	07:59	15:26 (7)	08:48			
	22:07	10	20:55 (10)	21:17		20:04	18:49	11	17:31 (8)	16:44	27	15:53 (7)	16:14	
13	05:19		06:09			07:05	08:00	17:17 (8)	08:01	15:26 (7)	08:49			
	22:06	13	20:56 (10)	21:15		20:01	18:47	17	17:34 (8)	16:42	27	15:53 (7)	16:14	
14	05:21		06:11			07:07	08:02	17:14 (8)	08:03	15:26 (7)	08:50			
	22:05	15	20:58 (10)	21:13	5	20:05 (9)	19:59	18:44	21	17:35 (8)	16:40	27	15:53 (7)	16:13
15	05:22		06:13			19:56 (9)	07:09	08:04	17:12 (8)	08:05	15:26 (7)	08:51		
	22:04	17	20:59 (10)	21:10	12	20:08 (9)	19:56	18:42	24	17:36 (8)	16:39	27	15:53 (7)	16:13
16	05:23		06:15			19:54 (9)	07:11	08:06	17:11 (8)	08:07	15:26 (7)	08:52		
	22:03	17	20:59 (10)	21:08	16	20:10 (9)	19:54	18:40	26	17:37 (8)	16:37	27	15:53 (7)	16:14
17	05:25		06:17			19:53 (9)	07:13	08:08	17:10 (8)	08:09	15:28 (7)	08:53		
	22:02	19	21:00 (10)	21:06	18	20:11 (9)	19:51	18:37	28	17:38 (8)	16:36	26	15:54 (7)	16:14
18	05:26		06:18			19:51 (9)	07:14	08:10	17:09 (8)	08:11	15:28 (7)	08:54		
	22:01	20	21:01 (10)	21:04	20	20:11 (9)	19:49	18:35	30	17:39 (8)	16:34	25	15:53 (7)	16:14
19	05:28		06:20			19:50 (9)	07:16	08:12	17:08 (8)	08:12	15:29 (7)	08:55		
	21:59	21	21:01 (10)	21:01	22	20:12 (9)	19:46	18:33	31	17:39 (8)	16:33	24	15:53 (7)	16:14
20	05:29		06:22			19:49 (9)	07:18	08:14	17:07 (8)	08:14	15:30 (7)	08:55		
	21:58	23	21:02 (10)	20:59	24	20:13 (9)	19:44	18:30	32	17:39 (8)	16:31	23	15:53 (7)	16:15
21	05:30		06:24			19:48 (9)	07:20	08:16	17:07 (8)	08:16	15:31 (7)	08:56		
	21:56	23	21:03 (10)	20:57	24	20:12 (9)	19:41	18:28	32	17:39 (8)	16:30	21	15:52 (7)	16:15
22	05:32		06:26			19:48 (9)	07:22	08:18	17:07 (8)	08:18	15:32 (7)	08:56		
	21:55	24	21:03 (10)	20:55	24	20:12 (9)	19:39	18:26	32	17:39 (8)	16:29	20	15:52 (7)	16:15
23	05:34		06:27			19:48 (9)	07:23	08:20	17:06 (8)	08:20	15:33 (7)	08:57		
	21:54	25	21:04 (10)	20:52	24	20:12 (9)	19:36	18:24	33	17:39 (8)	16:27	18	15:51 (7)	16:16
24	05:35		06:29			19:48 (9)	07:25	08:22	17:06 (8)	08:22	15:34 (7)	08:57		
	21:52	24	21:03 (10)	20:50	24	20:12 (9)	19:34	18:21	32	17:38 (8)	16:26	16	15:50 (7)	16:17
25	05:37		06:31			19:47 (9)	07:27	07:24	16:07 (8)	08:23	15:36 (7)	08:58		
	21:51	25	21:03 (10)	20:48	24	20:11 (9)	19:31	17:19	31	16:38 (8)	16:25	13	15:49 (7)	16:17
26	05:38		06:33			19:47 (9)	07:29	07:26	16:07 (8)	08:25	15:38 (7)	08:58		
	21:49	25	21:04 (10)	20:45	24	20:11 (9)	19:29	17:17	30	16:37 (8)	16:24	10	15:48 (7)	16:18
27	05:40		06:35			19:48 (9)	07:31	07:27	16:07 (8)	08:27	15:41 (7)	08:58		
	21:47	25	21:03 (10)	20:43	22	20:10 (9)	19:26	17:15	29	16:36 (8)	16:23	5	15:46 (7)	16:19
28	05:42		06:36			19:48 (9)	07:32	07:29	16:09 (8)	08:28		08:58		
	21:46	25	21:04 (10)	20:40	20	20:08 (9)	19:24	17:13	27	16:36 (8)	16:22		16:19	
29	05:43		06:38			19:49 (9)	07:34	07:31	16:09 (8)	08:30		08:58		
	21:44	25	21:03 (10)	20:38	18	20:07 (9)	19:21	17:11	26	16:35 (8)	16:21		16:20	
30	05:45		06:40			19:50 (9)	07:36	07:33	16:10 (8)	08:32		08:58		
	21:42	24	21:03 (10)	20:36	16	20:06 (9)	19:19	17:09	24	16:34 (8)	16:20		16:21	
31	05:47		06:42			19:53 (9)		07:35		16:12 (8)		08:58		
	21:40	23	21:03 (10)	20:33	10	20:03 (9)		17:06	20	16:32 (8)		16:22		
Potential sun hours	515		461			382		328		257		231		
Total, worst case		519		461				536		562				
Sun reduction		0.27		0.27				0.23		0.20				
Oper. time red.		1.00		1.00				1.00		1.00				
Wind dir. red.		0.63		0.60				0.58		0.61				
Total reduction		0.17		0.16				0.14		0.12				
Total, real		86		75				73		68				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: BB - H54

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January	February	March	April	May	June				
1	08:58	08:27	07:29	07:12	18:38 (16)	06:02	19:36 (15)	05:11		
	16:24	17:16	18:13	20:12	28	19:06 (16)	21:09	25	20:01 (15)	22:00
2	08:58	08:25	07:26	07:10	18:39 (16)	06:00	19:37 (15)	05:10		
	16:25	17:18	18:15	20:14	26	19:05 (16)	21:11	23	20:00 (15)	22:01
3	08:58	08:24	07:24	07:07	18:39 (16)	05:58	19:38 (15)	05:10		
	16:26	17:20	18:17	20:16	24	19:03 (16)	21:12	21	19:59 (15)	22:02
4	08:58	08:22	07:21	07:05	18:40 (16)	05:56	19:39 (15)	05:09		
	16:27	17:22	18:19	20:18	22	19:02 (16)	21:14	18	19:57 (15)	22:03
5	08:57	08:20	07:19	07:02	18:42 (16)	05:54	19:41 (15)	05:08		
	16:28	17:24	18:21	20:20	19	19:01 (16)	21:16	14	19:55 (15)	22:05
6	08:57	08:18	07:17	07:00	18:44 (16)	05:52	19:44 (15)	05:07		
	16:30	17:26	18:23	20:22	13	18:57 (16)	21:18	10	19:54 (15)	22:06
7	08:56	08:16	07:14	06:58		05:50				05:06
	16:31	17:28	18:24	20:24		21:20				22:07
8	08:56	08:14	07:12	06:55		05:48				05:06
	16:33	17:30	18:26	20:25		21:22				22:08
9	08:55	08:12	07:09	06:53		05:46				05:05
	16:34	17:32	18:28	20:27		21:23				22:09
10	08:55	08:10	07:07	06:50		05:44				05:05
	16:36	17:34	18:30	20:29		21:25				22:09
11	08:54	08:08	07:04	06:48		05:42				05:04
	16:37	17:36	18:32	20:31		21:27				22:10
12	08:53	08:06	07:02	06:45		05:40				05:04
	16:39	17:38	18:34	20:33		21:29				22:11
13	08:52	08:04	07:00	06:43		05:38				05:04
	16:40	17:40	18:36	20:35		21:31				22:12
14	08:51	08:02	06:57	06:41		05:37				05:03
	16:42	17:42	18:38	20:37		21:32				22:12
15	08:50	08:00	06:55	06:38		19:48 (15)	05:35			05:03
	16:44	17:44	18:40	20:39	8	19:56 (15)	21:34			22:13
16	08:49	07:58	06:52	06:36		19:44 (15)	05:33			05:03
	16:45	17:46	18:42	20:41	14	19:58 (15)	21:36			22:14
17	08:48	07:56	06:50	06:33		19:42 (15)	05:32			05:03
	16:47	17:49	18:44	20:42	19	20:01 (15)	21:37			22:14
18	08:47	07:54	06:47	06:31		19:40 (15)	05:30			05:03
	16:49	17:51	18:46	20:44	22	20:02 (15)	21:39			22:15
19	08:46	07:51	06:45	17:50 (16)	06:29	19:39 (15)	05:28			05:03
	16:51	17:53	18:48	18:02 (16)	20:46	24	20:03 (15)	21:41		22:15
20	08:45	07:49	06:42	17:46 (16)	06:26	19:37 (15)	05:27			05:03
	16:53	17:55	18:50	18:04 (16)	20:48	26	20:03 (15)	21:42		22:15
21	08:44	07:47	06:40	17:45 (16)	06:24	19:37 (15)	05:25			05:03
	16:54	17:57	18:51	18:06 (16)	20:50	27	20:04 (15)	21:44		22:15
22	08:42	07:45	06:37	17:43 (16)	06:22	19:36 (15)	05:24			05:03
	16:56	17:59	18:53	18:07 (16)	20:52	28	20:04 (15)	21:46		22:16
23	08:41	07:42	06:35	17:42 (16)	06:20	19:36 (15)	05:22			05:03
	16:58	18:01	18:55	18:08 (16)	20:54	29	20:05 (15)	21:47		22:16
24	08:40	07:40	06:32	17:40 (16)	06:17	19:36 (15)	05:21			05:04
	17:00	18:03	18:57	18:08 (16)	20:56	29	20:05 (15)	21:49		22:16
25	08:38	07:38	06:30	17:40 (16)	06:15	19:34 (15)	05:20			05:04
	17:02	18:05	18:59	18:09 (16)	20:58	30	20:04 (15)	21:50		22:16
26	08:37	07:36	06:27	17:38 (16)	06:13	19:34 (15)	05:18			05:04
	17:04	18:07	19:01	18:09 (16)	20:59	30	20:04 (15)	21:52		22:16
27	08:35	07:33	06:25	17:38 (16)	06:11	19:35 (15)	05:17			05:05
	17:06	18:09	19:03	18:09 (16)	21:01	28	20:03 (15)	21:53		22:16
28	08:34	07:31	06:22	17:37 (16)	06:08	19:35 (15)	05:16			05:05
	17:08	18:11	19:05	18:08 (16)	21:03	28	20:03 (15)	21:55		22:16
29	08:32		07:20	18:38 (16)	06:06	19:35 (15)	05:15			05:06
	17:10		20:07	19:09 (16)	21:05	28	20:03 (15)	21:56		22:15
30	08:30		07:17	18:37 (16)	06:04	19:36 (15)	05:14			05:07
	17:12		20:08	19:07 (16)	21:07	26	20:02 (15)	21:57		22:15
31	08:29		07:15	18:38 (16)			05:12			
	17:14		20:10	19:07 (16)			21:59			
Potential sun hours	248	272	367	421	496	513				
Total, worst case			341	528	111					
Sun reduction			0.22	0.34	0.36					
Oper. time red.			1.00	1.00	1.00					
Wind dir. red.			0.57	0.58	0.59					
Total reduction			0.13	0.20	0.21					
Total, real			44	106	24					

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: BB - H54

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	July	August	September	October	November	December	
1	05:07 22:15	05:48 21:39	06:44 20:31	07:38 19:16	07:37 17:04	08:33 16:19	
2	05:08 22:14	05:50 21:37	06:45 20:28	07:40 19:14	07:39 17:02	08:35 16:18	
3	05:09 22:14	05:52 21:35	06:47 20:26	07:42 19:11	07:41 17:00	08:36 16:17	
4	05:10 22:13	05:53 21:33	06:49 20:23	07:43 19:09	07:43 16:58	08:38 16:17	
5	05:11 22:13	05:55 21:31	06:51 20:21	07:45 19:06	07:45 16:56	08:39 16:16	
6	05:11 22:12	05:57 21:29	19:56 (15) 20:00 (15)	06:53 20:19	18:40 (16) 18:53 (16)	07:47 19:04	08:41 16:16
7	05:12 22:12	05:59 21:27	19:52 (15) 20:04 (15)	06:54 20:16	18:38 (16) 18:56 (16)	07:49 19:01	08:42 16:15
8	05:14 22:11	06:00 21:25	19:50 (15) 20:05 (15)	06:56 20:14	18:35 (16) 18:56 (16)	07:51 18:59	08:43 16:15
9	05:15 22:10	06:02 21:23	19:48 (15) 20:07 (15)	06:58 20:11	18:33 (16) 18:57 (16)	07:53 18:56	08:45 16:14
10	05:16 22:09	06:04 21:21	19:47 (15) 20:09 (15)	07:00 20:09	18:32 (16) 18:58 (16)	07:55 18:54	08:46 16:14
11	05:17 22:08	06:06 21:19	19:45 (15) 20:09 (15)	07:02 20:06	18:31 (16) 18:59 (16)	07:57 18:51	08:47 16:14
12	05:18 22:07	06:07 21:17	19:45 (15) 20:10 (15)	07:03 20:04	18:29 (16) 18:58 (16)	07:58 18:49	08:48 16:14
13	05:19 22:06	06:09 21:15	19:44 (15) 20:11 (15)	07:05 20:01	18:28 (16) 18:59 (16)	08:00 18:47	08:01 16:13
14	05:21 22:05	06:11 21:12	19:43 (15) 20:10 (15)	07:07 19:59	18:28 (16) 18:59 (16)	08:02 18:44	08:03 16:40
15	05:22 22:04	06:13 21:10	19:42 (15) 20:11 (15)	07:09 19:56	18:28 (16) 18:59 (16)	08:04 18:42	08:05 16:39
16	05:23 22:03	06:15 21:08	19:42 (15) 20:11 (15)	07:11 19:54	18:27 (16) 18:58 (16)	08:06 18:40	08:07 16:37
17	05:25 22:02	06:16 21:06	19:42 (15) 20:11 (15)	07:12 19:51	18:27 (16) 18:57 (16)	08:08 18:37	08:09 16:36
18	05:26 22:01	06:18 21:04	19:41 (15) 20:10 (15)	07:14 19:49	18:27 (16) 18:57 (16)	08:10 18:35	08:11 16:34
19	05:27 21:59	06:20 21:01	19:41 (15) 20:10 (15)	07:16 19:46	18:27 (16) 18:56 (16)	08:12 18:33	08:12 16:33
20	05:29 21:58	06:22 20:59	19:42 (15) 20:10 (15)	07:18 19:44	18:27 (16) 18:54 (16)	08:14 18:30	08:14 16:31
21	05:30 21:56	06:24 20:57	19:41 (15) 20:09 (15)	07:20 19:41	18:28 (16) 18:53 (16)	08:16 18:28	08:16 16:30
22	05:32 21:55	06:25 20:55	19:41 (15) 20:08 (15)	07:21 19:39	18:29 (16) 18:51 (16)	08:18 18:26	08:18 16:29
23	05:33 21:54	06:27 20:52	19:42 (15) 20:08 (15)	07:23 19:36	18:30 (16) 18:49 (16)	08:20 18:24	08:20 16:27
24	05:35 21:52	06:29 20:50	19:42 (15) 20:06 (15)	07:25 19:33	18:33 (16) 18:47 (16)	08:22 18:21	08:22 16:26
25	05:37 21:51	06:31 20:48	19:43 (15) 20:05 (15)	07:27 19:31	18:36 (16) 18:41 (16)	07:24 17:19	08:23 16:25
26	05:38 21:49	06:33 20:45	19:45 (15) 20:03 (15)	07:29 19:28	18:29 (16)	07:25 17:17	08:25 16:24
27	05:40 21:47	06:35 20:43	19:47 (15) 20:01 (15)	07:31 19:26	18:27 (16)	07:27 17:15	08:27 16:23
28	05:41 21:46	06:36 20:40	19:49 (15) 19:56 (15)	07:32 19:23	18:27 (16)	07:29 17:13	08:28 16:22
29	05:43 21:44	06:38 20:38	07:34 19:21	07:34 19:21	17:11	07:31 16:21	08:30 16:20
30	05:45 21:42	06:40 20:36	07:36 19:18	07:36 19:18	17:11	07:33 16:20	08:32 16:21
31	05:46 21:40	06:42 20:33	07:35 19:18	07:35 17:06	17:08	07:35 17:06	08:58 16:22
Potential sun hours	515	461	383	327	257	230	
Total, worst case		514	484				
Sun reduction		0.27	0.29				
Oper. time red.		1.00	1.00				
Wind dir. red.		0.59	0.57				
Total reduction		0.16	0.17				
Total, real		83	81				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: BC - H55

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January		February		March		April		May		June			
1	08:58	15:33 (1)	08:27	07:29	07:12				06:02	20:16 (7)	05:12	20:21 (7)		
	16:24	12	15:45 (1)	17:16	18:13	20:12			21:09	16	20:32 (7)	22:00	9	20:30 (7)
2	08:58	15:35 (1)	08:25	07:26	07:10				06:00	20:14 (7)	05:11	20:24 (7)		
	16:25	10	15:45 (1)	17:18	18:15	20:14			21:11	20	20:34 (7)	22:01	2	20:26 (7)
3	08:58	15:35 (1)	08:24	07:24	07:07				05:58	20:12 (7)	05:10			
	16:26	9	15:44 (1)	17:20	18:17	20:16			21:12	23	20:35 (7)	22:02		
4	08:58	15:37 (1)	08:22	07:21	07:05				05:56	20:11 (7)	05:09			
	16:27	8	15:45 (1)	17:22	18:19	20:18			21:14	25	20:36 (7)	22:03		
5	08:57	15:38 (1)	08:20	07:19	07:03				05:54	20:11 (7)	05:08			
	16:29	5	15:43 (1)	17:24	18:21	20:20			21:16	27	20:38 (7)	22:04		
6	08:57		08:18	07:17	07:00				05:52	20:10 (7)	05:07			
	16:30		17:26	18:23	20:22				21:18	28	20:38 (7)	22:06		
7	08:56		08:16	07:14	06:58				05:50	20:09 (7)	05:07	21:23 (8)		
	16:31		17:28	18:25	20:24				21:20	30	20:39 (7)	22:07	6	21:29 (8)
8	08:56		08:14	07:12	06:55				05:48	20:08 (7)	05:06	21:21 (8)		
	16:33		17:30	18:27	20:26				21:22	31	20:39 (7)	22:08	9	21:30 (8)
9	08:55		08:12	07:09	06:53				05:46	20:08 (7)	05:05	21:21 (8)		
	16:34		17:32	18:28	20:27				21:23	31	20:39 (7)	22:08	11	21:32 (8)
10	08:55		08:10	07:07	06:50				05:44	20:08 (7)	05:05	21:20 (8)		
	16:36		17:34	18:30	20:29				21:25	32	20:40 (7)	22:09	12	21:32 (8)
11	08:54		08:08	07:05	06:48				05:42	20:07 (7)	05:04	21:19 (8)		
	16:37		17:36	18:32	20:31				21:27	33	20:40 (7)	22:10	15	21:34 (8)
12	08:53		08:06	07:02	06:45				05:40	20:07 (7)	05:04	21:19 (8)		
	16:39		17:38	18:34	20:33				21:29	32	20:39 (7)	22:11	16	21:35 (8)
13	08:52		08:04	07:00	06:43				05:39	20:08 (7)	05:04	21:19 (8)		
	16:40		17:40	18:36	20:35				21:31	32	20:40 (7)	22:12	17	21:36 (8)
14	08:51		08:02	06:57	06:41				05:37	20:07 (7)	05:03	21:18 (8)		
	16:42		17:43	18:38	20:37				21:32	33	20:40 (7)	22:12	17	21:35 (8)
15	08:50		08:00	06:55	06:38				05:35	20:07 (7)	05:03	21:19 (8)		
	16:44		17:45	18:40	20:39				21:34	32	20:39 (7)	22:13	17	21:36 (8)
16	08:49		07:58	06:52	06:36				05:33	20:08 (7)	05:03	21:19 (8)		
	16:46		17:47	18:42	20:41				21:36	32	20:40 (7)	22:13	17	21:36 (8)
17	08:48		07:56	06:50	06:34				05:32	20:07 (7)	05:03	21:19 (8)		
	16:47		17:49	18:44	20:42				21:37	32	20:39 (7)	22:14	18	21:37 (8)
18	08:47		07:54	06:47	06:31				05:30	20:08 (7)	05:03	21:19 (8)		
	16:49		17:51	18:46	20:44				21:39	31	20:39 (7)	22:14	18	21:37 (8)
19	08:46		07:51	06:45	06:29				05:28	20:08 (7)	05:03	21:19 (8)		
	16:51		17:53	18:48	20:46				21:41	30	20:38 (7)	22:15	19	21:38 (8)
20	08:45		07:49	06:42	06:27				05:27	20:09 (7)	05:03	21:19 (8)		
	16:53		17:55	18:50	20:48				21:42	29	20:38 (7)	22:15	19	21:38 (8)
21	08:44		07:47	06:40	06:24				05:25	20:10 (7)	05:03	21:20 (8)		
	16:55		17:57	18:51	20:50				21:44	28	20:38 (7)	22:15	19	21:39 (8)
22	08:42		07:45	06:37	06:22				05:24	20:09 (7)	05:03	21:20 (8)		
	16:56		17:59	18:53	20:52				21:46	28	20:37 (7)	22:16	19	21:39 (8)
23	08:41		07:42	06:35	06:20				05:23	20:10 (7)	05:03	21:20 (8)		
	16:58		18:01	18:55	20:54				21:47	27	20:37 (7)	22:16	19	21:39 (8)
24	08:40		07:40	06:32	06:17				05:21	20:11 (7)	05:04	21:20 (8)		
	17:00		18:03	18:57	20:56				21:49	26	20:37 (7)	22:16	18	21:38 (8)
25	08:38		07:38	06:30	06:15				05:20	20:12 (7)	05:04	21:21 (8)		
	17:02		18:05	18:59	20:58				21:50	24	20:36 (7)	22:16	18	21:39 (8)
26	08:37		07:36	06:27	06:13				05:18	20:13 (7)	05:05	21:21 (8)		
	17:04		18:07	19:01	20:59				21:52	23	20:36 (7)	22:16	18	21:39 (8)
27	08:35		07:33	06:25	06:11				05:17	20:14 (7)	05:05	21:22 (8)		
	17:06		18:09	19:03	21:01				21:53	21	20:35 (7)	22:16	17	21:39 (8)
28	08:34		07:31	06:22	06:09				05:16	20:15 (7)	05:06	21:21 (8)		
	17:08		18:11	19:05	21:03				21:54	19	20:34 (7)	22:16	18	21:39 (8)
29	08:32			07:20	06:06				05:15	20:16 (7)	05:06	21:22 (8)		
	17:10			20:07	21:05				21:56	18	20:34 (7)	22:15	17	21:39 (8)
30	08:30			07:17	06:04				05:14	20:18 (7)	05:07	21:23 (8)		
	17:12			20:09	21:07	12	20:30 (7)		21:57	15	20:33 (7)	22:15	16	21:39 (8)
31	08:29			07:15					05:13		20:19 (7)			
	17:14			20:10					21:59	12	20:31 (7)			
Potential sun hours	248		272	367	421				496		513			
Total, worst case		44				12				820		401		
Sun reduction		0.17				0.34				0.36		0.26		
Oper. time red.		1.00				1.00				1.00		1.00		
Wind dir. red.		0.63				0.62				0.62		0.64		
Total reduction		0.11				0.21				0.22		0.16		
Total, real		5				3				183		66		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: BC - H55  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	July		August		September		October		November		December	
1	05:07	21:23 (8)	05:48	20:17 (7)	06:44	07:38	07:37	08:33				
	22:15	15	21:38 (8)	21:39	33	20:50 (7)	20:31	19:16	17:04	16:19		
2	05:08	21:24 (8)	05:50	20:18 (7)	06:45	07:40	07:39	08:35				
	22:14	14	21:38 (8)	21:37	32	20:50 (7)	20:28	19:14	17:02	16:18		
3	05:09	21:26 (8)	05:52	20:17 (7)	06:47	07:42	07:41	08:36				
	22:14	12	21:38 (8)	21:35	32	20:49 (7)	20:26	19:11	17:00	16:18		
4	05:10	21:26 (8)	05:53	20:18 (7)	06:49	07:44	07:43	08:38				
	22:13	10	21:36 (8)	21:33	31	20:49 (7)	20:24	19:09	16:58	16:17		
5	05:11	21:27 (8)	05:55	20:19 (7)	06:51	07:45	07:45	08:39				
	22:13	8	21:35 (8)	21:31	30	20:49 (7)	20:21	19:06	16:56	16:16		
6	05:12	21:30 (8)	05:57	20:19 (7)	06:53	07:47	07:47	08:41				
	22:12	3	21:33 (8)	21:29	29	20:48 (7)	20:19	19:04	16:55	16:16		
7	05:13		05:59	20:19 (7)	06:55	07:49	07:49	08:42		15:25 (1)		
	22:12		21:27	28	20:47 (7)	20:16	19:01	16:53	16:15	5	15:30 (1)	
8	05:14		06:00	20:21 (7)	06:56	07:51	07:51	08:43		15:25 (1)		
	22:11		21:25	26	20:47 (7)	20:14	18:59	16:51	16:15	8	15:33 (1)	
9	05:15		06:02	20:21 (7)	06:58	07:53	07:53	08:45		15:24 (1)		
	22:10		21:23	24	20:45 (7)	20:11	18:56	16:49	16:14	10	15:34 (1)	
10	05:16		06:04	20:22 (7)	07:00	07:55	07:55	08:46		15:24 (1)		
	22:09		21:21	22	20:44 (7)	20:09	18:54	16:47	16:14	10	15:34 (1)	
11	05:17	20:29 (7)	06:06	20:24 (7)	07:02	07:57	07:57	08:47		15:23 (1)		
	22:08	7	20:36 (7)	21:19	19	20:43 (7)	20:06	18:52	16:45	16:14	12	15:35 (1)
12	05:18	20:27 (7)	06:08	20:25 (7)	07:04	07:59	07:59	08:48		15:24 (1)		
	22:07	11	20:38 (7)	21:17	15	20:40 (7)	20:04	18:49	16:44	16:14	12	15:36 (1)
13	05:19	20:27 (7)	06:09	20:28 (7)	07:05	08:00	08:01	08:49		15:24 (1)		
	22:06	13	20:40 (7)	21:15	9	20:37 (7)	20:01	18:47	16:42	16:14	12	15:36 (1)
14	05:21	20:26 (7)	06:11		07:07	08:02	08:03	08:50		15:24 (1)		
	22:05	16	20:42 (7)	21:12		19:59	18:44	16:40	16:14	11	15:35 (1)	
15	05:22	20:24 (7)	06:13		07:09	08:04	08:05	08:51		15:25 (1)		
	22:04	19	20:43 (7)	21:10		19:56	18:42	16:39	16:14	10	15:35 (1)	
16	05:23	20:23 (7)	06:15		07:11	08:06	08:07	08:52		15:25 (1)		
	22:03	20	20:43 (7)	21:08		19:54	18:40	16:37	16:14	10	15:35 (1)	
17	05:25	20:22 (7)	06:17		07:13	08:08	08:09	08:53		15:24 (1)		
	22:02	22	20:44 (7)	21:06		19:51	18:37	16:36	16:14	11	15:35 (1)	
18	05:26	20:22 (7)	06:18		07:14	08:10	08:11	08:54		15:25 (1)		
	22:00	23	20:45 (7)	21:04		19:49	18:35	16:34	16:14	10	15:35 (1)	
19	05:28	20:21 (7)	06:20		07:16	08:12	08:12	08:54		15:26 (1)		
	21:59	25	20:46 (7)	21:01		19:46	18:33	16:33	16:14	10	15:36 (1)	
20	05:29	20:20 (7)	06:22		07:18	08:14	08:14	08:55		15:26 (1)		
	21:58	26	20:46 (7)	20:59		19:44	18:30	16:31	16:15	10	15:36 (1)	
21	05:31	20:20 (7)	06:24		07:20	08:16	08:16	08:56		15:26 (1)		
	21:56	27	20:47 (7)	20:57		19:41	18:28	16:30	16:15	10	15:36 (1)	
22	05:32	20:20 (7)	06:26		07:22	08:18	08:18	08:56		15:27 (1)		
	21:55	28	20:48 (7)	20:55		19:39	18:26	16:29	16:15	10	15:37 (1)	
23	05:34	20:20 (7)	06:27		07:23	08:20	08:20	08:57		15:27 (1)		
	21:54	29	20:49 (7)	20:52		19:36	18:24	16:27	16:16	10	15:37 (1)	
24	05:35	20:19 (7)	06:29		07:25	08:22	08:22	08:57		15:28 (1)		
	21:52	30	20:49 (7)	20:50		19:34	18:21	16:26	16:17	9	15:37 (1)	
25	05:37	20:18 (7)	06:31		07:27	07:24	08:23	08:58		15:29 (1)		
	21:50	31	20:49 (7)	20:48		19:31	17:19	16:25	16:17	10	15:39 (1)	
26	05:38	20:18 (7)	06:33		07:29	07:26	08:25	08:58		15:29 (1)		
	21:49	32	20:50 (7)	20:45		19:29	17:17	16:24	16:18	10	15:39 (1)	
27	05:40	20:18 (7)	06:35		07:31	07:27	08:27	08:58		15:30 (1)		
	21:47	31	20:49 (7)	20:43		19:26	17:15	16:23	16:19	10	15:40 (1)	
28	05:42	20:18 (7)	06:36		07:32	07:29	08:28	08:58		15:30 (1)		
	21:46	32	20:50 (7)	20:40		19:24	17:13	16:22	16:20	11	15:41 (1)	
29	05:43	20:18 (7)	06:38		07:34	07:31	08:30	08:58		15:31 (1)		
	21:44	33	20:51 (7)	20:38		19:21	17:11	16:21	16:20	11	15:42 (1)	
30	05:45	20:18 (7)	06:40		07:36	07:33	08:32	08:58		15:32 (1)		
	21:42	32	20:50 (7)	20:36		19:19	17:09	16:20	16:21	11	15:43 (1)	
31	05:47	20:18 (7)	06:42			07:35		08:58		15:33 (1)		
	21:40	32	20:50 (7)	20:33		17:06		16:22	16:22	11	15:44 (1)	
Potential sun hours	515		461		382	328	257	231				
Total, worst case		581		330						254		
Sun reduction		0.27		0.27						0.12		
Oper. time red.		1.00		1.00						1.00		
Wind dir. red.		0.62		0.62						0.63		
Total reduction		0.16		0.17						0.08		
Total, real		96		56						19		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: BD - H56  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June
1	08:58 16:24	08:27 17:16	07:29 18:13	07:12 20:12	06:02 15	20:03 (16) 22:00 23
2	08:58 16:25	08:25 17:18	07:26 18:15	07:10 20:14	06:00 19	20:01 (16) 22:01 20
3	08:58 16:26	08:24 17:20	07:24 18:17	07:07 20:16	05:58 21	19:59 (16) 22:02 16
4	08:58 16:27	08:22 17:22	07:21 18:19	07:05 20:18	05:56 24	19:58 (16) 22:03 18
5	08:57 16:28	08:20 17:24	07:19 18:21	07:02 20:20	05:54 26	19:57 (16) 22:05 18
6	08:57 16:30	08:18 17:26	07:17 18:23	07:00 20:22	05:52 27	19:57 (16) 22:06 20
7	08:56 16:31	08:16 17:28	07:14 18:24	06:58 20:24	05:50 29	19:56 (16) 22:07 21
8	08:56 16:33	08:14 17:30	07:12 18:26	06:55 20:25	05:48 30	19:55 (16) 22:08 22
9	08:55 16:34	08:12 17:32	07:09 18:28	06:53 20:27	05:46 31	19:54 (16) 22:09 22
10	08:55 16:36	08:10 17:34	07:07 18:30	06:50 20:29	05:44 31	19:54 (16) 22:09 23
11	08:54 16:37	08:08 17:36	07:04 18:32	06:48 20:31	05:42 32	19:54 (16) 22:10 23
12	08:53 16:39	08:06 17:38	07:02 18:34	06:45 20:33	05:40 32	19:54 (16) 22:11 23
13	08:52 16:40	08:04 17:40	07:00 18:36	06:43 20:35	05:38 32	19:53 (16) 22:12 24
14	08:51 16:42	08:02 17:42	06:57 18:38	06:41 20:37	05:37 32	19:54 (16) 22:12 24
15	08:50 16:44	08:00 17:44	06:55 18:40	06:38 20:39	05:35 32	19:54 (16) 22:13 24
16	08:49 16:45	07:58 17:46	06:52 18:42	06:36 20:41	05:33 32	19:54 (16) 22:14 24
17	08:48 16:47	07:56 17:49	06:50 18:44	06:33 20:42	05:32 31	19:54 (16) 22:14 24
18	08:47 16:49	07:54 17:51	06:47 18:46	06:31 20:44	05:30 31	19:55 (16) 22:14 25
19	08:46 16:51	07:51 17:53	06:45 18:48	06:29 20:46	05:28 30	19:55 (16) 22:15 25
20	08:45 16:53	07:49 17:55	06:42 18:50	06:26 20:48	05:27 30	19:55 (16) 22:15 25
21	08:44 16:54	07:47 17:57	06:40 18:51	06:24 20:50	05:25 29	19:56 (16) 22:15 25
22	08:42 16:56	07:45 17:59	06:37 18:53	06:22 20:52	05:24 28	19:56 (16) 22:16 25
23	08:41 16:58	07:42 18:01	06:35 18:55	06:20 20:54	05:22 26	19:57 (16) 22:16 25
24	08:40 17:00	07:40 18:03	06:32 18:57	06:17 20:56	05:21 25	19:58 (16) 22:16 25
25	08:38 17:02	07:38 18:05	06:30 18:59	06:15 20:58	05:20 24	19:59 (16) 22:16 25
26	08:37 17:04	07:36 18:07	06:27 19:01	06:13 20:59	05:18 22	20:00 (16) 22:16 24
27	08:35 17:06	07:33 18:09	06:25 19:03	06:11 21:01	05:17 21	20:00 (16) 22:16 24
28	08:34 17:08	07:31 18:11	06:22 19:05	06:08 21:03	05:16 19	20:01 (16) 22:16 24
29	08:32 17:10		07:20 20:07	06:06 21:05	05:15 17	20:02 (16) 22:15 24
30	08:30 17:12		07:17 20:08	06:04 21:07	05:14 8	20:03 (16) 21:05 (16)
31	08:29 17:14		07:15 20:10		05:12 23	20:05 (16) 21:11 (15)
Potential sun hours	248	272	367	421	496	513
Total, worst case				8	824	688
Sun reduction				0.34	0.36	0.26
Oper. time red.				1.00	1.00	1.00
Wind dir. red.				0.61	0.61	0.63
Total reduction				0.21	0.22	0.16
Total, real				2	182	111

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: BD - H56

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	July	August	September	October	November	December		
1	05:07	21:01 (15)	05:48	20:04 (16)	06:44	07:38	07:37	08:33
	22:15	23 21:24 (15)	21:39	32 20:36 (16)	20:31	19:16	17:04	16:19
2	05:08	21:01 (15)	05:50	20:05 (16)	06:45	07:40	07:39	08:35
	22:14	23 21:24 (15)	21:37	31 20:36 (16)	20:28	19:14	17:02	16:18
3	05:09	21:02 (15)	05:52	20:04 (16)	06:47	07:42	07:41	08:36
	22:14	22 21:24 (15)	21:35	31 20:35 (16)	20:26	19:11	17:00	16:17
4	05:10	21:02 (15)	05:53	20:05 (16)	06:49	07:43	07:43	08:38
	22:13	21 21:23 (15)	21:33	30 20:35 (16)	20:23	19:09	16:58	16:17
5	05:11	21:02 (15)	05:55	20:06 (16)	06:51	07:45	07:45	08:39
	22:13	21 21:23 (15)	21:31	29 20:35 (16)	20:21	19:06	16:56	16:16
6	05:12	21:03 (15)	05:57	20:06 (16)	06:53	07:47	07:47	08:41
	22:12	20 21:23 (15)	21:29	28 20:34 (16)	20:19	19:04	16:54	16:16
7	05:13	21:04 (15)	05:59	20:06 (16)	06:54	07:49	07:49	08:42
	22:12	19 21:23 (15)	21:27	28 20:34 (16)	20:16	19:01	16:53	16:15
8	05:14	21:04 (15)	06:00	20:07 (16)	06:56	07:51	07:51	08:43
	22:11	19 21:23 (15)	21:25	25 20:32 (16)	20:14	18:59	16:51	16:15
9	05:15	21:05 (15)	06:02	20:08 (16)	06:58	07:53	07:53	08:45
	22:10	17 21:22 (15)	21:23	23 20:31 (16)	20:11	18:56	16:49	16:14
10	05:16	21:06 (15)	06:04	20:09 (16)	07:00	07:55	07:55	08:46
	22:09	16 21:22 (15)	21:21	21 20:30 (16)	20:09	18:54	16:47	16:14
11	05:17	20:15 (16)	06:06	20:10 (16)	07:02	07:57	07:57	08:47
	22:08	22 21:21 (15)	21:19	18 20:28 (16)	20:06	18:51	16:45	16:14
12	05:18	20:14 (16)	06:07	20:12 (16)	07:03	07:58	07:59	08:48
	22:07	23 21:20 (15)	21:17	13 20:25 (16)	20:04	18:49	16:44	16:14
13	05:19	20:12 (16)	06:09	20:17 (16)	07:05	08:00	08:01	08:49
	22:06	22 21:18 (15)	21:15	4 20:21 (16)	20:01	18:47	16:42	16:13
14	05:21	20:12 (16)	06:11		07:07	08:02	08:03	08:50
	22:05	18 21:16 (15)	21:12		19:59	18:44	16:40	16:13
15	05:22	20:11 (16)	06:13		07:09	08:04	08:05	08:51
	22:04	18 20:29 (16)	21:10		19:56	18:42	16:39	16:13
16	05:23	20:10 (16)	06:15		07:11	08:06	08:07	08:52
	22:03	20 20:30 (16)	21:08		19:54	18:40	16:37	16:13
17	05:25	20:09 (16)	06:16		07:12	08:08	08:09	08:53
	22:02	22 20:31 (16)	21:06		19:51	18:37	16:36	16:14
18	05:26	20:09 (16)	06:18		07:14	08:10	08:11	08:54
	22:01	23 20:32 (16)	21:04		19:49	18:35	16:34	16:14
19	05:27	20:08 (16)	06:20		07:16	08:12	08:12	08:55
	21:59	25 20:33 (16)	21:01		19:46	18:33	16:33	16:14
20	05:29	20:07 (16)	06:22		07:18	08:14	08:14	08:55
	21:58	26 20:33 (16)	20:59		19:44	18:30	16:31	16:14
21	05:30	20:07 (16)	06:24		07:20	08:16	08:16	08:56
	21:56	27 20:34 (16)	20:57		19:41	18:28	16:30	16:15
22	05:32	20:06 (16)	06:25		07:21	08:18	08:18	08:56
	21:55	28 20:34 (16)	20:55		19:39	18:26	16:29	16:15
23	05:33	20:05 (16)	06:27		07:23	08:20	08:20	08:57
	21:54	29 20:34 (16)	20:52		19:36	18:24	16:27	16:16
24	05:35	20:06 (16)	06:29		07:25	08:22	08:22	08:57
	21:52	29 20:35 (16)	20:50		19:33	18:21	16:26	16:16
25	05:37	20:05 (16)	06:31		07:27	07:24	08:23	08:58
	21:50	30 20:35 (16)	20:48		19:31	17:19	16:25	16:17
26	05:38	20:05 (16)	06:33		07:29	07:25	08:25	08:58
	21:49	31 20:36 (16)	20:45		19:28	17:17	16:24	16:18
27	05:40	20:04 (16)	06:35		07:31	07:27	08:27	08:58
	21:47	32 20:36 (16)	20:43		19:26	17:15	16:23	16:19
28	05:41	20:05 (16)	06:36		07:32	07:29	08:28	08:58
	21:46	31 20:36 (16)	20:40		19:23	17:13	16:22	16:19
29	05:43	20:04 (16)	06:38		07:34	07:31	08:30	08:58
	21:44	32 20:36 (16)	20:38		19:21	17:11	16:21	16:20
30	05:45	20:04 (16)	06:40		07:36	07:33	08:32	08:58
	21:42	32 20:36 (16)	20:36		19:18	17:08	16:20	16:21
31	05:46	20:05 (16)	06:42			07:35		08:58
	21:40	32 20:37 (16)	20:33			17:06		16:22
Potential sun hours	515		461		383	327	257	230
Total, worst case		753		313				
Sun reduction		0.27		0.27				
Oper. time red.		1.00		1.00				
Wind dir. red.		0.62		0.61				
Total reduction		0.16		0.17				
Total, real		123		52				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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**SHADOW - Calendar**

Calculation: Tirawley Shadow Flicker Worst Case  
 Assumptions for shadow calculations

Shadow receptor: BE - H57

Sunshine probability S (Average daily sunshine hours) [BELMULLET]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.36	2.16	2.65	4.82	5.79	4.41	4.42	4.07	3.73	2.48	1.71	0.89

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January	February	March	April	May	June	
1	08:58 16:24 19	15:26 (7) 08:27 29	16:10 (8) 07:29 18:13	07:12 20:12 07:10	06:02 21:09 22	20:13 (10) 05:12 18	21:06 (11)
2	08:58 16:25 21	15:48 (7) 08:25 29	16:10 (8) 07:26 18:15	07:10 20:12 20:14	06:00 21:11 23	20:12 (10) 05:11 20	21:05 (11)
3	08:58 16:26 21	15:47 (7) 08:24 30	16:10 (8) 07:24 18:17	07:07 20:16 20:16	05:58 21:13 25	20:11 (10) 05:10 20	21:05 (11)
4	08:58 16:27 21	15:48 (7) 08:22 31	16:10 (8) 07:22 18:19	07:05 20:18 20:18	05:56 21:14 17	20:11 (10) 05:09 20	21:06 (11)
5	08:57 16:29 22	15:26 (7) 08:20 32	16:09 (8) 07:19 18:21	07:03 20:19 20:20	05:54 21:16 19	20:11 (10) 05:08 21	21:05 (11)
6	08:57 16:30 23	15:27 (7) 08:18 32	16:09 (8) 07:17 18:23	07:00 20:22 20:22	05:52 21:18 26	20:11 (10) 05:07 21	21:05 (11)
7	08:56 16:31 23	15:27 (7) 08:16 32	16:09 (8) 07:14 18:25	06:58 20:24 20:24	05:50 21:20 24	20:10 (10) 05:07 21	21:06 (11)
8	08:56 16:33 24	15:27 (7) 08:14 31	16:10 (8) 07:12 18:26	06:55 20:26 20:26	05:48 21:22 27	20:10 (10) 05:06 21	21:05 (11)
9	08:55 16:34 24	15:28 (7) 08:12 31	16:09 (8) 07:09 18:28	06:53 20:27 20:27	05:46 21:23 26	20:10 (10) 05:05 21	21:06 (11)
10	08:55 16:36 25	15:50 (7) 08:10 30	16:40 (8) 07:07 18:30	06:50 20:29 20:29	05:44 21:25 26	20:36 (10) 05:05 22	21:27 (11)
11	08:54 16:37 25	15:53 (7) 08:08 30	16:10 (8) 07:05 18:32	06:48 20:31 20:31	05:42 21:27 25	20:11 (10) 05:04 21	21:06 (11)
12	08:53 16:39 26	15:28 (7) 08:06 28	16:11 (8) 07:02 18:34	06:45 20:33 20:33	05:40 21:29 25	20:11 (10) 05:04 22	21:06 (11)
13	08:52 16:40 26	15:28 (7) 08:04 27	16:12 (8) 07:00 18:36	06:43 20:35 20:35	05:39 21:31 24	20:11 (10) 05:04 21	21:07 (11)
14	08:51 16:42 26	15:29 (7) 08:02 25	16:13 (8) 06:57 18:38	06:41 20:37 20:37	05:37 21:32 22	20:12 (10) 05:03 22	21:06 (11)
15	08:50 16:44 26	15:28 (7) 08:00 22	16:14 (8) 06:55 18:40	06:38 20:39 20:39	05:35 21:34 20	20:13 (10) 05:03 22	21:06 (11)
16	08:49 16:45 26	15:54 (7) 07:58 19	16:16 (8) 06:52 18:42	06:36 20:41 20:41	05:33 21:36 19	20:14 (10) 05:03 22	21:07 (11)
17	08:48 16:47 27	15:29 (7) 07:56 15	16:35 (8) 06:50 18:44	06:34 20:43 20:43	05:32 21:37 17	20:15 (10) 05:03 21	21:07 (11)
18	08:47 16:49 26	15:56 (7) 07:54 6	16:36 (8) 06:47 18:46	06:31 20:44 20:44	05:30 21:39 14	20:17 (10) 05:03 22	21:07 (11)
19	08:46 16:51 26	15:56 (7) 07:51 6	16:29 (8) 06:45 18:48	06:29 20:46 20:46	05:28 21:41 8	20:18 (10) 05:03 22	21:07 (11)
20	08:45 16:53 25	15:31 (7) 07:49 18:50	16:29 (8) 06:42 18:50	06:27 20:48 20:48	05:27 21:42 5	20:21 (10) 05:03 22	21:07 (11)
21	08:44 16:54 25	15:56 (7) 07:47 18:55	16:48 (8) 06:40 18:51	06:24 20:50 20:50	05:25 21:44 21:44	20:26 (10) 05:03 22	21:08 (11)
22	08:42 16:56 24	15:32 (7) 07:45 18:53	16:48 (8) 06:37 18:53	06:22 20:52 20:52	05:24 21:46 21:46	05:03 22:16 22	21:08 (11)
23	08:41 16:58 23	15:32 (7) 07:42 18:01	16:35 (8) 06:35 18:55	06:20 20:54 20:54	05:22 21:47 21:47	05:03 22:16 22	21:08 (11)
24	08:40 17:00 22	15:56 (7) 07:40 18:03	16:33 (8) 06:32 18:57	06:17 20:56 20:56	05:21 21:49 21:49	05:04 22:16 22	21:08 (11)
25	08:38 17:02 31	15:35 (7) 07:38 18:05	16:35 (8) 06:30 18:59	06:15 20:58 20:58	05:20 21:50 5	21:11 (11) 05:04 22	21:09 (11)
26	08:37 17:04 33	16:28 (8) 07:36 18:07	16:36 (8) 06:27 19:01	06:13 20:59 20:59	05:18 21:52 9	21:16 (11) 05:05 21	21:31 (11)
27	08:35 17:06 35	15:38 (7) 07:33 18:09	16:30 (8) 06:25 19:03	06:11 21:01 8	05:17 21:53 20:20 (10)	05:05 21:08 (11) 21:19 (11)	21:10 (11)
28	08:34 17:08 33	15:40 (7) 07:31 18:11	16:34 (8) 06:22 19:05	06:09 21:03 14	05:16 21:55 20:31 (10)	05:06 21:08 (11) 21:20 (11)	21:09 (11)
29	08:32 17:10 29	15:43 (7) 07:29 16:35 (8)	16:34 (8) 07:20 19:05	06:06 21:06 17	05:15 21:56 21:22 (11)	05:06 21:07 (11) 22:15	21:10 (11)
30	08:31 17:12 25	16:11 (8) 07:25 16:36 (8)	16:34 (8) 07:17 19:05	06:04 21:07 20	05:14 21:57 20:34 (10)	05:07 21:07 (11) 21:23 (11)	21:09 (11)
31	08:29 17:14 27	16:10 (8) 07:21 16:37 (8)	16:34 (8) 07:15 19:05	06:03 21:07 20	05:13 21:59 18	21:06 (11) 21:24 (11)	21:31 (11)
Potential sun hours	248	272	367	421	496	513	
Total, worst case	789	479	412	520		638	
Sun reduction	0.17	0.22	0.34	0.36		0.26	
Oper. time red.	1.00	1.00	1.00	1.00		1.00	
Wind dir. red.	0.62	0.60	0.59	0.62		0.63	
Total reduction	0.11	0.13	0.20	0.22		0.16	
Total, real	83	63	84	116		103	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)	

## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: BE - H57  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	July			August			September			October			November			December		
	Start	End	Duration	Start	End	Duration	Start	End	Duration	Start	End	Duration	Start	End	Duration	Start	End	Duration
1	05:07	21:10	(11)	05:48	20:21	(10)	06:44	19:24	(9)	07:38	07:37	15:39	(8)	08:33	15:10	(7)		
2	05:08	21:11	(11)	05:50	20:21	(10)	06:45	19:24	(9)	07:40	17:04	16:10	(8)	16:19	15:35	(7)		
3	05:09	21:11	(11)	05:52	20:20	(10)	06:47	19:24	(9)	07:42	17:02	16:10	(8)	16:18	15:35	(7)		
4	05:10	21:10	(11)	05:53	20:20	(10)	06:49	19:24	(9)	07:44	17:00	16:10	(8)	16:18	15:35	(7)		
5	05:11	21:11	(11)	05:55	20:21	(10)	06:51	19:24	(9)	07:45	16:58	16:11	(8)	16:17	15:36	(7)		
6	05:12	21:11	(11)	05:57	20:20	(10)	06:53	19:25	(9)	07:47	16:56	16:11	(8)	16:16	15:35	(7)		
7	05:13	21:12	(11)	05:59	20:20	(10)	06:54	19:26	(9)	07:49	16:55	16:10	(8)	16:16	15:36	(7)		
8	05:14	21:12	(11)	06:00	20:21	(10)	06:56	19:26	(9)	07:51	16:53	16:10	(8)	16:15	15:35	(7)		
9	05:15	21:12	(11)	06:02	20:20	(10)	06:58	19:28	(9)	07:53	16:51	16:10	(8)	16:15	15:36	(7)		
10	05:16	21:13	(11)	06:04	20:21	(10)	07:00	19:33	(9)	07:55	16:49	16:09	(8)	16:14	15:36	(7)		
11	05:17	21:13	(11)	06:06	20:22	(10)	07:02	19:36	(9)	07:57	16:47	16:09	(8)	16:14	15:36	(7)		
12	05:18	21:13	(11)	06:08	20:22	(10)	07:04		07:59	16:45	16:09	(8)	16:14	15:36	(7)			
13	05:19	21:14	(11)	06:09	20:23	(10)	07:05		08:00	16:44	16:08	(8)	16:14	15:36	(7)			
14	05:21	21:15	(11)	06:11	20:24	(10)	07:07		08:02	16:42	16:07	(8)	16:14	15:35	(7)			
15	05:22	21:16	(11)	06:13	20:26	(10)	07:09		08:04	16:40	16:06	(8)	16:13	15:35	(7)			
16	05:23	21:16	(11)	06:15	20:29	(10)	07:11		08:06	16:39	16:04	(8)	16:13	15:35	(7)			
17	05:25	21:17	(11)	06:17	20:35	(10)	07:13		08:08	16:37	16:03	(8)	16:14	15:35	(7)			
18	05:26	21:19	(11)	06:18		07:14	19:51		08:10	16:36	16:01	(8)	16:14	15:35	(7)			
19	05:28	21:21	(11)	06:20		07:16	19:49		08:12	16:34	15:30	(7)	16:14	15:35	(7)			
20	05:29	21:25	(11)	06:22		07:18	19:46		08:14	16:33	15:30	(7)	16:14	15:35	(7)			
21	05:30		06:24		07:20	19:44	19:39		08:16	16:31	15:31	(7)	16:15	15:36	(7)			
22	05:32		06:26		07:22	19:41	19:39		08:18	16:30	15:32	(7)	16:15	15:36	(7)			
23	05:34		06:27		07:23	19:36	19:36		08:20	16:29	15:32	(7)	16:15	15:37	(7)			
24	05:35	20:30	(10)	06:29	19:36	(9)	07:25		08:22	16:27	15:33	(7)	16:16	15:37	(7)			
25	05:37	20:27	(10)	06:31	19:45	(9)	07:27		08:24	16:26	15:33	(7)	16:17	15:37	(7)			
26	05:38	20:26	(10)	06:33	19:47	(9)	07:29		08:26	16:25	15:34	(7)	16:17	15:37	(7)			
27	05:40	20:25	(10)	06:35	19:50	(9)	07:31		08:28	16:24	15:34	(7)	16:18	15:39	(7)			
28	05:42	20:24	(10)	06:36	19:52	(9)	07:33		08:30	16:23	15:35	(7)	16:19	15:40	(7)			
29	05:43	20:23	(10)	06:38	19:55	(9)	07:34		08:32	16:22	15:36	(7)	16:19	15:41	(7)			
30	05:45	20:22	(10)	06:40	19:59	(9)	07:36		08:34	16:21	15:37	(7)	16:20	15:42	(7)			
31	05:47	20:22	(10)	06:42	20:00	(10)	07:38		08:36	16:20	15:38	(7)	16:21	15:43	(7)			
Potential sun hours	515		461		382		328		257		231							
Total, worst case	467		518		201		178		849		542							
Sun reduction	0.27		0.27		0.29		0.23		0.20		0.12							
Oper. time red.	1.00		1.00		1.00		1.00		1.00		1.00							
Wind dir. red.	0.62		0.61		0.59		0.60		0.61		0.63							
Total reduction	0.17		0.17		0.17		0.14		0.12		0.07							
Total, real	77		86		35		25		103		41							

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: BF - H58

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June	July	August	September	October	November	December	
1	08:58 16:24	15:16 (15) 15:44 (15)	08:27 17:16	07:29 18:13	07:12 20:12	06:02 21:09	05:11 22:00	05:07 22:15	05:48 21:39	06:44 20:31	07:38 19:16	08:33 17:04	15:01 (15) 16:19 32
2	08:58 16:25	15:16 (15) 15:45 (15)	08:25 17:18	07:26 18:15	07:10 20:14	06:00 21:11	05:10 22:01	05:08 22:15	05:50 21:37	06:45 20:28	07:40 19:14	08:35 17:02	15:01 (15) 16:18 32
3	08:58 16:26	15:17 (15) 15:46 (15)	08:24 17:20	07:24 18:17	07:07 20:16	05:58 21:13	05:10 22:02	05:09 22:14	05:52 21:35	06:47 20:26	07:42 19:11	08:37 17:00	15:01 (15) 16:17 32
4	08:58 16:27	15:17 (15) 15:46 (15)	08:22 17:22	07:21 18:19	07:05 20:18	05:56 21:14	05:10 22:04	05:10 22:14	05:53 21:33	06:49 20:24	07:44 19:09	08:38 16:58	15:02 (15) 16:17 32
5	08:57 16:28	15:17 (15) 15:47 (15)	08:20 17:24	07:19 18:21	07:02 20:20	05:54 21:16	05:08 22:05	05:11 22:13	05:55 21:31	06:51 20:21	07:45 19:06	08:39 16:56	15:02 (15) 16:16 31
6	08:57 16:30	15:17 (15) 15:48 (15)	08:18 17:26	07:17 18:23	07:00 20:22	05:52 21:18	05:07 22:06	05:11 22:12	05:57 21:29	06:53 20:19	07:47 19:04	08:41 16:54	15:03 (15) 16:16 31
7	08:57 16:31	15:17 (15) 15:48 (15)	08:16 17:28	07:14 18:24	06:58 20:24	05:50 21:20	05:06 22:07	05:12 22:12	05:59 21:27	06:54 20:16	07:49 19:01	08:42 16:53	15:03 (15) 16:15 31
8	08:56 16:33	15:17 (15) 15:48 (15)	08:14 17:30	07:12 18:26	06:55 20:26	05:48 21:22	05:06 22:08	05:13 22:11	06:00 21:25	06:56 20:14	07:51 18:59	08:45 16:51	15:05 (15) 16:15 29
9	08:55 16:34	15:18 (15) 15:50 (15)	08:12 17:32	07:09 18:28	06:53 20:27	05:46 21:24	05:05 22:09	05:15 22:10	06:02 21:23	06:58 20:11	07:53 18:56	08:45 16:49	15:05 (15) 16:14 29
10	08:55 16:36	15:18 (15) 15:50 (15)	08:10 17:34	07:07 18:30	06:50 20:29	05:44 21:25	05:05 22:09	05:16 22:09	06:04 21:21	07:00 20:09	07:55 18:54	08:46 16:47	15:05 (15) 16:14 29
11	08:54 16:37	15:19 (15) 15:51 (15)	08:08 17:36	07:05 18:32	06:48 20:31	05:42 21:27	05:04 22:10	05:17 22:08	06:06 21:19	07:02 20:06	07:57 18:51	08:47 16:45	15:07 (15) 16:14 28
12	08:53 16:39	15:19 (15) 15:51 (15)	08:06 17:38	07:02 18:34	06:45 20:33	05:40 21:29	05:04 22:11	05:18 22:07	06:07 21:17	07:03 20:04	07:59 18:49	08:48 16:44	15:07 (15) 16:13 28
13	08:52 16:40	15:19 (15) 15:52 (15)	08:04 17:40	07:00 18:36	06:43 20:35	05:38 21:31	05:03 22:12	05:19 22:06	06:09 21:15	07:05 20:01	08:00 18:47	08:49 16:42	15:08 (15) 16:13 27
14	08:51 16:42	15:19 (15) 15:52 (15)	08:02 17:42	06:57 18:38	06:41 20:37	05:37 21:32	05:03 22:12	05:21 22:05	06:11 21:13	07:07 19:59	08:02 18:44	08:50 16:40	15:08 (15) 16:13 27
15	08:51 16:44	15:19 (15) 15:52 (15)	08:00 17:44	06:55 18:40	06:38 20:39	05:35 21:34	05:03 22:13	05:22 22:04	06:13 21:10	07:09 19:56	08:04 18:42	08:51 16:39	15:09 (15) 16:13 26
16	08:50 16:45	15:20 (15) 15:52 (15)	07:58 17:46	06:52 18:42	06:36 20:41	05:33 21:36	05:03 22:14	05:23 22:03	06:15 21:08	07:11 19:54	08:06 18:40	08:52 16:37	15:10 (15) 16:13 25
17	08:48 16:47	15:20 (15) 15:53 (15)	07:56 17:49	06:50 18:44	06:33 20:43	05:32 21:37	05:03 22:14	05:25 22:02	06:16 21:06	07:12 19:51	08:08 18:37	08:53 16:36	15:10 (15) 16:14 29
18	08:47 16:49	15:21 (15) 15:53 (15)	07:54 17:51	06:47 18:46	06:31 20:44	05:30 21:39	05:03 22:15	05:26 22:01	06:18 21:04	07:14 19:49	08:10 18:35	08:54 16:34	15:11 (15) 16:14 30
19	08:46 16:51	15:21 (15) 15:53 (15)	07:51 17:53	06:45 18:48	06:29 20:46	05:28 21:41	05:03 22:15	05:27 21:59	06:20 21:01	07:16 19:46	08:12 18:33	08:55 16:33	15:11 (15) 16:14 31
20	08:45 16:53	15:22 (15) 15:53 (15)	07:49 17:55	06:42 18:50	06:26 20:48	05:27 21:42	05:03 22:15	05:29 21:58	06:22 20:59	07:18 19:44	08:14 18:30	08:55 16:31	15:11 (15) 16:14 31
21	08:44 16:54	15:22 (15) 15:53 (15)	07:47 17:57	06:40 18:51	06:24 20:50	05:25 21:44	05:03 22:16	05:30 21:57	06:24 20:57	07:20 19:41	08:16 18:28	08:56 16:30	15:12 (15) 16:15 31
22	08:42 16:56	15:23 (15) 15:53 (15)	07:45 17:59	06:37 18:53	06:22 20:52	05:24 21:46	05:03 22:16	05:32 21:55	06:25 20:55	07:21 19:39	08:18 18:26	08:57 16:29	15:12 (15) 16:15 31
23	08:41 16:58	15:23 (15) 15:53 (15)	07:42 18:01	06:35 18:55	06:20 20:54	05:22 21:47	05:03 22:16	05:33 21:54	06:27 20:52	07:23 19:36	08:20 18:24	08:57 16:27	15:13 (15) 16:16 31
24	08:40 17:00	15:23 (15) 15:53 (15)	07:40 18:03	06:32 18:57	06:17 20:56	05:21 21:49	05:04 22:16	05:35 21:52	06:29 20:50	07:25 19:34	08:22 18:21	08:57 16:26	15:13 (15) 16:16 31
25	08:38 17:02	15:25 (15) 15:52 (15)	07:38 18:05	06:30 18:59	06:15 20:58	05:20 21:50	05:04 22:16	05:36 21:51	06:31 20:48	07:27 19:31	08:23 18:19	08:58 16:25	15:13 (15) 16:17 30
26	08:37 17:04	15:26 (15) 15:52 (15)	07:36 18:07	06:27 19:01	06:13 20:59	05:18 21:52	05:04 22:16	05:38 21:49	06:33 20:45	07:29 19:28	08:25 18:17	08:58 16:24	15:14 (15) 16:18 29
27	08:35 17:06	15:28 (15) 15:52 (15)	07:33 18:09	06:25 19:03	06:11 21:01	05:17 21:53	05:05 22:16	05:40 21:47	06:35 20:43	07:31 19:26	08:27 18:15	08:58 16:23	15:14 (15) 16:18 27
28	08:34 17:08	15:29 (15) 15:50 (15)	07:31 18:11	06:22 19:05	06:08 21:03	05:16 21:55	05:05 22:16	05:41 21:46	06:36 20:40	07:32 19:23	08:29 18:13	08:58 16:22	15:15 (15) 16:19 25
29	08:32 17:10	15:31 (15) 15:49 (15)	07:20 20:07	06:06 21:05	06:05 21:56	05:15 22:16	05:06 21:44	05:43 20:38	07:34 19:21	07:34 18:11	08:30 18:00	08:59 16:21	15:15 (15) 16:20 26
30	08:31 17:12	15:33 (15) 15:47 (15)	07:17 20:09	06:04 21:07	06:04 21:57	05:14 22:15	05:07 21:42	05:45 20:36	06:40 19:18	07:36 18:08	08:32 18:00	08:59 16:20	15:16 (15) 16:21 27
31	08:29 17:14	15:37 (15) 15:44 (15)	07:15 20:10	06:03 21:09	06:02 21:59	05:12 22:15	05:06 21:40	05:46 20:33	06:42 19:18	07:35 18:06	08:33 18:00	08:59 16:22	15:16 (15) 16:22 28
Potential sun hours	248		272	367	421	496	513	515	461	383	327	257	230
Total, worst case		880											906
Sun reduction		0.17										0.20	0.12
Oper. time red.		1.00										1.00	1.00
Wind dir. red.		0.63										0.63	0.63
Total reduction		0.11										0.13	0.08
Total, real		94										69	68

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)



### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: BH - H60  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:58 16:24	08:27 17:16	07:29 18:13	07:13 20:12	06:02 21:09	05:12 22:00	05:08 22:15	05:48 21:38	06:44 20:31	07:38 19:16	07:37 17:05	08:33 16:19
2	08:58 16:25	08:25 17:18	07:26 18:15	07:10 20:14	06:00 21:11	05:11 22:01	05:09 22:14	05:50 21:37	06:46 20:28	07:40 19:14	07:39 17:03	08:35 16:19
3	08:58 16:26	08:24 17:20	07:24 18:17	07:08 20:16	05:58 21:12	05:10 22:02	05:09 22:14	05:52 21:35	06:47 20:26	07:42 19:11	07:41 17:01	08:36 16:18
4	08:58 16:28	08:22 17:22	07:22 18:19	07:05 20:18	05:56 21:14	05:09 22:03	05:10 22:13	05:54 21:33	06:49 20:24	07:44 19:09	07:43 16:59	08:38 16:17
5	08:57 16:29	08:20 17:24	07:19 18:21	07:03 20:20	05:54 21:16	05:08 22:04	05:11 22:13	05:55 21:31	06:51 20:21	07:45 19:06	07:45 16:57	08:39 16:17
6	08:57 16:30	08:18 17:26	07:17 18:23	07:00 20:22	05:52 21:18	05:08 22:05	05:12 22:12	05:57 21:29	06:53 20:19	07:47 19:04	07:47 16:55	08:41 16:16
7	08:56 16:32	08:16 17:28	07:14 18:25	06:58 20:24	05:50 21:20	05:07 22:06	05:13 22:11	05:59 21:27	06:55 20:16	07:49 19:01	07:49 16:53	08:42 16:15
8	08:56 16:33	08:14 17:30	07:12 18:27	06:55 20:26	05:48 21:22	05:06 22:07	05:14 22:11	06:01 21:25	06:56 20:14	07:51 18:59	07:51 16:51	08:43 16:15
9	08:55 16:34	08:12 17:32	07:09 18:29	06:53 20:27	05:46 21:23	05:06 22:08	05:15 22:10	06:02 21:23	06:58 20:11	07:53 18:57	07:53 16:49	08:45 16:15
10	08:54 16:36	08:10 17:34	07:07 18:30	06:50 20:29	05:44 21:25	05:05 22:09	05:16 22:09	06:04 21:21	07:00 20:09	07:55 18:54	07:55 16:47	08:46 16:14
11	08:54 16:38	08:08 17:37	07:05 18:32	06:48 20:31	05:42 21:27	05:05 22:10	05:17 22:08	06:06 21:19	07:02 20:06	07:57 18:52	07:57 16:46	08:47 16:14
12	08:53 16:39	08:06 17:39	07:02 18:34	06:46 20:33	05:41 21:29	05:04 22:11	05:19 22:07	06:08 21:17	07:04 20:04	07:59 18:49	07:59 16:44	08:48 16:14
13	08:52 16:41	08:04 17:41	07:00 18:36	06:43 20:35	05:39 21:30	05:04 22:12	05:20 22:06	06:10 21:15	07:05 20:01	08:00 18:47	08:01 16:42	08:49 16:14
14	08:51 16:42	08:02 17:43	06:57 18:38	06:41 20:37	05:37 21:32	05:04 22:12	05:21 22:05	06:11 21:12	07:07 19:59	08:02 18:45	08:03 16:41	08:50 16:14
15	08:50 16:44	08:00 17:45	06:55 18:40	06:38 20:39	05:35 21:34	05:03 22:13	05:22 22:04	06:13 21:10	07:09 19:56	08:04 18:42	08:05 16:39	08:51 16:14
16	08:49 16:46	07:58 17:47	06:52 18:42	06:36 20:41	05:34 21:36	05:03 22:13	05:24 22:03	06:15 21:08	07:11 19:54	08:06 18:40	08:07 16:37	08:52 16:14
17	08:48 16:48	07:56 17:49	06:50 18:44	06:34 20:42	05:32 21:37	05:03 22:14	05:25 22:02	06:17 21:06	07:13 19:51	08:08 18:37	08:09 16:36	08:53 16:14
18	08:47 16:49	07:54 17:51	06:47 18:46	06:31 20:44	05:30 21:39	05:03 22:14	05:26 22:00	06:19 21:04	07:14 19:49	08:10 18:35	08:10 16:34	08:54 16:14
19	08:46 16:51	07:51 17:53	06:45 18:48	06:29 20:46	05:29 21:41	05:03 22:15	05:28 21:59	06:20 21:01	07:16 19:46	08:12 18:33	08:12 16:33	08:54 16:14
20	08:45 16:53	07:49 17:55	06:42 18:50	06:27 20:48	05:27 21:42	05:03 22:15	05:29 21:58	06:22 20:59	07:18 19:44	08:14 18:31	08:14 16:32	08:55 16:15
21	08:44 16:55	07:47 17:57	06:40 18:52	06:24 20:50	05:26 21:44	05:03 22:15	05:31 21:56	06:24 20:57	07:20 19:41	08:16 18:28	08:16 16:30	08:56 16:15
22	08:42 16:57	07:45 17:59	06:37 18:53	06:22 20:52	05:24 21:45	05:04 22:15	05:32 21:55	06:26 20:55	07:22 19:39	08:18 18:26	08:18 16:29	08:56 16:16
23	08:41 16:58	07:42 18:01	06:35 18:55	06:20 20:54	05:23 21:47	05:04 22:16	05:34 21:53	06:28 20:52	07:23 19:36	08:20 18:24	08:20 16:28	08:57 16:16
24	08:40 17:00	07:40 18:03	06:32 18:57	06:18 20:56	05:21 21:49	05:04 22:16	05:35 21:52	06:29 20:50	07:25 19:34	08:22 18:22	08:21 16:26	08:57 16:17
25	08:38 17:02	07:38 18:05	06:30 18:59	06:15 20:58	05:20 21:50	05:04 22:16	05:37 21:50	06:31 20:48	07:27 19:31	07:24 17:19	08:23 16:25	08:57 16:17
26	08:37 17:04	07:36 18:07	06:27 19:01	06:13 20:59	05:19 21:52	05:05 22:16	05:39 21:49	06:33 20:45	07:29 19:29	07:25 17:17	08:25 16:24	08:58 16:18
27	08:35 17:06	07:33 18:09	06:25 19:03	06:11 21:01	05:17 21:53	05:05 22:16	05:40 21:47	06:35 20:43	07:31 19:26	07:27 17:15	08:27 16:23	08:58 16:19
28	08:34 17:08	07:31 18:11	06:22 19:05	06:09 21:03	05:16 21:54	05:06 22:15	05:42 21:45	06:37 20:40	07:33 19:24	07:29 17:13	08:28 16:22	08:58 16:20
29	08:32 17:10	07:29 18:07	06:20 19:01	06:07 21:05	05:15 21:56	05:06 22:15	05:43 21:44	06:38 20:38	07:34 19:21	07:31 17:11	08:30 16:21	08:58 16:21
30	08:30 17:12	07:27 18:09	06:17 19:04	06:04 21:07	05:14 21:57	05:07 22:15	05:45 21:42	06:40 20:36	07:36 19:19	07:33 17:09	08:32 16:20	08:58 16:22
31	08:29 17:14	07:25 18:10	06:15 19:05	06:03 21:07	05:13 21:58	05:07 22:15	05:47 21:40	06:42 20:33	07:35 17:07	07:35 16:23	08:58 16:23	08:58 16:23
Potential sun hours	248	272	367	421	496	513	515	461	382	328	257	231
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)





### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: BI - H61  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January	February	March	April	May	June	July	August	September	October	November	December				
1	08:58	08:27	15:57 (1)	07:29	07:12	06:02	05:12	05:08	05:48	06:44	07:38	07:37	08:33	15:29 (1)		
	16:24	17:16	20	16:17 (1)	18:13	20:12	21:09	22:00	22:15	21:39	20:31	19:16	16:19	14	15:43 (1)	
2	08:58	08:25	16:00 (1)	07:26	07:10	06:00	05:11	05:08	05:50	06:46	07:40	07:39	08:35	15:29 (1)		
	16:25	17:18	16	16:16 (1)	18:15	20:14	21:11	22:01	22:14	21:37	20:28	19:14	16:18	12	15:41 (1)	
3	08:58	15:47 (1)	08:24	16:03 (1)	07:24	07:08	05:58	05:10	05:09	05:52	06:47	07:42	07:41	08:36	15:31 (1)	
	16:26	15:48 (1)	17:20	16:14 (1)	18:17	20:16	21:12	22:02	22:14	21:35	20:26	19:11	17:00	16:18	10	15:41 (1)
4	08:58	15:47 (1)	08:22	16:03 (1)	07:21	07:05	05:56	05:09	05:10	05:53	06:49	07:44	07:43	08:38	15:32 (1)	
	16:27	15:49 (1)	17:22	16:14 (1)	18:19	20:18	21:14	22:03	22:13	21:33	20:24	19:09	16:58	16:17	8	15:40 (1)
5	08:57	15:47 (1)	08:20	16:03 (1)	07:19	07:03	05:54	05:08	05:11	05:55	06:51	07:45	07:45	08:39	15:32 (1)	
	16:29	15:50 (1)	17:24	16:14 (1)	18:21	20:20	21:16	22:04	22:13	21:31	20:21	19:06	16:57	16:16	7	15:39 (1)
6	08:57	15:47 (1)	08:18	16:03 (1)	07:17	07:00	05:52	05:07	05:12	05:57	06:53	07:47	07:47	08:41	15:33 (1)	
	16:30	15:52 (1)	17:26	16:14 (1)	18:23	20:22	21:18	22:06	22:12	21:29	20:19	19:04	16:55	16:16	6	15:39 (1)
7	08:56	15:47 (1)	08:16	16:03 (1)	07:14	06:58	05:50	05:07	05:13	05:59	06:55	07:49	07:49	08:42	15:34 (1)	
	16:31	15:54 (1)	17:28	16:14 (1)	18:25	20:24	21:20	22:07	22:12	21:27	20:16	19:01	16:53	16:15	4	15:38 (1)
8	08:56	15:47 (1)	08:14	16:03 (1)	07:12	06:55	05:48	05:06	05:14	06:00	06:56	07:51	07:51	08:43	15:35 (1)	
	16:33	15:55 (1)	17:30	16:14 (1)	18:27	20:26	21:22	22:08	22:11	21:25	20:14	18:59	16:51	12	15:32 (1)	
9	08:55	15:46 (1)	08:12	16:03 (1)	07:09	06:53	05:46	05:06	05:15	06:02	06:58	07:53	07:53	08:45	15:36 (1)	
	16:34	15:56 (1)	17:32	16:14 (1)	18:28	20:27	21:23	22:08	22:10	21:23	20:11	18:56	16:49	16	15:46 (1)	
10	08:55	15:47 (1)	08:10	16:03 (1)	07:07	06:50	05:44	05:05	05:16	06:04	07:00	07:55	07:55	08:46	15:37 (1)	
	16:36	15:59 (1)	17:34	16:14 (1)	18:30	20:29	21:25	22:09	22:09	21:21	20:09	18:54	16:47	20	15:49 (1)	
11	08:54	15:47 (1)	08:08	16:03 (1)	07:05	06:48	05:42	05:05	05:17	06:06	07:02	07:57	07:57	08:47	15:37 (1)	
	16:37	16:12 (1)	17:36	16:14 (1)	18:32	20:31	21:27	22:10	22:08	21:19	20:06	18:52	16:45	23	15:50 (1)	
12	08:53	15:47 (1)	08:06	16:03 (1)	07:02	06:46	05:40	05:04	05:18	06:08	07:04	07:59	07:59	08:48	15:38 (1)	
	16:39	16:02 (1)	17:38	16:14 (1)	18:34	20:33	21:29	22:11	22:07	21:17	20:04	18:49	16:44	25	15:51 (1)	
13	08:52	15:48 (1)	08:04	16:03 (1)	07:00	06:43	05:39	05:04	05:20	06:09	07:05	08:00	08:01	08:49	15:39 (1)	
	16:41	16:04 (1)	17:41	16:14 (1)	18:36	20:35	21:31	22:12	22:06	21:15	20:01	18:47	16:42	27	15:52 (1)	
14	08:51	15:47 (1)	08:02	16:03 (1)	06:57	06:41	05:37	05:03	05:21	06:11	07:07	08:02	08:03	08:50	15:40 (1)	
	16:42	16:05 (1)	17:43	16:14 (1)	18:38	20:37	21:32	22:12	22:05	21:12	19:59	18:44	16:40	27	15:25 (1)	
15	08:50	15:47 (1)	08:00	16:03 (1)	06:55	06:38	05:35	05:03	05:22	06:13	07:09	08:04	08:05	08:51	15:41 (1)	
	16:44	16:07 (1)	17:45	16:14 (1)	18:40	20:39	21:34	22:13	22:04	21:10	19:56	18:42	16:39	29	15:53 (1)	
16	08:49	15:47 (1)	07:58	16:03 (1)	06:52	06:36	05:33	05:03	05:23	06:15	07:11	08:06	08:07	08:52	15:42 (1)	
	16:46	16:10 (1)	17:47	16:14 (1)	18:42	20:41	21:36	22:13	22:03	21:08	19:54	18:40	16:37	30	15:54 (1)	
17	08:48	15:48 (1)	07:56	16:03 (1)	06:50	06:34	05:32	05:03	05:25	06:17	07:13	08:08	08:09	08:53	15:43 (1)	
	16:47	16:12 (1)	17:49	16:14 (1)	18:44	20:42	21:37	22:14	22:02	21:06	19:51	18:37	16:36	30	15:54 (1)	
18	08:47	15:48 (1)	07:54	16:03 (1)	06:47	06:31	05:30	05:03	05:26	06:18	07:14	08:10	08:11	08:54	15:44 (1)	
	16:49	16:14 (1)	17:51	16:14 (1)	18:46	20:44	21:39	22:14	22:00	21:04	19:49	18:35	16:34	32	15:56 (1)	
19	08:46	15:48 (1)	07:51	16:03 (1)	06:45	06:29	05:29	05:03	05:28	06:20	07:16	08:12	08:12	08:54	15:45 (1)	
	16:51	16:15 (1)	17:53	16:14 (1)	18:48	20:46	21:41	22:15	21:59	21:01	19:46	18:33	16:33	32	15:56 (1)	
20	08:45	15:49 (1)	07:49	16:03 (1)	06:42	06:27	05:27	05:03	05:29	06:22	07:18	08:14	08:14	08:55	15:46 (1)	
	16:53	16:18 (1)	17:55	16:14 (1)	18:50	20:48	21:42	22:15	21:58	20:59	19:44	18:30	16:31	32	15:56 (1)	
21	08:44	15:48 (1)	07:47	16:03 (1)	06:40	06:24	05:25	05:03	05:31	06:24	07:20	08:16	08:16	08:56	15:47 (1)	
	16:55	16:19 (1)	17:57	16:14 (1)	18:52	20:50	21:44	22:15	21:56	20:57	19:41	18:28	16:30	32	15:56 (1)	
22	08:42	15:49 (1)	07:45	16:03 (1)	06:37	06:22	05:24	05:03	05:32	06:26	07:22	08:18	08:18	08:56	15:48 (1)	
	16:56	16:21 (1)	17:59	16:14 (1)	18:53	20:52	21:46	22:16	21:55	20:55	19:39	18:26	16:29	29	15:54 (1)	
23	08:41	15:49 (1)	07:42	16:03 (1)	06:35	06:20	05:23	05:04	05:34	06:27	07:23	08:20	08:20	08:57	15:49 (1)	
	16:58	16:21 (1)	18:01	16:14 (1)	18:55	20:54	21:47	22:16	21:54	20:52	19:36	18:24	16:27	28	15:53 (1)	
24	08:40	15:50 (1)	07:40	16:03 (1)	06:32	06:17	05:21	05:04	05:35	06:29	07:25	08:22	08:22	08:57	15:50 (1)	
	17:00	16:22 (1)	18:03	16:14 (1)	18:57	20:56	21:49	22:16	21:52	20:50	19:34	18:21	16:26	26	15:51 (1)	
25	08:38	15:51 (1)	07:38	16:03 (1)	06:30	06:15	05:20	05:04	05:37	06:31	07:27	07:24	08:23	08:58	15:52 (1)	
	17:02	16:21 (1)	18:05	16:14 (1)	18:59	20:58	21:50	22:16	21:50	20:48	19:31	17:19	16:25	24	15:50 (1)	
26	08:37	15:51 (1)	07:36	16:03 (1)	06:27	06:13	05:19	05:05	05:38	06:33	07:29	07:26	08:25	08:58	15:52 (1)	
	17:04	16:21 (1)	18:07	16:14 (1)	19:01	20:59	21:52	22:16	21:49	20:45	19:29	17:17	16:24	23	15:49 (1)	
27	08:35	15:52 (1)	07:33	16:03 (1)	06:25	06:11	05:17	05:05	05:40	06:35	07:31	07:27	08:27	08:58	15:52 (1)	
	17:06	16:21 (1)	18:09	16:14 (1)	19:03	21:01	21:53	22:16	21:47	20:43	19:26	17:15	16:23	21	15:47 (1)	
28	08:34	15:53 (1)	07:31	16:03 (1)	06:22	06:09	05:16	05:06	05:42	06:36	07:32	07:29	08:28	08:58	15:52 (1)	
	17:08	16:21 (1)	18:11	16:14 (1)	19:05	21:03	21:54	22:16	21:46	20:40	19:24	17:13	16:22	18	15:45 (1)	
29	08:32	15:54 (1)		16:03 (1)	07:20	06:06	05:15	05:06	05:43	06:38	07:34	07:31	08:30	08:58	15:52 (1)	
	17:10	16:20 (1)		16:14 (1)	20:07	21:05	21:56	22:15	21:44	20:38	19:21	17:11	16:21	17	15:45 (1)	
30	08:30	15:55 (1)		16:03 (1)	07:17	06:04	05:14	05:07	05:45	06:40	07:36	07:33	08:32	08:58	15:52 (1)	
	17:12	16:19 (1)		16:14 (1)	20:09	21:07	21:57	22:15	21:42	20:36	19:19	17:09	16:20	15	15:44 (1)	
31	08:29	15:56 (1)		16:03 (1)	07:15	06:03	05:13	05:06	05:47	06:42	07:35	07:35	08:30	08:58	15:52 (1)	
	17:14	16:18 (1)		16:14 (1)	20:10	21:08	21:58	22:15	21:40	20:33	19:06	17:06	16:22	16:22	15:44 (1)	
Potential sun hours	248	272	367	421	496	513	515	461	382	257	568	231	65			
Total, worst case	576	47									568		65			
Sun reduction	0.17	0.22									0.20		0.12			
Oper. time red.	1.00	1.00									1.00		1.00			
Wind dir. red.	0.61	0.61									0.61		0.61			
Total reduction	0.10	0.14									0.12		0.07			
Total, real	60	6									70		5			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: BJ - H62  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January	February	March	April	May	June	July	August	September	October	November	December	
1	08:58 16:24	08:27 17:16	07:29 18:13	07:12 20:12	06:02 21:09	05:11 22:00	20:19 (16) 22:15	05:07 22:56 (16)	06:44 21:39	07:38 20:31	07:37 19:16	08:33 17:04	
2	08:58 16:25	08:25 17:18	07:26 18:15	07:10 20:14	06:00 21:11	05:11 22:01	20:19 (16) 22:14	05:08 20:57 (16)	06:45 21:37	07:40 20:28	07:39 19:14	08:35 17:02	
3	08:58 16:26	08:24 17:20	07:24 18:17	07:07 20:16	05:58 21:12	05:10 22:02	20:19 (16) 22:14	05:09 20:57 (16)	06:47 21:35	07:42 20:26	07:42 19:11	08:36 17:00	
4	08:58 16:27	08:22 17:22	07:21 18:19	07:05 20:18	05:56 21:14	05:09 22:03	20:19 (16) 22:13	05:10 20:57 (16)	06:49 21:33	07:43 20:23	07:43 19:09	08:38 16:17	
5	08:57 16:28	08:20 17:24	07:19 18:21	07:02 20:20	05:54 21:16	05:08 22:05	20:20 (16) 22:13	05:11 20:57 (16)	06:51 21:31	07:45 20:21	07:45 19:06	08:39 16:16	
6	08:57 16:30	08:18 17:26	07:17 18:23	07:00 20:22	05:52 21:18	05:07 22:06	20:20 (16) 22:12	05:12 20:57 (16)	06:53 21:29	07:47 20:19	07:47 19:04	08:41 16:16	
7	08:56 16:31	08:16 17:28	07:14 18:24	06:58 20:24	05:50 21:20	05:07 22:07	20:21 (16) 22:12	05:13 20:58 (16)	06:54 21:27	07:49 20:16	07:49 19:01	08:42 16:15	
8	08:56 16:33	08:14 17:30	07:12 18:26	06:55 20:25	05:48 21:22	05:06 22:08	20:21 (16) 22:11	05:14 20:58 (16)	06:56 21:25	07:51 20:14	07:51 18:59	08:43 16:15	
9	08:55 16:34	08:12 17:32	07:09 18:28	06:53 20:27	05:46 21:23	05:05 22:09	20:21 (16) 22:10	05:15 20:58 (16)	06:02 21:23	06:58 20:11	07:53 18:56	08:45 16:14	
10	08:55 16:36	08:10 17:34	07:07 18:30	06:50 20:29	05:44 21:25	05:05 22:09	20:21 (16) 22:09	05:16 20:58 (16)	07:00 21:21	07:55 20:09	07:55 18:54	08:46 16:14	
11	08:54 16:37	08:08 17:36	07:04 18:32	06:48 20:31	05:42 21:27	05:04 22:10	20:22 (16) 22:08	05:17 20:52 (16)	07:02 21:19	07:57 20:06	07:57 18:51	08:47 16:14	
12	08:53 16:39	08:06 17:38	07:02 18:34	06:45 20:33	05:40 21:29	05:04 22:11	20:22 (16) 22:07	05:18 20:59 (16)	07:03 21:17	07:58 20:04	07:59 18:49	08:48 16:14	
13	08:52 16:40	08:04 17:40	07:00 18:36	06:43 20:35	05:38 21:31	05:04 22:12	20:22 (16) 22:06	05:19 20:51 (16)	07:05 21:15	08:00 20:01	08:01 18:47	08:49 16:13	
14	08:51 16:42	08:02 17:42	06:57 18:38	06:41 20:37	05:37 21:32	05:03 22:12	20:22 (16) 22:05	05:21 20:52 (16)	07:07 21:12	08:02 19:59	08:03 18:44	08:50 16:13	
15	08:50 16:44	08:00 17:44	06:55 18:40	06:38 20:39	05:35 21:34	05:03 22:13	20:23 (16) 22:04	05:22 20:58 (16)	07:09 21:10	08:04 19:56	08:05 18:42	08:51 16:13	
16	08:49 16:45	07:58 17:46	06:52 18:42	06:36 20:41	05:33 21:36	05:03 22:14	20:23 (16) 22:03	05:23 20:52 (16)	07:11 21:08	08:06 19:54	08:07 18:40	08:52 16:13	
17	08:48 16:47	07:56 17:51	06:50 18:44	06:33 20:42	05:32 21:37	05:03 22:14	20:24 (16) 22:02	05:25 20:52 (16)	07:12 21:06	08:08 19:51	08:09 18:37	08:53 16:14	
18	08:47 16:49	07:54 17:51	06:47 18:46	06:31 20:44	05:30 21:39	05:03 22:14	20:24 (16) 22:01	05:26 20:53 (16)	07:14 21:04	08:10 19:49	08:11 18:35	08:54 16:14	
19	08:46 16:51	07:51 17:53	06:45 18:48	06:29 20:46	05:28 21:41	05:03 22:15	20:24 (16) 22:05	05:27 20:53 (16)	07:16 21:01	08:12 19:46	08:12 18:33	08:55 16:14	
20	08:45 16:53	07:49 17:55	06:42 18:50	06:26 20:48	05:27 21:42	05:03 22:15	20:24 (16) 22:03	05:29 20:53 (16)	07:18 20:59	08:14 19:44	08:14 18:30	08:55 16:14	
21	08:44 16:54	07:47 17:57	06:40 18:51	06:24 20:50	05:25 21:44	05:03 22:15	20:24 (16) 22:15	05:30 20:53 (16)	07:20 20:57	08:16 19:41	08:16 18:28	08:56 16:15	
22	08:42 16:56	07:45 17:59	06:37 18:53	06:22 20:52	05:24 21:46	05:03 22:16	20:25 (16) 22:16	05:32 21:55	07:21 20:58 (16)	08:18 19:39	08:18 18:26	08:56 16:15	
23	08:41 16:58	07:42 18:01	06:35 18:55	06:20 20:54	05:22 21:47	05:03 22:16	20:25 (16) 22:16	05:33 21:54	07:23 20:52	08:20 19:36	08:20 18:24	08:57 16:16	
24	08:40 17:00	07:40 18:03	06:32 18:57	06:17 20:56	05:21 21:49	05:04 22:16	20:25 (16) 22:16	05:35 21:52	07:25 20:58 (16)	08:22 19:33	08:22 18:21	08:57 16:16	
25	08:38 17:02	07:38 18:05	06:30 18:59	06:15 20:58	05:20 21:50	05:04 22:16	20:26 (16) 22:16	05:37 21:50	07:27 20:50	08:23 19:33	08:23 18:21	08:58 16:17	
26	08:37 17:04	07:36 18:07	06:27 19:01	06:13 20:59	05:18 21:52	05:04 22:16	20:26 (16) 22:16	05:38 21:49	07:29 20:48	08:25 19:31	08:25 17:19	08:58 16:17	
27	08:35 17:06	07:33 18:09	06:25 19:03	06:11 21:01	05:17 21:53	05:05 22:16	20:26 (16) 22:16	05:40 21:47	07:31 20:43	08:27 19:26	08:27 17:15	08:58 16:19	
28	08:34 17:08	07:31 18:11	06:22 19:05	06:08 21:03	05:16 21:55	05:05 22:16	20:26 (16) 22:16	05:41 21:46	07:32 20:40	08:28 19:23	08:28 17:13	08:58 16:19	
29	08:32 17:10	07:20 18:07	06:06 19:05	05:15 21:05	05:15 21:56	05:06 22:15	20:26 (16) 22:15	05:43 21:44	07:34 20:38	08:30 19:21	08:30 17:11	08:58 16:20	
30	08:30 17:12	07:17 18:08	06:04 21:07	05:14 21:57	05:14 21:57	05:07 22:15	20:26 (16) 22:15	05:45 21:42	07:36 20:36	08:32 19:18	08:32 17:08	08:58 16:21	
31	08:29 17:14	07:15 18:10	06:04 20:10	05:12 21:59	05:12 21:59	05:07 22:15	20:26 (16) 22:15	05:46 21:40	07:35 20:33	08:33 19:06	08:33 17:06	08:58 16:22	
Potential sun hours	248	272	367	421	496	513	894	869	461	383	327	257	230
Total, worst case					508		894	869					
Sun reduction					0.36		0.26	0.27					
Oper. time red.					1.00		1.00	1.00					
Wind dir. red.					0.62		0.62	0.62					
Total reduction					0.23		0.16	0.17					
Total, real					114		144	144					

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: BK - H63  
 Assumptions for shadow calculations Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January	February	March	April	May	June	July	August	September	October	November	December		
1	08:58 16:24	15:17 (1) 15:45 (1)	08:27 17:16	07:29 18:13	07:12 20:12	06:02 21:09	05:12 22:00	05:08 22:15	05:48 21:39	06:44 20:31	07:37 19:16	07:37 17:04	08:33 16:19	15:06 (1) 15:35 (1)
2	08:58 16:25	15:18 (1) 15:47 (1)	08:25 17:18	07:26 18:15	07:10 20:14	06:00 21:11	05:11 22:01	05:08 22:14	05:50 21:37	06:46 20:28	07:40 19:14	07:39 17:02	08:35 16:18	15:05 (1) 15:35 (1)
3	08:58 16:26	15:18 (1) 15:48 (1)	08:24 17:20	07:24 18:17	07:08 20:16	05:58 21:12	05:10 22:02	05:09 22:14	05:52 21:35	06:47 20:26	07:42 19:11	07:41 17:00	08:36 16:18	15:05 (1) 15:36 (1)
4	08:58 16:27	15:19 (1) 15:49 (1)	08:22 17:22	07:22 18:19	07:05 20:18	05:56 21:14	05:10 22:03	05:10 22:13	05:53 21:33	06:49 20:24	07:44 19:09	07:43 16:58	08:38 16:17	15:06 (1) 15:37 (1)
5	08:57 16:29	15:19 (1) 15:50 (1)	08:20 17:24	07:19 18:21	07:03 20:20	05:54 21:16	05:08 22:04	05:11 22:13	05:55 21:31	06:51 20:21	07:45 19:06	07:45 16:57	08:39 16:16	15:06 (1) 15:37 (1)
6	08:57 16:30	15:20 (1) 15:52 (1)	08:18 17:26	07:17 18:23	07:00 20:22	05:52 21:18	05:07 22:06	05:12 22:12	05:57 21:29	06:53 20:19	07:47 19:04	07:47 16:55	08:41 16:16	15:06 (1) 15:38 (1)
7	08:56 16:31	15:21 (1) 15:52 (1)	08:16 17:28	07:14 18:25	06:58 20:24	05:50 21:20	05:07 22:07	05:13 22:12	05:59 21:27	06:55 20:16	07:49 19:01	07:49 16:53	08:42 16:15	15:06 (1) 15:38 (1)
8	08:56 16:33	15:21 (1) 15:52 (1)	08:14 17:30	07:12 18:27	06:55 20:26	05:48 21:22	05:06 22:08	05:14 22:11	06:00 21:25	06:56 20:14	07:51 18:59	07:51 16:51	08:43 16:15	15:07 (1) 15:38 (1)
9	08:55 16:34	15:22 (1) 15:52 (1)	08:12 17:32	07:09 18:28	06:53 20:27	05:46 21:23	05:06 22:08	05:15 22:10	06:02 21:23	06:58 20:11	07:53 18:56	07:53 16:49	08:45 16:15	15:07 (1) 15:37 (1)
10	08:55 16:36	15:23 (1) 15:53 (1)	08:10 17:34	07:07 18:30	06:50 20:29	05:44 21:25	05:05 22:09	05:16 22:09	06:04 21:21	07:00 20:09	07:55 18:54	07:55 16:47	08:46 16:14	15:07 (1) 15:36 (1)
11	08:54 16:37	15:23 (1) 15:53 (1)	08:08 17:36	07:05 18:32	06:48 20:31	05:42 21:27	05:05 22:10	05:17 22:08	06:06 21:19	07:02 20:06	07:57 18:52	07:57 16:45	08:47 16:14	15:07 (1) 15:35 (1)
12	08:53 16:39	15:24 (1) 15:53 (1)	08:06 17:38	07:02 18:34	06:46 20:33	05:40 21:29	05:04 22:11	05:18 22:07	06:08 21:17	07:04 20:04	07:59 18:49	07:59 16:44	08:48 16:14	15:09 (1) 15:36 (1)
13	08:52 16:41	15:25 (1) 15:53 (1)	08:04 17:41	07:00 18:36	06:43 20:35	05:39 21:31	05:04 22:12	05:20 22:06	06:09 21:15	07:05 20:01	08:00 18:47	08:01 16:42	08:49 16:14	15:09 (1) 15:36 (1)
14	08:51 16:42	15:25 (1) 15:52 (1)	08:02 17:43	06:57 18:38	06:41 20:37	05:37 21:32	05:03 22:12	05:21 22:05	06:11 21:12	07:07 19:59	08:02 18:44	08:03 16:40	08:50 16:14	15:09 (1) 15:35 (1)
15	08:50 16:44	15:26 (1) 15:52 (1)	08:00 17:45	06:55 18:40	06:38 20:39	05:35 21:34	05:03 22:13	05:22 22:04	06:13 21:10	07:09 19:56	08:04 18:42	08:05 16:39	08:51 16:14	15:30 (1) 15:35 (1)
16	08:49 16:46	15:27 (1) 15:52 (1)	07:58 17:47	06:52 18:42	06:36 20:41	05:33 21:36	05:03 22:13	05:23 22:03	06:15 21:08	07:11 19:54	08:06 18:40	08:07 16:37	08:52 16:14	15:30 (1) 15:35 (1)
17	08:48 16:47	15:28 (1) 15:52 (1)	07:56 17:49	06:50 18:44	06:34 20:42	05:32 21:37	05:03 22:14	05:25 22:02	06:17 21:06	07:13 19:51	08:08 19:12 (5)	08:09 18:37	08:53 16:14	15:30 (1) 15:35 (1)
18	08:47 16:49	15:30 (1) 15:52 (1)	07:54 17:51	06:47 18:46	06:31 20:44	05:30 21:39	05:03 22:14	05:26 22:00	06:18 21:04	07:14 19:49	08:10 19:15 (5)	08:11 18:35	08:54 16:14	15:11 (1) 15:35 (1)
19	08:46 16:51	15:31 (1) 15:51 (1)	07:51 17:53	06:45 18:48	06:29 20:46	05:29 21:41	05:03 22:15	05:28 21:59	06:20 21:01	07:16 19:46	08:12 19:16 (5)	08:12 18:33	08:54 16:14	15:12 (1) 15:36 (1)
20	08:45 16:53	15:33 (1) 15:50 (1)	07:49 17:55	06:42 18:50	06:27 20:48	05:27 21:42	05:03 22:15	05:29 21:58	06:22 20:59	07:18 19:44	08:14 19:16 (5)	08:14 18:30	08:55 16:15	15:12 (1) 15:36 (1)
21	08:44 16:55	15:34 (1) 15:49 (1)	07:47 17:57	06:40 18:52	06:24 20:50	05:25 21:44	05:03 22:15	05:31 21:56	06:24 20:57	07:20 19:41	08:16 19:12 (5)	08:16 18:28	08:56 16:15	15:12 (1) 15:36 (1)
22	08:42 16:56	15:38 (1) 15:47 (1)	07:45 17:59	06:37 18:53	06:22 20:52	05:24 21:46	05:03 22:16	05:36 21:55	06:26 20:55	07:22 19:39	08:18 19:10 (5)	08:18 18:26	08:58 16:15	15:13 (1) 15:37 (1)
23	08:41 16:58	15:41 (1) 15:52 (1)	07:42 17:58	06:35 18:54	06:20 20:54	05:23 21:47	05:04 22:16	05:34 21:54	06:27 20:52	07:23 19:36	08:20 19:08 (5)	08:20 18:24	08:57 16:16	15:13 (1) 15:37 (1)
24	08:40 17:00	15:42 (1) 15:53 (1)	07:40 18:03	06:32 18:57	06:17 20:54	05:21 21:49	05:04 22:16	05:35 21:52	06:29 20:50	07:25 19:34	08:22 19:05 (5)	08:22 18:21	08:57 16:17	15:13 (1) 15:37 (1)
25	08:38 17:02	15:43 (1) 15:54 (1)	07:38 18:03	06:30 18:59	06:15 20:58	05:20 21:50	05:04 22:16	05:37 21:50	06:31 20:48	07:27 19:31	08:23 19:01 (5)	08:23 18:24	08:58 16:17	15:15 (1) 15:39 (1)
26	08:37 17:04	15:44 (1) 15:55 (1)	07:36 18:05	06:27 18:59	06:13 20:58	05:19 21:50	05:05 22:16	05:38 21:49	06:33 20:45	07:29 19:29	08:25 19:03 (5)	08:25 18:25	08:58 16:18	15:15 (1) 15:39 (1)
27	08:35 17:06	15:45 (1) 15:56 (1)	07:33 18:09	06:25 19:03	06:11 21:01	05:17 21:53	05:05 22:16	05:40 21:47	06:35 20:43	07:31 19:26	08:27 19:15	08:27 18:23	08:58 16:19	15:15 (1) 15:40 (1)
28	08:34 17:08	15:46 (1) 15:57 (1)	07:31 18:11	06:22 19:05	06:09 21:03	05:16 21:54	05:06 22:16	05:47 21:46	06:36 20:40	07:33 19:24	08:28 19:13	08:28 18:22	08:58 16:20	15:16 (1) 15:41 (1)
29	08:32 17:10	15:47 (1) 15:58 (1)	07:29 18:07	06:20 19:02	06:06 21:05	05:15 21:56	05:06 22:15	05:43 21:44	06:38 20:38	07:34 19:21	08:30 19:11	08:30 18:21	08:58 16:20	15:16 (1) 15:42 (1)
30	08:30 17:12	15:48 (1) 15:59 (1)	07:17 18:09	06:19 19:01	06:04 21:07	05:14 21:57	05:07 22:15	05:45 21:42	06:40 20:36	07:36 19:19	08:32 19:09	08:32 18:20	08:58 16:21	15:17 (1) 15:43 (1)
31	08:29 17:14	15:49 (1) 15:59 (1)	07:15 18:05	06:17 19:00	06:03 21:05	05:13 21:59	05:07 22:16	05:47 21:40	06:42 20:33	07:35 19:06	08:33 19:03 (5)	08:33 18:25	08:58 16:22	15:17 (1) 15:44 (1)
Potential sun hours	248	272	367	421	496	513	515	461	382	328	257	231	834	
Total, worst case	575	82							80		242		834	
Sun reduction	0.17	0.22							0.29		0.20		0.12	
Oper. time red.	1.00	1.00							1.00		1.00		1.00	
Wind dir. red.	0.63	0.58							0.58		0.63		0.63	
Total reduction	0.11	0.13							0.17		0.13		0.08	
Total, real	61	11							14		30		63	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: BL - H64  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:58 16:24	08:27 17:16	07:29 18:13	07:12 20:12	06:02 21:09	05:11 22:00	05:07 22:15	21:01 (16) 21:39	05:48 20:31	06:44 19:16	07:38 17:04	07:37 16:19
2	08:58 16:25	08:25 17:18	07:26 18:15	07:10 20:14	06:00 21:11	05:11 22:01	05:08 22:14	18 21:19 (16)	21:02 (16) 21:37	05:50 20:28	07:40 19:14	07:39 17:02
3	08:58 16:26	08:24 17:20	07:24 18:17	07:07 20:16	05:58 21:12	05:10 22:02	05:09 22:14	17 21:19 (16)	21:03 (16) 21:35	05:52 20:26	06:47 19:11	07:42 17:00
4	08:58 16:27	08:22 17:22	07:21 18:19	07:05 20:18	05:56 21:14	05:09 22:03	05:10 22:13	15 21:18 (16)	21:03 (16) 21:33	05:53 20:23	06:49 19:09	07:43 16:58
5	08:57 16:28	08:20 17:24	07:19 18:21	07:02 20:20	05:54 21:16	05:08 22:05	05:11 22:13	14 21:17 (16)	21:05 (16) 21:31	05:55 20:21	06:51 19:06	07:45 16:56
6	08:57 16:30	08:18 17:26	07:17 18:23	07:00 20:22	05:52 21:18	05:07 22:06	05:12 22:12	12 21:06 (16)	21:06 (16) 21:29	05:57 20:19	06:53 19:04	07:47 16:54
7	08:56 16:31	08:16 17:28	07:14 18:24	06:58 20:24	05:50 21:20	05:07 22:07	05:13 22:12	10 21:11 (16)	21:08 (16) 21:27	05:59 20:16	07:49 19:01	07:49 16:53
8	08:56 16:33	08:14 17:30	08:14 18:26	07:12 20:25	06:55 21:22	05:48 22:08	05:14 22:11	6 21:14 (16)	21:14 (16) 21:25	06:00 20:14	06:56 18:59	07:51 16:51
9	08:55 16:34	08:12 17:32	07:09 18:28	06:53 20:27	05:46 21:23	05:05 22:09	05:15 22:10	13 21:13 (16)	20:58 (16) 21:23	06:02 20:11	06:58 18:56	07:53 16:49
10	08:55 16:36	08:10 17:34	07:07 18:30	06:50 20:29	05:44 21:25	05:05 22:09	05:16 22:09	15 21:13 (16)	20:57 (16) 21:21	06:04 20:09	07:00 18:54	07:55 16:47
11	08:54 16:37	08:08 17:36	07:04 18:32	06:48 20:31	05:42 21:27	05:04 22:10	05:17 22:08	16 21:14 (16)	20:58 (16) 21:19	06:06 20:06	07:02 18:51	07:57 16:45
12	08:53 16:39	08:06 17:38	07:02 18:34	06:45 20:33	05:40 21:29	05:04 22:11	05:18 22:07	17 21:15 (16)	20:57 (16) 21:17	06:07 20:04	07:03 18:49	07:58 16:44
13	08:52 16:40	08:04 17:40	07:00 18:36	06:43 20:35	05:38 21:31	05:04 22:12	05:19 22:06	18 20:56 (16)	20:56 (16) 21:15	06:09 20:01	07:05 18:47	08:00 16:42
14	08:51 16:42	08:02 17:42	06:57 18:38	06:41 20:37	05:37 21:32	05:03 22:12	05:21 22:05	19 21:16 (16)	20:56 (16) 21:12	06:11 19:59	07:07 18:44	08:02 16:40
15	08:50 16:44	08:00 17:44	06:55 18:40	06:38 20:39	05:35 21:34	05:03 22:13	05:22 22:04	20 21:16 (16)	20:56 (16) 21:10	06:13 19:56	07:09 18:42	08:04 16:39
16	08:49 16:45	07:58 17:46	06:52 18:42	06:36 20:41	05:33 21:36	05:03 22:14	05:23 22:03	20 21:17 (16)	20:56 (16) 21:08	06:15 19:54	07:11 18:40	08:06 16:37
17	08:48 16:47	07:56 17:49	06:50 18:44	06:33 20:42	05:32 21:37	05:03 22:14	05:25 22:02	21 21:17 (16)	20:57 (16) 21:06	06:16 19:51	07:12 18:37	08:08 16:36
18	08:47 16:49	07:54 17:51	06:47 18:46	06:31 20:44	05:30 21:39	05:03 22:14	05:26 22:01	20 21:18 (16)	20:57 (16) 21:04	06:18 19:49	07:14 18:35	08:10 16:34
19	08:46 16:51	07:51 17:53	06:45 18:48	06:29 20:46	05:28 21:41	05:03 22:15	05:27 21:59	21 21:18 (16)	20:57 (16) 21:01	06:20 19:46	07:16 18:33	08:12 16:33
20	08:45 16:53	07:49 17:55	06:42 18:50	06:26 20:48	05:27 21:42	05:03 22:15	05:29 21:58	21 21:18 (16)	20:57 (16) 20:59	06:22 19:44	07:18 18:30	08:14 16:31
21	08:44 16:54	07:47 17:57	06:40 18:51	06:24 20:50	05:25 21:44	05:03 22:15	05:30 21:56	21 21:18 (16)	20:57 (16) 20:57	06:24 19:41	07:20 18:28	08:16 16:30
22	08:42 16:56	07:45 17:59	06:37 18:53	06:22 20:52	05:24 21:46	05:03 22:16	05:32 21:55	22 21:19 (16)	20:58 (16) 20:55	06:25 19:39	07:21 18:26	08:18 16:29
23	08:41 16:58	07:42 18:01	06:35 18:55	06:20 20:54	05:22 21:47	05:03 22:16	05:33 21:54	21 21:19 (16)	20:58 (16) 20:52	06:27 19:36	07:23 18:24	08:20 16:27
24	08:40 17:00	07:40 18:03	06:32 18:57	06:17 20:56	05:21 21:49	05:04 22:16	05:35 21:52	21 21:19 (16)	20:58 (16) 20:50	06:29 19:33	07:25 18:21	08:22 16:26
25	08:38 17:02	07:38 18:05	06:30 18:59	06:15 20:58	05:20 21:50	05:04 22:16	05:37 21:50	20 21:19 (16)	20:59 (16) 20:48	06:31 19:31	07:27 17:19	08:23 16:25
26	08:37 17:04	07:36 18:07	06:27 19:01	06:13 20:59	05:18 21:52	05:04 22:16	05:38 21:49	20 21:19 (16)	20:59 (16) 20:45	06:33 19:28	07:29 17:17	08:25 16:24
27	08:35 17:06	07:33 18:09	06:25 19:03	06:11 21:01	05:17 21:53	05:05 22:16	05:40 21:47	21 21:20 (16)	20:59 (16) 20:43	06:35 19:26	07:31 17:15	08:27 16:23
28	08:34 17:08	07:31 18:11	06:22 19:05	06:08 21:03	05:16 21:55	05:05 22:16	05:41 21:46	20 21:19 (16)	20:59 (16) 20:40	06:36 19:23	07:32 17:13	08:28 16:22
29	08:32 17:10	07:20 18:07	06:06 20:07	05:06 21:05	05:15 21:56	05:06 22:15	05:43 21:44	19 21:19 (16)	21:00 (16) 20:38	06:38 19:21	07:34 17:11	08:30 16:21
30	08:30 17:12	07:17 18:08	06:04 20:08	05:14 21:07	05:14 21:57	05:07 22:15	05:45 21:42	20 21:19 (16)	21:00 (16) 20:36	06:40 19:18	07:36 17:08	08:32 16:20
31	08:29 17:14	07:15 18:10	06:05 20:10	05:13 21:59	05:13 21:59	05:13 21:59	05:46 21:40	19 21:19 (16)	20:36 20:33	06:42 20:33	07:35 17:06	08:58 16:22
Potential sun hours	248	272	367	421	496	513	515	461	383	328	257	231
Total, worst case							468					
Sun reduction							0.26					
Oper. time red.							1.00					
Wind dir. red.							0.63					
Total reduction							0.16					
Total, real							76					

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)



### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: BM - H65  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:58	08:27	07:29	07:13	06:02	05:12	05:08	05:49	06:44	07:38	07:37	08:33
	16:24	17:16	18:13	20:12	21:09	22:00	22:15	21:39	20:31	19:16	17:05	16:19
2	08:58	08:25	07:26	07:10	06:00	05:11	05:09	05:50	06:46	07:40	07:39	08:35
	16:25	17:18	18:15	20:14	21:11	22:01	22:14	21:37	20:28	19:14	17:03	16:19
3	08:58	08:24	07:24	07:08	05:58	05:10	05:09	05:52	06:47	07:42	07:41	08:36
	16:26	17:20	18:17	20:16	21:12	22:02	22:14	21:35	20:26	19:11	17:01	16:18
4	08:58	08:22	07:22	07:05	05:56	05:09	05:10	05:54	06:49	07:44	07:43	08:38
	16:28	17:22	18:19	20:18	21:14	22:03	22:13	21:33	20:24	19:09	16:59	16:17
5	08:57	08:20	07:19	07:03	05:54	05:08	05:11	05:55	06:51	07:45	07:45	08:39
	16:29	17:24	18:21	20:20	21:16	22:04	22:13	21:31	20:21	19:06	16:57	16:17
6	08:57	08:18	07:17	07:00	05:52	05:08	05:12	05:57	06:53	07:47	07:47	08:41
	16:30	17:26	18:23	20:22	21:18	22:05	22:12	21:29	20:19	19:04	16:55	16:16
7	08:56	08:16	07:14	06:58	05:50	05:07	05:13	05:59	06:55	07:49	07:49	08:42
	16:32	17:28	18:25	20:24	21:20	22:06	22:11	21:27	20:16	19:01	16:53	16:16
8	08:56	08:14	07:12	06:55	05:48	05:06	05:14	06:01	06:56	07:51	07:51	08:43
	16:33	17:30	18:27	20:26	21:22	22:07	22:11	21:25	20:14	18:59	16:51	16:15
9	08:55	08:12	07:10	06:53	05:46	05:06	05:15	06:02	06:58	07:53	07:53	08:45
	16:35	17:32	18:29	20:27	21:23	22:08	22:10	21:23	20:11	18:57	16:49	16:15
10	08:55	08:10	07:07	06:51	05:44	05:05	05:16	06:04	07:00	07:55	07:55	08:46
	16:36	17:35	18:31	20:29	21:25	22:09	22:09	21:21	20:09	18:54	16:47	16:14
11	08:54	08:08	07:05	06:48	05:43	05:05	05:17	06:06	07:02	07:57	07:57	08:47
	16:38	17:37	18:32	20:31	21:27	22:10	22:08	21:19	20:06	18:52	16:46	16:14
12	08:53	08:06	07:02	06:46	05:41	05:04	05:19	06:08	07:04	07:59	07:59	08:48
	16:39	17:39	18:34	20:33	21:29	22:11	22:07	21:17	20:04	18:49	16:44	16:14
13	08:52	08:04	07:00	06:43	05:39	05:04	05:20	06:10	07:05	08:00	08:01	08:49
	16:41	17:41	18:36	20:35	21:30	22:12	22:06	21:15	20:01	18:47	16:42	16:14
14	08:51	08:02	06:41	06:37	05:37	05:04	05:21	06:11	07:07	08:02	08:03	08:50
	16:42	17:43	18:38	20:37	21:32	22:12	22:05	21:12	19:59	18:45	16:41	16:14
15	08:50	08:00	06:55	06:39	05:35	05:04	05:22	06:13	07:09	08:04	08:05	08:51
	16:44	17:45	18:40	20:39	21:34	22:13	22:04	21:10	19:56	18:42	16:39	16:14
16	08:49	07:58	06:52	06:36	05:34	05:03	05:24	06:15	07:11	08:06	08:07	08:52
	16:46	17:47	18:42	20:41	21:36	22:13	22:03	21:08	19:54	18:40	16:37	16:14
17	08:48	07:56	06:50	06:34	05:32	05:03	05:25	06:17	07:13	08:08	08:09	08:53
	16:48	17:49	18:44	20:43	21:37	22:14	22:02	21:06	19:51	18:38	16:36	16:14
18	08:47	07:54	06:47	06:31	05:30	05:03	05:26	06:19	07:14	08:10	08:11	08:54
	16:49	17:51	18:46	20:44	21:39	22:14	22:00	21:04	19:49	18:35	16:34	16:14
19	08:46	07:51	06:45	06:29	05:29	05:03	05:28	06:20	07:16	08:12	08:12	08:54
	16:51	17:53	18:48	20:46	21:41	22:15	21:59	21:01	19:46	18:33	16:33	16:15
20	08:45	07:49	06:42	06:27	05:27	05:03	05:29	06:22	07:18	08:14	08:14	08:55
	16:53	17:55	18:50	20:48	21:42	22:15	21:58	20:59	19:44	18:31	16:32	16:15
21	08:44	07:47	06:40	06:24	05:26	05:03	05:31	06:24	07:20	08:16	08:16	08:56
	16:55	17:57	18:52	20:50	21:44	22:15	21:56	20:57	19:41	18:28	16:30	16:15
22	08:42	07:45	06:37	06:22	05:24	05:04	05:32	06:26	07:22	08:18	08:18	08:56
	16:57	17:59	18:53	20:52	21:45	22:15	21:55	20:55	19:39	18:26	16:29	16:16
23	08:41	07:43	06:35	06:20	05:23	05:04	05:34	06:28	07:23	08:20	08:20	08:57
	16:59	18:01	18:55	20:54	21:47	22:16	21:53	20:52	19:36	18:24	16:28	16:16
24	08:40	07:40	06:32	06:18	05:21	05:04	05:35	06:29	07:25	08:22	08:22	08:57
	17:00	18:03	18:57	20:56	21:49	22:16	21:52	20:50	19:34	18:22	16:26	16:17
25	08:38	07:38	06:30	06:15	05:20	05:04	05:37	06:31	07:27	08:24	08:23	08:57
	17:02	18:05	18:59	20:58	21:50	22:16	21:50	20:48	19:31	17:19	16:25	16:18
26	08:37	07:36	06:27	06:13	05:19	05:05	05:39	06:33	07:29	08:26	08:25	08:58
	17:04	18:07	19:01	20:59	21:52	22:16	21:49	20:45	19:29	17:17	16:24	16:18
27	08:35	07:33	06:25	06:11	05:18	05:05	05:40	06:35	07:31	08:28	08:27	08:58
	17:06	18:09	19:03	21:01	21:53	22:16	21:47	20:43	19:26	17:15	16:23	16:19
28	08:34	07:31	06:23	06:09	05:16	05:06	05:42	06:37	07:33	08:29	08:28	08:58
	17:08	18:11	19:05	21:03	21:54	22:15	21:46	20:41	19:24	17:13	16:22	16:20
29	08:32		07:20	06:07	05:15	05:06	05:43	06:38	07:34	08:31	08:30	08:58
	17:10		20:07	21:05	21:56	22:15	21:44	20:38	19:21	17:11	16:21	16:21
30	08:30		07:18	06:05	05:14	05:07	05:45	06:40	07:36	08:33	08:32	08:58
	17:12		20:09	21:07	21:57	22:15	21:42	20:36	19:19	17:09	16:20	16:22
31	08:29		07:15		05:13		05:47	06:42		07:35		08:58
	17:14		20:10		21:58		21:40	20:33		17:07		16:23
Potential sun hours	248	272	367	421	496	513	515	461	382	328	257	231
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: BN - H66  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January	February	March	April	May	June										
1	08:58 16:24	08:27 17:16	16:09 (7) 18:13	07:29 18:13	16:52 (8) 20:12	07:12 20:12	06:02 21:09									21:16 (11)
2	08:58 16:25	08:25 17:18	16:09 (7) 18:15	07:26 18:15	16:52 (8) 20:14	07:10 20:14	06:00 21:11									21:15 (11)
3	08:58 16:26	08:24 17:20	16:09 (7) 18:17	07:24 18:17	16:54 (8) 20:16	07:07 20:16	05:58 21:12									21:15 (11)
4	08:58 16:27	08:22 17:22	16:09 (7) 18:19	07:21 18:19	16:56 (8) 20:18	07:05 20:18	05:56 21:14		8	20:34 (10)						21:15 (11)
5	08:57 16:29	08:20 17:24	16:09 (7) 18:21	07:19 18:21	17:00 (8) 20:20	07:03 20:20	05:54 21:16		12	20:33 (10)						21:15 (11)
6	08:57 16:30	08:18 17:26	16:10 (7) 18:23	07:17 18:23	17:06 (8) 20:22	07:00 20:22	05:52 21:18		16	20:31 (10)						21:14 (11)
7	08:56 16:31	08:16 17:28	16:11 (7) 18:25	07:14 18:25	16:11 (7) 20:24	07:14 20:24	05:50 21:20		18	20:47 (10)						21:30 (11)
8	08:56 16:33	08:14 17:30	16:11 (7) 18:26	07:12 18:26	16:11 (7) 20:26	07:12 20:26	05:48 21:22		19	20:48 (10)						21:15 (11)
9	08:55 16:34	08:12 17:32	16:12 (7) 18:28	07:09 18:28	16:12 (7) 20:27	07:09 20:27	05:46 21:23		21	20:28 (10)						21:15 (11)
10	08:55 16:36	08:10 17:34	16:13 (7) 18:30	07:07 18:30	16:13 (7) 20:29	07:07 20:29	05:44 21:25		22	20:49 (10)						21:14 (11)
11	08:54 16:37	08:08 17:36	16:15 (7) 18:32	07:05 18:32	16:15 (7) 20:31	07:05 20:31	05:42 21:27		23	20:27 (10)						21:14 (11)
12	08:53 16:39	08:06 17:38	16:18 (7) 18:34	07:02 18:34	16:18 (7) 20:33	07:02 20:33	05:40 21:29		23	20:50 (10)						21:15 (11)
13	08:52 16:40	08:04 17:40	16:27 (7) 18:36	07:00 18:36	16:27 (7) 20:35	07:00 20:35	05:39 21:31		23	19:53 (9)						21:15 (11)
14	08:51 16:42	08:02 17:42	16:59 (8) 18:38	06:57 18:38	16:59 (8) 20:37	06:57 20:37	05:37 21:33		23	20:06 (9)						21:15 (11)
15	08:50 16:44	08:00 17:45	16:56 (8) 18:40	06:55 18:40	16:56 (8) 20:39	06:55 20:39	05:35 21:34		23	19:49 (9)						21:15 (11)
16	08:49 16:45	07:58 17:47	16:54 (8) 18:42	06:52 18:42	16:54 (8) 20:41	06:52 20:41	05:33 21:36		23	20:08 (9)						21:15 (11)
17	08:48 16:47	07:56 17:49	16:53 (8) 18:44	06:50 18:44	16:53 (8) 20:42	06:50 20:42	05:32 21:37		22	19:47 (9)						21:15 (11)
18	08:47 16:49	07:54 17:51	16:53 (8) 18:46	06:47 18:46	16:53 (8) 20:44	06:47 20:44	05:30 21:39		21	20:09 (9)						21:15 (11)
19	08:46 16:51	07:51 17:53	16:51 (8) 18:48	06:45 18:48	16:51 (8) 20:46	06:45 20:46	05:28 21:41		21	19:46 (9)						21:16 (11)
20	08:45 16:53	07:49 17:55	16:51 (8) 18:50	06:42 18:50	16:51 (8) 20:48	06:42 20:48	05:27 21:42		20	20:09 (9)						21:16 (11)
21	08:44 16:54	07:47 17:57	16:50 (8) 18:51	06:40 18:51	16:50 (8) 20:50	06:40 20:50	05:25 21:44		19	20:08 (9)						21:17 (11)
22	08:42 16:56	07:45 17:59	16:49 (8) 18:53	06:37 18:53	16:49 (8) 20:52	06:37 20:52	05:24 21:46		18	19:45 (9)						21:17 (11)
23	08:41 16:58	16:15 (7) 18:01	16:50 (8) 18:55	06:35 18:55	16:15 (7) 20:54	06:35 20:54	05:22 21:47		15	20:07 (9)						21:17 (11)
24	08:40 17:00	16:13 (7) 18:03	16:50 (8) 18:57	06:32 18:57	16:13 (7) 20:56	06:32 20:56	05:21 21:49		14	19:47 (9)						21:17 (11)
25	08:38 17:02	16:12 (7) 18:05	16:49 (8) 18:59	06:30 18:59	16:12 (7) 20:58	06:30 20:58	05:20 21:50		12	20:05 (9)						21:17 (11)
26	08:37 17:04	16:10 (7) 18:07	16:50 (8) 19:01	06:27 19:01	16:10 (7) 20:59	06:27 20:59	05:18 21:52		9	19:48 (9)						21:17 (11)
27	08:35 17:06	16:10 (7) 18:09	16:50 (8) 19:03	06:25 19:03	16:10 (7) 21:01	06:25 21:01	05:17 21:53		3	20:02 (9)						21:18 (11)
28	08:34 17:08	16:10 (7) 18:11	16:51 (8) 19:05	06:22 19:05	16:10 (7) 21:03	06:22 21:03	05:16 21:55			20:48 (10)						21:18 (11)
29	08:32 17:10	16:09 (7) 18:11	16:51 (8) 19:05	06:20 19:05	16:09 (7) 21:05	06:20 21:05	05:15 21:56		2	20:48 (10)						21:18 (11)
30	08:31 17:12	16:09 (7) 18:11	16:51 (8) 19:05	06:19 19:05	16:09 (7) 21:07	06:19 21:07	05:14 21:57		5	21:22 (11)						21:18 (11)
31	08:29 17:14	16:08 (7) 18:11	16:51 (8) 19:05	06:18 19:05	16:08 (7) 21:09	06:18 21:09	05:13 21:59		7	21:23 (11)						21:18 (11)
Potential sun hours	248	272	367	421	496	513										
Total, worst case	171	647	85	297	442	518										
Sun reduction	0.17	0.22	0.22	0.34	0.36	0.26										
Oper. time red.	1.00	1.00	1.00	1.00	1.00	1.00										
Wind dir. red.	0.60	0.59	0.58	0.59	0.62	0.63										
Total reduction	0.10	0.13	0.13	0.20	0.22	0.16										
Total, real	17	85	11	60	99	84										

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)



### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: BN - H66

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	July		August		September		October		November		December			
1	05:07	21:19 (11)	05:48	20:37 (10)	06:44	07:38			07:37	15:42 (7)	08:33			
	22:15	18	21:37 (11)	21:39	23	21:00 (10)	20:31		19:16	17:04	19	16:01 (7)	16:19	
2	05:08	21:19 (11)	05:50	20:38 (10)	06:45	07:40			07:39	15:41 (7)	08:35			
	22:14	18	21:37 (11)	21:37	22	21:00 (10)	20:28		19:14	17:02	21	16:02 (7)	16:18	
3	05:09	21:20 (11)	05:52	20:37 (10)	06:47	07:42			07:41	15:40 (7)	08:36			
	22:14	18	21:38 (11)	21:35	22	20:59 (10)	20:26		19:11	17:00	22	16:02 (7)	16:18	
4	05:10	21:19 (11)	05:53	20:38 (10)	06:49	07:44			07:43	15:40 (7)	08:38			
	22:13	18	21:37 (11)	21:33	21	20:59 (10)	20:24		19:09	16:58	24	16:04 (7)	16:17	
5	05:11	21:20 (11)	05:55	20:39 (10)	06:51	07:45			07:45	15:40 (7)	08:39			
	22:13	17	21:37 (11)	21:31	19	20:58 (10)	20:21		19:06	16:56	24	16:04 (7)	16:16	
6	05:12	21:20 (11)	05:57	20:39 (10)	06:53	07:47			07:47	15:39 (7)	08:41			
	22:12	16	21:36 (11)	21:29	18	20:57 (10)	20:19		19:04	16:55	26	16:05 (7)	16:16	
7	05:13	21:21 (11)	05:59	20:41 (10)	06:54	07:49			07:49	15:39 (7)	08:42			
	22:12	15	21:36 (11)	21:27	15	20:56 (10)	20:16		19:01	16:53	26	16:05 (7)	16:15	
8	05:14	21:21 (11)	06:00	20:43 (10)	06:56	07:51			07:51	15:39 (7)	08:43			
	22:11	14	21:35 (11)	21:25	11	20:54 (10)	20:14		18:59	16:51	26	16:05 (7)	16:15	
9	05:15	21:22 (11)	06:02	20:45 (10)	06:58	07:53		17:33 (8)	07:53	15:39 (7)	08:45			
	22:10	12	21:34 (11)	21:23	6	20:51 (10)	20:11	18:56	11	17:44 (8)	16:49	25	16:04 (7)	16:14
10	05:16	21:23 (11)	06:04			07:00	07:55		07:55	17:30 (8)	07:55	15:40 (7)	08:46	
	22:09	11	21:34 (11)	21:21		20:09	18:54	16	17:46 (8)	16:47	25	16:05 (7)	16:14	
11	05:17	21:23 (11)	06:06			07:02	07:57		07:57	17:27 (8)	07:57	15:40 (7)	08:47	
	22:08	10	21:33 (11)	21:19		20:06	18:52	21	17:48 (8)	16:45	25	16:05 (7)	16:14	
12	05:18	21:24 (11)	06:08			07:03	07:59		07:59	17:26 (8)	07:59	15:40 (7)	08:48	
	22:07	8	21:32 (11)	21:17		20:04	18:49	23	17:49 (8)	16:44	25	16:05 (7)	16:14	
13	05:19	21:25 (11)	06:09			07:05	08:00		08:01	17:24 (8)	08:01	15:41 (7)	08:49	
	22:06	6	21:31 (11)	21:15		20:01	18:47	26	17:50 (8)	16:42	23	16:04 (7)	16:14	
14	05:21	21:27 (11)	06:11			07:07	08:02		08:03	17:23 (8)	08:03	15:42 (7)	08:50	
	22:05	4	21:31 (11)	21:13		19:59	18:44	27	17:50 (8)	16:40	21	16:03 (7)	16:13	
15	05:22		06:13			07:09	08:04		08:05	17:22 (8)	08:05	15:42 (7)	08:51	
	22:04		21:10			19:56	18:42	29	17:51 (8)	16:39	21	16:03 (7)	16:13	
16	05:23		06:15	19:58 (9)	07:11	08:06	17:22 (8)	08:07	08:07	15:43 (7)	08:52			
	22:03		21:08	9	20:07 (9)	19:54	18:40	29	17:51 (8)	16:37	19	16:02 (7)	16:14	
17	05:25	20:45 (10)	06:17			19:56 (9)	07:13	08:08	17:21 (8)	08:09	15:46 (7)	08:53		
	22:02	6	20:51 (10)	21:06	13	20:09 (9)	19:51	18:37	30	17:51 (8)	16:36	16	16:02 (7)	16:14
18	05:26	20:44 (10)	06:18			19:53 (9)	07:14	08:10	17:21 (8)	08:11	15:47 (7)	08:54		
	22:01	10	20:54 (10)	21:04	17	20:10 (9)	19:49	18:35	30	17:51 (8)	16:34	13	16:00 (7)	16:14
19	05:28	20:42 (10)	06:20			19:52 (9)	07:16	08:12	17:21 (8)	08:12	15:50 (7)	08:55		
	21:59	13	20:55 (10)	21:01	19	20:11 (9)	19:46	18:33	30	17:51 (8)	16:33	8	15:58 (7)	16:14
20	05:29	20:41 (10)	06:22			19:52 (9)	07:18	08:14	17:21 (8)	08:14	15:50 (7)	08:55		
	21:58	15	20:56 (10)	20:59	20	20:12 (9)	19:44	18:30	29	17:50 (8)	16:31	16:15		
21	05:30	20:41 (10)	06:24			19:50 (9)	07:20	08:16	17:21 (8)	08:16	16:15			
	21:56	16	20:57 (10)	20:57	22	20:12 (9)	19:41	18:28	29	17:50 (8)	16:30	16:15		
22	05:32	20:39 (10)	06:26			19:50 (9)	07:22	08:18	17:21 (8)	08:18	16:15			
	21:55	19	20:58 (10)	20:55	22	20:12 (9)	19:39	18:26	28	17:49 (8)	16:29	16:15		
23	05:34	20:39 (10)	06:27			19:49 (9)	07:23	08:20	17:22 (8)	08:20	16:16			
	21:54	20	20:59 (10)	20:52	23	20:12 (9)	19:36	18:24	26	17:48 (8)	16:27	16:16		
24	05:35	20:38 (10)	06:29			19:49 (9)	07:25	08:22	17:22 (8)	08:22	16:17			
	21:52	21	20:59 (10)	20:50	24	20:13 (9)	19:34	18:21	25	17:47 (8)	16:26	16:17		
25	05:37	20:38 (10)	06:31			19:48 (9)	07:27	07:24	16:23 (8)	08:23	16:18			
	21:51	21	20:59 (10)	20:48	23	20:11 (9)	19:31	17:19	23	16:46 (8)	16:25	16:17		
26	05:38	20:38 (10)	06:33			19:49 (9)	07:29	07:26	16:24 (8)	08:25	16:18			
	21:49	22	21:00 (10)	20:45	22	20:11 (9)	19:29	17:17	20	16:44 (8)	16:24	16:18		
27	05:40	20:37 (10)	06:35			19:49 (9)	07:31	07:27	16:26 (8)	08:27	16:19			
	21:47	23	21:00 (10)	20:43	22	20:11 (9)	19:26	17:15	16	16:42 (8)	16:23	16:19		
28	05:42	20:37 (10)	06:36			19:49 (9)	07:32	07:29	16:29 (8)	08:28	16:20			
	21:46	23	21:00 (10)	20:40	20	20:09 (9)	19:24	17:13	11	16:40 (8)	16:22	16:19		
29	05:43	20:37 (10)	06:38			19:50 (9)	07:34	07:31		08:30	16:20			
	21:44	23	21:00 (10)	20:38	18	20:08 (9)	19:21	17:11		16:21	16:20			
30	05:45	20:37 (10)	06:40			19:51 (9)	07:36	07:33		15:47 (7)	08:32	16:21		
	21:42	23	21:00 (10)	20:36	15	20:06 (9)	19:19	17:09	11	15:58 (7)	16:20	16:21		
31	05:47	20:37 (10)	06:42			19:53 (9)		07:35		15:44 (7)	08:58	16:22		
	21:40	24	21:01 (10)	20:33	11	20:04 (9)		17:06	16	16:00 (7)	16:22	16:22		
Potential sun hours	515		461		382		328		257		231			
Total, worst case		464		457		506		409						
Sun reduction		0.27		0.27		0.23		0.20						
Oper. time red.		1.00		1.00		1.00		1.00						
Wind dir. red.		0.63		0.60		0.58		0.60						
Total reduction		0.17		0.16		0.14		0.12						
Total, real		77		75		69		49						

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: BO - H67

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January	February	March	April	May	June		
1	08:58 16:24	08:27 17:16 28	15:56 (16) 16:24 (16)	07:29 18:13 29	16:54 (15) 17:23 (15)	07:12 20:12	06:02 21:09	05:11 22:00
2	08:58 16:25	08:25 17:18 28	15:56 (16) 16:24 (16)	07:26 18:15 28	16:54 (15) 17:22 (15)	07:10 20:14	06:00 21:11	05:10 22:01
3	08:58 16:26	08:24 17:20 28	15:56 (16) 16:24 (16)	07:24 18:17 28	16:54 (15) 17:22 (15)	07:07 20:16	05:58 21:13	05:10 22:02
4	08:58 16:27	08:22 17:22 27	15:57 (16) 16:24 (16)	07:21 18:19 27	16:54 (15) 17:21 (15)	07:05 20:18	05:56 21:14	05:09 22:03
5	08:57 16:28	08:20 17:24 26	15:57 (16) 16:23 (16)	07:19 18:21 24	16:56 (15) 17:20 (15)	07:02 20:20	05:54 21:16	05:08 22:05
6	08:57 16:30	08:18 17:26 25	15:58 (16) 16:23 (16)	07:17 18:23 22	16:56 (15) 17:18 (15)	07:00 20:22	05:52 21:18	05:07 22:06
7	08:56 16:31	08:16 17:28 23	15:59 (16) 16:22 (16)	07:14 18:24 19	16:58 (15) 17:17 (15)	06:58 20:24	05:50 21:20	05:06 22:07
8	08:56 16:33	08:14 17:30 22	16:00 (16) 16:22 (16)	07:12 18:26 14	17:00 (15) 17:14 (15)	06:55 20:25	05:48 21:22	05:06 22:08
9	08:55 16:34	08:12 17:32 20	16:00 (16) 16:20 (16)	07:09 18:28 4	17:05 (15) 17:09 (15)	06:53 20:27	05:46 21:23	05:05 22:09
10	08:55 16:36	08:10 17:34 17	16:02 (16) 16:19 (16)	07:07 18:30	06:50 20:29	06:50 21:25	05:44 21:25	05:05 22:09
11	08:54 16:37	08:08 17:36 12	16:05 (16) 16:17 (16)	07:05 18:32	06:48 20:31	05:42 21:27	05:04 21:27	05:04 22:10
12	08:53 16:39	08:06 17:38 2	16:10 (16) 16:12 (16)	07:02 18:34	06:45 20:33	05:40 21:29	05:04 21:29	05:04 22:11
13	08:52 16:40	08:04 17:40	07:00 18:36	06:43 20:35	05:38 21:31	05:03 22:12	05:03 21:31	05:03 22:12
14	08:51 16:42	08:02 17:42	06:57 18:38	06:41 20:37	05:37 21:32	05:03 22:12	05:37 21:32	05:03 22:12
15	08:51 16:44	08:00 17:44	06:55 18:40	06:38 20:39	05:35 21:34	05:03 22:13	05:35 21:34	05:03 22:13
16	08:50 16:45	07:58 17:46	06:52 18:42	06:36 20:41	05:33 21:36	05:03 22:14	05:33 21:36	05:03 22:14
17	08:48 16:47	07:56 17:48	06:50 18:44	06:33 20:42	05:32 21:37	05:03 22:14	05:32 21:37	05:03 22:14
18	08:47 16:49	07:54 17:51 9	17:05 (15) 17:14 (15)	06:47 18:46	06:31 20:44	05:30 21:39	05:30 21:39	05:03 22:15
19	08:46 16:51	07:51 17:53 15	17:02 (15) 17:17 (15)	06:45 18:48	06:29 20:46	05:28 21:41	05:28 21:41	05:03 22:15
20	08:45 16:52 7	16:03 (16) 16:10 (16)	07:49 17:55 19	17:00 (15) 17:19 (15)	06:42 18:50	05:27 20:48	05:27 21:42	05:03 22:15
21	08:44 16:54 11	16:01 (16) 16:12 (16)	07:47 17:57 22	16:59 (15) 17:21 (15)	06:40 18:51	05:25 20:50	05:25 21:44	05:03 22:16
22	08:42 16:56 15	16:00 (16) 16:15 (16)	07:45 17:59 24	16:57 (15) 17:21 (15)	06:37 18:53	05:24 20:52	05:24 21:46	05:03 22:16
23	08:41 16:58 18	15:58 (16) 16:16 (16)	07:42 18:01 26	16:56 (15) 17:22 (15)	06:35 18:55	05:22 20:54	05:22 21:47	05:03 22:16
24	08:40 17:00 20	15:58 (16) 16:18 (16)	07:40 18:03 27	16:56 (15) 17:23 (15)	06:32 18:57	05:21 20:56	05:21 21:49	05:04 22:16
25	08:38 17:02 22	15:57 (16) 16:19 (16)	07:38 18:05 29	16:54 (15) 17:23 (15)	06:30 18:59	05:20 20:58	05:20 21:50	05:04 22:16
26	08:37 17:04 23	15:56 (16) 16:19 (16)	07:36 18:07 30	16:54 (15) 17:24 (15)	06:27 19:01	05:18 20:59	05:18 21:52	05:04 22:16
27	08:35 17:06 24	15:57 (16) 16:21 (16)	07:33 18:09 30	16:53 (15) 17:23 (15)	06:25 19:03	05:17 21:01	05:17 21:53	05:05 22:16
28	08:34 17:08 26	15:56 (16) 16:22 (16)	07:31 18:11 29	16:54 (15) 17:23 (15)	06:22 19:05	05:16 21:03	05:16 21:55	05:05 22:16
29	08:32 17:10 26	15:56 (16) 16:22 (16)	07:20 20:07	07:20 20:07	06:06 21:05	05:15 21:56	05:15 21:56	05:06 22:15
30	08:31 17:12 27	15:55 (16) 16:22 (16)	07:17 20:08	07:17 20:08	06:04 21:07	05:14 21:57	05:14 21:57	05:07 22:15
31	08:29 17:14 27	15:55 (16) 16:22 (16)	07:15 20:10	07:15 20:10	05:12 21:59	05:12 21:59	05:12 21:59	05:07 22:15
Potential sun hours	248	272	367	421	496	513		
Total, worst case	246	518	195					
Sun reduction	0.17	0.22	0.22					
Oper. time red.	1.00	1.00	1.00					
Wind dir. red.	0.61	0.60	0.58					
Total reduction	0.10	0.13	0.13					
Total, real	26	69	25					

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: BO - H67

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	July	August	September	October	November	December
1	05:07	05:48	06:44	07:38	07:37	15:31 (16) 08:33
	22:15	21:39	20:31	19:16	17:04	17 15:48 (16) 16:19
2	05:08	05:50	06:45	07:40	07:39	15:30 (16) 08:35
	22:14	21:37	20:28	19:14	17:02	20 15:50 (16) 16:18
3	05:09	05:52	06:47	07:42	07:41	15:28 (16) 08:36
	22:14	21:35	20:26	19:11	17:00	23 15:51 (16) 16:17
4	05:10	05:53	06:49	07:43	07:43	15:28 (16) 08:38
	22:14	21:33	20:23	19:09	16:58	24 15:52 (16) 16:17
5	05:11	05:55	06:51	07:45	17:39 (15)	07:45 15:28 (16) 08:39
	22:13	21:31	20:21	19:06	10 17:49 (15)	16:56 25 15:53 (16) 16:16
6	05:11	05:57	06:53	07:47	17:35 (15)	07:47 15:27 (16) 08:41
	22:12	21:29	20:19	19:04	17 17:52 (15)	16:54 26 15:53 (16) 16:16
7	05:12	05:59	06:54	07:49	17:33 (15)	07:49 15:27 (16) 08:42
	22:12	21:27	20:16	19:01	20 17:53 (15)	16:53 26 15:53 (16) 16:15
8	05:13	06:00	06:56	07:51	17:31 (15)	07:51 15:26 (16) 08:43
	22:11	21:25	20:14	18:59	24 17:55 (15)	16:51 27 15:53 (16) 16:15
9	05:15	06:02	06:58	07:53	17:30 (15)	07:53 15:26 (16) 08:45
	22:10	21:23	20:11	18:56	25 17:55 (15)	16:49 28 15:54 (16) 16:14
10	05:16	06:04	07:00	07:55	17:29 (15)	07:55 15:27 (16) 08:46
	22:09	21:21	20:09	18:54	27 17:56 (15)	16:47 27 15:54 (16) 16:14
11	05:17	06:06	07:02	07:57	17:28 (15)	07:57 15:27 (16) 08:47
	22:08	21:19	20:06	18:51	28 17:56 (15)	16:45 27 15:54 (16) 16:14
12	05:18	06:07	07:03	07:58	17:28 (15)	07:59 15:27 (16) 08:48
	22:07	21:17	20:04	18:49	29 17:57 (15)	16:44 27 15:54 (16) 16:13
13	05:19	06:09	07:05	08:00	17:27 (15)	08:01 15:28 (16) 08:49
	22:06	21:15	20:01	18:47	30 17:57 (15)	16:42 26 15:54 (16) 16:13
14	05:21	06:11	07:07	08:02	17:27 (15)	08:03 15:28 (16) 08:50
	22:05	21:13	19:59	18:44	29 17:56 (15)	16:40 25 15:53 (16) 16:13
15	05:22	06:13	07:09	08:04	17:27 (15)	08:05 15:29 (16) 08:51
	22:04	21:10	19:56	18:42	29 17:56 (15)	16:39 24 15:53 (16) 16:13
16	05:23	06:15	07:11	08:06	17:27 (15)	08:07 15:29 (16) 08:52
	22:03	21:08	19:54	18:40	29 17:56 (15)	16:37 23 15:52 (16) 16:13
17	05:25	06:16	07:12	08:08	17:27 (15)	08:09 15:31 (16) 08:53
	22:02	21:06	19:51	18:37	28 17:55 (15)	16:36 22 15:53 (16) 16:14
18	05:26	06:18	07:14	08:10	17:27 (15)	08:11 15:32 (16) 08:54
	22:01	21:04	19:49	18:35	27 17:54 (15)	16:34 20 15:52 (16) 16:14
19	05:27	06:20	07:16	08:12	17:28 (15)	08:12 15:33 (16) 08:55
	21:59	21:01	19:46	18:33	25 17:53 (15)	16:33 18 15:51 (16) 16:14
20	05:29	06:22	07:18	08:14	17:28 (15)	08:14 15:35 (16) 08:55
	21:58	20:59	19:44	18:30	24 17:52 (15)	16:31 15 15:50 (16) 16:14
21	05:30	06:24	07:20	08:16	17:29 (15)	08:16 15:37 (16) 08:56
	21:57	20:57	19:41	18:28	22 17:51 (15)	16:30 11 15:48 (16) 16:15
22	05:32	06:25	07:21	08:18	17:31 (15)	08:18 15:39 (16) 08:56
	21:55	20:55	19:39	18:26	18 17:49 (15)	16:29 7 15:46 (16) 16:15
23	05:33	06:27	07:23	08:20	17:33 (15)	08:20 16:16
	21:54	20:52	19:36	18:24	13 17:46 (15)	16:27 16:16
24	05:35	06:29	07:25	08:22	17:36 (15)	08:22 16:16
	21:52	20:50	19:33	18:21	6 17:42 (15)	16:26 16:16
25	05:36	06:31	07:27	08:24	08:23 16:25	16:17
	21:51	20:48	19:31	17:19	08:25 16:24	16:18
26	05:38	06:33	07:29	08:26	08:25 16:24	16:18
	21:49	20:45	19:28	17:17	08:27 16:23	16:18
27	05:40	06:35	07:31	08:27	08:27 16:23	16:18
	21:47	20:43	19:26	17:15	08:29 16:22	16:19
28	05:41	06:36	07:32	08:29	08:29 16:22	16:19
	21:46	20:40	19:23	17:13	08:30 16:21	16:20
29	05:43	06:38	07:34	08:31	15:37 (16)	08:32 16:21
	21:44	20:38	19:21	17:10	6 15:43 (16)	16:20 16:21
30	05:45	06:40	07:36	08:33	15:34 (16)	08:33 16:21
	21:42	20:36	19:18	17:08	13 15:47 (16)	16:22 16:22
31	05:46	06:42	07:35	08:35	17:06	16:22
	21:40	20:33	19:11	17:06	13 15:47 (16)	16:22
Potential sun hours	515	461	383	327	257	230
Total, worst case				479	488	
Sun reduction				0.23	0.20	
Oper. time red.				1.00	1.00	
Wind dir. red.				0.58	0.61	
Total reduction				0.14	0.12	
Total, real				66	59	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)



SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: BQ - H69  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

Operational time  
N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

Table with columns for months (January to December) and rows for each day of the year. Includes columns for sun rise, sun set, and minutes with flicker. Summary rows at the bottom include Total sun hours (248), Total, worst case (496), Sun reduction (0.36), Oper. time red. (1.00), Wind dir. red. (0.63), Total reduction (0.23), and Total, real (74).

Table layout: For each day in each month the following matrix apply

Matrix defining columns: Day in month, Sun rise (hh:mm), Sun set (hh:mm), Minutes with flicker, First time (hh:mm) with flicker, Last time (hh:mm) with flicker, (WTG causing flicker first time), (WTG causing flicker last time)

### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: BR - H70  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:58	08:27	07:29	07:13	06:02	05:12	05:08	05:49	06:44	07:38	07:37	08:33
	16:24	17:16	18:13	20:12	21:09	22:00	22:15	21:39	20:31	19:16	17:05	16:19
2	08:58	08:25	07:26	07:10	06:00	05:11	05:09	05:50	06:46	07:40	07:39	08:35
	16:25	17:18	18:15	20:14	21:11	22:01	22:14	21:37	20:28	19:14	17:03	16:19
3	08:58	08:24	07:24	07:08	05:58	05:10	05:09	05:52	06:47	07:42	07:41	08:36
	16:26	17:20	18:17	20:16	21:12	22:02	22:14	21:35	20:26	19:11	17:01	16:18
4	08:58	08:22	07:22	07:05	05:56	05:09	05:10	05:54	06:49	07:44	07:43	08:38
	16:28	17:22	18:19	20:18	21:14	22:03	22:13	21:33	20:24	19:09	16:59	16:17
5	08:57	08:20	07:19	07:03	05:54	05:08	05:11	05:55	06:51	07:45	07:45	08:39
	16:29	17:24	18:21	20:20	21:16	22:04	22:13	21:31	20:21	19:06	16:57	16:17
6	08:57	08:18	07:17	07:00	05:52	05:08	05:12	05:57	06:53	07:47	07:47	08:41
	16:30	17:26	18:23	20:22	21:18	22:05	22:12	21:29	20:19	19:04	16:55	16:16
7	08:56	08:16	07:14	06:58	05:50	05:07	05:13	05:59	06:55	07:49	07:49	08:42
	16:32	17:28	18:25	20:24	21:20	22:06	22:11	21:27	20:16	19:01	16:53	16:16
8	08:56	08:14	07:12	06:55	05:48	05:06	05:14	06:01	06:56	07:51	07:51	08:43
	16:33	17:30	18:27	20:26	21:22	22:07	22:11	21:25	20:14	18:59	16:51	16:15
9	08:55	08:12	07:10	06:53	05:46	05:06	05:15	06:02	06:58	07:53	07:53	08:45
	16:35	17:32	18:29	20:27	21:23	22:08	22:10	21:23	20:11	18:57	16:49	16:15
10	08:55	08:10	07:07	06:50	05:44	05:05	05:16	06:04	07:00	07:55	07:55	08:46
	16:36	17:35	18:31	20:29	21:25	22:09	22:09	21:21	20:09	18:54	16:47	16:14
11	08:54	08:08	07:05	06:48	05:43	05:05	05:17	06:06	07:02	07:57	07:57	08:47
	16:38	17:37	18:32	20:31	21:27	22:10	22:08	21:19	20:06	18:52	16:46	16:14
12	08:53	08:06	07:02	06:46	05:41	05:04	05:19	06:08	07:04	07:59	07:59	08:48
	16:39	17:39	18:34	20:33	21:29	22:11	22:07	21:17	20:04	18:49	16:44	16:14
13	08:52	08:04	07:00	06:43	05:39	05:04	05:20	06:10	07:05	08:00	08:01	08:49
	16:41	17:41	18:36	20:35	21:30	22:12	22:06	21:15	20:01	18:47	16:42	16:14
14	08:51	08:02	06:57	06:41	05:37	05:04	05:21	06:11	07:07	08:02	08:03	08:50
	16:42	17:43	18:38	20:37	21:32	22:12	22:05	21:12	19:59	18:45	16:41	16:14
15	08:50	08:00	06:55	06:39	05:35	05:04	05:22	06:13	07:09	08:04	08:05	08:51
	16:44	17:45	18:40	20:39	21:34	22:13	22:04	21:10	19:56	18:42	16:39	16:14
16	08:49	07:58	06:52	06:36	05:34	05:03	05:24	06:15	07:11	08:06	08:07	08:52
	16:46	17:47	18:42	20:41	21:36	22:13	22:03	21:08	19:54	18:40	16:37	16:14
17	08:48	07:56	06:50	06:34	05:32	05:03	05:25	06:17	07:13	08:08	08:09	08:53
	16:48	17:49	18:44	20:43	21:37	22:14	22:02	21:06	19:51	18:38	16:36	16:14
18	08:47	07:54	06:47	06:31	05:30	05:03	05:26	06:19	07:14	08:10	08:11	08:54
	16:49	17:51	18:46	20:44	21:39	22:14	22:00	21:04	19:49	18:35	16:34	16:14
19	08:46	07:51	06:45	06:29	05:29	05:03	05:28	06:20	07:16	08:12	08:12	08:54
	16:51	17:53	18:48	20:46	21:41	22:15	21:59	21:01	19:46	18:33	16:33	16:15
20	08:45	07:49	06:42	06:27	05:27	05:03	05:29	06:22	07:18	08:14	08:14	08:55
	16:53	17:55	18:50	20:48	21:42	22:15	21:58	20:59	19:44	18:31	16:32	16:15
21	08:44	07:47	06:40	06:24	05:26	05:03	05:31	06:24	07:20	08:16	08:16	08:56
	16:55	17:57	18:52	20:50	21:44	22:15	21:56	20:57	19:41	18:28	16:30	16:15
22	08:42	07:45	06:37	06:22	05:24	05:04	05:32	06:26	07:22	08:18	08:18	08:56
	16:57	17:59	18:53	20:52	21:45	22:15	21:55	20:55	19:39	18:26	16:29	16:16
23	08:41	07:43	06:35	06:20	05:23	05:04	05:34	06:28	07:23	08:20	08:20	08:57
	16:59	18:01	18:55	20:54	21:47	22:16	21:53	20:52	19:36	18:24	16:28	16:16
24	08:40	07:40	06:32	06:18	05:21	05:04	05:35	06:29	07:25	08:22	08:21	08:57
	17:00	18:03	18:57	20:56	21:49	22:16	21:52	20:50	19:34	18:22	16:26	16:17
25	08:38	07:38	06:30	06:15	05:20	05:04	05:37	06:31	07:27	08:24	08:23	08:57
	17:02	18:05	18:59	20:58	21:50	22:16	21:50	20:48	19:31	17:19	16:25	16:18
26	08:37	07:36	06:27	06:13	05:19	05:05	05:39	06:33	07:29	08:26	08:25	08:58
	17:04	18:07	19:01	20:59	21:52	22:16	21:49	20:45	19:29	17:17	16:24	16:18
27	08:35	07:33	06:25	06:11	05:18	05:05	05:40	06:35	07:31	08:27	08:27	08:58
	17:06	18:09	19:03	21:01	21:53	22:16	21:47	20:43	19:26	17:15	16:23	16:19
28	08:34	07:31	06:22	06:09	05:16	05:06	05:42	06:37	07:33	08:29	08:28	08:58
	17:08	18:11	19:05	21:03	21:54	22:15	21:46	20:40	19:24	17:13	16:22	16:20
29	08:32		07:20	06:07	05:15	05:06	05:43	06:38	07:34	08:31	08:30	08:58
	17:10		20:07	21:05	21:56	22:15	21:44	20:38	19:21	17:11	16:21	16:21
30	08:30		07:18	06:05	05:14	05:07	05:45	06:40	07:36	08:33	08:32	08:58
	17:12		20:09	21:07	21:57	22:15	21:42	20:36	19:19	17:09	16:20	16:22
31	08:29		07:15		05:13		05:47	06:42		07:35		08:58
	17:14		20:10		21:58		21:40	20:33		17:07		16:23
Potential sun hours	248	272	367	421	496	513	515	461	382	328	257	231
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)



## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: BS - H71

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June
1	08:58 16:24	08:27 17:16	07:29 18:13	07:12 20:12	06:02 21:09	19:57 (16) 22:00
2	08:58 16:25	08:25 17:18	07:26 18:15	07:10 20:14	06:00 21:11	19:56 (16) 22:01
3	08:58 16:26	08:24 17:20	07:24 18:17	07:07 20:16	05:58 21:12	19:55 (16) 22:02
4	08:58 16:27	08:22 17:22	07:21 18:19	07:05 20:18	05:56 21:14	19:54 (16) 22:03
5	08:57 16:28	08:20 17:24	07:19 18:21	07:02 20:20	05:54 21:16	19:53 (16) 22:05
6	08:57 16:30	08:18 17:26	07:17 18:23	07:00 20:22	05:52 21:18	19:54 (16) 22:06
7	08:56 16:31	08:16 17:28	07:14 18:24	06:58 20:24	05:50 21:20	19:53 (16) 22:07
8	08:56 16:33	08:14 17:30	07:12 18:26	06:55 20:25	05:48 21:22	19:53 (16) 22:08
9	08:55 16:34	08:12 17:32	07:09 18:28	06:53 20:27	05:46 21:23	19:52 (16) 22:09
10	08:55 16:36	08:10 17:34	07:07 18:30	06:50 20:29	05:44 21:25	19:52 (16) 22:09
11	08:54 16:37	08:08 17:36	07:04 18:32	06:48 20:31	05:42 21:27	19:53 (16) 22:10
12	08:53 16:39	08:06 17:38	07:02 18:34	06:45 20:33	05:40 21:29	19:53 (16) 22:11
13	08:52 16:40	08:04 17:40	07:00 18:36	06:43 20:35	05:38 21:31	19:53 (16) 22:12
14	08:51 16:42	08:02 17:42	06:57 18:38	06:41 20:37	05:37 21:32	19:54 (16) 22:12
15	08:50 16:44	08:00 17:44	06:55 18:40	06:38 20:39	05:35 21:34	19:54 (16) 22:13
16	08:49 16:45	07:58 17:46	06:52 18:42	06:36 20:41	05:33 21:36	19:55 (16) 22:14
17	08:48 16:47	07:56 17:49	06:50 18:44	06:33 20:42	05:32 21:37	19:55 (16) 22:14
18	08:47 16:49	07:54 17:51	06:47 18:46	06:31 20:44	05:30 21:39	19:56 (16) 22:14
19	08:46 16:51	07:51 17:53	06:45 18:48	06:29 20:46	05:28 21:41	19:57 (16) 22:15
20	08:45 16:53	07:49 17:55	06:42 18:50	06:26 20:48	05:27 21:42	19:58 (16) 22:15
21	08:44 16:54	07:47 17:57	06:40 18:51	06:24 20:50	05:25 21:44	20:00 (16) 22:15
22	08:42 16:56	07:45 17:59	06:37 18:53	06:22 20:52	05:24 21:46	20:01 (16) 22:16
23	08:41 16:58	07:42 18:01	06:35 18:55	06:20 20:54	05:22 21:47	20:03 (16) 22:16
24	08:40 17:00	07:40 18:03	06:32 18:57	06:17 20:56	05:21 21:49	20:06 (16) 22:16
25	08:38 17:02	07:38 18:05	06:30 18:59	06:15 20:58	05:20 21:50	20:53 (15) 22:16
26	08:37 17:04	07:36 18:07	06:27 19:01	06:13 20:59	05:18 21:52	20:52 (15) 22:16
27	08:35 17:06	07:33 18:09	06:25 19:03	06:11 21:01	5 20:06 (16) 21:53	20:50 (15) 22:16
28	08:34 17:08	07:31 18:11	06:22 19:05	06:08 21:03	13 20:15 (16) 21:55	20:50 (15) 22:16
29	08:32 17:10		07:20 20:07	06:06 21:05	17 20:17 (16) 21:56	20:49 (15) 22:15
30	08:30 17:12		07:17 20:08	06:04 21:07	20 20:18 (16) 21:57	20:49 (15) 22:15
31	08:29 17:14		07:15 20:10		21 21:59	20:50 (15) 21:11 (15)
Potential sun hours	248	272	367	421	496	513
Total, worst case				55	699	759
Sun reduction				0.34	0.36	0.26
Oper. time red.				1.00	1.00	1.00
Wind dir. red.				0.61	0.61	0.63
Total reduction				0.21	0.22	0.16
Total, real				11	155	123

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: BS - H71

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	July	August	September	October	November	December				
1	05:07	20:53 (15)	05:48	20:03 (16)	06:44	07:38	07:37	08:33		
	22:15	26	21:19 (15)	21:39	29	20:32 (16)	20:31	19:16	17:04	16:19
2	05:08	20:54 (15)	05:50	20:03 (16)	06:45	07:40	07:39	08:35		
	22:14	25	21:19 (15)	21:37	30	20:33 (16)	20:28	19:14	17:02	16:18
3	05:09	20:54 (15)	05:52	20:03 (16)	06:47	07:42	07:41	08:36		
	22:14	26	21:20 (15)	21:35	29	20:32 (16)	20:26	19:11	17:00	16:17
4	05:10	20:54 (15)	05:53	20:03 (16)	06:49	07:43	07:43	08:38		
	22:13	25	21:19 (15)	21:33	29	20:32 (16)	20:23	19:09	16:58	16:17
5	05:11	20:54 (15)	05:55	20:03 (16)	06:51	07:45	07:45	08:39		
	22:13	25	21:19 (15)	21:31	30	20:33 (16)	20:21	19:06	16:56	16:16
6	05:12	20:55 (15)	05:57	20:03 (16)	06:53	07:47	07:47	08:41		
	22:12	24	21:19 (15)	21:29	29	20:32 (16)	20:19	19:04	16:54	16:16
7	05:13	20:55 (15)	05:59	20:03 (16)	06:54	07:49	07:49	08:42		
	22:12	24	21:19 (15)	21:27	29	20:32 (16)	20:16	19:01	16:53	16:15
8	05:14	20:55 (15)	06:00	20:03 (16)	06:56	07:51	07:51	08:43		
	22:11	24	21:19 (15)	21:25	28	20:31 (16)	20:14	18:59	16:51	16:15
9	05:15	20:56 (15)	06:02	20:03 (16)	06:58	07:53	07:53	08:45		
	22:10	23	21:19 (15)	21:23	27	20:30 (16)	20:11	18:56	16:49	16:14
10	05:16	20:56 (15)	06:04	20:04 (16)	07:00	07:55	07:55	08:46		
	22:09	23	21:19 (15)	21:21	26	20:30 (16)	20:09	18:54	16:47	16:14
11	05:17	20:56 (15)	06:06	20:04 (16)	07:02	07:57	07:57	08:47		
	22:08	23	21:19 (15)	21:19	24	20:28 (16)	20:06	18:51	16:45	16:14
12	05:18	20:57 (15)	06:07	20:05 (16)	07:03	07:58	07:59	08:48		
	22:07	22	21:19 (15)	21:17	22	20:27 (16)	20:04	18:49	16:44	16:14
13	05:19	20:57 (15)	06:09	20:07 (16)	07:05	08:00	08:01	08:49		
	22:06	21	21:18 (15)	21:15	19	20:26 (16)	20:01	18:47	16:42	16:13
14	05:21	20:59 (15)	06:11	20:08 (16)	07:07	08:02	08:03	08:50		
	22:05	20	21:19 (15)	21:12	16	20:24 (16)	19:59	18:44	16:40	16:13
15	05:22	20:59 (15)	06:13	20:10 (16)	07:09	08:04	08:05	08:51		
	22:04	19	21:18 (15)	21:10	11	20:21 (16)	19:56	18:42	16:39	16:13
16	05:23	21:00 (15)	06:15		07:11	08:06	08:07	08:52		
	22:03	17	21:17 (15)	21:08		19:54	18:40	16:37	16:13	
17	05:25	21:00 (15)	06:16		07:12	08:08	08:09	08:53		
	22:02	16	21:16 (15)	21:06		19:51	18:37	16:36	16:14	
18	05:26	21:02 (15)	06:18		07:14	08:10	08:11	08:54		
	22:01	14	21:16 (15)	21:04		19:49	18:35	16:34	16:14	
19	05:27	21:03 (15)	06:20		07:16	08:12	08:12	08:55		
	21:59	11	21:14 (15)	21:01		19:46	18:33	16:33	16:14	
20	05:29	20:14 (16)	06:22		07:18	08:14	08:14	08:55		
	21:58	14	21:12 (15)	20:59		19:44	18:30	16:31	16:14	
21	05:30	20:12 (16)	06:24		07:20	08:16	08:16	08:56		
	21:56	12	20:24 (16)	20:57		19:41	18:28	16:30	16:15	
22	05:32	20:10 (16)	06:25		07:21	08:18	08:18	08:56		
	21:55	15	20:25 (16)	20:55		19:39	18:26	16:29	16:15	
23	05:33	20:09 (16)	06:27		07:23	08:20	08:20	08:57		
	21:54	17	20:26 (16)	20:52		19:36	18:24	16:27	16:16	
24	05:35	20:08 (16)	06:29		07:25	08:22	08:22	08:57		
	21:52	20	20:28 (16)	20:50		19:33	18:21	16:26	16:16	
25	05:37	20:07 (16)	06:31		07:27	07:24	08:23	08:58		
	21:50	21	20:28 (16)	20:48		19:31	17:19	16:25	16:17	
26	05:38	20:06 (16)	06:33		07:29	07:25	08:25	08:58		
	21:49	24	20:30 (16)	20:45		19:28	17:17	16:24	16:18	
27	05:40	20:05 (16)	06:35		07:31	07:27	08:27	08:58		
	21:47	25	20:30 (16)	20:43		19:26	17:15	16:23	16:19	
28	05:41	20:05 (16)	06:36		07:32	07:29	08:28	08:58		
	21:46	26	20:31 (16)	20:40		19:23	17:13	16:22	16:19	
29	05:43	20:04 (16)	06:38		07:34	07:31	08:30	08:58		
	21:44	27	20:31 (16)	20:38		19:21	17:11	16:21	16:20	
30	05:45	20:04 (16)	06:40		07:36	07:33	08:32	08:58		
	21:42	28	20:32 (16)	20:36		19:18	17:08	16:20	16:21	
31	05:46	20:03 (16)	06:42			07:35		08:58		
	21:40	28	20:31 (16)	20:33		17:06		16:22		
Potential sun hours	515		461		383	327	257	230		
Total, worst case	665		378							
Sun reduction	0.27		0.27							
Oper. time red.	1.00		1.00							
Wind dir. red.	0.62		0.61							
Total reduction	0.16		0.17							
Total, real	110		63							

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: BT - H72  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:58	08:27	07:29	07:13	06:02	05:12	05:08	05:49	06:44	07:38	07:37	08:33
	16:24	17:16	18:13	20:12	21:09	22:00	22:15	21:39	20:31	19:16	17:05	16:19
2	08:58	08:25	07:26	07:10	06:00	05:11	05:09	05:50	06:46	07:40	07:39	08:35
	16:25	17:18	18:15	20:14	21:11	22:01	22:14	21:37	20:28	19:14	17:03	16:19
3	08:58	08:24	07:24	07:08	05:58	05:10	05:09	05:52	06:47	07:42	07:41	08:36
	16:26	17:20	18:17	20:16	21:12	22:02	22:14	21:35	20:26	19:11	17:01	16:18
4	08:58	08:22	07:22	07:05	05:56	05:09	05:10	05:54	06:49	07:44	07:43	08:38
	16:28	17:22	18:19	20:18	21:14	22:03	22:13	21:33	20:24	19:09	16:59	16:17
5	08:57	08:20	07:19	07:03	05:54	05:08	05:11	05:55	06:51	07:45	07:45	08:39
	16:29	17:24	18:21	20:20	21:16	22:04	22:13	21:31	20:21	19:06	16:57	16:17
6	08:57	08:18	07:17	07:00	05:52	05:08	05:12	05:57	06:53	07:47	07:47	08:41
	16:30	17:26	18:23	20:22	21:18	22:05	22:12	21:29	20:19	19:04	16:55	16:16
7	08:56	08:16	07:14	06:58	05:50	05:07	05:13	05:59	06:55	07:49	07:49	08:42
	16:32	17:28	18:25	20:24	21:20	22:06	22:11	21:27	20:16	19:01	16:53	16:16
8	08:56	08:14	07:12	06:55	05:48	05:06	05:14	06:01	06:56	07:51	07:51	08:43
	16:33	17:30	18:27	20:26	21:22	22:07	22:11	21:25	20:14	18:59	16:51	16:15
9	08:55	08:12	07:10	06:53	05:46	05:06	05:15	06:02	06:58	07:53	07:53	08:45
	16:35	17:33	18:29	20:27	21:23	22:08	22:10	21:23	20:11	18:57	16:49	16:15
10	08:55	08:10	07:07	06:51	05:44	05:05	05:16	06:04	07:00	07:55	07:55	08:46
	16:36	17:35	18:31	20:29	21:25	22:09	22:09	21:21	20:09	18:54	16:47	16:14
11	08:54	08:08	07:05	06:48	05:43	05:05	05:17	06:06	07:02	07:57	07:57	08:47
	16:38	17:37	18:32	20:31	21:27	22:10	22:08	21:19	20:06	18:52	16:46	16:14
12	08:53	08:06	07:02	06:46	05:41	05:04	05:19	06:08	07:04	07:59	07:59	08:48
	16:39	17:39	18:34	20:33	21:29	22:11	22:07	21:17	20:04	18:49	16:44	16:14
13	08:52	08:04	07:00	06:43	05:39	05:04	05:20	06:10	07:05	08:00	08:01	08:49
	16:41	17:41	18:36	20:35	21:31	22:12	22:06	21:15	20:01	18:47	16:42	16:14
14	08:51	08:02	06:57	06:41	05:37	05:04	05:21	06:11	07:07	08:02	08:03	08:50
	16:42	17:43	18:38	20:37	21:32	22:12	22:05	21:12	19:59	18:45	16:41	16:14
15	08:50	08:00	06:55	06:39	05:35	05:04	05:22	06:13	07:09	08:04	08:05	08:51
	16:44	17:45	18:40	20:39	21:34	22:13	22:04	21:10	19:56	18:42	16:39	16:14
16	08:49	07:58	06:52	06:36	05:34	05:03	05:24	06:15	07:11	08:06	08:07	08:52
	16:46	17:47	18:42	20:41	21:36	22:13	22:03	21:08	19:54	18:40	16:37	16:14
17	08:48	07:56	06:50	06:34	05:32	05:03	05:25	06:17	07:13	08:08	08:09	08:53
	16:48	17:49	18:44	20:43	21:37	22:14	22:02	21:06	19:51	18:38	16:36	16:14
18	08:47	07:54	06:47	06:31	05:30	05:03	05:26	06:19	07:14	08:10	08:11	08:54
	16:49	17:51	18:46	20:44	21:39	22:14	22:00	21:04	19:49	18:35	16:34	16:14
19	08:46	07:51	06:45	06:29	05:29	05:03	05:28	06:20	07:16	08:12	08:12	08:54
	16:51	17:53	18:48	20:46	21:41	22:15	21:59	21:01	19:46	18:33	16:33	16:15
20	08:45	07:49	06:42	06:27	05:27	05:03	05:29	06:22	07:18	08:14	08:14	08:55
	16:53	17:55	18:50	20:48	21:42	22:15	21:58	20:59	19:44	18:31	16:32	16:15
21	08:44	07:47	06:40	06:24	05:26	05:03	05:31	06:24	07:20	08:16	08:16	08:56
	16:55	17:57	18:52	20:50	21:44	22:15	21:56	20:57	19:41	18:28	16:30	16:15
22	08:42	07:45	06:37	06:22	05:24	05:04	05:32	06:26	07:22	08:18	08:18	08:56
	16:57	17:59	18:54	20:52	21:45	22:16	21:55	20:55	19:39	18:26	16:29	16:16
23	08:41	07:43	06:35	06:20	05:23	05:04	05:34	06:28	07:23	08:20	08:20	08:57
	16:59	18:01	18:55	20:54	21:47	22:16	21:53	20:52	19:36	18:24	16:28	16:16
24	08:40	07:40	06:32	06:18	05:21	05:04	05:35	06:29	07:25	08:22	08:22	08:57
	17:00	18:03	18:57	20:56	21:49	22:16	21:52	20:50	19:34	18:22	16:26	16:17
25	08:38	07:38	06:30	06:15	05:20	05:05	05:37	06:31	07:27	08:24	08:23	08:58
	17:02	18:05	18:59	20:58	21:50	22:16	21:50	20:48	19:31	17:19	16:25	16:18
26	08:37	07:36	06:27	06:13	05:19	05:05	05:39	06:33	07:29	08:26	08:25	08:58
	17:04	18:07	19:01	20:59	21:52	22:16	21:49	20:45	19:29	17:17	16:24	16:18
27	08:35	07:33	06:25	06:11	05:18	05:05	05:40	06:35	07:31	08:28	08:27	08:58
	17:06	18:09	19:03	21:01	21:53	22:16	21:47	20:43	19:26	17:15	16:23	16:19
28	08:34	07:31	06:23	06:09	05:16	05:06	05:42	06:37	07:33	08:29	08:28	08:58
	17:08	18:11	19:05	21:03	21:54	22:15	21:46	20:41	19:24	17:13	16:22	16:20
29	08:32		07:20	06:07	05:15	05:07	05:43	06:38	07:34	08:31	08:30	08:58
	17:10		20:07	21:05	21:56	22:15	21:44	20:38	19:21	17:11	16:21	16:21
30	08:30		07:18	06:05	05:14	05:07	05:45	06:40	07:36	08:33	08:32	08:58
	17:12		20:09	21:07	21:57	22:15	21:42	20:36	19:19	17:09	16:20	16:22
31	08:29		07:15		05:13		05:47	06:42		07:35		08:58
	17:14		20:11		21:58		21:40	20:33		17:07		16:23
Potential sun hours	248	272	367	421	496	513	515	461	382	328	257	231
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: BU - H73  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June
1	08:58 16:24	08:27 17:16	07:29 18:13	07:12 20:12	06:02 21:09	19:34 (16) 22:00
2	08:58 16:25	08:25 17:18	07:26 18:15	07:10 20:14	06:00 21:11	28 20:02 (16) 27 20:02 (16)
3	08:58 16:26	08:24 17:20	07:24 18:17	07:07 20:16	05:58 21:12	19:35 (16) 20:01 (16)
4	08:58 16:27	08:22 17:22	07:21 18:19	07:05 20:18	05:56 21:14	19:36 (16) 20:00 (16)
5	08:57 16:28	08:20 17:24	07:19 18:21	07:02 20:20	05:54 21:16	19:36 (16) 19:59 (16)
6	08:57 16:30	08:18 17:26	07:17 18:23	07:00 20:22	05:52 21:18	19:38 (16) 19:59 (16)
7	08:56 16:31	08:16 17:28	07:14 18:24	06:58 20:24	05:50 21:20	19:39 (16) 19:57 (16)
8	08:56 16:33	08:14 17:30	07:12 18:26	06:55 20:25	05:48 21:22	19:41 (16) 19:56 (16)
9	08:55 16:34	08:12 17:32	07:09 18:28	06:53 20:27	05:46 21:23	19:43 (16) 19:53 (16)
10	08:55 16:36	08:10 17:34	07:07 18:30	06:50 20:29	05:44 21:25	05:05 22:09
11	08:54 16:37	08:08 17:36	07:04 18:32	06:48 20:31	05:42 21:27	05:04 22:10
12	08:53 16:39	08:06 17:38	07:02 18:34	06:45 20:33	05:40 21:29	05:04 22:11
13	08:52 16:40	08:04 17:40	07:00 18:36	06:43 20:35	05:38 21:31	20:36 (15) 20:45 (15)
14	08:51 16:42	08:02 17:42	06:57 18:38	06:41 20:37	05:37 21:32	20:34 (15) 20:48 (15)
15	08:50 16:44	08:00 17:44	06:55 18:40	06:38 20:39	05:35 21:34	20:33 (15) 20:49 (15)
16	08:49 16:45	07:58 17:46	06:52 18:42	06:36 20:41	05:33 21:36	20:32 (15) 20:50 (15)
17	08:48 16:47	07:56 17:49	06:50 18:44	06:33 20:42	05:32 21:37	20:31 (15) 20:51 (15)
18	08:47 16:49	07:54 17:51	06:47 18:46	06:31 20:44	10 19:46 (16) 21:39	05:30 20:52 (15)
19	08:46 16:51	07:51 17:53	06:45 18:48	06:29 20:46	16 19:43 (16) 21:41	05:28 20:52 (15)
20	08:45 16:53	07:49 17:55	06:42 18:50	06:26 20:48	20 19:40 (16) 21:42	05:27 20:53 (15)
21	08:44 16:54	07:47 17:57	06:40 18:51	06:24 20:50	22 19:39 (16) 20:01 (16)	05:25 21:44
22	08:42 16:56	07:45 17:59	06:37 18:53	06:22 20:52	24 19:38 (16) 20:02 (16)	05:24 21:46
23	08:41 16:58	07:42 18:01	06:35 18:55	06:20 20:54	26 19:37 (16) 20:03 (16)	05:22 21:47
24	08:40 17:00	07:40 18:03	06:32 18:57	06:17 20:56	28 19:36 (16) 20:04 (16)	05:21 21:49
25	08:38 17:02	07:38 18:05	06:30 18:59	06:15 20:58	28 19:35 (16) 20:03 (16)	05:20 21:50
26	08:37 17:04	07:36 18:07	06:27 19:01	06:13 20:59	28 19:35 (16) 20:03 (16)	05:18 21:52
27	08:35 17:06	07:33 18:09	06:25 19:03	06:11 21:01	29 19:34 (16) 20:03 (16)	05:17 21:53
28	08:34 17:08	07:31 18:11	06:22 19:05	06:08 21:03	29 19:34 (16) 20:03 (16)	05:16 21:55
29	08:32 17:10	07:29 18:07	06:20 19:02	06:06 21:05	29 19:34 (16) 20:03 (16)	05:15 21:56
30	08:30 17:12	07:27 18:04	06:17 19:00	06:04 21:07	29 19:34 (16) 20:03 (16)	05:14 21:57
31	08:29 17:14	07:25 18:01	06:15 19:00	06:02 21:09	29 19:34 (16) 20:03 (16)	05:13 21:58
Potential sun hours	248	272	367	421	496	513
Total, worst case				318	617	588
Sun reduction				0.34	0.36	0.26
Oper. time red.				1.00	1.00	1.00
Wind dir. red.				0.59	0.61	0.62
Total reduction				0.20	0.22	0.16
Total, real				64	137	95

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: BU - H73

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	July	August	September	October	November	December				
1	05:07	20:38 (15)	05:48	06:44	07:38	07:37	08:33			
	22:15	20	20:58 (15)	21:39	20:31	19:16	17:04	16:19		
2	05:08	20:39 (15)	05:50	06:45	07:40	07:39	08:35			
	22:14	20	20:59 (15)	21:37	20:28	19:13	17:02	16:18		
3	05:09	20:39 (15)	05:52	19:55 (16)	06:47	07:42	07:41	08:36		
	22:14	21	21:00 (15)	21:35	6	20:01 (16)	20:26	19:11	17:00	16:17
4	05:10	20:38 (15)	05:53	19:52 (16)	06:49	07:43	07:43	08:38		
	22:13	21	20:59 (15)	21:33	12	20:04 (16)	20:23	19:09	16:58	16:17
5	05:11	20:38 (15)	05:55	19:50 (16)	06:51	07:45	07:45	08:39		
	22:13	22	21:00 (15)	21:31	16	20:06 (16)	20:21	19:06	16:56	16:16
6	05:12	20:38 (15)	05:57	19:48 (16)	06:53	07:47	07:47	08:41		
	22:12	22	21:00 (15)	21:29	19	20:07 (16)	20:19	19:04	16:54	16:16
7	05:12	20:38 (15)	05:59	19:47 (16)	06:54	07:49	07:49	08:42		
	22:12	23	21:01 (15)	21:27	22	20:09 (16)	20:16	19:01	16:53	16:15
8	05:14	20:38 (15)	06:00	19:46 (16)	06:56	07:51	07:51	08:43		
	22:11	23	21:01 (15)	21:25	23	20:09 (16)	20:14	18:59	16:51	16:15
9	05:15	20:38 (15)	06:02	19:45 (16)	06:58	07:53	07:53	08:45		
	22:10	24	21:02 (15)	21:23	25	20:10 (16)	20:11	18:56	16:49	16:14
10	05:16	20:38 (15)	06:04	19:44 (16)	07:00	07:55	07:55	08:46		
	22:09	24	21:02 (15)	21:21	27	20:11 (16)	20:09	18:54	16:47	16:14
11	05:17	20:38 (15)	06:06	19:43 (16)	07:02	07:57	07:57	08:47		
	22:08	24	21:02 (15)	21:19	27	20:10 (16)	20:06	18:51	16:45	16:14
12	05:18	20:38 (15)	06:07	19:43 (16)	07:03	07:58	07:59	08:48		
	22:07	25	21:03 (15)	21:17	28	20:11 (16)	20:04	18:49	16:44	16:14
13	05:19	20:37 (15)	06:09	19:43 (16)	07:05	08:00	08:01	08:49		
	22:06	26	21:03 (15)	21:15	28	20:11 (16)	20:01	18:47	16:42	16:13
14	05:21	20:38 (15)	06:11	19:42 (16)	07:07	08:02	08:03	08:50		
	22:05	26	21:04 (15)	21:12	29	20:11 (16)	19:59	18:44	16:40	16:13
15	05:22	20:38 (15)	06:13	19:42 (16)	07:09	08:04	08:05	08:51		
	22:04	26	21:04 (15)	21:10	29	20:11 (16)	19:56	18:42	16:39	16:13
16	05:23	20:38 (15)	06:15	19:42 (16)	07:11	08:06	08:07	08:52		
	22:03	26	21:04 (15)	21:08	29	20:11 (16)	19:54	18:40	16:37	16:13
17	05:25	20:38 (15)	06:16	19:42 (16)	07:12	08:08	08:09	08:53		
	22:02	26	21:04 (15)	21:06	29	20:11 (16)	19:51	18:37	16:36	16:14
18	05:26	20:38 (15)	06:18	19:42 (16)	07:14	08:10	08:11	08:54		
	22:01	26	21:04 (15)	21:04	27	20:09 (16)	19:49	18:35	16:34	16:14
19	05:27	20:38 (15)	06:20	19:42 (16)	07:16	08:12	08:12	08:55		
	21:59	26	21:04 (15)	21:01	27	20:09 (16)	19:46	18:33	16:33	16:14
20	05:29	20:38 (15)	06:22	19:43 (16)	07:18	08:14	08:14	08:55		
	21:58	26	21:04 (15)	20:59	25	20:08 (16)	19:44	18:30	16:31	16:14
21	05:30	20:39 (15)	06:24	19:43 (16)	07:20	08:16	08:16	08:56		
	21:56	25	21:04 (15)	20:57	24	20:07 (16)	19:41	18:28	16:30	16:15
22	05:32	20:39 (15)	06:25	19:44 (16)	07:21	08:18	08:18	08:56		
	21:55	25	21:04 (15)	20:55	22	20:06 (16)	19:39	18:26	16:29	16:15
23	05:33	20:39 (15)	06:27	19:45 (16)	07:23	08:20	08:20	08:57		
	21:54	24	21:03 (15)	20:52	19	20:04 (16)	19:36	18:24	16:27	16:16
24	05:35	20:40 (15)	06:29	19:46 (16)	07:25	08:22	08:22	08:57		
	21:52	23	21:03 (15)	20:50	15	20:01 (16)	19:33	18:21	16:26	16:16
25	05:37	20:40 (15)	06:31	19:49 (16)	07:27	07:24	08:23	08:58		
	21:50	22	21:02 (15)	20:48	9	19:58 (16)	19:31	17:19	16:25	16:17
26	05:38	20:41 (15)	06:33	19:49 (16)	07:29	07:25	08:25	08:58		
	21:49	21	21:02 (15)	20:45	19:28	17:17	16:24	16:18		
27	05:40	20:41 (15)	06:35	19:28	07:31	07:27	08:27	08:58		
	21:47	20	21:01 (15)	20:43	19:26	17:15	16:23	16:19		
28	05:41	20:43 (15)	06:36	19:27	07:32	07:29	08:28	08:58		
	21:46	17	21:00 (15)	20:40	19:23	17:13	16:22	16:19		
29	05:43	20:43 (15)	06:38	19:23	07:34	07:31	08:30	08:58		
	21:44	16	20:59 (15)	20:38	19:21	17:11	16:21	16:20		
30	05:45	20:45 (15)	06:40	19:21	07:36	07:33	08:32	08:58		
	21:42	12	20:57 (15)	20:36	19:18	17:08	16:20	16:21		
31	05:46	20:47 (15)	06:42	19:18	07:35	07:35	08:58			
	21:40	7	20:54 (15)	20:33	17:06	17:06	16:22			
Potential sun hours	515		461	383	327	257	230			
Total, worst case	689		517							
Sun reduction	0.27		0.27							
Oper. time red.	1.00		1.00							
Wind dir. red.	0.62		0.59							
Total reduction	0.17		0.16							
Total, real	114		83							

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: BV - H74  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June
1	08:58 16:24	15:43 (1) 15:45 (1)	08:27 17:16	07:29 18:13	07:12 20:12	06:02 21:09
2	08:58 16:25	15:44 (1) 15:47 (1)	08:25 17:18	07:26 18:15	07:10 20:14	06:00 21:11
3	08:58 16:26	15:44 (1) 15:47 (1)	08:24 17:20	07:24 18:17	07:07 20:16	05:58 21:12
4	08:58 16:27	15:45 (1) 15:49 (1)	08:22 17:22	07:21 18:19	07:05 20:18	05:56 21:14
5	08:57 16:29	15:45 (1) 15:50 (1)	08:20 17:24	07:19 18:21	07:03 20:20	05:54 21:16
6	08:57 16:30	15:46 (1) 15:52 (1)	08:18 17:26	07:17 18:23	07:00 20:22	05:52 21:18
7	08:56 16:31	15:46 (1) 15:54 (1)	08:16 17:28	07:14 18:25	06:58 20:24	05:50 21:20
8	08:56 16:33	15:47 (1) 15:55 (1)	08:14 17:30	07:12 18:26	06:55 20:25	05:48 21:22
9	08:55 16:34	15:47 (1) 15:56 (1)	08:12 17:32	07:09 18:28	06:53 20:27	05:46 21:23
10	08:55 16:36	15:49 (1) 15:59 (1)	08:10 17:34	07:07 18:30	06:50 20:29	05:44 21:25
11	08:54 16:37	15:49 (1) 16:01 (1)	08:08 17:36	07:05 18:32	06:48 20:31	05:42 21:27
12	08:53 16:39	15:50 (1) 16:02 (1)	08:06 17:38	07:02 18:34	06:45 20:33	05:40 21:29
13	08:52 16:40	15:51 (1) 16:04 (1)	08:04 17:40	07:00 18:36	06:43 20:35	05:39 21:31
14	08:51 16:42	15:51 (1) 16:05 (1)	08:02 17:43	06:57 18:38	06:41 20:37	05:37 21:32
15	08:50 16:44	15:52 (1) 16:05 (1)	08:00 17:45	06:55 18:40	06:38 20:39	05:35 21:34
16	08:49 16:46	15:54 (1) 16:04 (1)	07:58 17:47	06:52 18:42	06:36 20:41	05:33 21:36
17	08:48 16:47	15:56 (1) 16:03 (1)	07:56 17:49	06:50 18:44	06:34 20:42	05:32 21:37
18	08:47 16:49	07:54 17:51	06:47 18:46	06:31 20:44	05:30 21:39	05:03 22:14
19	08:46 16:51	07:51 17:53	06:45 18:48	06:29 20:46	05:28 21:41	05:03 22:15
20	08:45 16:53	07:49 17:55	06:42 18:50	06:27 20:48	05:27 21:42	05:03 22:15
21	08:44 16:55	07:47 17:57	06:40 18:51	06:24 20:50	05:25 21:44	05:03 22:15
22	08:42 16:56	07:45 17:59	06:37 18:53	06:22 20:52	05:24 21:46	05:03 22:16
23	08:41 16:58	07:42 18:01	06:35 18:55	06:20 20:54	05:23 21:47	05:04 22:16
24	08:40 17:00	07:40 18:03	06:32 18:57	06:17 20:56	05:21 21:49	05:04 22:16
25	08:38 17:02	07:38 18:05	06:30 18:59	06:15 20:58	05:20 21:50	05:04 22:16
26	08:37 17:04	07:36 18:07	06:27 19:01	06:13 20:59	05:18 21:52	05:05 22:16
27	08:35 17:06	07:33 18:09	06:25 19:03	06:11 21:01	05:17 21:53	05:05 22:16
28	08:34 17:08	07:31 18:11	06:22 19:05	06:09 21:03	05:16 21:54	05:06 22:16
29	08:32 17:10	07:29 18:07	06:20 19:07	06:06 21:05	05:15 21:56	05:06 22:15
30	08:30 17:12	07:27 18:09	06:17 19:09	06:04 21:07	05:14 21:57	05:07 22:15
31	08:29 17:14	07:25 18:11	06:15 19:11	06:02 21:09	05:13 21:58	05:07 22:15
Potential sun hours	248		272	367	421	496
Total, worst case		139				606
Sun reduction		0.17				0.36
Oper. time red.		1.00				1.00
Wind dir. red.		0.62				0.62
Total reduction		0.11				0.23
Total, real		15				137

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: BV - H74

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	July	August	September	October	November	December							
1	05:07	20:35 (7)	05:48	20:39 (7)	06:44	07:38	07:37				08:33	15:31 (1)	
	22:15	22	20:57 (7)	21:39	20	20:59 (7)	20:31	19:16	17:04		16:19	12	15:43 (1)
2	05:08	20:36 (7)	05:50	20:40 (7)	06:45	07:40	07:39				08:35	15:31 (1)	
	22:14	21	20:57 (7)	21:37	18	20:58 (7)	20:28	19:14	17:02		16:18	10	15:41 (1)
3	05:09	20:36 (7)	05:52	20:42 (7)	06:47	07:42	07:41				08:36	15:31 (1)	
	22:14	22	20:58 (7)	21:35	13	20:55 (7)	20:26	19:11	17:00		16:18	10	15:41 (1)
4	05:10	20:35 (7)	05:53	20:45 (7)	06:49	07:44	07:43				08:38	15:32 (1)	
	22:13	23	20:58 (7)	21:33	8	20:53 (7)	20:24	19:09	16:58		16:17	8	15:40 (1)
5	05:11	20:35 (7)	05:55		06:51	07:45	07:45				08:39	15:31 (1)	
	22:13	23	20:58 (7)	21:31		20:21	19:06	16:56			16:16	8	15:39 (1)
6	05:12	20:35 (7)	05:57		06:53	07:47	07:47				08:41	15:32 (1)	
	22:12	24	20:59 (7)	21:29		20:19	19:04	16:55			16:16	7	15:39 (1)
7	05:13	20:35 (7)	05:59		06:55	07:49	07:49				08:42	15:32 (1)	
	22:12	25	21:00 (7)	21:27		20:16	19:01	16:53			16:15	6	15:38 (1)
8	05:14	20:35 (7)	06:00		06:56	07:51	07:51				08:43	15:33 (1)	
	22:11	25	21:00 (7)	21:25		20:14	18:59	16:51			16:15	5	15:38 (1)
9	05:15	20:34 (7)	06:02		06:58	07:53	07:53				08:45	15:33 (1)	
	22:10	27	21:01 (7)	21:23		20:11	18:56	16:49			16:14	4	15:37 (1)
10	05:16	20:34 (7)	06:04		07:00	07:55	07:55				08:46	15:33 (1)	
	22:09	27	21:01 (7)	21:21		20:09	18:54	16:47			16:14	3	15:36 (1)
11	05:17	20:34 (7)	06:06		07:02	07:57	07:57				08:47	15:34 (1)	
	22:08	27	21:01 (7)	21:19		20:06	18:52	16:45			16:14	1	15:35 (1)
12	05:18	20:34 (7)	06:08		07:04	07:59	07:59				08:48	15:35 (1)	
	22:07	28	21:02 (7)	21:17		20:04	18:49	16:44			16:14	1	15:36 (1)
13	05:19	20:34 (7)	06:09		07:05	08:00	08:01				08:49	15:35 (1)	
	22:06	29	21:03 (7)	21:15		20:01	18:47	16:42			16:14	1	15:36 (1)
14	05:21	20:34 (7)	06:11		07:07	08:02	08:03				08:50		
	22:05	29	21:03 (7)	21:12		19:59	18:44	16:40			16:14		
15	05:22	20:34 (7)	06:13		07:09	08:04	08:05				08:51		
	22:04	29	21:03 (7)	21:10		19:56	18:42	16:39			16:14		
16	05:23	20:34 (7)	06:15		07:11	08:06	08:07				08:52		
	22:03	29	21:03 (7)	21:08		19:54	18:40	16:37			16:14		
17	05:25	20:33 (7)	06:17		07:13	08:08	08:09				08:53		
	22:02	30	21:03 (7)	21:06		19:51	18:37	16:36			16:14		
18	05:26	20:34 (7)	06:18		07:14	08:10	08:11				08:54		
	22:00	30	21:04 (7)	21:04		19:49	18:35	16:34			16:14		
19	05:28	20:34 (7)	06:20		07:16	08:12	08:12				08:54		
	21:59	30	21:04 (7)	21:01		19:46	18:33	16:33			16:14		
20	05:29	20:33 (7)	06:22		07:18	08:14	08:14				08:55		
	21:58	31	21:04 (7)	20:59		19:44	18:30	16:31			16:15		
21	05:31	20:34 (7)	06:24		07:20	08:16	08:16				08:56		
	21:56	30	21:04 (7)	20:57		19:41	18:28	16:30			16:15		
22	05:32	20:34 (7)	06:26		07:22	08:18	08:18				08:56		
	21:55	30	21:04 (7)	20:55		19:39	18:26	16:29			16:15		
23	05:34	20:35 (7)	06:27		07:23	08:20	08:20				08:57		
	21:54	29	21:04 (7)	20:52		19:36	18:24	16:27			16:16		
24	05:35	20:34 (7)	06:29		07:25	08:22	08:22				08:57		
	21:52	30	21:04 (7)	20:50		19:34	18:21	16:26			16:17		
25	05:37	20:34 (7)	06:31		07:27	07:24	08:23				15:35 (1)	08:58	
	21:50	29	21:03 (7)	20:48		19:31	17:19	16:25		6	15:41 (1)	16:17	
26	05:38	20:35 (7)	06:33		07:29	07:25	08:25				15:33 (1)	08:58	
	21:49	28	21:03 (7)	20:45		19:29	17:17	16:24		10	15:43 (1)	16:18	
27	05:40	20:35 (7)	06:35		07:31	07:27	08:27				15:32 (1)	08:58	
	21:47	27	21:02 (7)	20:43		19:26	17:15	16:23		12	15:44 (1)	16:19	
28	05:42	20:36 (7)	06:36		07:32	07:29	08:28				15:31 (1)	08:58	
	21:46	26	21:02 (7)	20:40		19:24	17:13	16:22		14	15:45 (1)	16:20	
29	05:43	20:37 (7)	06:38		07:34	07:31	08:30				15:31 (1)	08:58	
	21:44	25	21:02 (7)	20:38		19:21	17:11	16:21		13	15:44 (1)	16:20	
30	05:45	20:37 (7)	06:40		07:36	07:33	08:32				15:31 (1)	08:58	
	21:42	24	21:01 (7)	20:36		19:19	17:09	16:20		13	15:44 (1)	16:21	
31	05:47	20:38 (7)	06:42			07:35					08:58		
	21:40	23	21:01 (7)	20:33		17:06					16:22		
Potential sun hours	515		461		382	328	257				231		
Total, worst case		832		59			68				76		
Sun reduction		0.27		0.27			0.20				0.12		
Oper. time red.		1.00		1.00			1.00				1.00		
Wind dir. red.		0.62		0.62			0.62				0.62		
Total reduction		0.17		0.17			0.12				0.07		
Total, real		138		10			8				6		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: BW - H75  
 Assumptions for shadow calculations Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	July		August		September		October		November		December				
1	05:07	21:14 (11)	05:48	20:34 (10)	06:44	19:51 (9)	07:38		07:37	15:46 (7)	08:33				
	22:15	19	21:33 (11)	21:39	22	20:56 (10)	20:31	10	20:01 (9)	19:16	17:04	21	16:07 (7)	16:19	
2	05:08	21:15 (11)	05:50	20:34 (10)	06:45				07:40		07:39	21	16:07 (7)	08:35	
	22:14	19	21:34 (11)	21:37	23	20:57 (10)	20:28		19:14		17:02	23	16:08 (7)	16:18	
3	05:09	21:15 (11)	05:52	20:34 (10)	06:47				07:42		07:41	23	16:08 (7)	08:36	
	22:14	19	21:34 (11)	21:35	22	20:56 (10)	20:26		19:11		17:00	23	16:08 (7)	16:18	
4	05:10	21:15 (11)	05:53	20:34 (10)	06:49				07:44		07:43	23	16:08 (7)	08:38	
	22:13	18	21:33 (11)	21:33	22	20:56 (10)	20:24		19:09		16:58	25	16:10 (7)	16:17	
5	05:11	21:15 (11)	05:55	20:35 (10)	06:51				07:45		07:45	25	16:10 (7)	08:39	
	22:13	19	21:34 (11)	21:31	21	20:56 (10)	20:21		19:06		16:56	25	16:10 (7)	16:16	
6	05:12	21:16 (11)	05:57	20:35 (10)	06:53				07:47		07:47	25	16:10 (7)	08:41	
	22:12	18	21:34 (11)	21:29	20	20:55 (10)	20:19		19:04		16:55	25	16:10 (7)	16:16	
7	05:13	21:16 (11)	05:59	20:36 (10)	06:54				07:49		07:49	24	16:09 (7)	08:42	
	22:12	18	21:34 (11)	21:27	18	20:54 (10)	20:16		19:01		16:53	24	16:09 (7)	16:15	
8	05:14	21:16 (11)	06:00	20:37 (10)	06:56				07:51	17:39 (8)	07:51	24	16:09 (7)	08:43	
	22:11	18	21:34 (11)	21:25	17	20:54 (10)	20:14		18:59	7	17:46 (8)	16:51	24	16:09 (7)	16:15
9	05:15	21:17 (11)	06:02	20:37 (10)	06:58				07:53	7	17:35 (8)	07:53	24	16:09 (7)	08:45
	22:10	17	21:34 (11)	21:23	15	20:52 (10)	20:11		18:56	15	17:50 (8)	16:49	24	16:09 (7)	16:14
10	05:16	21:17 (11)	06:04	20:39 (10)	07:00				07:55	15	17:33 (8)	07:55	24	16:09 (7)	08:46
	22:09	17	21:34 (11)	21:21	11	20:50 (10)	20:09		18:54	18	17:51 (8)	16:47	23	16:09 (7)	16:14
11	05:17	21:17 (11)	06:06	20:41 (10)	07:02				07:57	18	17:31 (8)	07:57	23	16:09 (7)	08:47
	22:08	16	21:33 (11)	21:19	5	20:46 (10)	20:06		18:52	22	17:53 (8)	16:45	22	16:09 (7)	16:14
12	05:18	21:18 (11)	06:08		07:03				07:59	22	17:30 (8)	07:59	22	16:09 (7)	08:48
	22:07	14	21:32 (11)	21:17		20:04			18:49	24	17:54 (8)	16:44	20	16:08 (7)	16:14
13	05:19	21:18 (11)	06:09		07:05				08:00	24	17:28 (8)	08:01	20	16:08 (7)	08:49
	22:06	13	21:31 (11)	21:15		20:01			18:47	26	17:54 (8)	16:42	19	16:07 (7)	16:14
14	05:21	21:20 (11)	06:11		07:07				08:02	26	17:28 (8)	08:03	19	16:07 (7)	08:50
	22:05	11	21:31 (11)	21:13		19:59			18:44	27	17:55 (8)	16:40	17	16:06 (7)	16:13
15	05:22	21:20 (11)	06:13		07:09				08:04	27	17:27 (8)	08:05	17	16:06 (7)	08:51
	22:04	10	21:30 (11)	21:10		19:56			18:42	28	17:55 (8)	16:39	14	16:05 (7)	16:13
16	05:23	21:21 (11)	06:15		07:11				08:06	28	17:26 (8)	08:07	14	16:05 (7)	08:52
	22:03	7	21:28 (11)	21:08		19:54			18:40	29	17:55 (8)	16:37	10	16:03 (7)	16:14
17	05:25	21:22 (11)	06:17		07:12				08:08	29	17:26 (8)	08:09	10	16:03 (7)	08:53
	22:02	5	21:27 (11)	21:06		19:51			18:37	29	17:55 (8)	16:36	2	16:00 (7)	16:14
18	05:26	21:25 (11)	06:18		07:14	19:55 (9)			08:10	29	17:26 (8)	08:11			08:54
	22:01	2	21:27 (11)	21:04	10	20:05 (9)	19:49		18:35	28	17:54 (8)	16:34			16:14
19	05:28		06:20		07:16	19:53 (9)			08:12	28	17:26 (8)	08:12			08:55
	21:59		21:01	14	19:46	20:07 (9)			18:33	28	17:54 (8)	16:33			16:14
20	05:29		06:22		07:18	19:52 (9)			08:14	27	17:26 (8)	08:14			08:55
	21:58		20:59	17	19:44	20:09 (9)			18:30	27	17:53 (8)	16:31			16:15
21	05:30	20:43 (10)	06:24		07:20	19:50 (9)			08:16	27	17:26 (8)	08:16			08:56
	21:56	5	20:48 (10)	20:57	19	20:09 (9)	19:41		18:28	27	17:53 (8)	16:30			16:15
22	05:32	20:40 (10)	06:26		07:22	19:49 (9)			08:18	27	17:27 (8)	08:18			08:56
	21:55	10	20:50 (10)	20:55	20	20:09 (9)	19:39		18:26	25	17:52 (8)	16:29			16:15
23	05:34	20:40 (10)	06:27		07:23	19:49 (9)			08:20	25	17:28 (8)	08:20			08:57
	21:54	12	20:52 (10)	20:52	21	20:10 (9)	19:36		18:24	22	17:50 (8)	16:27			16:16
24	05:35	20:38 (10)	06:29		07:25	19:48 (9)			08:22	22	17:29 (8)	08:22			08:57
	21:52	15	20:53 (10)	20:50	22	20:10 (9)	19:34		18:21	20	17:49 (8)	16:26			16:17
25	05:37	20:37 (10)	06:31		07:27	19:47 (9)			07:24	20	16:30 (8)	08:23			08:58
	21:51	16	20:53 (10)	20:48	22	20:09 (9)	19:31		17:19	17	16:47 (8)	16:25			16:17
26	05:38	20:36 (10)	06:33		07:29	19:47 (9)			07:26	17	16:32 (8)	08:25			08:58
	21:49	19	20:55 (10)	20:45	22	20:09 (9)	19:29		17:17	12	16:44 (8)	16:24			16:18
27	05:40	20:35 (10)	06:35		07:31	19:47 (9)			07:27	12	16:37 (8)	08:27			08:58
	21:47	20	20:55 (10)	20:43	22	20:09 (9)	19:26		17:15	2	16:39 (8)	16:23			16:19
28	05:41	20:35 (10)	06:36		07:32	19:47 (9)			07:29		15:55 (7)	08:28			08:58
	21:46	21	20:56 (10)	20:40	21	20:08 (9)	19:24		17:13	6	16:01 (7)	16:22			16:19
29	05:43	20:34 (10)	06:38		07:34	19:48 (9)			07:31		15:51 (7)	08:30			08:58
	21:44	22	20:56 (10)	20:38	19	20:07 (9)	19:21		17:11	13	16:04 (7)	16:21			16:20
30	05:45	20:34 (10)	06:40		07:36	19:49 (9)			07:33		15:49 (7)	08:32			08:58
	21:42	22	20:56 (10)	20:36	17	20:06 (9)	19:19		17:08	16	16:05 (7)	16:20			16:21
31	05:47	20:35 (10)	06:42		07:35	19:50 (9)			07:35		15:48 (7)				08:58
	21:40	22	20:57 (10)	20:33	15	20:05 (9)			17:06	19	16:07 (7)				16:22
Potential sun hours	515		461		382				328		257				231
Total, worst case	444		457		10				487		341				
Sun reduction	0.27		0.27		0.29				0.23		0.20				
Oper. time red.	1.00		1.00		1.00				1.00		1.00				
Wind dir. red.	0.62		0.60		0.59				0.58		0.59				
Total reduction	0.17		0.16		0.17				0.14		0.12				
Total, real	74		75		2				67		40				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: BX - H76  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:58	08:27	07:29	07:13	06:02	05:12	05:08	05:48	06:44	07:38	07:37	08:33
	16:24	17:16	18:13	20:12	21:09	22:00	22:15	21:38	20:31	19:16	17:05	16:19
2	08:58	08:25	07:26	07:10	06:00	05:11	05:09	05:50	06:46	07:40	07:39	08:35
	16:25	17:18	18:15	20:14	21:11	22:01	22:14	21:37	20:28	19:14	17:03	16:19
3	08:58	08:24	07:24	07:08	05:58	05:10	05:09	05:52	06:47	07:42	07:41	08:36
	16:26	17:20	18:17	20:16	21:12	22:02	22:14	21:35	20:26	19:11	17:01	16:18
4	08:58	08:22	07:22	07:05	05:56	05:09	05:10	05:54	06:49	07:44	07:43	08:38
	16:28	17:22	18:19	20:18	21:14	22:03	22:13	21:33	20:24	19:09	16:59	16:17
5	08:57	08:20	07:19	07:03	05:54	05:08	05:11	05:55	06:51	07:45	07:45	08:39
	16:29	17:24	18:21	20:20	21:16	22:04	22:13	21:31	20:21	19:06	16:57	16:17
6	08:57	08:18	07:17	07:00	05:52	05:08	05:12	05:57	06:53	07:47	07:47	08:41
	16:30	17:26	18:23	20:22	21:18	22:05	22:12	21:29	20:19	19:04	16:55	16:16
7	08:56	08:16	07:14	06:58	05:50	05:07	05:13	05:59	06:55	07:49	07:49	08:42
	16:32	17:28	18:25	20:24	21:20	22:06	22:11	21:27	20:16	19:01	16:53	16:16
8	08:56	08:14	07:12	06:55	05:48	05:06	05:14	06:01	06:56	07:51	07:51	08:43
	16:33	17:30	18:27	20:26	21:22	22:07	22:11	21:25	20:14	18:59	16:51	16:15
9	08:55	08:12	07:09	06:53	05:46	05:06	05:15	06:02	06:58	07:53	07:53	08:45
	16:35	17:32	18:29	20:27	21:23	22:08	22:10	21:23	20:11	18:57	16:49	16:15
10	08:54	08:10	07:07	06:50	05:44	05:05	05:16	06:04	07:00	07:55	07:55	08:46
	16:36	17:35	18:31	20:29	21:25	22:09	22:09	21:21	20:09	18:54	16:47	16:14
11	08:54	08:08	07:05	06:48	05:42	05:05	05:17	06:06	07:02	07:57	07:57	08:47
	16:38	17:37	18:32	20:31	21:27	22:10	22:08	21:19	20:06	18:52	16:46	16:14
12	08:53	08:06	07:02	06:46	05:41	05:04	05:19	06:08	07:04	07:59	07:59	08:48
	16:39	17:39	18:34	20:33	21:29	22:11	22:07	21:17	20:04	18:49	16:44	16:14
13	08:52	08:04	07:00	06:43	05:39	05:04	05:20	06:10	07:05	08:00	08:01	08:49
	16:41	17:41	18:36	20:35	21:30	22:12	22:06	21:15	20:01	18:47	16:42	16:14
14	08:51	08:02	06:57	06:41	05:37	05:04	05:21	06:11	07:07	08:02	08:03	08:50
	16:42	17:43	18:38	20:37	21:32	22:12	22:05	21:12	19:59	18:45	16:41	16:14
15	08:50	08:00	06:55	06:38	05:35	05:04	05:22	06:13	07:09	08:04	08:05	08:51
	16:44	17:45	18:40	20:39	21:34	22:13	22:04	21:10	19:56	18:42	16:39	16:14
16	08:49	07:58	06:52	06:36	05:34	05:03	05:24	06:15	07:11	08:06	08:07	08:52
	16:46	17:47	18:42	20:41	21:36	22:13	22:03	21:08	19:54	18:40	16:37	16:14
17	08:48	07:56	06:50	06:34	05:32	05:03	05:25	06:17	07:13	08:08	08:09	08:53
	16:48	17:49	18:44	20:42	21:37	22:14	22:02	21:06	19:51	18:38	16:36	16:14
18	08:47	07:54	06:47	06:31	05:30	05:03	05:26	06:19	07:14	08:10	08:10	08:54
	16:49	17:51	18:46	20:44	21:39	22:14	22:00	21:04	19:49	18:35	16:34	16:14
19	08:46	07:51	06:45	06:29	05:29	05:03	05:28	06:20	07:16	08:12	08:12	08:54
	16:51	17:53	18:48	20:46	21:41	22:15	21:59	21:01	19:46	18:33	16:33	16:15
20	08:45	07:49	06:42	06:27	05:27	05:03	05:29	06:22	07:18	08:14	08:14	08:55
	16:53	17:55	18:50	20:48	21:42	22:15	21:58	20:59	19:44	18:31	16:32	16:15
21	08:44	07:47	06:40	06:24	05:26	05:03	05:31	06:24	07:20	08:16	08:16	08:56
	16:55	17:57	18:52	20:50	21:44	22:15	21:56	20:57	19:41	18:28	16:30	16:15
22	08:42	07:45	06:37	06:22	05:24	05:04	05:32	06:26	07:22	08:18	08:18	08:56
	16:57	17:59	18:53	20:52	21:45	22:15	21:55	20:55	19:39	18:26	16:29	16:16
23	08:41	07:43	06:35	06:20	05:23	05:04	05:34	06:28	07:23	08:20	08:20	08:57
	16:59	18:01	18:55	20:54	21:47	22:16	21:53	20:52	19:36	18:24	16:28	16:16
24	08:40	07:40	06:32	06:18	05:21	05:04	05:35	06:29	07:25	08:22	08:21	08:57
	17:00	18:03	18:57	20:56	21:49	22:16	21:52	20:50	19:34	18:22	16:26	16:17
25	08:38	07:38	06:30	06:15	05:20	05:04	05:37	06:31	07:27	08:24	08:23	08:57
	17:02	18:05	18:59	20:58	21:50	22:16	21:50	20:48	19:31	17:19	16:25	16:18
26	08:37	07:36	06:27	06:13	05:19	05:05	05:39	06:33	07:29	08:26	08:25	08:58
	17:04	18:07	19:01	20:59	21:52	22:16	21:49	20:45	19:29	17:17	16:24	16:18
27	08:35	07:33	06:25	06:11	05:17	05:05	05:40	06:35	07:31	08:27	08:27	08:58
	17:06	18:09	19:03	21:01	21:53	22:16	21:47	20:43	19:26	17:15	16:23	16:19
28	08:34	07:31	06:22	06:09	05:16	05:06	05:42	06:37	07:33	08:29	08:28	08:58
	17:08	18:11	19:05	21:03	21:54	22:15	21:46	20:40	19:24	17:13	16:22	16:20
29	08:32		07:20	06:07	05:15	05:06	05:43	06:38	07:34	08:31	08:30	08:58
	17:10		20:07	21:05	21:56	22:15	21:44	20:38	19:21	17:11	16:21	16:21
30	08:30		07:18	06:04	05:14	05:07	05:45	06:40	07:36	08:33	08:32	08:58
	17:12		20:09	21:07	21:57	22:15	21:42	20:36	19:19	17:09	16:20	16:22
31	08:29		07:15		05:13		05:47	06:42		07:35		08:58
	17:14		20:10		21:58		21:40	20:33		17:07		16:23
Potential sun hours	248	272	367	421	496	513	515	461	382	328	257	231
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: BY - H77

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January	February	March	April	May	June
1	08:58 16:24	08:27 17:16	07:29 18:13	07:12 20:12	06:02 21:09	05:11 22:00
2	08:58 16:25	08:25 17:18	07:26 18:15	07:10 20:14	06:00 21:11	05:10 22:01
3	08:58 16:26	08:24 17:20	07:24 18:17	07:07 20:16	05:58 21:12	05:10 22:02
4	08:58 16:27	08:22 17:22	07:21 18:19	07:05 20:18	05:56 21:14	05:09 22:03
5	08:57 16:28	08:20 17:24	07:19 18:21	07:02 20:20	05:54 21:16	05:08 22:05
6	08:57 16:30	08:18 17:26	07:17 18:23	07:00 20:22	05:52 21:18	05:07 22:06
7	08:56 16:31	08:16 17:28	07:14 18:24	06:58 20:24	05:50 21:20	05:06 22:07
8	08:56 16:33	08:14 17:30	07:12 18:26	06:55 20:25	05:48 21:22	05:06 22:08
9	08:55 16:34	08:12 17:32	07:09 18:28	06:53 20:27	05:46 21:23	05:05 22:09
10	08:55 16:36	08:10 17:34	07:07 18:30	06:50 20:29	19:28 (16) 19:41 (16)	05:44 21:25
11	08:54 16:37	08:08 17:36	07:04 18:32	06:48 20:31	19:26 (16) 19:43 (16)	05:42 21:27
12	08:53 16:39	08:06 17:38	07:02 18:34	06:45 20:33	19:25 (16) 19:45 (16)	05:40 21:29
13	08:52 16:40	08:04 17:40	07:00 18:36	06:43 20:35	19:23 (16) 19:45 (16)	05:38 21:31
14	08:51 16:42	08:02 17:42	06:57 18:38	06:41 20:37	19:22 (16) 19:46 (16)	05:37 21:32
15	08:50 16:44	08:00 17:44	06:55 18:40	06:38 20:39	19:21 (16) 19:47 (16)	05:35 21:34
16	08:49 16:45	07:58 17:46	06:52 18:42	06:36 20:41	19:20 (16) 19:47 (16)	05:33 21:36
17	08:48 16:47	07:56 17:49	06:50 18:44	06:33 20:42	19:19 (16) 19:47 (16)	05:32 21:37
18	08:47 16:49	07:54 17:51	06:47 18:46	06:31 20:44	19:19 (16) 19:47 (16)	05:30 21:39
19	08:46 16:51	07:51 17:53	06:45 18:48	06:29 20:46	19:19 (16) 19:47 (16)	05:28 21:41
20	08:45 16:53	07:49 17:55	06:42 18:50	06:26 20:48	19:18 (16) 19:46 (16)	05:27 21:42
21	08:44 16:54	07:47 17:57	06:40 18:51	06:24 20:50	19:19 (16) 19:46 (16)	05:25 21:44
22	08:42 16:56	07:45 17:59	06:37 18:53	06:22 20:52	19:19 (16) 19:45 (16)	05:24 21:46
23	08:41 16:58	07:42 18:01	06:35 18:55	06:20 20:54	19:20 (16) 19:45 (16)	05:22 21:47
24	08:40 17:00	07:40 18:03	06:32 18:57	06:17 20:56	19:21 (16) 19:44 (16)	05:21 21:49
25	08:38 17:02	07:38 18:05	06:30 18:59	06:15 20:58	19:21 (16) 19:42 (16)	05:20 21:50
26	08:37 17:04	07:36 18:07	06:27 19:01	06:13 20:59	19:22 (16) 19:41 (16)	05:18 21:52
27	08:35 17:06	07:33 18:09	06:25 19:03	06:11 21:01	19:23 (16) 19:39 (16)	05:17 21:53
28	08:34 17:08	07:31 18:11	06:22 19:05	06:08 21:03	19:26 (16) 19:37 (16)	05:16 21:55
29	08:32 17:10		07:20 20:07	06:06 21:05	05:15 21:56	05:15 22:01
30	08:30 17:12		07:17 20:08	06:04 21:07	05:14 21:57	05:14 22:15
31	08:29 17:14		07:15 20:10		05:12 21:59	
Potential sun hours	248	272	367	421	496	513
Total, worst case				429		524
Sun reduction				0.34		0.36
Oper. time red.				1.00		1.00
Wind dir. red.				0.59		0.62
Total reduction				0.20		0.22
Total, real				87		117

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: BY - H77

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	July	August	September	October	November	December
1	05:07 22:15	05:48 21:39	20:22 (15) 20:47 (15)	06:44 20:31	19:25 (16) 19:42 (16)	07:38 17:04
2	05:08 22:14	05:50 21:37	20:22 (15) 20:47 (15)	06:45 20:28	19:27 (16) 19:40 (16)	07:40 17:02
3	05:09 22:14	05:52 21:35	20:22 (15) 20:45 (15)	06:47 20:26	19:11 19:11	07:41 17:00
4	05:10 22:13	05:53 21:33	20:23 (15) 20:45 (15)	06:49 20:23	19:09 19:09	07:43 16:58
5	05:11 22:13	05:55 21:31	20:23 (15) 20:44 (15)	06:51 20:21	19:07 19:06	07:45 16:56
6	05:12 22:12	05:57 21:29	20:24 (15) 20:43 (15)	06:53 20:19	19:04 19:04	07:47 16:54
7	05:12 22:12	05:59 21:27	20:26 (15) 20:42 (15)	06:54 20:16	19:01 19:01	07:49 16:53
8	05:14 22:11	06:00 21:25	20:26 (15) 20:40 (15)	06:56 20:14	18:59 18:59	07:51 16:51
9	05:15 22:10	06:02 21:23	20:29 (15) 20:38 (15)	06:58 20:11	18:57 18:56	07:53 16:49
10	05:16 22:09	06:04 21:21	07:00 20:09	07:00 20:09	18:55 18:54	07:55 16:47
11	05:17 22:08	06:06 21:19	07:02 20:06	07:02 20:06	18:51 18:51	07:57 16:45
12	05:18 22:07	06:07 21:17	07:03 20:04	07:03 20:04	18:51 18:49	07:59 16:44
13	05:19 22:06	06:09 21:15	07:05 20:01	07:05 20:01	18:49 18:47	08:01 16:42
14	05:21 22:05	20:32 (15) 20:36 (15)	06:11 21:12	19:36 (16) 19:41 (16)	07:07 19:59	08:02 18:44
15	05:22 22:04	20:30 (15) 20:38 (15)	06:13 21:10	19:33 (16) 19:45 (16)	07:09 19:56	08:05 18:42
16	05:23 22:03	20:28 (15) 20:40 (15)	06:15 21:08	19:31 (16) 19:47 (16)	07:11 19:54	08:07 18:40
17	05:25 22:02	20:27 (15) 20:41 (15)	06:16 21:06	19:29 (16) 19:49 (16)	07:12 19:51	08:08 18:37
18	05:26 22:01	20:26 (15) 20:42 (15)	06:18 21:04	19:27 (16) 19:49 (16)	07:14 19:49	08:10 18:35
19	05:27 21:59	20:25 (15) 20:43 (15)	06:20 21:01	19:26 (16) 19:50 (16)	07:16 19:46	08:12 18:33
20	05:29 21:58	20:24 (15) 20:43 (15)	06:22 20:59	19:25 (16) 19:51 (16)	07:18 19:44	08:14 18:30
21	05:30 21:56	20:24 (15) 20:45 (15)	06:24 20:57	19:24 (16) 19:50 (16)	07:20 19:41	08:16 18:28
22	05:32 21:55	20:23 (15) 20:45 (15)	06:25 20:55	19:23 (16) 19:51 (16)	07:21 19:38	08:18 18:26
23	05:33 21:54	20:22 (15) 20:45 (15)	06:27 20:52	19:23 (16) 19:51 (16)	07:23 19:36	08:20 18:24
24	05:35 21:52	20:23 (15) 20:46 (15)	06:29 20:50	19:22 (16) 19:50 (16)	07:25 19:33	08:22 18:21
25	05:37 21:50	20:22 (15) 20:46 (15)	06:31 20:48	19:22 (16) 19:50 (16)	07:27 19:31	08:23 18:19
26	05:38 21:49	20:22 (15) 20:47 (15)	06:33 20:45	19:22 (16) 19:50 (16)	07:29 19:28	08:25 17:17
27	05:40 21:47	20:21 (15) 20:47 (15)	06:35 20:43	19:22 (16) 19:49 (16)	07:31 19:26	08:27 17:15
28	05:41 21:46	20:22 (15) 20:47 (15)	06:36 20:40	19:22 (16) 19:48 (16)	07:32 19:23	08:28 17:13
29	05:43 21:44	20:21 (15) 20:47 (15)	06:38 20:38	19:23 (16) 19:47 (16)	07:34 19:21	08:30 17:10
30	05:45 21:42	20:22 (15) 20:47 (15)	06:40 20:36	19:24 (16) 19:46 (16)	07:36 19:18	08:32 17:08
31	05:46 21:40	20:21 (15) 20:46 (15)	06:42 20:33	19:24 (16) 19:44 (16)	07:35 17:06	08:58 16:22
Potential sun hours	515	461	383	327	257	230
Total, worst case	356	584	30			
Sun reduction	0.27	0.27	0.29			
Oper. time red.	1.00	1.00	1.00			
Wind dir. red.	0.62	0.60	0.59			
Total reduction	0.16	0.16	0.17			
Total, real	58	96	5			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)



SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: BZ - H78
Assumptions for shadow calculations Sunshine probability S (Average daily sunshine hours) [BELMULLET]
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum
263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

Table with columns for months (January to December) and rows for days (1 to 31). Each cell contains time ranges and shadow reduction values. Summary rows at the bottom show total sun hours and reductions.

Table layout: For each day in each month the following matrix apply

Matrix with columns: Day in month, Sun rise (hh:mm), Sun set (hh:mm), Minutes with flicker, First time (hh:mm) with flicker, Last time (hh:mm) with flicker, (WTG causing flicker first time), (WTG causing flicker last time)



## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: CA - H79

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June				
1	08:59	15:29 (12)	08:27	07:29	07:12	06:02	05:12			
	16:24	16	15:45 (12)	17:16	18:13	20:12	21:09			
2	08:58	15:29 (12)	08:26	07:26	07:10	06:00	05:11			
	16:25	17	15:46 (12)	17:18	18:15	20:14	21:11			
3	08:58	15:30 (12)	08:24	08:52 (15)	07:24	07:07	05:58	05:10		
	16:26	18	15:48 (12)	17:20	1	08:53 (15)	18:17	20:16	21:13	22:02
4	08:58	15:29 (12)	08:22	08:50 (15)	07:22	07:05	05:56	05:09		
	16:27	20	15:49 (12)	17:22	4	08:54 (15)	18:19	20:18	21:14	22:04
5	08:57	15:30 (12)	08:20	08:48 (15)	07:19	07:03	05:54	05:08		
	16:29	21	15:51 (12)	17:24	7	08:55 (15)	18:21	20:20	21:16	22:05
6	08:57	15:30 (12)	08:18	08:46 (15)	07:17	07:00	05:52	05:07		
	16:30	22	15:52 (12)	17:26	10	08:56 (15)	18:23	20:22	21:18	22:06
7	08:57	15:30 (12)	08:16	08:44 (15)	07:14	06:58	05:50	05:07		
	16:31	23	15:53 (12)	17:28	12	08:56 (15)	18:25	20:24	21:20	22:07
8	08:56	15:31 (12)	08:14	08:42 (15)	07:12	06:55	05:48	05:06		
	16:33	24	15:55 (12)	17:30	15	08:57 (15)	18:27	20:26	21:22	22:08
9	08:55	15:30 (12)	08:12	08:40 (15)	07:10	06:53	05:46	05:05		
	16:34	26	15:56 (12)	17:32	17	08:57 (15)	18:28	20:27	21:24	22:09
10	08:55	15:31 (12)	08:10	08:37 (15)	07:07	06:50	05:44	05:05		
	16:36	25	15:56 (12)	17:34	19	08:56 (15)	18:30	20:29	21:25	22:10
11	08:54	15:31 (12)	08:08	08:35 (15)	07:05	06:48	05:42	05:04		
	16:37	26	15:57 (12)	17:36	21	08:56 (15)	18:32	20:31	21:27	22:10
12	08:53	15:31 (12)	08:06	08:33 (15)	07:02	06:45	05:40	05:04		
	16:39	26	15:57 (12)	17:38	23	08:56 (15)	18:34	20:33	21:29	22:11
13	08:52	15:31 (12)	08:04	08:32 (15)	07:00	06:43	05:39	05:04		
	16:40	27	15:58 (12)	17:40	23	08:55 (15)	18:36	20:35	21:31	22:12
14	08:52	15:32 (12)	08:02	08:33 (15)	06:57	06:41	05:37	05:03		
	16:42	27	15:59 (12)	17:42	22	08:55 (15)	18:38	20:37	21:32	22:13
15	08:51	15:32 (12)	08:00	08:34 (15)	06:55	06:38	05:35	05:03		
	16:44	27	15:59 (12)	17:45	19	08:53 (15)	18:40	20:39	21:34	22:13
16	08:50	15:32 (12)	07:58	08:35 (15)	06:52	06:36	05:33	05:03		
	16:45	27	15:59 (12)	17:47	17	08:52 (15)	18:42	20:41	21:36	22:14
17	08:49	09:20 (16)	07:56	08:37 (15)	06:50	06:34	05:32	05:03		
	16:47	30	15:59 (12)	17:49	13	08:50 (15)	18:44	20:43	21:38	22:14
18	08:47	09:19 (16)	07:54	08:42 (15)	06:47	06:31	05:30	05:03		
	16:49	32	16:00 (12)	17:51	4	08:46 (15)	18:46	20:44	21:39	22:15
19	08:46	09:17 (16)	07:52	06:45	06:29	05:28	05:03			
	16:51	32	15:59 (12)	17:53	18:48	20:46	21:41	22:15		
20	08:45	09:16 (16)	07:49	06:42	06:27	05:27	05:03			
	16:53	34	16:00 (12)	17:55	18:50	20:48	21:43	22:15		
21	08:44	09:14 (16)	07:47	06:40	06:24	05:25	05:03			
	16:54	35	15:59 (12)	17:57	18:52	20:50	21:44	22:16		
22	08:43	09:13 (16)	07:45	06:37	06:22	05:24	05:03			
	16:56	37	16:00 (12)	17:59	18:53	20:52	21:46	22:16		
23	08:41	09:11 (16)	07:43	06:35	06:20	05:22	05:03			
	16:58	38	15:59 (12)	18:01	18:55	20:54	21:47	22:16		
24	08:40	09:10 (16)	07:40	06:32	06:17	05:21	05:04			
	17:00	39	16:00 (12)	18:03	18:57	20:56	21:49	22:16		
25	08:38	09:08 (16)	07:38	06:30	06:15	05:20	05:04			
	17:02	39	15:59 (12)	18:05	18:59	20:58	21:50	22:16		
26	08:37	09:07 (16)	07:36	06:27	06:13	05:18	05:04			
	17:04	39	15:59 (12)	18:07	19:01	21:00	21:52	22:16		
27	08:35	09:06 (16)	07:33	06:25	06:11	05:17	05:05			
	17:06	37	15:58 (12)	18:09	19:03	21:01	21:53	22:16		
28	08:34	09:07 (16)	07:31	06:22	06:09	05:16	05:05			
	17:08	31	15:56 (12)	18:11	19:05	21:03	21:55	22:16		
29	08:32	09:08 (16)		07:20	06:06	05:15	05:06			
	17:10	24	15:54 (12)		20:07	21:05	21:56	22:16		
30	08:31	09:09 (16)		07:17	06:04	05:14	05:07			
	17:12	13	09:22 (16)		20:09	21:07	21:57	22:15		
31	08:29	09:12 (16)		07:15		05:13				
	17:14	9	09:21 (16)		20:10	21:59				
Potential sun hours	248		272	367	421	496	513			
Total, worst case	841		227							
Sun reduction	0.17		0.22							
Oper. time red.	1.00		1.00							
Wind dir. red.	0.63		0.63							
Total reduction	0.11		0.14							
Total, real	90		32							

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: CA - H79

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	July	August	September	October	November	December			
1	05:07	05:48	06:44	07:38	07:37	08:07 (15)	08:34	15:13 (12)	
	22:15	21:39	20:31	19:16	17:04	19 08:26 (15)	16:19	26 15:39 (12)	
2	05:08	05:50	06:45	07:40	07:39	08:09 (15)	08:35	15:14 (12)	
	22:15	21:37	20:29	19:14	17:02	16 08:25 (15)	16:18	25 15:39 (12)	
3	05:09	05:52	06:47	07:42	07:41	08:12 (15)	08:37	15:14 (12)	
	22:14	21:35	20:26	19:11	17:00	14 08:26 (15)	16:18	25 15:39 (12)	
4	05:10	05:53	06:49	07:44	07:43	08:14 (15)	08:38	15:15 (12)	
	22:14	21:33	20:24	19:09	16:58	12 08:26 (15)	16:17	24 15:39 (12)	
5	05:11	05:55	06:51	07:45	07:45	08:16 (15)	08:40	15:15 (12)	
	22:13	21:31	20:21	19:06	16:56	9 08:25 (15)	16:16	23 15:38 (12)	
6	05:12	05:57	06:53	07:47	07:47	08:18 (15)	08:41	15:16 (12)	
	22:12	21:29	20:19	19:04	16:55	7 08:25 (15)	16:16	22 15:38 (12)	
7	05:13	05:59	06:55	07:49	07:49	08:20 (15)	08:42	15:16 (12)	
	22:12	21:27	20:16	19:01	16:53	4 08:24 (15)	16:15	21 15:37 (12)	
8	05:14	06:00	06:56	07:51	07:51	08:22 (15)	08:44	15:17 (12)	
	22:11	21:25	20:14	18:59	16:51	1 08:23 (15)	16:15	20 15:37 (12)	
9	05:15	06:02	06:58	07:53	07:53		08:45	15:18 (12)	
	22:10	21:23	20:11	18:56	16:49		16:14	18 15:36 (12)	
10	05:16	06:04	07:00	07:55	07:55		08:46	15:18 (12)	
	22:09	21:21	20:09	18:54	16:47		16:14	17 15:35 (12)	
11	05:17	06:06	07:02	07:57	07:57	08:43 (16)	08:47	15:20 (12)	
	22:08	21:19	20:06	18:52	16:45	9 08:52 (16)	16:14	16 15:36 (12)	
12	05:18	06:08	07:04	07:59	07:59	08:41 (16)	08:48	15:20 (12)	
	22:08	21:17	20:04	18:49	16:44	13 08:54 (16)	16:14	15 15:35 (12)	
13	05:19	06:09	07:05	08:00	08:01	08:40 (16)	08:49	15:21 (12)	
	22:06	21:15	20:01	18:47	16:42	25 15:26 (12)	16:13	14 15:35 (12)	
14	05:21	06:11	07:07	08:02	08:03	08:39 (16)	08:50	15:22 (12)	
	22:05	21:13	19:59	18:44	16:40	31 15:28 (12)	16:13	13 15:35 (12)	
15	05:22	06:13	07:09	08:04	08:05	08:38 (16)	08:51	15:22 (12)	
	22:04	21:10	19:56	18:42	16:39	37 15:30 (12)	16:13	13 15:35 (12)	
16	05:23	06:15	07:11	08:06	08:07	08:40 (16)	08:52	15:23 (12)	
	22:03	21:08	19:54	18:40	16:37	39 15:32 (12)	16:13	12 15:35 (12)	
17	05:25	06:16	07:13	08:08	08:09	08:42 (16)	08:53	15:24 (12)	
	22:02	21:06	19:51	18:37	16:36	39 15:33 (12)	16:14	11 15:35 (12)	
18	05:26	06:18	07:14	08:10	08:11	08:44 (16)	08:54	15:24 (12)	
	22:01	21:04	19:49	18:35	16:34	38 15:33 (12)	16:14	11 15:35 (12)	
19	05:27	06:20	07:16	08:12	08:13	08:46 (16)	08:55	15:25 (12)	
	21:59	21:02	19:46	18:33	16:33	38 15:34 (12)	16:14	10 15:35 (12)	
20	05:29	06:22	07:18	08:14	08:14	08:48 (16)	08:55	15:26 (12)	
	21:58	20:59	19:44	18:30	16:31	37 15:35 (12)	16:14	10 15:36 (12)	
21	05:30	06:24	07:20	08:16	08:16	08:50 (16)	08:56	15:26 (12)	
	21:57	20:57	19:41	18:28	16:30	35 15:35 (12)	16:15	10 15:36 (12)	
22	05:32	06:26	07:22	08:18	08:18	08:52 (16)	08:57	15:27 (12)	
	21:55	20:55	19:39	18:26	16:29	34 15:36 (12)	16:15	10 15:37 (12)	
23	05:33	06:27	07:23	08:20	08:20	08:54 (16)	08:57	15:27 (12)	
	21:54	20:52	19:36	18:24	16:27	33 15:36 (12)	16:16	10 15:37 (12)	
24	05:35	06:29	07:25	08:22	08:22	08:56 (16)	08:57	15:28 (12)	
	21:52	20:50	19:34	18:21	8 09:09 (15)	16:26	32 15:37 (12)	16:16	10 15:38 (12)
25	05:37	06:31	07:27	07:24	08:06 (15)	08:24	08:58 (16)	08:58	15:28 (12)
	21:51	20:48	19:31	17:19	14 08:20 (15)	16:25	30 15:37 (12)	16:17	10 15:38 (12)
26	05:38	06:33	07:29	07:26	08:04 (15)	08:25	09:00 (16)	08:58	15:28 (12)
	21:49	20:45	19:29	17:17	18 08:22 (15)	16:24	28 15:38 (12)	16:18	11 15:39 (12)
27	05:40	06:35	07:31	07:28	08:04 (15)	08:27	15:11 (12)	08:58	15:28 (12)
	21:47	20:43	19:26	17:15	20 08:24 (15)	16:23	27 15:38 (12)	16:19	12 15:40 (12)
28	05:41	06:36	07:33	07:30	08:03 (15)	08:29	15:12 (12)	08:58	15:28 (12)
	21:46	20:41	19:24	17:13	21 08:24 (15)	16:22	27 15:39 (12)	16:19	12 15:40 (12)
29	05:43	06:38	07:34	07:32	08:02 (15)	08:30	15:11 (12)	08:59	15:28 (12)
	21:44	20:38	19:21	17:11	23 08:25 (15)	16:21	27 15:38 (12)	16:20	13 15:41 (12)
30	05:45	06:40	07:36	07:34	08:03 (15)	08:32	15:12 (12)	08:59	15:29 (12)
	21:42	20:36	19:19	17:08	22 08:25 (15)	16:20	26 15:38 (12)	16:21	14 15:43 (12)
31	05:46	06:42	07:36	07:36	08:05 (15)		08:59	15:29 (12)	
	21:41	20:33	17:06	21 08:26 (15)			16:22	15 15:44 (12)	
Potential sun hours	515	461	383	327	257		230		
Total, worst case				147	687		473		
Sun reduction				0.23	0.20		0.12		
Oper. time red.				1.00	1.00		1.00		
Wind dir. red.				0.63	0.63		0.62		
Total reduction				0.15	0.13		0.07		
Total, real				22	87		35		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: CB - H80  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June
1	08:59 16:24	15:44 (12) 15:45 (12)	08:27 17:16	08:56 (15) 09:04 (15)	07:29 18:13	07:12 20:12
2	08:58 16:25	15:43 (12) 15:46 (12)	08:26 17:18	08:54 (15) 09:04 (15)	07:26 18:15	07:10 20:14
3	08:58 16:26	15:44 (12) 15:48 (12)	08:24 17:20	08:52 (15) 09:05 (15)	07:24 18:17	07:07 20:16
4	08:58 16:27	15:43 (12) 15:49 (12)	08:22 17:22	08:50 (15) 09:05 (15)	07:22 18:19	07:05 20:18
5	08:57 16:29	15:43 (12) 15:51 (12)	08:20 17:24	08:48 (15) 09:05 (15)	07:19 18:21	07:03 20:20
6	08:57 16:30	15:43 (12) 15:52 (12)	08:18 17:26	08:46 (15) 09:05 (15)	07:17 18:23	07:00 20:22
7	08:57 16:31	15:42 (12) 15:53 (12)	08:16 17:28	08:44 (15) 09:06 (15)	07:14 18:25	06:58 20:24
8	08:56 16:33	15:43 (12) 15:56 (12)	08:14 17:30	08:42 (15) 09:05 (15)	07:12 18:27	06:55 20:26
9	08:55 16:34	15:43 (12) 15:57 (12)	08:12 17:32	08:40 (15) 09:05 (15)	07:09 18:28	06:53 20:27
10	08:55 16:36	15:43 (12) 15:59 (12)	08:10 17:34	08:40 (15) 09:04 (15)	07:07 18:30	06:50 20:29
11	08:54 16:37	09:27 (16) 16:00 (12)	08:08 17:36	08:41 (15) 09:03 (15)	07:05 18:32	06:48 20:31
12	08:53 16:39	09:26 (16) 16:02 (12)	08:06 17:38	08:42 (15) 09:02 (15)	07:02 18:34	06:45 20:33
13	08:52 16:40	09:25 (16) 16:04 (12)	08:04 17:40	08:43 (15) 09:01 (15)	07:00 18:36	06:43 20:35
14	08:52 16:42	09:24 (16) 16:06 (12)	08:02 17:42	08:45 (15) 08:59 (15)	06:57 18:38	06:41 20:37
15	08:51 16:44	09:23 (16) 16:07 (12)	08:00 17:45	08:48 (15) 08:56 (15)	06:55 18:40	06:38 20:39
16	08:50 16:45	09:21 (16) 16:07 (12)	07:58 17:47	06:52 18:42	06:36 20:41	05:33 21:36
17	08:49 16:47	09:20 (16) 16:08 (12)	07:56 17:49	06:50 18:44	06:34 20:43	05:32 21:38
18	08:47 16:49	09:19 (16) 16:09 (12)	07:54 17:51	06:47 18:46	06:31 20:44	05:30 21:39
19	08:46 16:51	09:17 (16) 16:09 (12)	07:52 17:53	06:45 18:48	06:29 20:46	05:28 21:41
20	08:45 16:53	09:16 (16) 16:09 (12)	07:49 17:55	06:42 18:50	06:27 20:48	05:27 21:43
21	08:44 16:54	09:14 (16) 16:09 (12)	07:47 17:57	06:40 18:52	06:24 20:50	05:25 21:44
22	08:43 16:56	09:13 (16) 16:10 (12)	07:45 17:59	06:37 18:53	06:22 20:52	05:24 21:46
23	08:41 16:58	09:13 (16) 16:09 (12)	07:43 18:01	06:35 18:55	06:20 20:54	05:22 21:47
24	08:40 17:00	09:14 (16) 16:10 (12)	07:40 18:03	06:32 18:57	06:17 20:56	05:21 21:49
25	08:38 17:02	09:15 (16) 16:09 (12)	07:38 18:05	06:30 18:59	06:15 20:58	05:20 21:50
26	08:37 17:04	09:17 (16) 16:10 (12)	07:36 18:07	06:27 19:01	06:13 21:00	05:18 21:52
27	08:35 17:06	09:19 (16) 16:09 (12)	07:33 18:09	06:25 19:03	06:11 21:01	05:17 21:53
28	08:34 17:08	09:21 (16) 16:08 (12)	07:31 18:11	06:22 19:05	06:09 21:03	05:16 21:55
29	08:32 17:10	15:50 (12) 16:07 (12)		07:20 20:07	06:06 21:05	05:15 21:56
30	08:31 17:12	16:07 (12) 16:05 (12)		07:17 20:09	06:04 21:07	05:14 21:57
31	08:29 17:14	08:58 (15) 16:04 (12)		07:15 20:10	05:13 21:09	21:59
Potential sun hours	248		272	367	421	496
Total, worst case	782		258			513
Sun reduction	0.17		0.22			
Oper. time red.	1.00		1.00			
Wind dir. red.	0.63		0.63			
Total reduction	0.11		0.14			
Total, real	84		36			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: CB - H80

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	July	August	September	October	November	December
1	05:07	05:48	06:44	07:38	07:37	08:09 (15) 08:34 09:09 (16)
	22:15	21:39	20:31	19:16	17:04	24 08:33 (15) 16:19 21 15:42 (12)
2	05:08	05:50	06:45	07:40	07:39	08:09 (15) 08:35 09:11 (16)
	22:15	21:37	20:29	19:14	17:02	25 08:34 (15) 16:18 18 15:42 (12)
3	05:09	05:52	06:47	07:42	07:41	08:12 (15) 08:37 15:26 (12)
	22:14	21:35	20:26	19:11	17:00	23 08:35 (15) 16:17 14 15:40 (12)
4	05:10	05:53	06:49	07:44	07:43	08:14 (15) 08:38 15:27 (12)
	22:14	21:33	20:24	19:09	16:58	21 08:35 (15) 16:17 13 15:40 (12)
5	05:11	05:55	06:51	07:45	07:45	08:16 (15) 08:40 15:27 (12)
	22:13	21:31	20:21	19:06	16:56	19 08:35 (15) 16:16 11 15:38 (12)
6	05:12	05:57	06:53	07:47	07:47	08:18 (15) 08:41 15:29 (12)
	22:12	21:29	20:19	19:04	16:55	17 08:35 (15) 16:16 9 15:38 (12)
7	05:13	05:59	06:55	07:49	07:49	08:20 (15) 08:42 15:29 (12)
	22:12	21:27	20:16	19:01	16:53	15 08:35 (15) 16:15 8 15:37 (12)
8	05:14	06:00	06:56	07:51	07:51	08:22 (15) 08:44 15:31 (12)
	22:11	21:25	20:14	18:59	16:51	12 08:34 (15) 16:15 6 15:37 (12)
9	05:15	06:02	06:58	07:53	07:53	08:25 (15) 08:45 15:32 (12)
	22:10	21:23	20:11	18:56	16:49	10 08:35 (15) 16:14 4 15:36 (12)
10	05:16	06:04	07:00	07:55	07:55	08:27 (15) 08:46 15:33 (12)
	22:09	21:21	20:09	18:54	16:47	7 08:34 (15) 16:14 2 15:35 (12)
11	05:17	06:06	07:02	07:57	07:57	08:29 (15) 08:47 15:34 (12)
	22:08	21:19	20:06	18:52	16:45	14 15:35 (12) 16:14 2 15:36 (12)
12	05:18	06:07	07:04	07:59	07:59	08:31 (15) 08:48 15:36 (12)
	22:08	21:17	20:04	18:49	16:44	15 15:37 (12) 16:14 08:01 15:22 (12) 08:49
13	05:19	06:09	07:05	08:00	08:01	15:22 (12) 08:49 16:42 17 15:39 (12) 16:13
	22:06	21:15	20:01	18:47	16:42	17 15:39 (12) 16:13 08:03 08:53 (16) 08:50
14	05:21	06:11	07:07	08:02	08:03	08:53 (16) 08:50 16:40 26 15:40 (12) 16:13
	22:05	21:13	19:59	18:44	16:40	26 15:40 (12) 16:13 08:05 08:50 (16) 08:51
15	05:22	06:13	07:09	08:04	08:05	08:50 (16) 08:51 16:39 33 15:41 (12) 16:13
	22:04	21:10	19:56	18:42	16:39	33 15:41 (12) 16:13 08:07 08:50 (16) 08:52
16	05:23	06:15	07:11	08:06	08:07	08:50 (16) 08:52 16:37 38 15:43 (12) 16:13
	22:03	21:08	19:54	18:40	16:37	38 15:43 (12) 16:13 08:09 08:49 (16) 08:53
17	05:25	06:16	07:13	08:08	08:09	08:49 (16) 08:53 16:36 40 15:43 (12) 16:14
	22:02	21:06	19:51	18:37	16:36	40 15:43 (12) 16:14 08:11 08:48 (16) 08:54
18	05:26	06:18	07:14	08:10	08:11	08:48 (16) 08:54 16:34 43 15:44 (12) 16:14
	22:01	21:04	19:49	18:35	16:34	43 15:44 (12) 16:14 08:13 08:48 (16) 08:55
19	05:27	06:20	07:16	08:12	08:13	08:48 (16) 08:55 16:33 45 15:44 (12) 16:14
	21:59	21:02	19:46	18:33	16:33	45 15:44 (12) 16:14 08:14 08:48 (16) 08:55
20	05:29	06:22	07:18	08:14	08:14	08:48 (16) 08:55 16:31 46 15:45 (12) 16:14
	21:58	20:59	19:44	18:30	16:31	46 15:45 (12) 16:14 08:16 08:50 (16) 08:56
21	05:30	06:24	07:20	08:16	08:16	08:50 (16) 08:56 16:30 45 15:45 (12) 16:15
	21:57	20:57	19:41	18:28	16:30	45 15:45 (12) 16:15 08:18 08:52 (16) 08:57
22	05:32	06:26	07:22	08:18	08:18	08:52 (16) 08:57 16:29 42 15:45 (12) 16:15
	21:55	20:55	19:39	18:26	16:29	42 15:45 (12) 16:15 08:20 08:54 (16) 08:57
23	05:33	06:27	07:23	08:20	08:20	08:54 (16) 08:57 16:27 42 15:46 (12) 16:16
	21:54	20:52	19:36	18:24	16:27	42 15:46 (12) 16:16 08:22 08:56 (16) 08:57
24	05:35	06:29	07:25	08:22	08:22	08:56 (16) 08:57 16:26 40 15:46 (12) 16:16
	21:52	20:50	19:34	18:21	16:26	40 15:46 (12) 16:16 08:23 08:58 (16) 08:58
25	05:37	06:31	07:27	07:24	08:23	08:58 (16) 08:58 16:25 38 15:46 (12) 16:17
	21:51	20:48	19:31	17:19	16:25	38 15:46 (12) 16:17 08:25 09:00 (16) 08:58
26	05:38	06:33	07:29	07:26	08:25	09:00 (16) 08:58 16:24 36 15:46 (12) 16:18
	21:49	20:45	19:29	17:17	16:24	36 15:46 (12) 16:18 08:27 09:02 (16) 08:58
27	05:40	06:35	07:31	07:28	08:17 (15)	08:27 09:02 (16) 08:58 10 08:27 (15) 16:23 34 15:47 (12) 16:19
	21:47	20:43	19:26	17:15	08:27 (15)	16:23 34 15:47 (12) 16:19 08:14 (15) 08:29 09:04 (16) 08:58
28	05:41	06:36	07:33	07:30	08:14 (15)	08:29 09:04 (16) 08:58 15 08:29 (15) 16:22 31 15:46 (12) 16:19
	21:46	20:41	19:24	17:13	08:29 (15)	16:22 31 15:46 (12) 16:19 08:13 (15) 08:30 09:05 (16) 08:59
29	05:43	06:38	07:34	07:32	08:13 (15)	08:30 09:05 (16) 08:59 18 08:31 (15) 16:21 27 15:44 (12) 16:20
	21:44	20:38	19:21	17:11	08:31 (15)	16:21 27 15:44 (12) 16:20 08:11 (15) 08:32 09:07 (16) 08:59
30	05:45	06:40	07:36	07:34	08:11 (15)	08:32 09:07 (16) 08:59 21 08:32 (15) 16:20 24 15:43 (12) 16:21
	21:42	20:36	19:19	17:08	08:32 (15)	16:20 24 15:43 (12) 16:21 08:10 (15) 08:59
31	05:46	06:42	07:35	07:35	08:10 (15)	08:59 17:06 23 08:33 (15) 16:22
	21:41	20:33	17:06	17:06	08:33 (15)	16:22 257 230
Potential sun hours	515	461	383	327	257	108
Total, worst case				87	849	0.12
Sun reduction				0.23	0.20	1.00
Oper. time red.				1.00	1.00	0.62
Wind dir. red.				0.63	0.63	0.07
Total reduction				0.15	0.13	8
Total, real				13	107	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: CC - H81

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June
1	08:58 16:24	08:27 17:16	15:56 (16) 16:19 (16)	07:29 18:13	16:53 (15) 17:09 (15)	07:12 20:12
2	08:58 16:25	08:25 17:18	15:56 (16) 16:19 (16)	07:26 18:15	16:55 (15) 17:06 (15)	07:10 20:14
3	08:58 16:26	08:24 17:20	15:57 (16) 16:19 (16)	07:24 18:17	07:07 20:16	05:58 21:13
4	08:58 16:27	08:22 17:22	15:58 (16) 16:18 (16)	07:21 18:19	07:05 20:18	05:56 21:14
5	08:57 16:28	08:20 17:24	15:59 (16) 16:17 (16)	07:19 18:21	07:02 20:20	05:54 21:16
6	08:57 16:30	08:18 17:26	16:01 (16) 16:16 (16)	07:17 18:23	07:00 20:22	05:52 21:18
7	08:56 16:31	08:16 17:28	16:03 (16) 16:14 (16)	07:14 18:24	06:58 20:24	05:50 21:20
8	08:56 16:33	08:14 17:30	07:12 18:26	06:55 20:25	05:48 21:22	05:06 22:08
9	08:55 16:34	08:12 17:32	07:09 18:28	06:53 20:27	05:46 21:23	05:05 22:09
10	08:55 16:36	08:10 17:34	07:07 18:30	06:50 20:29	05:44 21:25	05:05 22:09
11	08:54 16:37	08:08 17:36	07:05 18:32	06:48 20:31	05:42 21:27	05:04 22:10
12	08:53 16:39	08:06 17:38	07:02 18:34	06:45 20:33	05:40 21:29	05:04 22:11
13	08:52 16:40	08:04 17:40	16:57 (15) 17:06 (15)	07:00 18:36	06:43 20:35	05:38 21:31
14	08:51 16:42	08:02 17:42	16:55 (15) 17:09 (15)	06:57 18:38	06:41 20:37	05:37 21:32
15	08:51 16:44	08:00 17:44	16:52 (15) 17:10 (15)	06:55 18:40	06:38 20:39	05:35 21:34
16	08:50 16:45	16:02 (16) 16:03 (16)	07:58 17:12 (15)	06:52 18:42	06:36 20:41	05:33 21:36
17	08:48 16:47	15:59 (16) 16:08 (16)	07:56 17:13 (15)	06:50 18:44	06:33 20:42	05:32 21:37
18	08:47 16:49	15:58 (16) 16:10 (16)	07:54 17:14 (15)	06:47 18:46	06:31 20:44	05:30 21:39
19	08:46 16:51	15:56 (16) 16:11 (16)	07:51 17:15 (15)	06:45 18:48	06:29 20:46	05:28 21:41
20	08:45 16:52	15:56 (16) 16:13 (16)	07:49 17:15 (15)	06:42 18:50	06:26 20:48	05:27 21:42
21	08:44 16:54	15:55 (16) 16:14 (16)	07:47 17:15 (15)	06:40 18:51	06:24 20:50	05:25 21:44
22	08:42 16:56	15:55 (16) 16:15 (16)	07:45 17:14 (15)	06:37 18:53	06:22 20:52	05:24 21:46
23	08:41 16:58	15:54 (16) 16:16 (16)	07:42 18:01	06:35 18:55	06:20 20:54	05:22 21:47
24	08:40 17:00	15:54 (16) 16:17 (16)	07:40 18:03	06:32 18:57	06:17 20:56	05:21 21:49
25	08:38 17:02	15:54 (16) 16:17 (16)	07:38 18:05	06:30 18:59	06:15 20:58	05:20 21:50
26	08:37 17:04	15:53 (16) 16:18 (16)	07:36 18:07	06:27 19:01	06:13 20:59	05:18 21:52
27	08:35 17:06	15:54 (16) 16:19 (16)	07:33 18:09	06:25 19:03	06:11 21:01	05:17 21:53
28	08:34 17:08	15:54 (16) 16:19 (16)	07:31 18:11	06:22 19:05	06:08 21:03	05:16 21:55
29	08:32 17:10	15:54 (16) 16:19 (16)	07:20 20:07	06:06 21:05	05:15 21:56	05:06 22:15
30	08:31 17:12	15:54 (16) 16:19 (16)	07:17 20:08	06:04 21:07	05:14 21:57	05:07 22:15
31	08:29 17:14	15:54 (16) 16:19 (16)	07:15 20:10	06:02 21:09	05:12 21:59	05:05 22:16
Potential sun hours	248	272	367	421	496	513
Total, worst case	311	492	527	577	641	661
Sun reduction	0.17	0.22	0.22	0.22	0.22	0.22
Oper. time red.	1.00	1.00	1.00	1.00	1.00	1.00
Wind dir. red.	0.61	0.59	0.58	0.58	0.58	0.58
Total reduction	0.10	0.13	0.13	0.13	0.13	0.13
Total, real	32	64	4	4	4	4

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: CC - H81

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	July	August	September	October	November	December
1	05:07	05:48	06:44	07:38	07:37	08:33
	22:15	21:39	20:31	19:16	17:04	16:19
2	05:08	05:50	06:45	07:40	07:39	08:35
	22:14	21:37	20:28	19:14	17:02	16:18
3	05:09	05:52	06:47	07:42	07:41	08:36
	22:14	21:35	20:26	19:11	17:00	16:17
4	05:10	05:53	06:49	07:43	07:43	08:38
	22:14	21:33	20:23	19:09	16:58	16:17
5	05:11	05:55	06:51	07:45	07:45	08:39
	22:13	21:31	20:21	19:06	16:56	16:16
6	05:11	05:57	06:53	07:47	07:47	08:41
	22:12	21:29	20:19	19:04	16:54	16:16
7	05:12	05:58	06:54	07:49	07:49	08:42
	22:12	21:27	20:16	19:01	16:53	16:15
8	05:13	06:00	06:56	07:51	07:51	08:43
	22:11	21:25	20:14	18:59	16:51	16:15
9	05:15	06:02	06:58	07:53	07:53	08:45
	22:10	21:23	20:11	18:56	16:49	16:14
10	05:16	06:04	07:00	07:55	07:55	08:46
	22:09	21:21	20:09	18:54	16:47	16:14
11	05:17	06:06	07:02	07:57	17:31 (15)	07:57
	22:08	21:19	20:06	18:51	7 17:38 (15)	16:45
12	05:18	06:07	07:03	07:58	17:27 (15)	07:59
	22:07	21:17	20:04	18:49	14 17:41 (15)	16:44
13	05:19	06:09	07:05	08:00	17:25 (15)	08:01
	22:06	21:15	20:01	18:47	18 17:43 (15)	16:42
14	05:21	06:11	07:07	08:02	17:23 (15)	08:03
	22:05	21:13	19:59	18:44	21 17:44 (15)	16:40
15	05:22	06:13	07:09	08:04	17:22 (15)	08:05
	22:04	21:10	19:56	18:42	23 17:45 (15)	16:39
16	05:23	06:15	07:11	08:06	17:21 (15)	08:07
	22:03	21:08	19:54	18:40	24 17:45 (15)	16:37
17	05:25	06:16	07:12	08:08	17:20 (15)	08:09
	22:02	21:06	19:51	18:37	26 17:46 (15)	16:36
18	05:26	06:18	07:14	08:10	17:19 (15)	08:11
	22:01	21:04	19:49	18:35	27 17:46 (15)	16:34
19	05:27	06:20	07:16	08:12	17:19 (15)	08:12
	21:59	21:01	19:46	18:33	27 17:46 (15)	16:33
20	05:29	06:22	07:18	08:14	17:19 (15)	08:14
	21:58	20:59	19:44	18:30	27 17:46 (15)	16:31
21	05:30	06:24	07:20	08:16	17:19 (15)	08:16
	21:57	20:57	19:41	18:28	26 17:45 (15)	16:30
22	05:32	06:25	07:21	08:18	17:19 (15)	08:18
	21:55	20:55	19:39	18:26	26 17:45 (15)	16:28
23	05:33	06:27	07:23	08:20	17:19 (15)	08:20
	21:54	20:52	19:36	18:24	25 17:44 (15)	16:27
24	05:35	06:29	07:25	08:22	17:19 (15)	08:22
	21:52	20:50	19:33	18:21	24 17:43 (15)	16:26
25	05:36	06:31	07:27	07:24	16:20 (15)	08:23
	21:51	20:48	19:31	17:19	22 16:42 (15)	16:25
26	05:38	06:33	07:29	07:26	16:21 (15)	08:25
	21:49	20:45	19:28	17:17	20 16:41 (15)	16:24
27	05:40	06:34	07:31	07:27	16:22 (15)	08:27
	21:47	20:43	19:26	17:15	17 16:39 (15)	16:23
28	05:41	06:36	07:32	07:29	16:25 (15)	08:29
	21:46	20:40	19:23	17:13	13 16:38 (15)	16:22
29	05:43	06:38	07:34	07:31	16:28 (15)	08:30
	21:44	20:38	19:21	17:10	7 16:35 (15)	16:21
30	05:45	06:40	07:36	07:33		08:32
	21:42	20:36	19:18	17:08		16:21
31	05:46	06:42		07:35		08:58
	21:40	20:33		17:06		16:22
Potential sun hours	515	461	383	327	257	230
Total, worst case				394	451	
Sun reduction				0.23	0.20	
Oper. time red.				1.00	1.00	
Wind dir. red.				0.58	0.61	
Total reduction				0.14	0.12	
Total, real				54	55	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: CD - H82  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June
1	08:58 16:24	08:27 17:16	15:51 (16) 16:08 (16)	07:29 18:13	07:12 20:12	06:02 21:09
2	08:58 16:25	08:25 17:18	15:53 (16) 16:07 (16)	07:26 18:15	07:10 20:14	06:00 21:11
3	08:58 16:26	08:24 17:20	15:55 (16) 16:05 (16)	07:24 18:17	07:07 20:16	05:58 21:13
4	08:58 16:27	08:22 17:22		07:21 18:19	07:05 20:18	05:56 21:14
5	08:57 16:28	08:20 17:24		07:19 18:21	07:02 20:20	05:54 21:16
6	08:57 16:30	08:18 17:26		07:17 18:23	07:00 20:22	05:52 21:18
7	08:56 16:31	08:16 17:28		07:14 18:24	06:58 20:24	05:50 21:20
8	08:56 16:33	08:14 17:30	16:50 (15) 16:56 (15)	07:12 18:26	06:55 20:25	05:48 21:22
9	08:55 16:34	15:52 (16) 17:32	08:12 16:46 (15)	07:09 18:28	06:53 20:27	05:46 21:23
10	08:55 16:36	15:49 (16) 17:34	08:10 16:44 (15)	07:07 18:30	06:50 20:29	05:44 21:25
11	08:54 16:37	15:57 (16) 17:36	17:01 (15) 16:43 (15)	07:05 18:32	06:48 20:31	05:42 21:27
12	08:53 16:39	15:48 (16) 17:38	20 17:03 (15)	18:32 18:34	20:31 20:33	21:27 21:29
13	08:52 16:40	15:47 (16) 17:40	22 17:04 (15)	18:34 18:36	20:33 20:35	21:29 21:31
14	08:51 16:42	15:46 (16) 17:42	24 17:05 (15)	18:36 18:38	20:35 20:37	21:31 21:32
15	08:51 16:44	15:45 (16) 17:44	25 17:06 (15)	18:38 18:40	20:37 20:39	21:32 21:34
16	08:50 16:45	15:44 (16) 17:46	27 17:07 (15)	18:44 18:46	20:42 20:44	21:37 21:39
17	08:48 16:47	15:45 (16) 17:48	28 17:08 (15)	18:44 18:46	20:42 20:44	21:37 21:39
18	08:47 16:49	15:45 (16) 17:51	27 17:07 (15)	18:46 18:48	20:44 20:46	21:39 21:41
19	08:46 16:51	15:44 (16) 17:53	27 17:06 (15)	18:48 18:50	20:46 20:48	21:41 21:42
20	08:45 16:52	15:45 (16) 17:55	26 17:06 (15)	18:50 18:52	20:48 20:50	21:42 21:44
21	08:44 16:54	15:44 (16) 17:57	26 17:06 (15)	18:51 18:53	20:50 20:52	21:44 21:46
22	08:42 16:56	15:45 (16) 17:59	24 17:04 (15)	18:53 18:55	20:52 20:54	21:46 21:47
23	08:41 16:58	15:45 (16) 18:01	21 17:03 (15)	18:55 18:57	20:54 20:56	21:47 21:49
24	08:40 17:00	15:45 (16) 18:03	19 17:02 (15)	18:57 18:59	20:56 20:58	21:49 21:50
25	08:38 17:02	15:45 (16) 18:05	16 17:00 (15)	18:59 19:01	20:58 20:59	21:50 21:52
26	08:37 17:04	15:45 (16) 18:07	9 16:57 (15)	19:01 19:03	20:59 21:01	21:52 21:53
27	08:35 17:06	15:47 (16) 18:09		19:03 19:05	21:01 21:03	21:53 21:55
28	08:34 17:08	15:47 (16) 18:11		19:05 19:07	21:03 21:05	21:55 21:56
29	08:32 17:10	15:47 (16) 18:13		19:07 19:09	21:05 21:07	21:56 21:57
30	08:31 17:12	15:48 (16) 18:15		19:11 19:13	21:09 21:11	21:59 22:00
31	08:29 17:14	15:49 (16) 18:17		19:15 19:17	21:13 21:15	22:03 22:04
Potential sun hours	248	272	367	421	496	513
Total, worst case	453	445				
Sun reduction	0.17	0.22				
Oper. time red.	1.00	1.00				
Wind dir. red.	0.62	0.58				
Total reduction	0.11	0.13				
Total, real	48	58				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: CD - H82

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	July	August	September	October	November	December	
1	05:07 22:15	05:48 21:39	06:44 20:31	07:38 19:16	07:37 17:04	16:14 (15) 16:19	08:33 11 15:41 (16)
2	05:08 22:14	05:50 21:37	06:45 20:28	07:40 19:14	07:39 17:02	16:16 (15) 16:28 (15)	08:35 8 15:39 (16)
3	05:09 22:14	05:51 21:35	06:47 20:26	07:42 19:11	07:41 17:00	16:19 (15) 16:24 (15)	08:36 3 15:37 (16)
4	05:10 22:14	05:53 21:33	06:49 20:23	07:43 19:09	07:43 16:58		08:38 16:17
5	05:11 22:13	05:55 21:31	06:51 20:21	07:45 19:06	07:45 16:56		08:39 16:16
6	05:11 22:12	05:57 21:29	06:53 20:19	07:47 19:04	07:47 16:54		08:41 16:16
7	05:12 22:12	05:58 21:27	06:54 20:16	07:49 19:01	07:49 16:53		08:42 16:15
8	05:13 22:11	06:00 21:25	06:56 20:14	07:51 18:59	07:51 16:51	15:25 (16) 10 15:35 (16)	08:43 16:15
9	05:15 22:10	06:02 21:23	06:58 20:11	07:53 18:56	07:53 16:49	15:22 (16) 15 15:37 (16)	08:45 16:14
10	05:16 22:09	06:04 21:21	07:00 20:09	07:55 18:54	07:55 16:47	15:22 (16) 17 15:39 (16)	08:46 16:14
11	05:17 22:08	06:06 21:19	07:02 20:06	07:57 18:51	07:57 16:45	15:21 (16) 19 15:40 (16)	08:47 16:14
12	05:18 22:07	06:07 21:17	07:03 20:04	07:58 18:49	07:59 16:44	15:20 (16) 21 15:41 (16)	08:48 16:13
13	05:19 22:06	06:09 21:15	07:05 20:01	08:00 18:47	08:01 16:42	15:19 (16) 23 15:42 (16)	08:49 16:13
14	05:21 22:05	06:11 21:13	07:07 19:59	08:02 18:44	08:03 16:40	15:19 (16) 23 15:42 (16)	08:50 16:13
15	05:22 22:04	06:13 21:10	07:09 19:56	08:04 18:42	08:05 17:24 (15) 2 17:26 (15)	15:19 (16) 24 15:43 (16)	08:51 16:13
16	05:23 22:03	06:15 21:08	07:11 19:54	08:06 18:40	08:07 17:31 (15) 12 17:31 (15)	15:18 (16) 25 15:43 (16)	08:52 16:13
17	05:25 22:02	06:16 21:06	07:12 19:51	08:08 18:37	08:09 17:16 (15) 17 17:33 (15)	15:19 (16) 25 15:44 (16)	08:53 16:14
18	05:26 22:01	06:18 21:04	07:14 19:49	08:10 18:35	08:11 17:14 (15) 20 17:34 (15)	15:19 (16) 25 15:44 (16)	08:54 16:14
19	05:27 21:59	06:20 21:01	07:16 19:46	08:12 18:33	08:12 17:13 (15) 22 17:35 (15)	15:20 (16) 24 15:44 (16)	08:55 16:14
20	05:29 21:58	06:22 20:59	07:18 19:44	08:14 18:30	08:14 17:11 (15) 25 17:36 (15)	15:20 (16) 24 15:44 (16)	08:55 16:14
21	05:30 21:57	06:24 20:57	07:20 19:41	08:16 18:28	08:16 17:11 (15) 25 17:36 (15)	15:20 (16) 24 15:44 (16)	08:56 16:15
22	05:32 21:55	06:25 20:55	07:21 19:39	08:18 18:26	08:18 17:10 (15) 26 17:36 (15)	15:21 (16) 23 15:44 (16)	08:56 16:15
23	05:33 21:54	06:27 20:52	07:23 19:36	08:20 18:24	08:20 17:09 (15) 27 17:36 (15)	15:21 (16) 23 15:44 (16)	08:57 16:16
24	05:35 21:52	06:29 20:50	07:25 19:33	08:22 18:21	08:22 17:09 (15) 27 17:36 (15)	15:22 (16) 22 15:44 (16)	08:57 16:16
25	05:36 21:51	06:31 20:48	07:27 19:31	08:24 17:19	08:23 16:09 (15) 27 16:36 (15)	15:23 (16) 21 15:44 (16)	08:58 16:17
26	05:38 21:49	06:33 20:45	07:29 19:28	08:26 17:17	08:25 16:09 (15) 27 16:36 (15)	15:24 (16) 20 15:44 (16)	08:58 16:18
27	05:40 21:47	06:34 20:43	07:31 19:26	08:27 17:15	08:27 16:09 (15) 26 16:35 (15)	15:25 (16) 19 15:44 (16)	08:58 16:18
28	05:41 21:46	06:36 20:40	07:32 19:23	08:29 17:13	08:29 16:10 (15) 25 16:35 (15)	15:25 (16) 17 15:42 (16)	08:58 16:19
29	05:43 21:44	06:38 20:38	07:34 19:21	08:31 17:10	08:30 16:11 (15) 23 16:34 (15)	15:27 (16) 15 15:42 (16)	08:58 16:20
30	05:45 21:42	06:40 20:36	07:36 19:18	08:33 17:08	08:32 16:12 (15) 21 16:33 (15)	15:28 (16) 14 15:42 (16)	08:59 16:21
31	05:46 21:40	06:42 20:33	07:35 19:16	08:35 17:06	08:35 16:12 (15) 20 16:32 (15)	08:59 16:22	08:59 16:22
Potential sun hours	515	461	383	327	257	230	
Total, worst case				372	506	22	
Sun reduction				0.23	0.20	0.12	
Oper. time red.				1.00	1.00	1.00	
Wind dir. red.				0.58	0.62	0.62	
Total reduction				0.14	0.12	0.07	
Total, real				51	62	2	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: CE - H83  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June													
1	08:58	08:27	07:29	07:12	06:02	05:12													
	16:24	17:16	18:13	20:12	21:09	22:00													
2	08:58	08:25	07:26	07:10	06:00	05:11													
	16:25	17:18	18:15	20:14	21:11	22:01													
3	08:58	08:24	07:24	07:07	05:58	05:10		20:32 (8)											
	16:26	17:20	18:17	20:16	21:12	22:02		8	20:40 (8)										
4	08:58	08:22	07:21	07:05	05:56	05:09			20:29 (8)										
	16:27	17:22	18:19	20:18	21:14	22:03		13	20:42 (8)										
5	08:57	08:20	07:19	07:03	05:54	05:08				20:28 (8)									
	16:29	17:24	18:21	20:20	21:16	22:04		17	20:45 (8)										
6	08:57	08:18	07:17	07:00	05:52	05:07				20:27 (8)									
	16:30	17:26	18:23	20:22	21:18	22:06		19	20:46 (8)										
7	08:56	08:16	07:14	06:58	05:50	05:07				20:26 (8)									
	16:31	17:28	18:25	20:24	21:20	22:07		21	20:47 (8)										
8	08:56	08:14	07:12	06:55	19:47 (7)	05:48				20:25 (8)									
	16:33	17:30	18:26	20:25	4	19:51 (7)	21:22	22	20:47 (8)										
9	08:55	08:12	07:09	06:53	19:43 (7)	05:46				20:24 (8)									
	16:34	17:32	18:28	20:27	12	19:55 (7)	21:23	24	20:48 (8)										
10	08:55	08:10	07:07	06:50	19:41 (7)	05:44				20:24 (8)									
	16:36	17:34	18:30	20:29	17	19:58 (7)	21:25	25	20:49 (8)										
11	08:54	08:08	07:05	06:48	19:38 (7)	05:42				20:23 (8)									
	16:37	17:36	18:32	20:31	20	19:58 (7)	21:27	26	20:49 (8)										
12	08:53	08:06	07:02	06:45	19:37 (7)	05:40				20:23 (8)									
	16:39	17:38	18:34	20:33	23	20:00 (7)	21:29	26	20:49 (8)										
13	08:52	08:04	07:00	06:43	19:36 (7)	05:39				20:22 (8)									
	16:40	17:40	18:36	20:35	24	20:00 (7)	21:31	27	20:49 (8)										
14	08:51	08:02	06:57	06:41	19:35 (7)	05:37				20:23 (8)									
	16:42	17:42	18:38	20:37	25	20:00 (7)	21:32	26	20:49 (8)										
15	08:50	08:00	06:55	06:38	19:35 (7)	05:35				20:22 (8)									
	16:44	17:45	18:40	20:39	26	20:01 (7)	21:34	27	20:49 (8)										
16	08:49	07:58	06:52	06:36	19:34 (7)	05:33				20:23 (8)									
	16:46	17:47	18:42	20:41	27	20:01 (7)	21:36	26	20:49 (8)										
17	08:48	07:56	06:50	06:34	19:33 (7)	05:32				20:23 (8)									
	16:47	17:49	18:44	20:42	27	20:00 (7)	21:37	26	20:49 (8)										
18	08:47	07:54	06:47	06:31	19:33 (7)	05:30				20:23 (8)									
	16:49	17:51	18:46	20:44	27	20:00 (7)	21:39	26	20:49 (8)										
19	08:46	07:51	06:45	06:29	19:34 (7)	05:28				20:23 (8)									
	16:51	17:53	18:48	20:46	26	20:00 (7)	21:41	25	20:48 (8)										
20	08:45	07:49	06:42	06:27	19:33 (7)	05:27				20:24 (8)									
	16:53	17:55	18:50	20:48	26	19:59 (7)	21:42	24	20:48 (8)										
21	08:44	07:47	06:40	06:24	19:34 (7)	05:25				20:25 (8)									
	16:55	17:57	18:51	20:50	24	19:58 (7)	21:44	23	20:48 (8)										
22	08:42	07:45	06:37	06:22	19:34 (7)	05:24				20:25 (8)									
	16:56	17:59	18:53	20:52	23	19:57 (7)	21:46	22	20:47 (8)										
23	08:41	07:42	06:35	06:20	19:35 (7)	05:22				20:25 (8)									
	16:58	18:01	18:55	20:54	21	19:56 (7)	21:47	22	20:47 (8)										
24	08:40	07:40	06:32	06:17	19:37 (7)	05:21				20:26 (8)									
	17:00	18:03	18:57	20:56	18	19:55 (7)	21:49	20	20:46 (8)										
25	08:38	07:38	06:30	06:15	19:38 (7)	05:20				20:28 (8)									
	17:02	18:05	18:59	20:58	15	19:53 (7)	21:50	18	20:46 (8)										
26	08:37	07:36	06:27	06:13	19:40 (7)	05:18				20:29 (8)									
	17:04	18:07	19:01	20:59	10	19:50 (7)	21:52	16	20:45 (8)										
27	08:35	07:33	06:25	06:11		05:17				20:30 (8)									
	17:06	18:09	19:03	21:01		21:53		14	20:44 (8)										
28	08:34	07:31	06:22	06:09		05:16				20:31 (8)									
	17:08	18:11	19:05	21:03		21:54		12	20:43 (8)										
29	08:32		07:20	06:06		05:15				20:33 (8)									
	17:10		20:07	21:05		21:56		9	20:42 (8)										
30	08:30		07:17	06:04		05:14				20:35 (8)									
	17:12		20:09	21:07		21:57		5	20:40 (8)										
31	08:29		07:15			05:13													
	17:14		20:10			21:59													
Potential sun hours	248	272	367	421	496	513													
Total, worst case					395	569				28									
Sun reduction					0.34	0.36				0.26									
Oper. time red.					1.00	1.00				1.00									
Wind dir. red.					0.59	0.62				0.64									
Total reduction					0.20	0.22				0.17									
Total, real					80	128				5									

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: CE - H83

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	July	August	September	October	November	December
1	05:07 22:15	05:48 21:39	20:33 (8) 20:59 (8)	06:44 20:31	19:37 (7) 19:57 (7)	07:38 17:04
2	05:08 22:14	05:50 21:37	20:34 (8) 20:59 (8)	06:45 20:28	19:39 (7) 19:56 (7)	07:40 17:02
3	05:09 22:14	05:52 21:35	20:33 (8) 20:58 (8)	06:47 20:26	19:41 (7) 19:53 (7)	07:41 17:00
4	05:10 22:13	05:53 21:33	20:34 (8) 20:58 (8)	06:49 20:23	19:44 (7) 19:48 (7)	07:44 16:58
5	05:11 22:13	05:55 21:31	20:35 (8) 20:58 (8)	06:51 20:21	19:45 19:06	07:45 16:56
6	05:12 22:12	05:57 21:29	20:35 (8) 20:56 (8)	06:53 20:19	19:47 19:04	07:47 16:55
7	05:13 22:12	05:59 21:27	20:37 (8) 20:55 (8)	06:54 20:16	19:49 19:01	07:49 16:53
8	05:14 22:11	06:00 21:25	20:38 (8) 20:54 (8)	06:56 20:14	19:51 18:59	07:51 16:51
9	05:15 22:10	06:02 21:23	20:39 (8) 20:51 (8)	06:58 20:11	19:53 18:56	07:53 16:49
10	05:16 22:09	06:04 21:21	20:43 (8) 20:48 (8)	07:00 20:09	19:55 18:54	07:55 16:47
11	05:17 22:08	06:06 21:19		07:02 20:06	19:57 18:52	07:57 16:45
12	05:18 22:07	06:08 21:17		07:03 20:04	19:58 18:49	07:59 16:44
13	05:19 22:06	06:09 21:15		07:05 20:01	19:59 18:47	08:01 16:42
14	05:21 22:05	20:42 (8) 20:50 (8)	06:11 21:12	07:07 19:59	18:44 18:02	16:40 08:03
15	05:22 22:04	20:40 (8) 20:51 (8)	06:13 21:10	07:09 19:56	18:44 18:42	16:14 16:39
16	05:23 22:03	20:39 (8) 20:52 (8)	06:15 21:08	07:11 19:54	18:40 18:40	16:14 16:37
17	05:25 22:02	20:38 (8) 20:53 (8)	06:17 21:06	19:47 (7) 19:58 (7)	07:12 19:51	18:08 18:37
18	05:26 22:00	20:38 (8) 20:55 (8)	06:18 21:04	19:44 (7) 19:59 (7)	07:14 19:49	18:10 18:35
19	05:28 21:59	20:37 (8) 20:56 (8)	06:20 21:01	19:42 (7) 20:01 (7)	07:16 19:46	18:12 18:33
20	05:29 21:58	20:36 (8) 20:56 (8)	06:22 20:59	19:41 (7) 20:02 (7)	07:18 19:44	18:14 18:30
21	05:30 21:56	20:36 (8) 20:57 (8)	06:24 20:57	19:39 (7) 20:02 (7)	07:20 19:41	18:16 18:28
22	05:32 21:55	20:35 (8) 20:57 (8)	06:26 20:55	19:38 (7) 20:03 (7)	07:22 19:39	18:18 18:26
23	05:34 21:54	20:35 (8) 20:59 (8)	06:27 20:52	19:38 (7) 20:03 (7)	07:23 19:36	18:20 18:24
24	05:35 21:52	20:34 (8) 20:59 (8)	06:29 20:50	19:37 (7) 20:04 (7)	07:25 19:34	18:22 18:21
25	05:37 21:50	20:33 (8) 20:58 (8)	06:31 20:48	19:36 (7) 20:03 (7)	07:27 19:31	18:23 17:19
26	05:38 21:49	20:33 (8) 20:59 (8)	06:33 20:45	19:36 (7) 20:03 (7)	07:29 19:29	18:25 17:17
27	05:40 21:47	20:33 (8) 20:59 (8)	06:35 20:43	19:36 (7) 20:03 (7)	07:31 19:26	18:27 17:15
28	05:42 21:46	20:33 (8) 21:00 (8)	06:36 20:40	19:35 (7) 20:02 (7)	07:32 19:24	18:28 17:13
29	05:43 21:44	20:34 (8) 21:00 (8)	06:38 20:38	19:36 (7) 20:01 (7)	07:34 19:21	18:30 17:11
30	05:45 21:42	20:33 (8) 21:00 (8)	06:40 20:36	19:36 (7) 20:00 (7)	07:36 19:19	18:32 17:09
31	05:47 21:40	20:34 (8) 21:00 (8)	06:42 20:33	19:37 (7) 20:00 (7)	19:19 17:06	18:21 17:06
Potential sun hours	515	461	382	328	257	231
Total, worst case	378	541	53			
Sun reduction	0.27	0.27	0.29			
Oper. time red.	1.00	1.00	1.00			
Wind dir. red.	0.62	0.60	0.59			
Total reduction	0.17	0.16	0.17			
Total, real	62	89	9			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: CF - H84  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June
1	08:58 16:24	08:27 17:16	16:39 (7) 16:43 (7)	07:29 18:13	17:08 (8) 17:34 (8)	07:12 20:12
2	08:58 16:25	08:25 17:18	16:35 (7) 16:46 (7)	07:26 18:15	17:07 (8) 17:34 (8)	07:10 20:14
3	08:58 16:26	08:24 17:20	16:34 (7) 16:48 (7)	07:24 18:17	17:08 (8) 17:34 (8)	07:07 20:16
4	08:58 16:27	08:22 17:22	16:32 (7) 16:50 (7)	07:21 18:19	17:07 (8) 17:32 (8)	07:05 20:18
5	08:57 16:29	08:20 17:24	16:32 (7) 16:51 (7)	07:19 18:21	17:08 (8) 17:32 (8)	07:03 20:20
6	08:57 16:30	08:18 17:26	16:31 (7) 16:52 (7)	07:17 18:23	17:09 (8) 17:30 (8)	07:00 20:22
7	08:56 16:31	08:16 17:28	16:30 (7) 16:53 (7)	07:14 18:25	17:10 (8) 17:29 (8)	06:58 20:24
8	08:56 16:33	08:14 17:30	16:30 (7) 16:53 (7)	07:12 18:26	17:12 (8) 17:27 (8)	06:55 20:26
9	08:55 16:34	08:12 17:32	16:29 (7) 16:53 (7)	07:09 18:28	17:15 (8) 17:24 (8)	06:53 20:27
10	08:55 16:36	08:10 17:34	16:29 (7) 16:53 (7)	07:07 18:30	06:50 20:29	05:44 21:25
11	08:54 16:37	08:08 17:36	16:29 (7) 16:53 (7)	07:05 18:32	06:48 20:31	05:42 21:27
12	08:53 16:39	08:06 17:38	16:30 (7) 16:53 (7)	07:02 18:34	06:45 20:33	05:40 21:29
13	08:52 16:40	08:04 17:40	16:31 (7) 16:53 (7)	07:00 18:36	06:43 20:35	05:39 21:31
14	08:51 16:42	08:02 17:42	16:31 (7) 16:52 (7)	06:57 18:38	06:41 20:37	05:37 21:32
15	08:50 16:44	08:00 17:45	16:31 (7) 16:51 (7)	06:55 18:40	06:38 20:39	05:35 21:34
16	08:49 16:45	07:58 17:47	16:33 (7) 16:50 (7)	06:52 18:42	06:36 20:41	05:33 21:36
17	08:48 16:47	07:56 17:49	16:35 (7) 16:48 (7)	06:50 18:44	06:34 20:42	05:32 21:37
18	08:47 16:49	07:54 17:51	16:38 (7) 16:46 (7)	06:47 18:46	06:31 20:44	05:30 21:39
19	08:46 16:51	07:51 17:53		06:45 18:48	06:29 20:46	05:28 21:41
20	08:45 16:53	07:49 17:55		06:42 18:50	06:27 20:48	05:27 21:42
21	08:44 16:54	07:47 17:57	17:17 (8) 17:27 (8)	06:40 18:51	06:24 20:50	05:25 21:44
22	08:42 16:56	07:45 17:59	17:13 (8) 17:29 (8)	06:37 18:53	06:22 20:52	05:24 21:46
23	08:41 16:58	07:42 18:01	17:12 (8) 17:31 (8)	06:35 18:55	06:20 20:54	05:22 21:47
24	08:40 17:00	07:40 18:03	17:11 (8) 17:33 (8)	06:32 18:57	06:17 20:56	05:21 21:49
25	08:38 17:02	07:38 18:05	17:09 (8) 17:33 (8)	06:30 18:59	06:15 20:58	05:20 21:50
26	08:37 17:04	07:36 18:07	17:09 (8) 17:34 (8)	06:27 19:01	06:13 20:59	05:18 21:52
27	08:35 17:06	07:33 18:09	17:08 (8) 17:34 (8)	06:25 19:03	06:11 21:01	05:17 21:53
28	08:34 17:08	07:31 18:11	17:08 (8) 17:34 (8)	06:22 19:05	06:09 21:03	05:16 21:55
29	08:32 17:10			07:20 20:07	06:06 21:05	05:15 21:56
30	08:30 17:12			07:17 20:09	06:04 21:07	05:14 21:57
31	08:29 17:14			07:15 20:10	05:13 21:09	21:07 (11) 21:59
Potential sun hours	248	272	367	421	496	513
Total, worst case		497		192	239	407
Sun reduction		0.22		0.22	0.34	0.36
Oper. time red.		1.00		1.00	1.00	1.00
Wind dir. red.		0.58		0.58	0.59	0.62
Total reduction		0.13		0.13	0.20	0.22
Total, real		64		25	48	80

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: CF - H84

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	July			August			September			October			November			December		
1	05:07	21:13 (11)	05:48	20:35 (10)	06:44	19:57 (9)	07:38			07:37	15:59 (7)	08:33						
	22:15	16	21:29 (11)	21:39	20	20:55 (10)	20:31	4	20:01 (9)	19:16	17:04	23	16:22 (7)	16:19				
2	05:08	21:13 (11)	05:50	20:35 (10)	06:45		07:40			07:39	15:59 (7)	08:35						
	22:14	17	21:30 (11)	21:37	21	20:56 (10)	20:28			19:14	17:02	23	16:22 (7)	16:18				
3	05:09	21:13 (11)	05:52	20:34 (10)	06:47		07:42			07:41	15:59 (7)	08:36						
	22:14	18	21:31 (11)	21:35	21	20:55 (10)	20:26			19:11	17:00	23	16:22 (7)	16:18				
4	05:10	21:13 (11)	05:53	20:34 (10)	06:49		07:44			17:54 (8)	07:43	16:00 (7)	08:38					
	22:13	17	21:30 (11)	21:33	21	20:55 (10)	20:24			19:09	5	17:59 (8)	16:58	22	16:22 (7)	16:17		
5	05:11	21:13 (11)	05:55	20:35 (10)	06:51		07:45			07:45	17:50 (8)	07:45	16:01 (7)	08:39				
	22:13	17	21:30 (11)	21:31	20	20:55 (10)	20:21			19:06	13	18:03 (8)	16:56	20	16:21 (7)	16:16		
6	05:12	21:13 (11)	05:57	20:34 (10)	06:53		07:47			17:47 (8)	07:47	16:01 (7)	08:41					
	22:12	18	21:31 (11)	21:29	20	20:54 (10)	20:19			19:04	18	18:05 (8)	16:55	20	16:21 (7)	16:16		
7	05:13	21:13 (11)	05:59	20:35 (10)	06:54		07:49			17:45 (8)	07:49	16:02 (7)	08:42					
	22:12	18	21:31 (11)	21:27	19	20:54 (10)	20:16			19:01	21	18:06 (8)	16:53	17	16:19 (7)	16:15		
8	05:14	21:14 (11)	06:00	20:36 (10)	06:56		07:51			17:44 (8)	07:51	16:04 (7)	08:43					
	22:11	17	21:31 (11)	21:25	18	20:54 (10)	20:14			18:59	23	18:07 (8)	16:51	14	16:18 (7)	16:15		
9	05:15	21:14 (11)	06:02	20:36 (10)	06:58		07:53			07:53	17:43 (8)	07:53	16:05 (7)	08:45				
	22:10	17	21:31 (11)	21:23	16	20:52 (10)	20:11			18:56	24	18:07 (8)	16:49	11	16:16 (7)	16:14		
10	05:16	21:14 (11)	06:04	20:38 (10)	07:00		07:55			17:42 (8)	07:55	16:10 (7)	08:46					
	22:09	17	21:31 (11)	21:21	12	20:50 (10)	20:09			18:54	26	18:08 (8)	16:47	3	16:13 (7)	16:14		
11	05:17	21:14 (11)	06:06	20:39 (10)	07:02		07:57			17:42 (8)	07:57	08:47						
	22:08	17	21:31 (11)	21:19	9	20:48 (10)	20:06			18:52	26	18:08 (8)	16:45	16:14				
12	05:18	21:14 (11)	06:08		07:03		07:59			17:41 (8)	07:59	08:48						
	22:07	17	21:31 (11)	21:17		20:04				18:49	27	18:08 (8)	16:44	16:14				
13	05:19	21:15 (11)	06:09		07:05		08:00			08:00	17:41 (8)	08:01	08:49					
	22:06	16	21:31 (11)	21:15		20:01				18:47	26	18:07 (8)	16:42	16:14				
14	05:21	21:16 (11)	06:11		07:07		08:02			08:02	17:41 (8)	08:03	08:50					
	22:05	15	21:31 (11)	21:12		19:59				18:44	26	18:07 (8)	16:40	16:13				
15	05:22	21:16 (11)	06:13		07:09		08:04			08:04	17:41 (8)	08:05	08:51					
	22:04	14	21:30 (11)	21:10		19:56				18:42	26	18:07 (8)	16:39	16:13				
16	05:23	21:16 (11)	06:15		07:11		08:06			08:06	17:41 (8)	08:07	08:52					
	22:03	12	21:28 (11)	21:08		19:54				18:40	25	18:06 (8)	16:37	16:14				
17	05:25	21:17 (11)	06:17		07:12		08:08			08:08	17:42 (8)	08:09	08:53					
	22:02	10	21:27 (11)	21:06		19:51				18:37	23	18:05 (8)	16:36	16:14				
18	05:26	21:18 (11)	06:18		19:58 (9)	07:14				08:10	17:43 (8)	08:11	08:54					
	22:01	9	21:27 (11)	21:04	9	20:07 (9)	19:49			18:35	21	18:04 (8)	16:34	16:14				
19	05:28	21:19 (11)	06:20		19:56 (9)	07:16				08:12	17:44 (8)	08:12	08:55					
	21:59	6	21:25 (11)	21:01	13	20:09 (9)	19:46			18:33	18	18:02 (8)	16:33	16:14				
20	05:29	21:20 (11)	06:22		19:55 (9)	07:18				08:14	17:45 (8)	08:14	08:55					
	21:58	4	21:24 (11)	20:59	16	20:11 (9)	19:44			18:30	15	18:00 (8)	16:31	16:15				
21	05:30		06:24		19:53 (9)	07:20				08:16	17:48 (8)	08:16	08:56					
	21:56		20:57	18	20:11 (9)	19:41				18:28	9	17:57 (8)	16:30	16:15				
22	05:32		06:26		19:52 (9)	07:22				08:18		08:18	08:56					
	21:55		20:55	19	20:11 (9)	19:39				18:26		16:29	16:15					
23	05:34		06:27		19:52 (9)	07:23				08:20		08:20	08:57					
	21:54		20:52	20	20:12 (9)	19:36				18:24		16:27	16:16					
24	05:35	20:42 (10)	06:29		19:52 (9)	07:25				08:22		17:06 (7)	08:22	08:57				
	21:52	6	20:48 (10)	20:50	20	20:12 (9)	19:34			18:21	10	17:16 (7)	16:26	16:16				
25	05:37	20:40 (10)	06:31		19:50 (9)	07:27				07:24		16:04 (7)	08:23	08:58				
	21:50	10	20:50 (10)	20:48	21	20:11 (9)	19:31			17:19	14	16:18 (7)	16:25	16:17				
26	05:38	20:39 (10)	06:33		19:51 (9)	07:29				07:26		16:02 (7)	08:25	08:58				
	21:49	13	20:52 (10)	20:45	20	20:11 (9)	19:29			17:17	18	16:20 (7)	16:24	16:18				
27	05:40	20:37 (10)	06:35		19:51 (9)	07:31				07:27		16:01 (7)	08:27	08:58				
	21:47	15	20:52 (10)	20:43	20	20:11 (9)	19:26			17:15	19	16:20 (7)	16:23	16:19				
28	05:41	20:37 (10)	06:36		19:50 (9)	07:32				07:29		16:01 (7)	08:28	08:58				
	21:46	16	20:53 (10)	20:40	19	20:09 (9)	19:24			17:13	21	16:22 (7)	16:22	16:19				
29	05:43	20:36 (10)	06:38		19:51 (9)	07:34				07:31		16:00 (7)	08:30	08:58				
	21:44	17	20:53 (10)	20:38	17	20:08 (9)	19:21			17:11	22	16:22 (7)	16:21	16:20				
30	05:45	20:35 (10)	06:40		19:52 (9)	07:36				07:33		15:59 (7)	08:32	08:58				
	21:42	19	20:54 (10)	20:36	15	20:07 (9)	19:19			17:08	24	16:23 (7)	16:20	16:21				
31	05:47	20:35 (10)	06:42		19:54 (9)					07:35		15:59 (7)	08:58					
	21:40	20	20:55 (10)	20:33	11	20:05 (9)				17:06	24	16:23 (7)	16:22					
Potential sun hours	515		461		382		328			257		231						
Total, worst case	408		435		4		524			176								
Sun reduction	0.27		0.27		0.29		0.23			0.20								
Oper. time red.	1.00		1.00		1.00		1.00			1.00								
Wind dir. red.	0.62		0.60		0.59		0.58			0.58								
Total reduction	0.17		0.16		0.17		0.14			0.12								
Total, real	68		72		1		71			20								

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: CG - H85  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June	July	August	September	October	November	December		
1	08:58	08:27	07:29	07:12	06:02	05:12	20:47 (1)	05:08	20:55 (1)	05:48	06:44	07:38	07:37	08:33
	16:24	17:16	18:13	20:12	21:09	22:00	21:15 (1)	22:15	21:18 (1)	21:38	20:31	19:16	17:04	16:19
2	08:58	08:25	07:26	07:10	06:00	05:11	20:48 (1)	05:08	20:56 (1)	05:50	06:46	07:40	07:39	08:35
	16:25	17:18	18:15	20:14	21:11	22:01	21:14 (1)	22:14	21:19 (1)	21:37	20:28	19:14	17:02	16:18
3	08:58	08:24	07:24	07:08	05:58	05:10	20:48 (1)	05:09	20:56 (1)	05:52	06:47	07:42	07:41	08:36
	16:26	17:20	18:17	20:16	21:12	22:02	21:14 (1)	22:14	21:19 (1)	21:35	20:26	19:11	17:00	16:18
4	08:58	08:22	07:21	07:05	05:56	05:09	20:49 (1)	05:10	20:56 (1)	05:53	06:49	07:44	07:43	08:38
	16:27	17:22	18:19	20:18	21:14	22:03	21:15 (1)	22:13	21:20 (1)	21:33	20:23	19:09	16:58	16:17
5	08:57	08:20	07:19	07:03	05:54	05:08	20:49 (1)	05:11	20:55 (1)	05:55	06:51	07:45	07:45	08:39
	16:29	17:24	18:21	20:20	21:16	22:04	21:14 (1)	22:13	21:20 (1)	21:31	20:21	19:06	16:57	16:16
6	08:57	08:18	07:17	07:00	05:52	05:07	20:49 (1)	05:12	20:55 (1)	05:57	06:53	07:47	07:47	08:41
	16:30	17:26	18:23	20:22	21:18	22:05	21:14 (1)	22:12	21:20 (1)	21:29	20:19	19:04	16:55	16:16
7	08:56	08:16	07:14	06:58	05:50	05:07	20:50 (1)	05:13	20:55 (1)	05:59	06:55	07:49	07:49	08:42
	16:31	17:28	18:25	20:24	21:20	22:06	21:14 (1)	22:11	21:21 (1)	21:27	20:16	19:01	16:53	16:15
8	08:56	08:14	07:12	06:55	05:48	05:06	20:50 (1)	05:14	20:55 (1)	06:01	06:56	07:51	07:51	08:43
	16:33	17:30	18:27	20:25	21:22	22:07	21:14 (1)	22:11	21:21 (1)	21:25	20:14	18:59	16:51	16:15
9	08:55	08:12	07:09	06:53	05:46	05:06	20:51 (1)	05:15	20:55 (1)	06:02	06:58	07:53	07:53	08:45
	16:34	17:32	18:28	20:27	21:23	22:08	21:14 (1)	22:10	21:21 (1)	21:23	20:11	18:56	16:49	16:15
10	08:54	08:10	07:07	06:50	05:44	05:05	20:51 (1)	05:16	20:55 (1)	06:04	07:00	07:55	07:55	08:46
	16:36	17:34	18:30	20:29	21:25	22:09	21:15 (1)	22:09	21:22 (1)	21:21	20:09	18:54	16:47	16:14
11	08:54	08:08	07:05	06:48	05:42	05:05	20:51 (1)	05:17	20:55 (1)	06:06	07:02	07:57	07:57	08:47
	16:37	17:36	18:32	20:31	21:27	22:10	21:14 (1)	22:08	21:22 (1)	21:19	20:06	18:52	16:46	16:14
12	08:53	08:06	07:02	06:46	05:40	05:04	20:52 (1)	05:18	20:55 (1)	06:08	07:04	07:58	07:59	08:48
	16:39	17:38	18:34	20:33	21:29	22:11	21:14 (1)	22:07	21:22 (1)	21:17	20:04	18:49	16:44	16:14
13	08:52	08:04	07:00	06:43	05:39	05:04	20:52 (1)	05:20	20:56 (1)	06:09	07:05	08:00	08:01	08:49
	16:41	17:41	18:36	20:35	21:30	22:12	21:15 (1)	22:06	21:23 (1)	21:15	20:01	18:47	16:42	16:14
14	08:51	08:02	06:57	06:41	05:37	05:04	20:53 (1)	05:21	20:56 (1)	06:11	07:07	08:02	08:03	08:50
	16:42	17:43	18:38	20:37	21:32	22:12	21:15 (1)	22:05	21:23 (1)	21:12	19:59	18:44	16:40	16:14
15	08:50	08:00	06:55	06:38	05:35	05:03	20:53 (1)	05:22	20:55 (1)	06:13	07:09	08:04	08:05	08:51
	16:44	17:45	18:40	20:39	21:34	22:13	21:14 (1)	22:04	21:23 (1)	21:10	19:56	18:42	16:39	16:14
16	08:49	07:58	06:52	06:36	05:33	05:03	20:53 (1)	05:23	20:55 (1)	06:15	07:11	08:06	08:07	08:52
	16:46	17:47	18:42	20:41	21:36	22:13	21:14 (1)	22:03	21:23 (1)	21:08	19:54	18:40	16:37	16:14
17	08:48	07:56	06:50	06:34	05:32	05:03	20:53 (1)	05:25	20:55 (1)	06:17	07:13	08:08	08:09	08:53
	16:47	17:49	18:44	20:42	21:37	22:14	21:14 (1)	22:02	21:23 (1)	21:06	19:51	18:37	16:36	16:14
18	08:47	07:54	06:47	06:31	05:30	05:03	20:54 (1)	05:26	20:56 (1)	06:18	07:14	08:10	08:10	08:54
	16:49	17:51	18:46	20:44	21:39	22:14	21:14 (1)	22:00	21:24 (1)	21:04	19:49	18:35	16:34	16:14
19	08:46	07:51	06:45	06:29	05:29	05:03	20:54 (1)	05:28	20:56 (1)	06:20	07:16	08:12	08:12	08:54
	16:51	17:53	18:48	20:46	21:41	22:15	21:14 (1)	21:59	21:24 (1)	21:01	19:46	18:33	16:33	16:14
20	08:45	07:49	06:42	06:27	05:27	05:03	20:55 (1)	05:29	20:56 (1)	06:22	07:18	08:14	08:14	08:55
	16:53	17:55	18:50	20:48	21:42	22:15	21:15 (1)	21:58	21:23 (1)	21:09	19:44	18:30	16:31	16:15
21	08:44	07:47	06:40	06:24	05:26	05:03	20:55 (1)	05:31	20:56 (1)	06:24	07:20	08:16	08:16	08:56
	16:55	17:57	18:51	20:50	21:44	22:15	21:15 (1)	21:56	21:23 (1)	21:07	19:41	18:28	16:30	16:15
22	08:42	07:45	06:37	06:22	05:24	05:03	20:55 (1)	05:32	20:56 (1)	06:26	07:22	08:18	08:18	08:56
	16:56	17:59	18:53	20:52	21:45	22:15	21:15 (1)	21:55	21:21 (1)	21:05	19:39	18:26	16:29	16:16
23	08:41	07:42	06:35	06:20	05:23	05:04	20:55 (1)	05:34	20:57 (1)	06:27	07:23	08:20	08:20	08:57
	16:58	18:01	18:55	20:54	21:47	22:16	21:15 (1)	21:53	21:20 (1)	21:02	19:36	18:24	16:28	16:16
24	08:40	07:40	06:32	06:18	05:21	05:04	20:56 (1)	05:35	20:57 (1)	06:29	07:25	08:22	08:21	08:57
	17:00	18:03	18:57	20:56	21:49	22:16	21:16 (1)	21:52	21:19 (1)	21:00	19:34	18:21	16:26	16:17
25	08:38	07:38	06:30	06:15	05:20	05:04	20:56 (1)	05:37	20:58 (1)	06:31	07:27	07:24	08:23	08:57
	17:02	18:05	18:59	20:57	21:50	22:16	21:16 (1)	21:50	21:18 (1)	21:04	19:31	17:19	16:25	16:17
26	08:37	07:36	06:27	06:13	05:19	05:05	20:55 (1)	05:38	20:58 (1)	06:33	07:29	07:25	08:25	08:58
	17:04	18:07	19:01	20:59	21:52	22:16	21:16 (1)	21:49	21:16 (1)	21:05	19:29	17:17	16:24	16:18
27	08:35	07:33	06:25	06:11	05:17	05:05	20:56 (1)	05:40	21:00 (1)	06:35	07:31	07:27	08:27	08:58
	17:06	18:09	19:03	21:01	21:53	22:16	21:17 (1)	21:47	21:15 (1)	21:03	19:26	17:15	16:23	16:19
28	08:34	07:31	06:22	06:09	05:16	05:06	20:55 (1)	05:42	21:00 (1)	06:36	07:32	07:29	08:28	08:58
	17:08	18:11	19:05	21:03	21:54	22:15	21:17 (1)	21:45	21:13 (1)	21:04	19:24	17:13	16:22	16:20
29	08:32	07:20	06:06	05:55	05:15	05:06	20:56 (1)	05:43	21:01 (1)	06:38	07:34	07:31	08:30	08:58
	17:10		20:07	21:05	21:56	22:15	21:18 (1)	21:44	21:12 (1)	21:08	19:21	17:11	16:21	16:21
30	08:30		07:17	06:04	05:14	05:07	20:56 (1)	05:45	21:02 (1)	06:40	07:36	07:33	08:32	08:58
	17:12		20:09	21:07	21:57	22:15	21:18 (1)	21:42	21:10 (1)	21:06	19:19	17:09	16:20	16:21
31	08:29		07:15	06:03	05:13	05:07	21:18 (1)	21:42	21:04 (1)	06:42	07:35	07:35	08:35	08:58
	17:14		20:10	21:08	21:58	22:15	21:40	21:40	21:08 (1)	21:33	17:07	17:07	16:23	16:23
Potential sun hours	248	272	367	421	496	513	515	461	382	328	257	231		
Total, worst case					419	672	709							
Sun reduction					0.36	0.26	0.27							
Oper. time red.					1.00	1.00	1.00							
Wind dir. red.					0.63	0.63	0.63							
Total reduction					0.23	0.16	0.17							
Total, real					95	109	118							

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: CH - H86  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:58 16:24	08:27 17:16	07:29 18:13	07:13 20:12	06:02 21:09	05:12 22:00	05:08 22:15	05:48 21:38	06:44 20:31	07:38 19:16	07:37 17:05	08:33 16:19
2	08:58 16:25	08:25 17:18	07:26 18:15	07:10 20:14	06:00 21:11	05:11 22:01	05:09 22:14	05:50 21:37	06:46 20:28	07:40 19:14	07:39 17:03	08:35 16:19
3	08:58 16:26	08:24 17:20	07:24 18:17	07:08 20:16	05:58 21:12	05:10 22:02	05:09 22:14	05:52 21:35	06:47 20:26	07:42 19:11	07:41 17:01	08:36 16:18
4	08:58 16:28	08:22 17:22	07:22 18:19	07:05 20:18	05:56 21:14	05:09 22:03	05:10 22:13	05:54 21:33	06:49 20:24	07:44 19:09	07:43 16:59	08:38 16:17
5	08:57 16:29	08:20 17:24	07:19 18:21	07:03 20:20	05:54 21:16	05:08 22:04	05:11 22:13	05:55 21:31	06:51 20:21	07:45 19:06	07:45 16:57	08:39 16:17
6	08:57 16:30	08:18 17:26	07:17 18:23	07:00 20:22	05:52 21:18	05:08 22:05	05:12 22:12	05:57 21:29	06:53 20:19	07:47 19:04	07:47 16:55	08:41 16:16
7	08:56 16:32	08:16 17:28	07:14 18:25	06:58 20:24	05:50 21:20	05:07 22:06	05:13 22:11	05:59 21:27	06:55 20:16	07:49 19:01	07:49 16:53	08:42 16:16
8	08:56 16:33	08:14 17:30	07:12 18:27	06:55 20:26	05:48 21:22	05:06 22:07	05:14 22:11	06:01 21:25	06:56 20:14	07:51 18:59	07:51 16:51	08:43 16:15
9	08:55 16:34	08:12 17:32	07:09 18:29	06:53 20:27	05:46 21:23	05:06 22:08	05:15 22:10	06:02 21:23	06:58 20:11	07:53 18:57	07:53 16:49	08:45 16:15
10	08:54 16:36	08:10 17:34	07:07 18:30	06:50 20:29	05:44 21:25	05:05 22:09	05:16 22:09	06:04 21:21	07:00 20:09	07:55 18:54	07:55 16:47	08:46 16:14
11	08:54 16:38	08:08 17:37	07:05 18:32	06:48 20:31	05:42 21:27	05:05 22:10	05:17 22:08	06:06 21:19	07:02 20:06	07:57 18:52	07:57 16:46	08:47 16:14
12	08:53 16:39	08:06 17:39	07:02 18:34	06:46 20:33	05:41 21:29	05:04 22:11	05:19 22:07	06:08 21:17	07:04 20:04	07:59 18:49	07:59 16:44	08:48 16:14
13	08:52 16:41	08:04 17:41	07:00 18:36	06:43 20:35	05:39 21:30	05:04 22:12	05:20 22:06	06:10 21:15	07:05 20:01	08:00 18:47	08:01 16:42	08:49 16:14
14	08:51 16:42	08:02 17:43	06:57 18:38	06:41 20:37	05:37 21:32	05:04 22:12	05:21 22:05	06:11 21:12	07:07 19:59	08:02 18:45	08:03 16:41	08:50 16:14
15	08:50 16:44	08:00 17:45	06:55 18:40	06:38 20:39	05:35 21:34	05:03 22:13	05:22 22:04	06:13 21:10	07:09 19:56	08:04 18:42	08:05 16:39	08:51 16:14
16	08:49 16:46	07:58 17:47	06:52 18:42	06:36 20:41	05:34 21:36	05:03 22:13	05:24 22:03	06:15 21:08	07:11 19:54	08:06 18:40	08:07 16:37	08:52 16:14
17	08:48 16:48	07:56 17:49	06:50 18:44	06:34 20:42	05:32 21:37	05:03 22:14	05:25 22:02	06:17 21:06	07:13 19:51	08:08 18:37	08:09 16:36	08:53 16:14
18	08:47 16:49	07:54 17:51	06:47 18:46	06:31 20:44	05:30 21:39	05:03 22:14	05:26 22:00	06:19 21:04	07:14 19:49	08:10 18:35	08:10 16:34	08:54 16:14
19	08:46 16:51	07:51 17:53	06:45 18:48	06:29 20:46	05:29 21:41	05:03 22:15	05:28 21:59	06:20 21:01	07:16 19:46	08:12 18:33	08:12 16:33	08:54 16:15
20	08:45 16:53	07:49 17:55	06:42 18:50	06:27 20:48	05:27 21:42	05:03 22:15	05:29 21:58	06:22 20:59	07:18 19:44	08:14 18:31	08:14 16:32	08:55 16:15
21	08:44 16:55	07:47 17:57	06:40 18:52	06:24 20:50	05:26 21:44	05:03 22:15	05:31 21:56	06:24 20:57	07:20 19:41	08:16 18:28	08:16 16:30	08:56 16:15
22	08:42 16:57	07:45 17:59	06:37 18:53	06:22 20:52	05:24 21:45	05:04 22:15	05:32 21:55	06:26 20:55	07:22 19:39	08:18 18:26	08:18 16:29	08:56 16:16
23	08:41 16:59	07:42 18:01	06:35 18:55	06:20 20:54	05:23 21:47	05:04 22:16	05:34 21:53	06:28 20:52	07:23 19:36	08:20 18:24	08:20 16:28	08:57 16:16
24	08:40 17:00	07:40 18:03	06:32 18:57	06:18 20:56	05:21 21:49	05:04 22:16	05:35 21:52	06:29 20:50	07:25 19:34	08:22 18:22	08:21 16:26	08:57 16:17
25	08:38 17:02	07:38 18:05	06:30 18:59	06:15 20:58	05:20 21:50	05:04 22:16	05:37 21:50	06:31 20:48	07:27 19:31	07:24 17:19	08:23 16:25	08:57 16:17
26	08:37 17:04	07:36 18:07	06:27 19:01	06:13 20:59	05:19 21:51	05:05 22:16	05:39 21:49	06:33 20:45	07:29 19:29	07:25 17:17	08:25 16:24	08:58 16:18
27	08:35 17:06	07:33 18:09	06:25 19:03	06:11 21:01	05:17 21:53	05:05 22:16	05:40 21:47	06:35 20:43	07:31 19:26	07:27 17:15	08:27 16:23	08:58 16:19
28	08:34 17:08	07:31 18:11	06:22 19:05	06:09 21:03	05:16 21:54	05:06 22:15	05:42 21:45	06:37 20:40	07:33 19:24	07:29 17:13	08:28 16:22	08:58 16:20
29	08:32 17:10	07:29 18:07	06:20 19:01	06:07 21:05	05:15 21:56	05:06 22:15	05:43 21:44	06:38 20:38	07:34 19:21	07:31 17:11	08:30 16:21	08:58 16:21
30	08:30 17:12	07:27 18:04	06:17 19:04	06:04 21:07	05:14 21:57	05:07 22:15	05:45 21:42	06:40 20:36	07:36 19:19	07:33 17:09	08:32 16:20	08:58 16:22
31	08:29 17:14	07:25 18:10	06:15 19:05	06:03 21:07	05:13 21:58	05:07 22:15	05:47 21:40	06:42 20:33	07:35 17:07	07:35 16:23	08:58 16:23	
Potential sun hours	248	272	367	421	496	513	515	461	382	328	257	231
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)



### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: CI - H87  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:58	08:27	07:29	07:13	06:02	05:12	05:08	05:49	06:44	07:38	07:37	08:33
	16:24	17:16	18:13	20:12	21:09	22:00	22:15	21:39	20:31	19:16	17:05	16:19
2	08:58	08:25	07:26	07:10	06:00	05:11	05:09	05:50	06:46	07:40	07:39	08:35
	16:25	17:18	18:15	20:14	21:11	22:01	22:14	21:37	20:28	19:14	17:03	16:19
3	08:58	08:24	07:24	07:08	05:58	05:10	05:09	05:52	06:47	07:42	07:41	08:36
	16:26	17:20	18:17	20:16	21:12	22:02	22:14	21:35	20:26	19:11	17:01	16:18
4	08:58	08:22	07:22	07:05	05:56	05:09	05:10	05:54	06:49	07:44	07:43	08:38
	16:28	17:22	18:19	20:18	21:14	22:03	22:13	21:33	20:24	19:09	16:59	16:17
5	08:57	08:20	07:19	07:03	05:54	05:08	05:11	05:55	06:51	07:46	07:45	08:39
	16:29	17:24	18:21	20:20	21:16	22:04	22:13	21:31	20:21	19:06	16:57	16:17
6	08:57	08:18	07:17	07:00	05:52	05:08	05:12	05:57	06:53	07:47	07:47	08:41
	16:30	17:26	18:23	20:22	21:18	22:05	22:12	21:29	20:19	19:04	16:55	16:16
7	08:56	08:16	07:14	06:58	05:50	05:07	05:13	05:59	06:55	07:49	07:49	08:42
	16:32	17:28	18:25	20:24	21:20	22:06	22:11	21:27	20:16	19:01	16:53	16:16
8	08:56	08:14	07:12	06:55	05:48	05:06	05:14	06:01	06:56	07:51	07:51	08:43
	16:33	17:30	18:27	20:26	21:22	22:07	22:11	21:25	20:14	18:59	16:51	16:15
9	08:55	08:12	07:10	06:53	05:46	05:06	05:15	06:02	06:58	07:53	07:53	08:45
	16:35	17:33	18:29	20:27	21:23	22:08	22:10	21:23	20:11	18:57	16:49	16:15
10	08:55	08:10	07:07	06:51	05:44	05:05	05:16	06:04	07:00	07:55	07:55	08:46
	16:36	17:35	18:31	20:29	21:25	22:09	22:09	21:21	20:09	18:54	16:47	16:14
11	08:54	08:08	07:05	06:48	05:43	05:05	05:17	06:06	07:02	07:57	07:57	08:47
	16:38	17:37	18:32	20:31	21:27	22:10	22:08	21:19	20:06	18:52	16:46	16:14
12	08:53	08:06	07:02	06:46	05:41	05:04	05:19	06:08	07:04	07:59	07:59	08:48
	16:39	17:39	18:34	20:33	21:29	22:11	22:07	21:17	20:04	18:49	16:44	16:14
13	08:52	08:04	07:00	06:43	05:39	05:04	05:20	06:10	07:05	08:00	08:01	08:49
	16:41	17:41	18:36	20:35	21:31	22:12	22:06	21:15	20:01	18:47	16:42	16:14
14	08:51	08:02	06:57	06:41	05:37	05:04	05:21	06:11	07:07	08:02	08:03	08:50
	16:42	17:43	18:38	20:37	21:32	22:12	22:05	21:13	19:59	18:45	16:41	16:14
15	08:50	08:00	06:55	06:39	05:35	05:04	05:22	06:13	07:09	08:04	08:05	08:51
	16:44	17:45	18:40	20:39	21:34	22:13	22:04	21:10	19:56	18:42	16:39	16:14
16	08:49	07:58	06:52	06:36	05:34	05:03	05:24	06:15	07:11	08:06	08:07	08:52
	16:46	17:47	18:42	20:41	21:36	22:13	22:03	21:08	19:54	18:40	16:37	16:14
17	08:48	07:56	06:50	06:34	05:32	05:03	05:25	06:17	07:13	08:08	08:09	08:53
	16:48	17:49	18:44	20:43	21:37	22:14	22:02	21:06	19:51	18:38	16:36	16:14
18	08:47	07:54	06:47	06:31	05:30	05:03	05:26	06:19	07:14	08:10	08:11	08:54
	16:49	17:51	18:46	20:44	21:39	22:14	22:00	21:04	19:49	18:35	16:34	16:14
19	08:46	07:51	06:45	06:29	05:29	05:03	05:28	06:20	07:16	08:12	08:12	08:54
	16:51	17:53	18:48	20:46	21:41	22:15	21:59	21:01	19:46	18:33	16:33	16:15
20	08:45	07:49	06:42	06:27	05:27	05:03	05:29	06:22	07:18	08:14	08:14	08:55
	16:53	17:55	18:50	20:48	21:42	22:15	21:58	20:59	19:44	18:31	16:32	16:15
21	08:44	07:47	06:40	06:25	05:26	05:03	05:31	06:24	07:20	08:16	08:16	08:56
	16:55	17:57	18:52	20:50	21:44	22:15	21:56	20:57	19:41	18:28	16:30	16:15
22	08:42	07:45	06:37	06:22	05:24	05:04	05:32	06:26	07:22	08:18	08:18	08:56
	16:57	17:59	18:54	20:52	21:45	22:16	21:55	20:55	19:39	18:26	16:29	16:16
23	08:41	07:43	06:35	06:20	05:23	05:04	05:34	06:28	07:24	08:20	08:20	08:57
	16:59	18:01	18:55	20:54	21:47	22:16	21:53	20:52	19:36	18:24	16:28	16:16
24	08:40	07:40	06:32	06:18	05:21	05:04	05:35	06:29	07:25	08:22	08:22	08:57
	17:00	18:03	18:57	20:56	21:49	22:16	21:52	20:50	19:34	18:22	16:27	16:17
25	08:38	07:38	06:30	06:15	05:20	05:05	05:37	06:31	07:27	08:24	08:23	08:58
	17:02	18:05	18:59	20:58	21:50	22:16	21:50	20:48	19:31	17:19	16:25	16:18
26	08:37	07:36	06:27	06:13	05:19	05:05	05:39	06:33	07:29	08:26	08:25	08:58
	17:04	18:07	19:01	20:59	21:52	22:16	21:49	20:45	19:29	17:17	16:24	16:18
27	08:35	07:33	06:25	06:11	05:18	05:05	05:40	06:35	07:31	08:28	08:27	08:58
	17:06	18:09	19:03	21:01	21:53	22:16	21:47	20:43	19:26	17:15	16:23	16:19
28	08:34	07:31	06:23	06:09	05:16	05:06	05:42	06:37	07:33	08:29	08:28	08:58
	17:08	18:11	19:05	21:03	21:54	22:15	21:46	20:41	19:24	17:13	16:22	16:20
29	08:32		07:20	06:07	05:15	05:07	05:43	06:38	07:34	08:31	08:30	08:58
	17:10		20:07	21:05	21:56	22:15	21:44	20:38	19:21	17:11	16:21	16:21
30	08:30		07:18	06:05	05:14	05:07	05:45	06:40	07:36	08:33	08:32	08:58
	17:12		20:09	21:07	21:57	22:15	21:42	20:36	19:19	17:09	16:20	16:22
31	08:29		07:15		05:13		05:47	06:42		07:35		08:58
	17:14		20:11		21:58		21:40	20:33		17:07		16:23
Potential sun hours	248	272	367	421	496	513	515	461	382	328	257	231
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)



## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: CJ - H88

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January	February	March	April	May	June	
1	08:58 16:24	08:27 17:16	07:29 18:13	07:12 20:12	06:02 21:09	05:12 22:00	20:55 (14) 17 21:12 (14)
2	08:58 16:25	08:25 17:18	07:26 18:15	07:10 20:14	06:00 21:11	05:11 22:01	20:55 (14) 17 21:12 (14)
3	08:58 16:26	08:24 17:20	07:24 18:17	07:07 20:16	19:37 (10) 21:12	05:58 22:02	20:55 (14) 17 21:12 (14)
4	08:58 16:27	08:22 17:22	07:21 18:19	07:05 20:18	19:35 (10) 21:14	05:56 22:03	20:56 (14) 17 21:13 (14)
5	08:57 16:29	08:20 17:24	07:19 18:21	07:02 20:20	19:34 (10) 21:16	05:54 22:05	20:56 (14) 16 21:12 (14)
6	08:57 16:30	08:18 17:26	07:17 18:23	07:00 20:22	19:33 (10) 21:18	05:52 22:06	20:56 (14) 16 21:12 (14)
7	08:56 16:31	08:16 17:28	07:14 18:25	06:58 20:24	19:33 (10) 21:20	05:50 22:07	20:57 (14) 16 21:13 (14)
8	08:56 16:33	08:14 17:30	07:12 18:26	06:55 20:25	19:32 (10) 21:22	05:48 22:08	20:56 (14) 16 21:12 (14)
9	08:55 16:34	08:12 17:32	07:09 18:28	06:53 20:27	19:32 (10) 21:23	05:46 22:09	20:57 (14) 15 21:12 (14)
10	08:55 16:36	08:10 17:34	16:55 (8) 17:03 (8)	07:07 18:30	06:50 20:29	05:44 22:09	20:57 (14) 15 21:12 (14)
11	08:54 16:37	08:08 17:36	16:53 (8) 17:05 (8)	07:05 18:32	06:48 20:31	05:42 22:10	20:58 (14) 14 21:12 (14)
12	08:53 16:39	08:06 17:38	16:52 (8) 17:06 (8)	07:02 18:34	06:45 20:33	05:40 22:11	20:59 (14) 14 21:13 (14)
13	08:52 16:40	08:04 17:40	16:51 (8) 17:07 (8)	07:00 18:36	06:43 20:35	05:39 22:12	20:59 (14) 14 21:13 (14)
14	08:51 16:42	08:02 17:42	16:51 (8) 17:08 (8)	06:57 18:38	06:41 20:37	05:37 22:12	20:59 (14) 13 21:12 (14)
15	08:50 16:44	08:00 17:44	16:50 (8) 17:08 (8)	06:55 18:40	06:38 20:39	05:35 22:13	20:59 (14) 13 21:12 (14)
16	08:49 16:45	07:58 17:47	16:50 (8) 17:08 (8)	06:52 18:42	06:36 20:41	05:33 22:14	21:00 (14) 12 21:12 (14)
17	08:48 16:47	07:56 17:49	16:51 (8) 17:08 (8)	06:50 18:44	06:34 20:42	05:32 22:14	21:00 (14) 12 21:12 (14)
18	08:47 16:49	07:54 17:51	16:52 (8) 17:08 (8)	06:47 18:46	06:31 20:44	05:30 22:14	21:01 (14) 11 21:12 (14)
19	08:46 16:51	07:51 17:53	16:52 (8) 17:06 (8)	06:45 18:48	06:29 20:46	05:28 22:15	21:01 (14) 12 21:13 (14)
20	08:45 16:53	07:49 17:55	16:53 (8) 17:05 (8)	06:42 18:50	06:27 20:48	05:27 21:42	21:01 (14) 4 21:04 (14)
21	08:44 16:54	07:47 17:57	16:55 (8) 17:03 (8)	06:40 18:51	06:24 20:50	05:25 21:44	21:02 (14) 9 21:07 (14)
22	08:42 16:56	07:45 17:59	06:37 18:53	06:22 20:52	06:22 21:46	05:24 21:46	21:02 (14) 11 21:07 (14)
23	08:41 16:58	07:42 18:01	06:35 18:55	06:20 20:54	06:20 21:47	05:22 21:47	21:02 (14) 12 21:08 (14)
24	08:40 17:00	07:40 18:03	06:32 18:57	06:17 20:56	06:17 21:49	05:21 21:49	21:02 (14) 13 21:09 (14)
25	08:38 17:02	07:38 18:05	06:30 18:59	06:15 20:58	06:15 21:50	05:20 21:50	21:02 (14) 15 21:10 (14)
26	08:37 17:04	07:36 18:07	06:27 19:01	06:13 20:59	06:13 21:52	05:18 21:52	21:02 (14) 16 21:11 (14)
27	08:35 17:06	07:33 18:09	06:25 19:03	06:11 21:01	06:11 21:53	05:17 21:53	21:03 (14) 16 21:10 (14)
28	08:34 17:08	07:31 18:11	06:22 19:05	06:09 21:03	06:09 21:54	05:16 21:54	21:02 (14) 17 21:11 (14)
29	08:32 17:10		07:20 20:07	06:06 21:05	06:06 21:56	05:15 21:56	21:02 (14) 17 21:11 (14)
30	08:30 17:12		07:17 20:08	06:04 21:07	06:04 21:57	05:14 21:57	21:02 (14) 17 21:12 (14)
31	08:29 17:14		07:15 20:10		05:13 21:59	05:13 21:12 (14)	21:16 (14) 17 21:12 (14)
Potential sun hours	248	272	367	421	496	513	
Total, worst case		170		135	164	413	
Sun reduction		0.22		0.34	0.36	0.26	
Oper. time red.		1.00		1.00	1.00	1.00	
Wind dir. red.		0.58		0.59	0.63	0.63	
Total reduction		0.13		0.20	0.23	0.16	
Total, real		22		27	37	67	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: CJ - H88  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	July			August			September			October			November			December		
1	05:07	21:02 (14)	05:48	06:44	19:32 (10)	07:38	07:37	16:25 (8)	08:33									
	22:15	14	21:16 (14)	21:39	20:31	12	19:44 (10)	19:16	17:04	7	16:32 (8)	16:19						
2	05:08	21:02 (14)	05:50	06:45	19:31 (10)	07:40	07:39	16:35	08:35									
	22:14	15	21:17 (14)	21:37	20:28	14	19:45 (10)	19:14	17:02	16:18								
3	05:09	21:03 (14)	05:52	06:47	19:30 (10)	07:42	07:41	08:36										
	22:14	15	21:18 (14)	21:35	20:26	16	19:46 (10)	19:11	17:00	16:18								
4	05:10	21:02 (14)	05:53	06:49	19:29 (10)	07:44	07:43	08:38										
	22:13	15	21:17 (14)	21:33	20:23	16	19:45 (10)	19:09	16:58	16:17								
5	05:11	21:02 (14)	05:55	06:51	19:29 (10)	07:45	07:45	08:39										
	22:13	16	21:18 (14)	21:31	20:21	16	19:45 (10)	19:06	16:56	16:16								
6	05:12	21:02 (14)	05:57	06:53	19:29 (10)	07:47	07:47	08:41										
	22:12	16	21:18 (14)	21:29	20:19	16	19:45 (10)	19:04	16:54	16:16								
7	05:13	21:02 (14)	05:59	06:54	19:29 (10)	07:49	07:49	08:42										
	22:12	17	21:19 (14)	21:27	20:16	15	19:44 (10)	19:01	16:53	16:15								
8	05:14	21:02 (14)	06:00	06:56	19:29 (10)	07:51	07:51	08:43										
	22:11	17	21:19 (14)	21:25	20:14	13	19:42 (10)	18:59	16:51	16:15								
9	05:15	21:02 (14)	06:02	06:58	19:31 (10)	07:53	07:53	08:45										
	22:10	17	21:19 (14)	21:23	20:11	9	19:40 (10)	18:56	16:49	16:14								
10	05:16	21:02 (14)	06:04	07:00	19:34 (10)	07:55	07:55	08:46										
	22:09	18	21:20 (14)	21:21	20:09	3	19:37 (10)	18:54	16:47	16:14								
11	05:17	21:02 (14)	06:06	07:02	19:33 (10)	07:57	07:57	08:47										
	22:08	18	21:20 (14)	21:19	20:06	16	18:52	16:45	16:14									
12	05:18	21:02 (14)	06:07	07:03	19:33 (10)	07:58	07:59	08:48										
	22:07	18	21:20 (14)	21:17	20:04	16	18:49	16:44	16:14									
13	05:19	21:02 (14)	06:09	07:05	19:34 (10)	08:00	08:01	08:49										
	22:06	18	21:20 (14)	21:15	20:01	16	18:47	16:42	16:13									
14	05:21	21:03 (14)	06:11	07:07	19:34 (10)	08:02	08:03	08:50										
	22:05	18	21:21 (14)	21:12	19:59	16	18:44	16:40	16:13									
15	05:22	21:03 (14)	06:13	07:09	19:35 (10)	08:04	08:05	08:51										
	22:04	17	21:20 (14)	21:10	19:56	16	18:42	16:39	16:13									
16	05:23	21:03 (14)	06:15	07:11	19:36 (10)	08:06	08:07	08:52										
	22:03	17	21:20 (14)	21:08	19:54	16	18:40	16:37	16:14									
17	05:25	21:04 (14)	06:16	07:12	19:37 (10)	08:08	08:09	08:53										
	22:02	16	21:20 (14)	21:06	19:51	16	18:37	16:36	16:14									
18	05:26	21:05 (14)	06:18	07:14	19:38 (10)	08:10	08:11	08:54										
	22:01	15	21:20 (14)	21:04	19:49	16	18:35	16:34	16:14									
19	05:27	21:05 (14)	06:20	07:16	19:39 (10)	08:12	08:12	08:54										
	21:59	14	21:19 (14)	21:01	19:46	16	18:33	16:33	16:14									
20	05:29	21:05 (14)	06:22	07:18	19:40 (10)	08:14	08:14	08:55										
	21:58	14	21:19 (14)	20:59	19:44	16	18:30	16:31	16:14									
21	05:30	21:07 (14)	06:24	07:20	19:41 (10)	08:16	17:25 (8)	08:16	08:56									
	21:56	11	21:18 (14)	20:57	19:41	16	18:28	10	17:35 (8)	16:30								
22	05:32	21:07 (14)	06:26	07:22	19:42 (10)	08:18	08:18	08:56										
	21:55	10	21:17 (14)	20:55	19:39	16	18:26	13	17:36 (8)	16:29								
23	05:33	21:09 (14)	06:27	07:23	19:43 (10)	08:20	08:20	08:57										
	21:54	6	21:15 (14)	20:52	19:36	16	18:24	15	17:37 (8)	16:27								
24	05:35	21:10 (14)	06:29	07:25	19:44 (10)	08:22	08:22	08:57										
	21:52	16	21:16 (14)	20:50	19:34	16	18:21	16	17:37 (8)	16:26								
25	05:37	21:11 (14)	06:31	07:27	19:45 (10)	08:24	08:24	08:58										
	21:50	16	21:17 (14)	20:48	19:31	16	18:19	17	16:37 (8)	16:25								
26	05:38	21:12 (14)	06:33	07:29	19:46 (10)	08:25	08:25	08:58										
	21:49	16	21:18 (14)	20:45	19:28	16	18:17	17	16:37 (8)	16:24								
27	05:40	21:13 (14)	06:35	07:31	19:47 (10)	08:27	08:27	08:58										
	21:47	16	21:19 (14)	20:43	19:26	16	18:15	17	16:37 (8)	16:23								
28	05:41	21:14 (14)	06:36	07:32	19:48 (10)	08:28	08:28	08:58										
	21:46	16	21:20 (14)	20:40	19:23	16	18:13	17	16:38 (8)	16:22								
29	05:43	21:15 (14)	06:38	07:34	19:49 (10)	08:30	08:30	08:58										
	21:44	16	21:21 (14)	20:38	19:21	16	18:11	16	16:37 (8)	16:21								
30	05:45	21:16 (14)	06:40	07:36	19:50 (10)	08:32	08:32	08:58										
	21:42	16	21:22 (14)	20:36	19:19	16	18:08	14	16:36 (8)	16:20								
31	05:46	21:17 (14)	06:42	19:35 (10)	19:51 (10)	08:35	07:35	16:23 (8)	08:58									
	21:40	16	20:33	8	19:43 (10)	17:06	11	16:34 (8)	16:22									
Potential sun hours	515	461	383	328	257	231												
Total, worst case	352	8	130	163	7													
Sun reduction	0.27	0.27	0.29	0.23	0.20													
Oper. time red.	1.00	1.00	1.00	1.00	1.00													
Wind dir. red.	0.63	0.59	0.59	0.58	0.58													
Total reduction	0.17	0.16	0.17	0.14	0.12													
Total, real	59	1	22	22	1													

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)



## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: CK - H89

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January	February	March	April	May	June
1	08:58 16:24	08:27 17:16	07:29 18:13	07:12 20:12	19:06 (7) 06:02	19:52 (8) 05:12
2	08:58 16:25	08:25 17:18	07:26 18:15	07:10 20:14	19:06 (7) 19:31 (7)	06:00 21:09
3	08:58 16:26	08:24 17:20	07:24 18:17	07:07 20:16	19:05 (7) 19:29 (7)	05:58 21:12
4	08:58 16:27	08:22 17:22	07:21 18:19	07:05 20:18	19:06 (7) 19:29 (7)	05:56 21:14
5	08:57 16:29	08:20 17:24	07:19 18:21	07:03 20:20	19:07 (7) 19:28 (7)	05:54 21:16
6	08:57 16:30	08:18 17:26	07:17 18:23	07:00 20:22	19:08 (7) 19:26 (7)	05:52 21:18
7	08:56 16:31	08:16 17:28	07:14 18:25	06:58 20:24	19:10 (7) 19:24 (7)	05:50 21:20
8	08:56 16:33	08:14 17:30	07:12 18:26	06:55 20:25	19:12 (7) 19:20 (7)	05:48 21:22
9	08:55 16:34	08:12 17:32	07:09 18:28	06:53 20:27	05:46 21:23	05:05 22:08
10	08:55 16:36	08:10 17:34	07:07 18:30	06:50 20:29	05:44 21:25	05:05 22:09
11	08:54 16:37	08:08 17:36	07:05 18:32	06:48 20:31	05:42 21:27	05:04 22:10
12	08:53 16:39	08:06 17:38	07:02 18:34	06:45 20:33	05:40 21:29	05:04 22:11
13	08:52 16:40	08:04 17:40	07:00 18:36	06:43 20:35	05:39 21:31	05:04 22:12
14	08:51 16:42	08:02 17:42	06:57 18:38	06:41 20:37	05:37 21:32	05:03 22:12
15	08:50 16:44	08:00 17:45	06:55 18:40	06:38 20:39	20:01 (8) 20:08 (8)	05:35 21:34
16	08:49 16:46	07:58 17:47	06:52 18:42	06:36 20:41	19:57 (8) 20:10 (8)	05:33 21:36
17	08:48 16:47	07:56 17:49	06:50 18:44	06:34 20:42	19:55 (8) 20:12 (8)	05:32 21:37
18	08:47 16:49	07:54 17:51	06:47 18:46	06:31 20:44	19:53 (8) 20:13 (8)	05:30 21:39
19	08:46 16:51	07:51 17:53	06:45 18:48	06:29 20:46	19:52 (8) 20:14 (8)	05:28 21:41
20	08:45 16:53	07:49 17:55	06:42 18:50	06:27 20:48	19:51 (8) 20:14 (8)	05:27 21:42
21	08:44 16:55	07:47 17:57	06:40 18:51	06:24 20:50	19:50 (8) 20:15 (8)	05:25 21:44
22	08:42 16:56	07:45 17:59	06:37 18:53	06:22 20:52	19:50 (8) 20:15 (8)	05:24 21:46
23	08:41 16:58	07:42 18:01	06:35 18:55	06:20 20:54	19:50 (8) 20:15 (8)	05:22 21:47
24	08:40 17:00	07:40 18:03	06:32 18:57	06:17 20:56	19:49 (8) 20:15 (8)	05:21 21:49
25	08:38 17:02	07:38 18:05	06:30 18:59	06:15 20:58	19:49 (8) 20:15 (8)	05:20 21:50
26	08:37 17:04	07:36 18:07	06:27 19:01	06:13 20:59	19:49 (8) 20:14 (8)	05:18 21:52
27	08:35 17:06	07:33 18:09	06:25 19:03	06:11 21:01	19:49 (8) 20:13 (8)	05:17 21:53
28	08:34 17:08	07:31 18:11	06:22 19:05	06:09 21:03	19:49 (8) 20:13 (8)	05:16 21:54
29	08:32 17:10	07:29 18:11	06:20 19:07	06:06 21:05	19:50 (8) 20:12 (8)	05:15 21:56
30	08:30 17:12	07:27 18:12	06:17 19:09	06:04 21:07	19:51 (8) 20:11 (8)	05:14 21:57
31	08:29 17:14	07:25 18:14	06:15 19:11	06:02 21:09	19:52 (8) 20:10 (8)	05:13 21:58
Potential sun hours	248	272	367	421	496	513
Total, worst case			163	502	182	452
Sun reduction			0.22	0.34	0.36	0.26
Oper. time red.			1.00	1.00	1.00	1.00
Wind dir. red.			0.59	0.59	0.62	0.63
Total reduction			0.13	0.20	0.22	0.16
Total, real			21	102	41	73

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: CK - H89  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	July	August	September	October	November	December						
1	05:07	21:10 (9)	05:48	06:44	07:38	07:37	08:33					
	22:15	15	21:25 (9)	21:39	20:31	19:16	17:04	16:19				
2	05:08	21:10 (9)	05:50	06:45	07:40	07:39	08:35					
	22:14	16	21:26 (9)	21:37	20:28	19:14	17:02	16:18				
3	05:09	21:11 (9)	05:52	06:47	07:42	07:41	08:36					
	22:14	16	21:27 (9)	21:35	20:26	19:11	17:00	16:18				
4	05:10	21:10 (9)	05:53	06:49	19:09 (7)	07:44	07:43	08:38				
	22:13	16	21:26 (9)	21:33	20:23	8	19:17 (7)	19:09	16:58	16:17		
5	05:11	21:10 (9)	05:55	06:51	19:06 (7)	07:45	07:45	08:39				
	22:13	17	21:27 (9)	21:31	20:21	14	19:20 (7)	19:06	16:56	16:16		
6	05:12	21:10 (9)	05:57	06:53	19:04 (7)	07:47	07:47	08:41				
	22:12	17	21:27 (9)	21:29	20:19	18	19:22 (7)	19:04	16:55	16:16		
7	05:13	21:10 (9)	05:59	06:54	19:03 (7)	07:49	07:49	08:42				
	22:12	17	21:27 (9)	21:27	20:16	20	19:23 (7)	19:01	16:53	16:15		
8	05:14	21:10 (9)	06:00	06:56	19:01 (7)	07:51	07:51	08:43				
	22:11	18	21:28 (9)	21:25	20:14	22	19:23 (7)	18:59	16:51	16:15		
9	05:15	21:10 (9)	06:02	20:08 (8)	06:58	19:00 (7)	07:53	07:53	08:45			
	22:10	18	21:28 (9)	21:23	4	20:12 (8)	20:11	23	19:23 (7)	18:56	16:49	16:14
10	05:16	21:10 (9)	06:04	20:04 (8)	07:00	18:59 (7)	07:55	07:55	08:46			
	22:09	18	21:28 (9)	21:21	12	20:16 (8)	20:09	25	19:24 (7)	18:54	16:47	16:14
11	05:17	21:11 (9)	06:06	20:01 (8)	07:02	18:59 (7)	07:57	07:57	08:47			
	22:08	17	21:28 (9)	21:19	16	20:17 (8)	20:06	25	19:24 (7)	18:52	16:45	16:14
12	05:18	21:11 (9)	06:08	20:00 (8)	07:03	18:58 (7)	07:58	07:59	08:48			
	22:07	17	21:28 (9)	21:17	18	20:18 (8)	20:04	25	19:23 (7)	18:49	16:44	16:14
13	05:19	21:11 (9)	06:09	19:59 (8)	07:05	18:58 (7)	08:00	08:01	08:49			
	22:06	17	21:28 (9)	21:15	21	20:20 (8)	20:01	25	19:23 (7)	18:47	16:42	16:14
14	05:21	21:12 (9)	06:11	19:58 (8)	07:07	18:58 (7)	08:02	08:03	08:50			
	22:05	17	21:29 (9)	21:12	23	20:21 (8)	19:59	24	19:22 (7)	18:44	16:40	16:13
15	05:22	21:12 (9)	06:13	19:57 (8)	07:09	18:58 (7)	08:04	08:05	08:51			
	22:04	17	21:29 (9)	21:10	23	20:20 (8)	19:56	23	19:21 (7)	18:42	16:39	16:14
16	05:23	21:12 (9)	06:15	19:56 (8)	07:11	18:58 (7)	08:06	08:07	08:52			
	22:03	16	21:28 (9)	21:08	25	20:21 (8)	19:54	21	19:19 (7)	18:40	16:37	16:14
17	05:25	21:12 (9)	06:17	19:56 (8)	07:12	18:59 (7)	08:08	08:09	08:53			
	22:02	15	21:27 (9)	21:06	25	20:21 (8)	19:51	19	19:18 (7)	18:37	16:36	16:14
18	05:26	21:13 (9)	06:18	19:55 (8)	07:14	19:00 (7)	08:10	08:11	08:54			
	22:00	14	21:27 (9)	21:04	26	20:21 (8)	19:49	16	19:16 (7)	18:35	16:34	16:14
19	05:28	21:14 (9)	06:20	19:55 (8)	07:16	19:02 (7)	08:12	08:12	08:54			
	21:59	11	21:25 (9)	21:01	26	20:21 (8)	19:46	12	19:14 (7)	18:33	16:33	16:14
20	05:29	21:14 (9)	06:22	19:55 (8)	07:18	08:14	08:14	08:14	08:55			
	21:58	10	21:24 (9)	20:59	26	20:21 (8)	19:44	26	18:30	16:31	16:15	
21	05:30	21:16 (9)	06:24	19:54 (8)	07:20	08:16	08:16	08:16	08:56			
	21:56	7	21:23 (9)	20:57	26	20:20 (8)	19:41	18:28	16:30	16:15		
22	05:32	21:16 (9)	06:26	19:55 (8)	07:22	08:18	08:18	08:18	08:56			
	21:55	5	21:21 (9)	20:55	24	20:19 (8)	19:39	18:26	16:29	16:15		
23	05:34	21:19 (9)	06:27	19:55 (8)	07:23	08:20	08:20	08:20	08:57			
	21:54	2	21:21 (9)	20:52	24	20:19 (8)	19:36	18:24	16:27	16:16		
24	05:35		06:29	19:56 (8)	07:25	08:22	08:22	08:22	08:57			
	21:52		20:50	22	20:18 (8)	19:34	18:21	16:26	16:17			
25	05:37		06:31	19:56 (8)	07:27	07:24	08:23	08:23	08:58			
	21:50		20:48	20	20:16 (8)	19:31	17:19	16:25	16:17			
26	05:38		06:33	19:58 (8)	07:29	07:25	08:25	08:25	08:58			
	21:49		20:45	17	20:15 (8)	19:29	17:17	16:24	16:18			
27	05:40		06:35	20:00 (8)	07:31	07:27	08:27	08:27	08:58			
	21:47		20:43	13	20:13 (8)	19:26	17:15	16:23	16:19			
28	05:42		06:36	20:02 (8)	07:32	07:29	08:28	08:28	08:58			
	21:46		20:40	6	20:08 (8)	19:24	17:13	16:22	16:20			
29	05:43		06:38		07:34	07:31	08:30	08:30	08:58			
	21:44		20:38		19:21	17:11	16:21	16:20	16:20			
30	05:45		06:40		07:36	07:33	08:32	08:32	08:58			
	21:42		20:36		19:19	17:09	16:20	16:20	16:21			
31	05:47		06:42			07:35			08:58			
	21:40		20:33			17:06			16:22			
Potential sun hours	515		461		382		328		257		231	
Total, worst case		333		397		320						
Sun reduction		0.27		0.27		0.29						
Oper. time red.		1.00		1.00		1.00						
Wind dir. red.		0.63		0.59		0.59						
Total reduction		0.17		0.16		0.17						
Total, real		56		65		55						

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: CL - H90  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:58 16:24	08:27 17:16	07:29 18:13	07:12 20:12	06:02 21:09	05:12 22:00	05:08 22:15	05:48 21:38	06:44 20:31	07:38 19:16	07:37 17:04	08:33 16:19
2	08:58 16:25	08:25 17:18	07:26 18:15	07:10 20:14	06:00 21:11	05:11 22:01	05:08 22:14	05:50 21:37	06:46 20:28	07:40 19:14	07:39 17:02	08:35 16:18
3	08:58 16:26	08:24 17:20	07:24 18:17	07:08 20:16	05:58 21:12	05:10 22:02	05:09 22:14	05:52 21:35	06:47 20:26	07:42 19:11	07:41 17:00	08:36 16:18
4	08:58 16:27	08:22 17:22	07:21 18:19	07:05 20:18	05:56 21:14	05:09 22:03	05:10 22:13	05:54 21:33	06:49 20:23	07:44 19:09	07:43 16:58	08:38 16:17
5	08:57 16:29	08:20 17:24	07:19 18:21	07:03 20:20	05:54 21:16	05:08 22:04	05:11 22:13	05:55 21:31	06:51 20:21	07:45 19:06	07:45 16:57	08:39 16:16
6	08:57 16:30	08:18 17:26	07:17 18:23	07:00 20:22	05:52 21:18	05:07 22:05	05:12 22:12	05:57 21:29	06:53 20:19	07:47 19:04	07:47 16:55	08:41 16:16
7	08:56 16:31	08:16 17:28	07:14 18:25	06:58 20:24	05:50 21:20	05:07 22:06	05:13 22:11	05:59 21:27	06:55 20:16	07:49 19:01	07:49 16:53	08:42 16:15
8	08:56 16:33	08:14 17:30	07:12 18:27	06:55 20:25	05:48 21:22	05:06 22:07	05:14 22:11	06:01 21:25	06:56 20:14	07:51 18:59	07:51 16:51	08:43 16:15
9	08:55 16:34	08:12 17:32	07:09 18:28	06:53 20:27	05:46 21:23	05:06 22:08	05:15 22:10	06:02 21:23	06:58 20:11	07:53 18:56	07:53 16:49	08:45 16:15
10	08:54 16:36	08:10 17:34	07:07 18:30	06:50 20:29	05:43 21:25	05:05 22:09	05:16 22:09	06:04 21:21	07:00 20:09	07:55 18:54	07:55 16:47	08:46 16:14
11	08:54 16:37	08:08 17:36	07:05 18:32	06:48 20:31	05:42 21:27	05:05 22:10	05:17 22:08	06:06 21:19	07:02 20:06	07:57 18:52	07:57 16:46	08:47 16:14
12	08:53 16:39	08:06 17:38	07:02 18:34	06:46 20:33	05:41 21:29	05:04 22:11	05:18 22:07	06:08 21:17	07:04 20:04	07:58 18:49	07:59 16:44	08:48 16:14
13	08:52 16:41	08:04 17:41	07:00 18:36	06:43 20:35	05:39 21:30	05:04 22:12	05:20 22:06	06:09 21:15	07:05 20:01	08:00 18:47	08:01 16:42	08:49 16:14
14	08:51 16:42	08:02 17:43	06:57 18:38	06:41 20:37	05:37 21:32	05:04 22:12	05:21 22:05	06:11 21:12	07:07 19:59	08:02 18:44	08:03 16:40	08:50 16:14
15	08:50 16:44	08:00 17:45	17:11 (2) 18:40	06:55 20:39	05:35 21:34	05:03 22:13	05:22 22:04	06:13 21:10	07:09 19:56	08:04 18:42	08:05 16:39	08:51 16:14
16	08:49 16:46	07:58 17:47	17:10 (2) 18:42	06:52 20:41	18:14 (4) 20:41	06:36 21:36	05:33 22:13	06:15 21:08	07:11 19:54	08:06 18:40	08:07 16:37	08:52 16:14
17	08:48 16:47	07:56 17:49	17:10 (2) 18:44	06:50 20:42	18:13 (4) 20:42	06:34 21:37	05:32 22:14	06:17 21:06	07:13 19:51	08:08 18:37	08:09 16:36	08:53 16:14
18	08:47 16:49	07:54 17:51	17:10 (2) 18:46	06:47 20:44	18:11 (4) 20:44	06:31 21:39	05:30 22:14	06:18 21:04	07:14 19:49	19:04 (4) 18:35	08:10 16:34	08:54 16:14
19	08:46 16:51	07:51 17:53	17:10 (2) 18:48	06:45 20:46	18:11 (4) 20:46	06:29 21:41	05:29 22:15	06:20 21:01	07:16 19:46	19:00 (4) 18:33	08:12 16:33	08:54 16:14
20	08:45 16:53	07:49 17:55	17:10 (2) 18:50	06:42 20:48	18:10 (4) 20:48	06:27 21:42	05:27 22:15	06:22 20:59	07:18 19:44	19:09 (4) 18:30	08:14 17:43	08:55 16:15
21	08:44 16:55	07:47 17:57	17:11 (2) 18:51	06:40 20:50	18:10 (4) 20:50	06:24 21:44	05:26 22:15	06:24 20:57	07:20 19:41	19:11 (4) 18:28	18:30 17:41	16:31 08:16
22	08:42 16:56	07:45 17:59	17:12 (2) 18:53	06:37 20:52	18:10 (4) 20:52	06:22 21:45	05:24 22:15	06:26 20:55	07:22 19:39	19:10 (4) 18:26	18:18 17:42	08:18 16:16
23	08:41 16:58	07:42 18:01	17:15 (2) 18:55	06:35 20:54	18:11 (4) 20:54	06:20 21:47	05:23 22:16	06:27 20:52	07:23 19:36	18:54 (4) 18:24	17:40 (2) 17:53 (2)	08:20 16:28
24	08:40 17:00	07:40 18:03	17:21 (2) 18:52	06:32 20:54	18:12 (4) 20:54	06:18 21:47	05:21 22:16	06:29 20:50	07:25 19:34	18:54 (4) 18:21	17:40 (2) 17:51 (2)	08:21 16:17
25	08:38 17:02	07:38 18:05	17:15 (2) 18:59	06:30 20:57	18:15 (4) 20:57	06:15 21:50	05:20 22:16	06:31 20:48	07:27 19:31	18:55 (4) 17:19	16:40 (2) 16:25	08:23 16:17
26	08:37 17:04	07:36 18:07	06:27 19:01	06:27 20:59	18:19 (4) 21:52	06:13 22:16	05:19 22:16	06:33 20:45	07:29 19:29	18:54 (4) 17:17	16:40 (2) 16:46 (2)	08:25 16:18
27	08:35 17:06	07:33 18:09	06:25 19:03	06:11 21:01	05:17 21:53	05:05 22:16	05:40 21:47	06:35 20:43	07:31 19:26	18:55 (4) 17:15	16:41 (2) 16:44 (2)	08:27 16:23
28	08:34 17:08	07:31 18:11	06:22 19:05	06:09 21:03	05:16 21:54	05:06 22:15	05:42 21:45	06:36 20:40	07:32 19:24	19:05 (4) 17:13	16:44 (2) 16:22	08:28 16:20
29	08:32 17:10	07:29 18:11	06:20 20:07	06:06 21:05	05:15 21:56	05:06 22:15	05:43 21:44	06:38 20:38	07:34 19:21	19:05 (4) 17:11	16:44 (2) 16:21	08:28 16:21
30	08:30 17:12	07:27 18:09	06:17 20:09	06:04 21:07	05:14 21:57	05:07 22:15	05:45 21:42	06:40 20:36	07:36 19:19	19:05 (4) 17:09	16:44 (2) 16:22	08:28 16:22
31	08:29 17:14	07:25 18:06	06:15 20:10	05:13 21:58	05:07 22:15	05:07 22:15	05:47 21:40	06:42 20:33	07:36 19:19	19:05 (4) 17:07	16:44 (2) 16:23	08:28 16:23
Potential sun hours	248	272	367	421	496	513	515	461	382	328	257	231
Total, worst case		93	92			5			93	90		
Sun reduction		0.22	0.22			0.26			0.29	0.23		
Oper. time red.		1.00	1.00			1.00			1.00	1.00		
Wind dir. red.		0.58	0.58			0.65			0.58	0.58		
Total reduction		0.13	0.13			0.17			0.17	0.14		
Total, real		12	12			1			16	12		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: CM - H91  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January	February	March	April	May	June	July	August	September	October	November	December	
1	08:59 16:24	08:27 17:16	08:56 (5) 18:13	07:29 18:13	06:02 21:09	05:12 22:00	05:08 22:15	05:48 21:39	06:44 20:31	07:38 19:16	07:38 08:09 (5)	08:34 16:19	
2	08:58 16:25	08:26 17:18	08:54 (5) 18:15	07:26 20:14	06:00 21:11	05:11 22:01	05:08 22:15	05:50 21:37	06:46 20:29	07:40 19:14	07:40 08:09 (5)	08:35 16:19	
3	08:58 16:26	08:24 17:20	08:52 (5) 18:17	07:24 20:16	06:08 21:13	05:10 22:02	05:09 22:14	05:52 21:35	06:47 20:26	07:42 19:11	07:42 08:12 (5)	08:37 16:18	
4	08:58 16:28	08:22 17:22	08:50 (5) 18:19	07:22 20:18	06:16 21:15	05:16 22:04	05:10 22:14	05:54 21:33	06:49 20:24	07:44 19:09	07:43 08:14 (5)	08:38 16:17	
5	08:57 16:29	08:20 17:24	08:48 (5) 18:21	07:19 20:20	06:34 21:16	05:18 22:05	05:11 22:13	05:55 21:31	06:51 20:21	07:46 19:06	07:45 08:16 (5)	08:40 16:17	
6	08:57 16:30	08:18 17:26	08:46 (5) 18:23	07:17 20:22	07:00 21:18	05:52 22:06	05:08 22:12	05:12 21:29	06:57 20:19	07:47 19:04	07:47 08:29 (5)	08:41 16:16	
7	08:57 16:32	08:16 17:28	08:44 (5) 18:25	07:14 20:24	06:58 21:20	05:50 22:07	05:07 22:12	05:13 21:27	06:55 20:16	07:49 19:01	06:55 08:29 (5)	08:42 16:15	
8	08:56 16:33	09:30 (6) 17:30	08:14 18:27	08:42 (5) 20:26	06:55 21:22	05:48 22:08	05:14 22:11	06:01 21:25	06:56 20:14	07:51 18:59	07:51 08:29 (5)	08:44 16:15	
9	08:55 16:34	09:29 (6) 17:32	08:13 18:11	08:40 (5) 20:28	06:53 21:24	05:46 22:09	05:15 22:10	06:02 21:23	06:58 20:11	07:53 18:57	07:53 08:29 (5)	08:45 16:15	
10	08:55 16:36	09:28 (6) 17:35	08:11 18:09	08:40 (5) 20:29	06:51 21:25	05:45 22:10	05:16 22:09	06:04 21:21	07:00 20:09	07:55 18:54	07:55 08:27 (5)	08:46 16:14	
11	08:54 16:37	09:27 (6) 17:37	08:09 18:33	08:42 (5) 20:31	06:48 21:27	05:45 22:10	05:17 22:08	06:06 21:19	07:02 20:06	07:57 18:52	07:57 08:29 (5)	08:47 16:14	
12	08:53 16:39	09:26 (6) 17:39	08:06 18:34	08:45 (5) 20:33	06:46 21:29	05:41 22:11	05:18 22:07	06:08 21:17	07:04 20:04	07:59 18:49	07:59 08:29 (5)	08:48 16:14	
13	08:52 16:41	09:25 (6) 17:41	08:04 18:36	08:44 (5) 20:35	06:43 21:31	05:39 22:12	05:14 22:06	06:10 21:15	07:06 20:01	08:01 18:47	08:01 08:53 (6)	08:49 16:14	
14	08:52 16:42	09:24 (6) 17:43	08:02 18:38	08:43 (5) 20:37	06:41 21:32	05:37 22:13	05:14 22:05	06:11 21:13	07:07 19:59	08:02 18:45	08:03 08:50 (6)	08:50 16:14	
15	08:51 16:44	09:23 (6) 17:45	08:00 18:40	08:42 (5) 20:39	06:55 21:34	05:35 22:13	05:13 22:04	06:13 21:10	07:09 19:56	08:04 18:42	08:05 08:49 (6)	08:51 16:14	
16	08:50 16:46	09:21 (6) 17:47	07:58 18:42	08:41 (5) 20:41	06:52 21:36	05:34 22:14	05:24 22:03	06:15 21:08	07:11 19:54	08:06 18:40	08:07 08:49 (6)	08:52 16:14	
17	08:49 16:47	09:20 (6) 17:49	07:56 18:44	08:40 (5) 20:43	06:50 21:38	05:32 22:14	05:25 22:02	06:17 21:06	07:13 19:51	08:08 18:38	08:09 08:48 (6)	08:53 16:14	
18	08:47 16:49	09:19 (6) 17:51	07:54 18:46	08:39 (5) 20:45	06:47 21:39	05:30 22:15	05:26 22:01	06:19 21:04	07:15 19:49	08:10 18:35	08:11 08:47 (6)	08:54 16:14	
19	08:46 16:51	09:17 (6) 17:53	07:52 18:48	08:38 (5) 20:46	06:45 21:41	05:29 22:15	05:28 22:15	06:20 21:59	07:16 19:46	08:12 18:33	08:13 08:47 (6)	08:55 16:14	
20	08:45 16:53	09:16 (6) 17:59	07:49 18:50	08:37 (5) 20:48	06:42 21:43	05:27 22:15	05:23 22:06	06:22 21:58	07:18 19:44	08:14 18:31	08:14 08:48 (6)	08:55 16:15	
21	08:44 16:55	09:14 (6) 17:57	07:47 18:52	08:36 (5) 20:50	06:40 21:44	05:26 22:16	05:23 22:07	06:24 21:57	07:20 19:41	08:16 18:28	08:16 08:50 (6)	08:56 16:15	
22	08:43 16:57	09:13 (6) 17:59	07:45 18:54	08:35 (5) 20:52	06:38 21:46	05:24 22:16	05:22 22:05	06:32 21:55	07:22 19:39	08:18 18:26	08:18 08:52 (6)	08:56 16:16	
23	08:41 16:58	09:12 (6) 18:01	07:43 18:55	08:34 (5) 20:54	06:35 21:47	05:23 22:16	05:24 22:04	06:28 21:54	07:24 19:36	08:20 18:24	08:20 08:54 (6)	08:57 16:16	
24	08:40 17:00	09:11 (6) 18:03	07:40 18:03	08:33 (5) 20:56	06:33 21:49	05:21 22:16	05:35 22:02	06:29 21:52	07:25 19:34	08:22 18:22	08:22 08:56 (6)	08:57 16:17	
25	08:38 17:02	09:14 (6) 18:05	07:38 18:05	08:30 (5) 20:58	06:30 21:50	05:20 22:16	05:37 22:01	06:31 21:48	07:27 19:31	08:24 18:19	08:24 08:58 (6)	08:58 16:17	
26	08:37 17:04	09:15 (6) 18:07	07:36 18:07	08:28 (5) 21:00	06:28 21:52	05:19 22:16	05:38 22:04	06:33 21:49	07:29 19:29	08:25 18:17	08:25 09:00 (6)	08:58 16:18	
27	08:35 17:06	09:17 (6) 18:09	07:33 18:09	08:25 (5) 21:01	06:25 21:53	05:17 22:16	05:40 22:07	06:35 21:47	07:31 19:26	08:27 18:15	08:27 09:02 (6)	08:58 16:19	
28	08:34 17:08	09:19 (6) 18:11	07:31 18:11	08:23 (5) 21:03	06:19 21:55	05:16 22:16	05:36 22:04	06:37 21:46	07:33 19:24	08:29 18:13	08:29 09:15 (6)	08:58 16:20	
29	08:32 17:10	09:21 (6) 18:09	07:29 18:09	08:20 (5) 21:05	06:07 21:56	05:15 22:16	05:43 22:04	06:38 21:44	07:35 19:21	08:30 18:11	08:30 09:05 (6)	08:59 16:21	
30	08:31 17:12	09:22 (6) 18:11	07:28 18:11	08:19 (5) 21:07	06:04 21:57	05:14 22:15	05:45 22:02	06:40 21:42	07:36 19:19	08:32 18:04 (5)	08:32 09:07 (6)	08:59 16:22	
31	08:29 17:14	09:23 (6) 18:11	07:27 18:11	08:17 (5) 21:09	05:13 21:59	05:13 22:15	05:47 22:01	06:42 21:33	07:36 19:07	08:11 (5) 08:24 (5)	08:11 (5) 08:24 (5)	08:59 16:23	
Potential sun hours	248	272	367	421	496	513	515	461	382	328	20	407	16
Total, worst case	313	128									20	407	16
Sun reduction	0.17	0.22									0.23	0.20	0.12
Oper. time red.	1.00	1.00									1.00	1.00	1.00
Wind dir. red.	0.66	0.63									0.63	0.65	0.66
Total reduction	0.11	0.14									0.15	0.13	0.08
Total, real	35	18									3	53	1

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker
			(WTG causing flicker last time)



### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: CN - H92

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:58 16:24	08:27 17:16	07:29 18:13	07:12 20:12	06:02 21:09	05:12 22:00	05:08 22:15	05:48 21:39	06:44 20:31	07:38 19:16		16:16 (1) 16:19
2	08:58 16:25	08:25 17:18	07:26 18:15	07:10 20:14	06:00 21:11	05:11 22:01	05:08 22:14	05:50 21:37	06:45 20:28	07:40 19:14	17 14	16:33 (1) 16:30 (1) 16:18 16:18
3	08:58 16:26	08:24 17:20	07:24 18:17	07:07 20:16	05:58 21:12	05:10 22:02	05:09 22:14	05:52 21:35	06:47 20:26	07:42 19:11	14 11	16:17 (1) 16:18 16:28 (1) 16:18
4	08:58 16:27	08:22 17:22	07:21 18:19	07:05 20:18	05:56 21:14	05:09 22:03	05:10 22:13	05:53 21:33	06:49 20:24	07:44 19:09	11 9	16:18 (1) 16:19 (1) 16:27 (1) 16:17
5	08:57 16:29	08:20 17:24	16:51 (1) 18:21	07:19 20:20	05:54 21:16	05:08 22:04	05:11 22:13	05:55 21:31	06:51 20:21	07:45 19:06	6	16:19 (1) 16:25 (1) 16:16 16:21 (1) 16:16
6	08:57 16:30	08:18 17:26	16:50 (1) 18:23	07:17 20:22	05:52 21:18	05:07 22:06	05:12 22:12	05:57 21:29	06:53 20:19	07:47 19:04	1	16:22 (1) 16:16 16:22 (1) 16:16
7	08:56 16:31	08:16 17:28	16:49 (1) 18:25	07:14 20:24	06:58 21:20	05:50 22:07	05:13 22:11	05:59 21:27	06:55 20:16	07:49 19:01		16:15 16:15 16:21 (1) 16:16
8	08:56 16:33	08:14 17:30	16:47 (1) 18:27	07:12 20:25	06:55 21:22	05:48 22:08	05:14 22:11	06:00 21:25	06:56 20:14	07:51 18:59		16:15 16:15 16:22 (1) 16:15
9	08:55 16:34	08:12 17:32	16:46 (1) 18:28	07:09 20:27	06:53 21:23	05:46 22:08	05:15 22:10	06:02 21:23	06:58 20:11	07:53 18:56		16:15 16:15 16:22 (1) 16:14
10	08:55 16:36	08:10 17:34	16:46 (1) 18:30	07:07 20:29	06:50 21:25	05:44 22:09	05:16 22:09	06:04 21:21	07:00 20:09	07:55 18:54		16:14 16:14 16:22 (1) 16:14
11	08:54 16:37	08:08 17:36	16:46 (1) 18:32	07:05 20:31	06:48 21:27	05:42 22:10	05:17 22:08	06:06 21:19	07:02 20:06	07:57 18:52		16:14 16:14 16:22 (1) 16:14
12	08:53 16:39	08:06 17:38	16:46 (1) 18:34	07:02 20:33	06:46 21:29	05:40 22:11	05:18 22:07	06:08 21:17	07:04 20:04	07:59 18:49		16:14 16:14 16:22 (1) 16:14
13	08:52 16:41	08:04 17:40	16:46 (1) 18:36	07:00 20:35	06:43 21:30	05:39 22:12	05:20 22:06	06:09 21:15	07:05 20:01	08:00 18:47		16:14 16:14 16:22 (1) 16:14
14	08:51 16:42	08:02 17:43	16:46 (1) 18:38	06:57 20:37	06:41 21:32	05:37 22:12	05:21 22:05	06:11 21:12	07:07 19:59	08:02 18:44		16:14 16:14 16:22 (1) 16:14
15	08:50 16:44	08:00 17:45	16:46 (1) 18:40	06:55 20:39	06:38 21:34	05:35 22:13	05:22 22:04	06:13 21:10	07:09 19:56	08:04 18:42		16:14 16:14 16:22 (1) 16:14
16	08:49 16:46	07:58 17:47	16:46 (1) 18:42	06:52 20:41	06:36 21:36	05:33 22:13	05:23 22:03	06:15 21:08	07:11 19:54	08:06 18:40		16:14 16:14 16:22 (1) 16:14
17	08:48 16:47	07:56 17:49	16:47 (1) 18:44	06:50 20:42	06:34 21:37	05:32 22:14	05:25 22:02	06:17 21:06	07:13 19:51	08:08 18:37		16:14 16:14 16:22 (1) 16:14
18	08:47 16:49	07:54 17:51	16:48 (1) 18:46	06:47 20:44	06:31 21:39	05:30 22:14	05:26 22:00	06:18 21:04	07:14 19:49	08:10 18:35		16:14 16:14 16:22 (1) 16:14
19	08:46 16:51	07:51 17:53	16:49 (1) 18:48	06:45 20:46	06:29 21:41	05:29 22:15	05:28 21:59	06:20 19:46	07:16 18:33	08:12 18:33		16:14 16:14 16:22 (1) 16:14
20	08:45 16:53	07:49 17:55	16:51 (1) 18:50	06:42 20:48	06:27 21:42	05:27 22:15	05:29 21:58	06:22 20:59	07:18 19:44	08:14 18:30	5	17:27 (1) 17:32 (1) 16:31 16:15
21	08:44 16:55	07:47 17:57	16:53 (1) 18:51	06:40 20:50	06:24 21:44	05:25 22:15	05:31 21:56	06:24 20:57	07:20 19:41	18:30 18:28	12	17:35 (1) 17:20 (1) 16:30 16:15
22	08:42 16:56	07:45 17:59	16:53 (1) 18:53	06:37 20:52	06:22 21:45	05:24 22:16	05:32 21:55	06:26 20:55	07:22 19:39	18:18 18:26	17	17:37 (1) 17:19 (1) 16:29 16:15
23	08:41 16:58	07:42 18:01	16:53 (1) 18:55	06:35 20:54	06:20 21:47	05:23 22:16	05:34 21:54	06:27 20:52	07:23 19:36	18:20 18:24	19	17:38 (1) 17:17 (1) 16:27 16:16
24	08:40 17:00	07:40 18:03	16:52 (1) 18:57	06:32 20:56	06:17 21:49	05:04 22:16	05:35 21:52	06:29 20:50	07:25 19:34	18:22 18:21	22	17:39 (1) 16:16 (1) 16:26 16:17
25	08:38 17:02	07:38 18:05	16:50 (1) 18:59	06:30 20:58	06:15 21:50	05:20 22:16	05:04 21:50	06:31 20:48	07:27 19:31	18:24 17:19	24	16:16 (1) 16:16 (1) 16:25 16:17
26	08:37 17:04	07:36 18:07	16:49 (1) 19:01	06:27 20:59	06:13 21:52	05:19 22:16	05:05 21:49	06:33 20:45	07:29 19:29	18:25 17:17	24	16:16 (1) 16:16 (1) 16:24 16:18
27	08:35 17:06	07:33 18:09	16:48 (1) 19:03	06:25 21:01	06:11 21:53	05:17 22:16	05:05 21:47	06:35 20:43	07:31 19:26	18:27 17:15	25	16:15 (1) 16:15 (1) 16:23 16:19
28	08:34 17:08	07:31 18:11	16:47 (1) 19:05	06:22 21:03	06:09 21:54	05:16 22:16	05:06 21:46	06:36 20:40	07:32 19:24	18:28 17:13	25	16:16 (1) 16:16 (1) 16:22 16:20
29	08:32 17:10	07:29 18:11	16:46 (1) 19:07	06:20 21:05	06:06 21:56	05:15 22:15	05:06 21:44	06:38 20:38	07:34 19:21	18:30 17:11	25	16:15 (1) 16:40 (1) 16:21 16:20
30	08:30 17:12	07:27 18:09	16:45 (1) 19:09	06:19 21:07	06:04 21:57	05:14 22:15	05:07 21:42	06:40 20:36	07:36 19:19	18:32 17:09	22	16:15 (1) 16:37 (1) 16:20 16:21
31	08:29 17:14	07:25 18:06	16:44 (1) 19:06	06:18 21:06	06:03 21:58	05:13 21:58	05:07 21:40	06:42 20:33	07:35 17:06	18:30 16:35 (1)	20	16:15 (1) 16:35 (1) 16:22 16:22
Potential sun hours	248	272	292	367	421	496	513	515	461	382	328	240
Total, worst case			292									240
Sun reduction			0.22									0.23
Oper. time red.			1.00									1.00
Wind dir. red.			0.58									0.58
Total reduction			0.13									0.14
Total, real			38									33

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: CO - H93

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June	July	August	September	October	November	December							
1	08:59	09:33 (16)	08:27	08:56 (15)	07:29	07:12	06:02	05:12	05:07	05:48	06:44	07:38	08:34	09:09 (16)					
16:24	19	15:45 (12)	17:16	22	09:18 (15)	18:13	20:12	21:09	22:00	22:15	21:39	19:16	17:04	16:19	38	15:37 (12)			
2	08:58	09:33 (16)	08:26	08:54 (15)	07:26	07:10	06:00	05:11	05:08	05:50	06:45	07:40	07:39	08:30 (15)	08:35	09:11 (16)			
16:25	21	15:46 (12)	17:18	23	09:17 (15)	18:15	20:14	21:11	22:01	22:15	21:37	20:29	19:14	17:02	9	08:39 (15)	16:18	36	15:37 (12)
3	08:58	09:33 (16)	08:24	08:53 (15)	07:24	07:07	05:58	05:10	05:09	05:52	06:47	07:42	07:41	08:28 (15)	08:37	09:12 (16)			
16:26	23	15:48 (12)	17:20	24	09:17 (15)	18:17	20:16	21:13	22:02	22:14	21:35	20:26	19:11	17:00	14	08:42 (15)	16:17	35	15:37 (12)
4	08:58	09:32 (16)	08:22	08:54 (15)	07:22	07:05	05:56	05:09	05:10	05:53	06:49	07:44	07:43	08:27 (15)	08:38	09:14 (16)			
16:27	25	15:49 (12)	17:22	23	09:17 (15)	18:19	20:18	21:14	22:04	22:14	21:33	20:24	19:09	16:58	17	08:44 (15)	16:17	33	15:38 (12)
5	08:57	09:32 (16)	08:20	08:55 (15)	07:19	07:03	05:54	05:08	05:11	05:55	06:51	07:45	07:45	08:25 (15)	08:40	09:15 (16)			
16:29	28	15:51 (12)	17:24	21	09:16 (15)	18:21	20:20	21:16	22:05	22:13	21:31	20:21	19:06	16:56	20	08:45 (15)	16:16	31	15:37 (12)
6	08:57	09:31 (16)	08:18	08:56 (15)	07:17	07:00	05:52	05:07	05:12	05:57	06:53	07:47	07:47	08:24 (15)	08:41	09:17 (16)			
16:30	31	15:52 (12)	17:26	19	09:15 (15)	18:23	20:22	21:18	22:06	22:12	21:29	20:19	19:04	16:55	22	08:46 (15)	16:16	30	15:38 (12)
7	08:57	09:30 (16)	08:16	08:57 (15)	07:14	06:58	05:50	05:07	05:13	05:59	06:55	07:49	07:49	08:23 (15)	08:42	09:18 (16)			
16:31	32	15:52 (12)	17:28	17	09:14 (15)	18:25	20:24	21:20	22:07	22:12	21:27	20:16	19:01	16:53	23	08:46 (15)	16:15	28	15:37 (12)
8	08:56	09:30 (16)	08:14	08:59 (15)	07:12	06:55	05:48	05:06	05:14	06:00	06:56	07:51	07:51	08:23 (15)	08:44	09:20 (16)			
16:33	33	15:53 (12)	17:30	13	09:12 (15)	18:27	20:26	21:22	22:08	22:11	21:25	20:14	18:59	16:51	24	08:47 (15)	16:15	26	15:37 (12)
9	08:55	09:29 (16)	08:12	09:02 (15)	07:09	06:53	05:46	05:05	05:15	06:02	06:58	07:53	07:53	08:25 (15)	08:45	09:21 (16)			
16:34	35	15:54 (12)	17:32	7	09:09 (15)	18:28	20:27	21:24	22:09	22:10	21:23	20:11	18:56	16:49	23	08:48 (15)	16:14	23	15:36 (12)
10	08:55	09:28 (16)	08:10	07:07	06:50	05:44	05:05	05:16	06:04	07:00	07:55	07:55	08:27 (15)	08:46	09:22 (16)				
16:36	36	15:54 (12)	17:34	18:30	20:29	21:25	22:10	22:09	21:21	21:09	18:54	16:47	21	08:48 (15)	16:14	21	15:35 (12)		
11	08:54	09:27 (16)	08:08	07:05	06:48	05:42	05:04	05:17	06:06	07:02	07:57	07:57	08:29 (15)	08:47	09:24 (16)				
16:37	38	15:55 (12)	17:36	18:32	20:31	21:27	22:10	22:08	21:19	21:06	18:52	16:45	20	08:49 (15)	16:14	19	15:36 (12)		
12	08:53	09:26 (16)	08:06	07:02	06:45	05:40	05:04	05:18	06:07	07:04	07:59	07:59	08:31 (15)	08:48	09:25 (16)				
16:39	40	15:55 (12)	17:38	18:34	20:33	21:29	22:11	22:08	21:17	21:04	18:49	16:44	18	08:49 (15)	16:14	18	15:35 (12)		
13	08:52	09:25 (16)	08:04	07:00	06:43	05:39	05:04	05:19	06:09	07:05	08:00	08:01	08:33 (15)	08:49	09:26 (16)				
16:40	40	15:55 (12)	17:40	18:36	20:35	21:31	22:12	22:06	21:15	21:01	18:47	16:42	16	08:49 (15)	16:13	16	15:35 (12)		
14	08:52	09:24 (16)	08:02	06:57	06:41	05:37	05:03	05:21	06:11	07:07	08:02	08:03	08:35 (15)	08:50	09:27 (16)				
16:42	42	15:56 (12)	17:42	18:38	20:37	21:32	22:13	22:05	21:13	21:01	18:44	16:40	13	08:48 (15)	16:13	16	15:35 (12)		
15	08:51	09:23 (16)	08:00	06:55	06:38	05:35	05:03	05:22	06:13	07:09	08:04	08:05	08:37 (15)	08:51	09:28 (16)				
16:44	42	15:56 (12)	17:45	18:40	20:39	21:34	22:13	22:04	21:10	21:00	18:42	16:39	11	08:48 (15)	16:13	15	15:35 (12)		
16	08:50	09:21 (16)	07:58	06:52	06:36	05:33	05:03	05:23	06:15	07:11	08:06	08:07	08:40 (15)	08:52	09:29 (16)				
16:45	44	15:56 (12)	17:47	18:42	20:41	21:36	22:14	22:03	21:08	21:00	18:40	16:37	9	08:49 (15)	16:13	14	15:35 (12)		
17	08:49	09:22 (16)	07:56	06:50	06:34	05:32	05:03	05:25	06:16	07:13	08:08	08:09	08:42 (15)	08:53	09:30 (16)				
16:47	42	15:56 (12)	17:49	18:44	20:43	21:38	22:14	22:02	21:06	21:00	18:37	16:36	17	15:26 (12)	16:14	13	15:35 (12)		
18	08:47	09:23 (16)	07:54	06:47	06:31	05:30	05:03	05:26	06:18	07:14	08:10	08:11	08:44 (15)	08:54	09:31 (16)				
16:49	40	15:56 (12)	17:51	18:46	20:44	21:39	22:15	22:01	21:04	21:00	18:35	16:34	18	15:28 (12)	16:14	14	15:35 (12)		
19	08:46	09:23 (16)	07:52	06:45	06:29	05:28	05:03	05:27	06:20	07:16	08:12	08:13	08:46 (15)	08:55	09:32 (16)				
16:51	39	15:56 (12)	17:53	18:48	20:46	21:41	22:15	21:59	21:02	21:00	18:33	16:33	21	15:29 (12)	16:14	13	15:35 (12)		
20	08:45	09:25 (16)	07:49	06:42	06:27	05:27	05:03	05:29	06:22	07:18	08:14	08:14	08:47 (15)	08:55	09:33 (16)				
16:53	36	15:56 (12)	17:55	18:50	20:48	21:43	22:15	21:58	20:59	20:50	18:30	16:31	28	15:30 (12)	16:14	13	15:36 (12)		
21	08:44	09:26 (16)	07:47	06:40	06:24	05:25	05:03	05:30	06:24	07:20	08:16	08:16	08:49 (15)	08:56	09:34 (16)				
16:54	33	15:55 (12)	17:57	18:52	20:50	21:44	22:16	21:57	20:57	20:57	19:41	18:28	16:30	33	15:31 (12)	16:15	13	15:36 (12)	
22	08:43	09:28 (16)	07:45	06:37	06:22	05:24	05:03	05:32	06:26	07:22	08:18	08:18	08:51 (15)	08:57	09:35 (16)				
16:56	28	15:55 (12)	17:59	18:53	20:52	21:46	22:16	21:55	20:55	20:55	19:39	18:26	16:29	36	15:32 (12)	16:15	13	15:37 (12)	
23	08:41	09:11 (15)	07:43	06:35	06:20	05:22	05:03	05:33	06:27	07:23	08:20	08:20	09:00 (16)	08:57	09:36 (16)				
16:58	21	15:54 (12)	18:01	18:55	20:54	21:47	22:16	21:54	20:52	20:52	19:36	18:24	16:27	39	15:33 (12)	16:16	13	15:37 (12)	
24	08:40	09:10 (15)	07:40	06:32	06:17	05:21	05:04	05:35	06:29	07:25	08:22	08:22	09:00 (16)	08:57	09:37 (16)				
17:00	18	15:54 (12)	18:03	18:57	20:56	21:49	22:16	21:52	20:50	20:50	19:34	18:21	16:26	40	15:33 (12)	16:16	13	15:38 (12)	
25	08:38	09:08 (15)	07:38	06:30	06:15	05:20	05:04	05:37	06:31	07:27	08:24	08:24	09:00 (16)	08:58	09:38 (16)				
17:02	17	15:52 (12)	18:05	18:59	20:58	21:50	22:16	21:51	20:48	20:48	19:31	18:19	16:25	42	15:34 (12)	16:17	13	15:38 (12)	
26	08:37	09:07 (15)	07:36	06:27	06:13	05:18	05:04	05:38	06:33	07:29	08:26	08:25	09:00 (16)	08:58	09:39 (16)				
17:04	9	09:16 (15)	18:07	19:01	21:00	21:52	22:16	21:49	20:45	20:45	19:29	18:17	16:24	44	15:35 (12)	16:18	14	15:39 (12)	
27	08:35	09:05 (15)	07:33	06:25	06:11	05:17	05:05	05:40	06:35	07:31	08:28	08:27	09:02 (16)	08:58	09:40 (16)				
17:06	11	09:16 (15)	18:09	19:03	21:01	21:53	22:16	21:47	20:43	20:43	19:26	18:15	16:23	43	15:35 (12)	16:19	14	15:40 (12)	
28	08:34	09:03 (15)	07:31	06:22	06:09	05:16	05:05	05:41	06:36	07:33	08:30	08:29	09:04 (16)	08:58	09:41 (16)				
17:08	14	09:17 (15)	18:11	19:05	21:03	21:55	22:16	21:46	20:41	20:41	19:24	18:13	16:22	42	15:36 (12)	16:19	14	15:40 (12)	
29	08:32	09:01 (15)		07:20	06:06	05:15	05:06	05:43	06:38	07:34	08:32	08:30	09:05 (16)	08:59	09:42 (16)				
17:10	16	09:17 (15)		20:07	21:05	21:56	22:16	21:44	20:38	20:38	19:21	18:11	16:21	41	15:36 (12)	16:20	15	15:41 (12)	
30	08:31	08:59 (15)		07:17	06:04	05:14	05:07	05:45	06:40	07:36	08:34	08:32	09:07 (16)	08:59	09:43 (16)				
17:12	18	09:17 (15)		20:09	21:07	21:57	22:15	21:42	20:36	20:36	19:19	18:08	16:20	40	15:36 (12)	16:21	16	15:43 (12)	
31	08:29	08:58 (15)		07:15	06:03	05:13		05:46	06:42	07:36	08:34	08:32	09:07 (16)	08:59	09:44 (16)				
17:14	20	09:18 (15)		20:10	21:09	21:59		21:41	20:33	20:33	19:06	18:06	16:22	37	15:37 (12)	16:22	17	15:44 (12)	
Potential sun hours	248	272	367	421	496	513	515	461	383	327	257	744	607						
Total, worst case	891	169										744	607						
Sun reduction	0.17	0.22																	



## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: CP - H94  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June	July	August	September	October	November	December	
1	08:59 16:24	08:27 17:16	07:29 18:13	07:54 (6) 20:13	07:13 21:09	06:02 22:00	05:12 22:15	05:08 21:39	05:48 20:31	06:44 19:16	08:05 (5) 23 08:34 (6)	07:38 17:05	08:34 16:19
2	08:58 16:25	08:26 17:18	07:26 18:15	07:51 (6) 20:14	07:10 21:11	06:00 22:01	05:11 22:15	05:08 21:37	05:50 20:29	06:46 19:14	08:07 (5) 27 08:37 (6)	07:40 17:03	08:35 16:19
3	08:58 16:26	08:24 17:20	07:24 18:17	07:49 (6) 20:16	07:08 21:13	05:58 22:02	05:10 22:14	05:52 21:35	06:48 20:26	07:42 19:11	08:09 (5) 28 08:38 (6)	07:42 17:01	08:37 16:18
4	08:58 16:28	08:22 17:22	07:22 18:19	07:46 (6) 20:18	07:05 21:15	05:56 22:04	05:10 22:14	05:54 21:33	06:49 20:24	07:44 19:09	08:10 (5) 27 08:38 (6)	07:43 16:59	08:38 16:17
5	08:57 16:29	08:20 17:24	07:19 18:21	07:44 (6) 20:20	07:03 21:16	05:54 22:05	05:11 22:23	05:55 21:31	06:51 20:21	07:46 19:06	08:12 (5) 27 08:39 (6)	07:45 16:57	08:40 16:17
6	08:57 16:30	08:18 17:26	07:17 18:23	07:42 (6) 20:22	07:00 21:18	05:52 22:06	05:12 22:12	05:57 21:29	06:53 20:19	07:47 19:04	08:14 (5) 24 08:39 (6)	07:47 16:55	08:41 16:16
7	08:57 16:32	08:16 17:28	07:14 18:25	07:39 (6) 20:24	06:58 21:20	05:50 22:07	05:13 22:12	05:59 21:27	06:55 20:16	07:49 19:01	08:16 (6) 24 08:40 (6)	07:49 16:53	08:42 16:15
8	08:56 16:33	08:14 17:30	07:12 18:27	07:37 (5) 20:26	06:55 21:22	05:48 22:08	05:14 22:11	06:01 21:25	06:57 20:14	07:51 18:59	08:18 (6) 22 08:40 (6)	07:51 16:51	08:44 16:15
9	08:55 16:34	08:13 17:33	07:10 18:29	07:34 (5) 20:28	06:53 21:24	05:46 22:09	05:15 22:10	06:02 21:23	06:58 20:11	07:53 18:57	08:20 (6) 19 08:39 (6)	07:53 16:49	08:45 16:15
10	08:55 16:36	08:11 17:35	07:07 18:31	07:32 (5) 20:29	06:51 21:25	05:44 22:10	05:16 22:09	06:04 21:21	07:00 20:09	07:55 18:54	08:22 (6) 17 08:39 (6)	07:55 16:47	08:46 16:14
11	08:54 16:38	08:09 17:37	07:05 18:33	07:29 (5) 20:31	06:48 21:27	05:42 22:10	05:17 22:08	06:06 21:19	07:02 20:06	07:57 18:52	08:24 (6) 14 08:38 (6)	07:57 16:46	08:47 16:14
12	08:53 16:39	08:06 17:39	07:02 18:34	07:27 (5) 20:33	06:46 21:29	05:41 22:11	05:18 22:07	06:08 21:17	07:04 20:04	07:59 18:49	08:26 (6) 11 08:37 (6)	07:59 16:44	08:48 16:14
13	08:52 16:41	08:04 17:41	07:00 18:36	07:24 (5) 20:35	06:43 21:31	05:39 22:12	05:04 22:06	06:10 21:15	07:06 20:01	08:01 18:47	08:28 (6) 8 08:36 (6)	08:01 16:42	08:49 16:14
14	08:52 16:42	08:02 17:43	06:57 18:38	07:22 (5) 20:37	06:41 21:32	05:37 22:13	05:21 22:05	06:11 21:13	07:07 19:59	08:03 18:45	08:30 (6) 5 08:35 (6)	08:03 16:41	08:50 16:14
15	08:51 16:44	08:00 17:45	06:55 18:40	07:20 (5) 20:39	06:39 21:34	05:35 22:13	05:03 22:04	06:13 21:10	07:09 19:56	08:04 18:42	08:32 (6) 1 08:33 (6)	08:05 16:39	08:51 16:14
16	08:50 16:46	07:58 17:47	06:52 18:42	07:22 (5) 20:41	06:36 21:36	05:34 22:14	05:03 22:03	06:15 21:08	07:11 19:54	08:06 18:40	08:06 18:06	08:07 16:37	08:52 16:14
17	08:49 16:48	07:56 17:49	06:50 18:44	07:23 (5) 20:43	06:34 21:38	05:32 22:14	05:03 22:02	06:17 21:06	07:13 19:51	08:08 18:38	08:08 18:38	08:09 16:36	08:53 16:14
18	08:47 16:49	07:54 17:51	06:47 18:46	07:27 (5) 20:45	06:31 21:39	05:30 22:15	05:03 22:01	06:19 21:04	07:15 19:49	08:10 18:35	08:10 18:35	08:11 16:34	08:54 16:14
19	08:46 16:51	07:52 17:53	06:45 18:48	07:31 (5) 20:46	06:29 21:41	05:29 22:15	05:03 21:59	06:20 21:02	07:16 19:46	08:12 18:33	08:12 18:33	08:13 16:33	08:55 16:14
20	08:45 16:53	07:49 17:55	06:43 18:50	06:27 20:48	05:27 21:43	05:03 22:15	05:29 21:58	06:22 20:59	07:18 19:44	08:14 18:31	08:14 18:31	08:14 16:32	08:55 16:15
21	08:44 16:55	07:47 17:57	06:40 18:52	06:40 20:50	05:26 21:44	05:03 22:16	05:31 21:57	06:24 20:57	07:20 19:41	08:16 18:28	08:16 18:28	08:16 16:30	08:56 16:15
22	08:43 16:57	07:45 17:59	06:38 18:54	06:22 20:52	05:24 21:46	05:03 22:16	05:32 21:55	06:26 20:55	07:22 19:39	08:18 18:26	08:18 18:26	08:18 16:29	08:56 16:16
23	08:41 16:59	07:43 18:01	06:35 18:55	06:20 20:54	05:23 21:47	05:04 22:16	05:34 21:54	06:28 20:52	07:24 19:36	08:20 18:24	08:20 18:24	08:20 16:28	08:57 16:16
24	08:40 17:00	07:40 18:03	06:33 18:57	06:18 20:56	05:21 21:49	05:04 22:16	05:35 21:52	06:29 20:50	07:25 19:34	08:22 18:22	08:22 18:22	08:22 16:26	08:57 16:17
25	08:38 17:02	07:38 18:05	06:30 18:59	06:15 20:58	05:20 21:50	05:04 22:16	05:37 21:51	06:31 20:48	07:27 19:31	08:24 18:19	08:24 18:19	08:23 16:25	08:58 16:17
26	08:37 17:04	07:36 18:07	06:28 19:01	06:13 21:00	05:19 21:52	05:05 22:16	05:39 21:49	06:33 20:45	07:29 19:29	08:26 18:16	08:26 18:16	08:25 16:24	08:58 16:18
27	08:35 17:06	07:33 18:09	06:25 19:03	06:11 21:01	05:17 21:53	05:05 22:16	05:40 21:47	06:35 20:43	07:31 19:26	08:28 18:17	08:28 18:17	08:27 17:15	08:58 16:19
28	08:34 17:08	07:31 18:11	06:23 19:05	06:09 21:03	05:16 21:55	05:06 22:16	05:42 21:46	06:37 20:41	07:33 19:24	08:30 18:18	08:30 18:18	08:29 17:13	08:58 16:20
29	08:32 17:10	07:32 18:11	06:20 19:05	06:07 21:05	05:15 21:56	05:06 22:16	05:43 21:44	06:38 20:38	07:35 19:21	08:31 18:19	08:31 18:19	08:30 17:11	08:59 16:21
30	08:31 17:12	07:31 18:12	06:18 19:04	06:05 21:07	05:14 21:57	05:07 22:15	05:45 21:42	06:40 20:36	07:36 19:19	08:32 18:19	08:32 18:19	08:32 17:09	08:59 16:22
31	08:29 17:14	07:29 18:14	06:15 19:01	06:05 21:07	05:13 21:59	05:07 22:15	05:47 21:41	06:42 20:33	07:36 19:17	08:33 18:17	08:33 18:17	08:33 17:07	08:59 16:23
Potential sun hours	248	272	367	421	496	513	515	461	382	328	257	231	
Total, worst case		9	344						75	277			
Sun reduction		0.22	0.22						0.29	0.23			
Oper. time red.		1.00	1.00						1.00	1.00			
Wind dir. red.		0.61	0.60						0.59	0.60			
Total reduction		0.13	0.13						0.17	0.14			
Total, real		1	46						13	39			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: CQ - H95  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:58	08:27	07:29	07:13	06:02	05:12	05:08	05:49	06:44	07:38	07:37	08:33
	16:24	17:16	18:13	20:12	21:09	22:00	22:15	21:39	20:31	19:16	17:05	16:19
2	08:58	08:25	07:26	07:10	06:00	05:11	05:09	05:50	06:46	07:40	07:39	08:35
	16:25	17:18	18:15	20:14	21:11	22:01	22:14	21:37	20:28	19:14	17:03	16:19
3	08:58	08:24	07:24	07:08	05:58	05:10	05:09	05:52	06:47	07:42	07:41	08:36
	16:26	17:20	18:17	20:16	21:12	22:02	22:14	21:35	20:26	19:11	17:01	16:18
4	08:58	08:22	07:22	07:05	05:56	05:09	05:10	05:54	06:49	07:44	07:43	08:38
	16:28	17:22	18:19	20:18	21:14	22:03	22:13	21:33	20:24	19:09	16:59	16:17
5	08:57	08:20	07:19	07:03	05:54	05:08	05:11	05:55	06:51	07:45	07:45	08:39
	16:29	17:24	18:21	20:20	21:16	22:04	22:13	21:31	20:21	19:06	16:57	16:17
6	08:57	08:18	07:17	07:00	05:52	05:08	05:12	05:57	06:53	07:47	07:47	08:41
	16:30	17:26	18:23	20:22	21:18	22:05	22:12	21:29	20:19	19:04	16:55	16:16
7	08:56	08:16	07:14	06:58	05:50	05:07	05:13	05:59	06:55	07:49	07:49	08:42
	16:32	17:28	18:25	20:24	21:20	22:06	22:11	21:27	20:16	19:01	16:53	16:16
8	08:56	08:14	07:12	06:55	05:48	05:06	05:14	06:01	06:56	07:51	07:51	08:43
	16:33	17:30	18:27	20:26	21:22	22:07	22:11	21:25	20:14	18:59	16:51	16:15
9	08:55	08:12	07:10	06:53	05:46	05:06	05:15	06:02	06:58	07:53	07:53	08:45
	16:35	17:33	18:29	20:27	21:23	22:08	22:10	21:23	20:11	18:57	16:49	16:15
10	08:55	08:10	07:07	06:51	05:44	05:05	05:16	06:04	07:00	07:55	07:55	08:46
	16:36	17:35	18:31	20:29	21:25	22:09	22:09	21:21	20:09	18:54	16:47	16:14
11	08:54	08:08	07:05	06:48	05:43	05:05	05:17	06:06	07:02	07:57	07:57	08:47
	16:38	17:37	18:32	20:31	21:27	22:10	22:08	21:19	20:06	18:52	16:46	16:14
12	08:53	08:06	07:02	06:46	05:41	05:04	05:19	06:08	07:04	07:59	07:59	08:48
	16:39	17:39	18:34	20:33	21:29	22:11	22:07	21:17	20:04	18:49	16:44	16:14
13	08:52	08:04	07:00	06:43	05:39	05:04	05:20	06:10	07:05	08:00	08:01	08:49
	16:41	17:41	18:36	20:35	21:31	22:12	22:06	21:15	20:01	18:47	16:42	16:14
14	08:51	08:02	06:57	06:41	05:37	05:04	05:21	06:11	07:07	08:02	08:03	08:50
	16:42	17:43	18:38	20:37	21:32	22:12	22:05	21:12	19:59	18:45	16:41	16:14
15	08:50	08:00	06:55	06:39	05:35	05:04	05:22	06:13	07:09	08:04	08:05	08:51
	16:44	17:45	18:40	20:39	21:34	22:13	22:04	21:10	19:56	18:42	16:39	16:14
16	08:49	07:58	06:52	06:36	05:34	05:03	05:24	06:15	07:11	08:06	08:07	08:52
	16:46	17:47	18:42	20:41	21:36	22:13	22:03	21:08	19:54	18:40	16:37	16:14
17	08:48	07:56	06:50	06:34	05:32	05:03	05:25	06:17	07:13	08:08	08:09	08:53
	16:48	17:49	18:44	20:43	21:37	22:14	22:02	21:06	19:51	18:38	16:36	16:14
18	08:47	07:54	06:47	06:31	05:30	05:03	05:26	06:19	07:14	08:10	08:11	08:54
	16:49	17:51	18:46	20:44	21:39	22:14	22:00	21:04	19:49	18:35	16:34	16:14
19	08:46	07:51	06:45	06:29	05:29	05:03	05:28	06:20	07:16	08:12	08:12	08:54
	16:51	17:53	18:48	20:46	21:41	22:15	21:59	21:01	19:46	18:33	16:33	16:15
20	08:45	07:49	06:42	06:27	05:27	05:03	05:29	06:22	07:18	08:14	08:14	08:55
	16:53	17:55	18:50	20:48	21:42	22:15	21:58	20:59	19:44	18:31	16:32	16:15
21	08:44	07:47	06:40	06:25	05:26	05:03	05:31	06:24	07:20	08:16	08:16	08:56
	16:55	17:57	18:52	20:50	21:44	22:15	21:56	20:57	19:41	18:28	16:30	16:15
22	08:42	07:45	06:37	06:22	05:24	05:04	05:32	06:26	07:22	08:18	08:18	08:56
	16:57	17:59	18:54	20:52	21:45	22:16	21:55	20:55	19:39	18:26	16:29	16:16
23	08:41	07:43	06:35	06:20	05:23	05:04	05:34	06:28	07:23	08:20	08:20	08:57
	16:59	18:01	18:55	20:54	21:47	22:16	21:53	20:52	19:36	18:24	16:28	16:16
24	08:40	07:40	06:32	06:18	05:21	05:04	05:35	06:29	07:25	08:22	08:22	08:57
	17:00	18:03	18:57	20:56	21:49	22:16	21:52	20:50	19:34	18:22	16:27	16:17
25	08:38	07:38	06:30	06:15	05:20	05:05	05:37	06:31	07:27	08:24	08:23	08:57
	17:02	18:05	18:59	20:58	21:50	22:16	21:50	20:48	19:31	17:19	16:25	16:18
26	08:37	07:36	06:27	06:13	05:19	05:05	05:39	06:33	07:29	08:26	08:25	08:58
	17:04	18:07	19:01	20:59	21:52	22:16	21:49	20:45	19:29	17:17	16:24	16:18
27	08:35	07:33	06:25	06:11	05:18	05:05	05:40	06:35	07:31	08:28	08:27	08:58
	17:06	18:09	19:03	21:01	21:53	22:16	21:47	20:43	19:26	17:15	16:23	16:19
28	08:34	07:31	06:23	06:09	05:16	05:06	05:42	06:37	07:33	08:29	08:28	08:58
	17:08	18:11	19:05	21:03	21:54	22:15	21:46	20:41	19:24	17:13	16:22	16:20
29	08:32		07:20	06:07	05:15	05:07	05:43	06:38	07:34	08:31	08:30	08:58
	17:10		20:07	21:05	21:56	22:15	21:44	20:38	19:21	17:11	16:21	16:21
30	08:30		07:18	06:05	05:14	05:07	05:45	06:40	07:36	08:33	08:32	08:58
	17:12		20:09	21:07	21:57	22:15	21:42	20:36	19:19	17:09	16:20	16:22
31	08:29		07:15		05:13		05:47	06:42		07:35		08:58
	17:14		20:11		21:58		21:40	20:33		17:07		16:23
Potential sun hours	248	272	367	421	496	513	515	461	382	328	257	231
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: CR - H96  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June	
1	08:59 16:24	08:27 17:16	07:29 18:13	07:13 20:12	07:37 (11) 21:09	06:02 16 06:28 (13) 05:12	05:43 (12)
2	08:58 16:25	08:26 17:18	07:26 18:15	07:10 20:14	07:34 (11) 21:11	06:00 18 06:44 (13) 22:01	9 05:52 (12) 05:42 (12)
3	08:58 16:26	08:24 17:20	07:24 18:17	07:08 20:16	07:32 (11) 21:13	05:58 19 06:43 (13) 22:02	11 05:53 (12) 05:41 (12)
4	08:58 16:27	08:22 17:22	07:22 18:19	07:05 20:18	07:29 (11) 21:15	05:56 18 06:43 (13) 22:04	12 05:53 (12) 05:41 (12)
5	08:58 16:29	08:20 17:24	07:19 18:21	07:03 20:20	07:27 (11) 21:16	05:54 16 06:42 (13) 22:05	14 05:55 (12) 05:40 (12)
6	08:57 16:30	08:18 17:26	07:17 18:23	07:00 20:22	07:24 (11) 21:18	05:52 14 06:41 (13) 22:06	15 05:55 (12) 05:39 (12)
7	08:57 16:31	08:16 17:28	07:14 18:25	07:41 (10) 20:24	06:58 17 07:39 (11) 21:20	05:50 11 06:39 (13) 22:07	16 05:55 (12) 05:39 (12)
8	08:56 16:33	08:14 17:30	07:12 18:27	07:37 (10) 20:26	06:55 18 07:37 (11) 21:22	05:48 4 06:35 (13) 22:08	17 05:56 (12) 05:38 (12)
9	08:55 16:34	08:13 17:32	07:10 18:29	07:34 (10) 20:28	06:53 17 07:36 (11) 21:24	05:46 22:09	18 05:56 (12) 05:38 (12)
10	08:55 16:36	08:11 17:34	07:07 18:31	07:32 (10) 20:29	06:50 13 07:34 (11) 21:25	05:44 22:10	19 05:57 (12) 05:38 (12)
11	08:54 16:37	08:09 17:36	07:05 18:32	07:29 (10) 20:31	06:48 9 07:31 (11) 21:27	05:42 22:10	20 05:57 (12) 05:37 (12)
12	08:53 16:39	08:06 17:39	07:02 18:34	07:27 (10) 20:33	06:46 21:29	05:40 22:11	21 05:58 (12) 05:37 (12)
13	08:52 16:41	08:04 17:41	07:00 18:36	07:24 (10) 20:35	06:43 21:31	05:39 22:12	22 05:58 (12) 05:37 (12)
14	08:52 16:42	08:02 17:43	06:57 18:38	07:25 (10) 20:37	06:41 21:32	05:37 22:13	23 05:59 (12) 05:36 (12)
15	08:51 16:44	08:00 17:45	06:55 18:40	06:38 20:39	05:35 21:34	05:03 22:13	24 05:59 (12) 05:36 (12)
16	08:50 16:46	07:58 17:47	06:52 18:42	06:36 20:41	05:33 21:36	05:03 22:14	25 05:59 (12) 05:36 (12)
17	08:49 16:47	07:56 17:49	06:50 18:44	06:34 20:43	05:32 21:38	05:03 22:14	26 05:59 (12) 05:36 (12)
18	08:48 16:49	07:54 17:51	08:20 (9) 18:46	06:47 20:45	06:56 (14) 2 06:58 (14) 21:39	05:30 22:15	27 05:59 (12) 05:36 (12)
19	08:46 16:51	07:52 17:53	08:17 (9) 18:48	06:45 20:46	06:54 (14) 4 06:58 (14) 21:41	05:29 22:15	28 05:59 (12) 05:37 (12)
20	08:45 16:53	07:49 17:55	08:15 (9) 18:50	06:42 20:48	06:52 (14) 5 06:57 (14) 21:43	05:27 22:15	29 05:59 (12) 06:00 (12)
21	08:44 16:55	07:47 17:57	08:13 (9) 18:52	06:40 20:50	06:49 (14) 7 06:56 (14) 21:44	05:25 22:16	30 06:00 (12) 05:37 (12)
22	08:43 16:56	07:45 17:59	08:10 (9) 18:54	06:37 20:52	06:47 (14) 8 06:55 (14) 21:46	05:24 22:16	31 06:00 (12) 05:37 (12)
23	08:41 16:58	07:43 18:01	08:08 (9) 18:55	06:35 20:54	06:45 (14) 9 06:54 (14) 21:47	05:23 22:16	06:00 (12) 05:37 (12)
24	08:40 17:00	07:40 18:03	08:06 (9) 18:57	06:32 20:56	06:43 (13) 9 06:52 (14) 21:49	05:21 22:16	05:38 (12) 06:01 (12)
25	08:38 17:02	07:38 18:05	08:05 (9) 18:59	06:30 20:58	06:41 (13) 4 06:45 (13) 21:50	05:20 22:16	05:38 (12) 06:01 (12)
26	08:37 17:04	07:36 18:07	08:09 (9) 19:01	06:27 21:00	06:39 (13) 6 06:45 (13) 21:52	05:19 22:16	05:38 (12) 06:01 (12)
27	08:35 17:06	07:33 18:09	08:12 (9) 19:03	06:25 21:01	06:37 (13) 9 06:46 (13) 21:53	05:17 22:16	05:39 (12) 06:01 (12)
28	08:34 17:08	07:31 18:11	06:23 19:05	06:09 21:03	06:34 (13) 11 06:45 (13) 21:55	05:16 1 05:48 (12) 22:16	05:39 (12) 06:01 (12)
29	08:32 17:10	07:29 18:13	07:20 20:07	06:07 21:05	06:32 (13) 13 06:45 (13) 21:56	05:15 4 05:50 (12) 22:16	05:40 (12) 06:02 (12)
30	08:31 17:12	07:28 18:14	07:18 20:09	06:04 21:07	06:30 (13) 15 06:45 (13) 21:57	05:14 6 05:51 (12) 22:15	05:41 (12) 06:02 (12)
31	08:29 17:14	07:27 18:15	07:15 20:11	05:13 21:59	05:13 8 05:52 (12)	05:44 (12)	
Potential sun hours	248	272	367	421	496	513	596
Total, worst case		66	67	234	135		0.26
Sun reduction		0.22	0.22	0.34	0.36		1.00
Oper. time red.		1.00	1.00	1.00	1.00		0.58
Wind dir. red.		0.62	0.59	0.58	0.58		0.15
Total reduction		0.14	0.13	0.20	0.21		90
Total, real		9	9	47	28		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: CR - H96

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	July	August	September	October	November	December				
1	05:08	05:41 (12)	05:48	06:44	07:21 (11)	07:38	08:05 (10)	07:38	08:34	
	22:15	20 06:01 (12)	21:39	20:31	9 07:30 (11)	19:16	12 08:17 (10)	17:05	16:19	
2	05:08	05:42 (12)	05:50	06:46	07:18 (11)	07:40	08:07 (10)	07:40	08:35	
	22:15	20 06:02 (12)	21:37	20:29	14 07:32 (11)	19:14	11 08:18 (10)	17:02	16:18	
3	05:09	05:43 (12)	05:52	06:47	07:17 (11)	07:42	08:09 (10)	07:42	08:37	
	22:14	19 06:02 (12)	21:35	20:26	17 07:34 (11)	19:11	10 08:19 (10)	17:00	16:18	
4	05:10	05:44 (12)	05:54	06:49	07:17 (11)	07:44	08:10 (10)	07:43	08:38	
	22:14	18 06:02 (12)	21:33	20:24	18 07:35 (11)	19:09	8 08:18 (10)	16:59	16:17	
5	05:11	05:44 (12)	05:55	06:40 (13)	06:51	07:18 (11)	07:46	08:12 (10)	07:45	08:40
	22:13	17 06:01 (12)	21:31	7 06:47 (13)	20:21	17 07:35 (11)	19:06	6 08:18 (10)	16:57	16:16
6	05:12	05:45 (12)	05:57	06:37 (13)	06:53	07:20 (11)	07:47	08:14 (10)	07:47	08:41
	22:12	16 06:01 (12)	21:29	12 06:49 (13)	20:19	15 07:35 (11)	19:04	3 08:17 (10)	16:55	16:16
7	05:13	05:46 (12)	05:59	06:36 (13)	06:55	07:22 (11)	07:49	08:16 (10)	07:49	08:42
	22:12	15 06:01 (12)	21:27	15 06:51 (13)	20:16	13 07:35 (11)	19:01	1 08:17 (10)	16:53	16:15
8	05:14	05:47 (12)	06:01	06:35 (13)	06:56	07:24 (11)	07:51		07:51	08:44
	22:11	14 06:01 (12)	21:25	17 06:52 (13)	20:14	11 07:35 (11)	18:59		16:51	16:15
9	05:15	05:48 (12)	06:02	06:34 (13)	06:58	07:25 (11)	07:53		07:53	08:45
	22:10	13 06:01 (12)	21:23	18 06:52 (13)	20:11	9 07:34 (11)	18:57		16:49	16:15
10	05:16	05:49 (12)	06:04	06:34 (13)	07:00	07:27 (11)	07:55		07:55	08:46
	22:09	12 06:01 (12)	21:21	19 06:53 (13)	20:09	7 07:34 (11)	18:54		16:47	16:14
11	05:17	05:50 (12)	06:06	06:36 (13)	07:02	07:29 (11)	07:57		07:57	08:47
	22:08	10 06:00 (12)	21:19	18 06:54 (13)	20:06	4 07:33 (11)	18:52		16:46	16:14
12	05:18	05:51 (12)	06:08	06:37 (13)	07:04	07:31 (11)	07:59		07:59	08:48
	22:08	9 06:00 (12)	21:17	16 06:53 (13)	20:04	1 07:32 (11)	18:49		16:44	16:14
13	05:20	05:53 (12)	06:09	06:39 (13)	07:05		08:01		08:01	08:49
	22:07	7 06:00 (12)	21:15	14 06:53 (13)	20:01		18:47		16:42	16:14
14	05:21	05:54 (12)	06:11	06:41 (13)	07:07		08:02		08:03	08:50
	22:05	5 05:59 (12)	21:13	12 06:53 (13)	19:59		18:45		16:40	16:14
15	05:22	05:55 (12)	06:13	06:42 (13)	07:09		08:04		08:05	08:51
	22:04	2 05:57 (12)	21:11	10 06:52 (13)	19:56		18:42		16:39	16:14
16	05:23		06:15	06:44 (13)	07:11		08:06	08:39 (9)	08:07	08:52
	22:03		21:08	8 06:52 (13)	19:54		18:40	7 08:46 (9)	16:37	16:14
17	05:25		06:17	06:46 (13)	07:13		08:08	08:36 (9)	08:09	08:53
	22:02		21:06	6 06:52 (13)	19:51		18:37	13 08:49 (9)	16:36	16:14
18	05:26		06:18	06:47 (13)	07:14		08:10	08:38 (9)	08:11	08:54
	22:01		21:04	3 06:50 (13)	19:49		18:35	12 08:50 (9)	16:34	16:14
19	05:28		06:20	06:50 (14)	07:16		08:12	08:40 (9)	08:13	08:55
	21:59		21:02	8 06:58 (14)	19:46		18:33	11 08:51 (9)	16:33	16:14
20	05:29		06:22	06:51 (14)	07:18		08:14	08:42 (9)	08:15	08:55
	21:58		20:59	9 07:00 (14)	19:44		18:31	9 08:51 (9)	16:31	16:15
21	05:31		06:24	06:53 (14)	07:20		08:16	08:44 (9)	08:16	08:56
	21:57		20:57	8 07:01 (14)	19:41		18:28	7 08:51 (9)	16:30	16:15
22	05:32		06:26	06:54 (14)	07:22		08:18	08:46 (9)	08:18	08:57
	21:55		20:55	7 07:01 (14)	19:39		18:26	5 08:51 (9)	16:29	16:15
23	05:34		06:27	06:56 (14)	07:24		08:20	08:48 (9)	08:20	08:57
	21:54		20:52	5 07:01 (14)	19:36		18:24	3 08:51 (9)	16:27	16:16
24	05:35		06:29	06:58 (14)	07:25		08:22		08:22	08:57
	21:52		20:50	3 07:01 (14)	19:34		18:22		16:26	16:17
25	05:37		06:31	06:59 (14)	07:27		07:24		08:24	08:58
	21:51		20:48	1 07:00 (14)	19:31		17:19		16:25	16:17
26	05:38		06:33		07:29		07:26		08:25	08:58
	21:49		20:45		19:29		17:17		16:24	16:18
27	05:40		06:35		07:31		07:28		08:27	08:58
	21:47		20:43		19:26		17:15		16:23	16:19
28	05:42		06:37		07:33		07:30		08:29	08:59
	21:46		20:41		19:24		17:13		16:22	16:20
29	05:43		06:38		07:34		08:06 (10)	07:32	08:30	08:59
	21:44		20:38		19:21	7 08:13 (10)	17:11		16:21	16:20
30	05:45		06:40		07:36		08:04 (10)	07:34	08:32	08:59
	21:42		20:36		19:19	12 08:16 (10)	17:09		16:20	16:21
31	05:47		06:42				07:36			08:59
	21:41		20:33				17:07			16:22
Potential sun hours	515	461	383	328	257	231				
Total, worst case	197	216	154	118						
Sun reduction	0.27	0.27	0.29	0.23						
Oper. time red.	1.00	1.00	1.00	1.00						
Wind dir. red.	0.58	0.58	0.58	0.61						
Total reduction	0.16	0.16	0.17	0.14						
Total, real	31	34	26	17						

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: CS - H97

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

Operational time

Table with 17 columns: N, NNE, NE, ENE, E, ESE, SE, SSE, S, SSW, SW, WSW, W, WNW, NW, NNW, Sum. Values range from 263 to 8,760.

Main shadow calculation table with columns for months (January to June) and rows for each day (1-31). Includes start/end times and shadow angles. Summary rows at the bottom show total hours and reductions.

Table layout: For each day in each month the following matrix apply

Matrix defining table layout: Day in month, Sun rise (hh:mm), Sun set (hh:mm), Minutes with flicker, First time (hh:mm) with flicker, Last time (hh:mm) with flicker, (WTG causing flicker first time), (WTG causing flicker last time)

## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: CS - H97  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	July	August	September	October	November	December
1	05:07 22:15	21:03 (14) 21:18 (14)	05:48 21:39	06:44 20:31	19:34 (10) 19:48 (10)	07:38 17:04
2	05:08 22:14	21:04 (14) 21:19 (14)	05:50 21:37	06:45 20:28	19:33 (10) 19:49 (10)	07:40 17:02
3	05:09 22:14	21:04 (14) 21:19 (14)	05:52 21:35	06:47 20:26	19:33 (10) 19:49 (10)	07:42 17:00
4	05:10 22:13	21:03 (14) 21:19 (14)	05:53 21:33	06:49 20:23	19:32 (10) 19:48 (10)	07:44 16:58
5	05:11 22:13	21:03 (14) 21:19 (14)	05:55 21:31	06:51 20:21	19:32 (10) 19:47 (10)	07:45 16:56
6	05:12 22:12	21:04 (14) 21:20 (14)	05:57 21:29	06:53 20:19	19:33 (10) 19:47 (10)	07:47 16:54
7	05:13 22:12	21:04 (14) 21:20 (14)	05:59 21:27	06:54 20:16	19:34 (10) 19:45 (10)	07:49 16:53
8	05:14 22:11	21:04 (14) 21:20 (14)	06:00 21:25	06:56 20:14	19:35 (10) 19:42 (10)	07:51 16:51
9	05:15 22:10	21:04 (14) 21:21 (14)	06:02 21:23	06:58 20:11	19:33 (10) 18:56	07:53 16:49
10	05:16 22:09	21:04 (14) 21:21 (14)	06:04 21:21	07:00 20:09	18:55 18:54	07:55 16:47
11	05:17 22:08	21:04 (14) 21:21 (14)	06:06 21:19	07:02 20:06	18:57 18:52	07:57 16:45
12	05:18 22:07	21:04 (14) 21:21 (14)	06:07 21:17	07:03 20:04	18:58 18:49	07:59 16:44
13	05:19 22:06	21:04 (14) 21:21 (14)	06:09 21:15	07:05 20:01	18:00 18:47	08:01 16:42
14	05:21 22:05	21:05 (14) 21:22 (14)	06:11 21:12	07:07 19:59	18:02 18:44	08:03 16:40
15	05:22 22:04	21:05 (14) 21:21 (14)	06:13 21:10	07:09 19:56	18:04 18:42	08:05 16:39
16	05:23 22:03	21:05 (14) 21:21 (14)	06:15 21:08	07:11 19:54	18:06 18:40	08:07 16:37
17	05:25 22:02	21:06 (14) 21:21 (14)	06:16 21:06	07:12 19:51	18:08 18:37	08:09 16:36
18	05:26 22:01	21:07 (14) 21:21 (14)	06:18 21:04	07:14 19:49	18:10 18:35	17:34 (8) 17:37 (8)
19	05:27 21:59	21:07 (14) 21:20 (14)	06:20 21:01	07:16 19:46	18:12 18:33	17:30 (8) 17:40 (8)
20	05:29 21:58	21:08 (14) 21:19 (14)	06:22 20:59	07:18 19:44	18:14 18:30	17:28 (8) 17:41 (8)
21	05:30 21:56	21:09 (14) 21:19 (14)	06:24 20:57	07:20 19:41	18:16 18:28	17:27 (8) 17:42 (8)
22	05:32 21:55	21:11 (14) 21:17 (14)	06:25 20:55	07:22 19:39	18:18 18:26	17:26 (8) 17:42 (8)
23	05:33 21:54	06:27 20:52	07:23 19:36	18:20 18:24	17:25 (8) 17:43 (8)	16:29 16:27
24	05:35 21:52	06:29 20:50	07:25 19:34	18:22 18:21	17:25 (8) 17:43 (8)	16:28 16:26
25	05:37 21:50	06:31 20:48	07:27 19:31	18:24 17:19	16:25 (8) 16:42 (8)	16:23 16:25
26	05:38 21:49	06:33 20:45	07:29 19:28	18:25 17:17	16:25 (8) 16:42 (8)	16:25 16:24
27	05:40 21:47	06:35 20:43	07:31 19:26	18:27 17:15	16:26 (8) 16:41 (8)	16:24 16:23
28	05:41 21:46	06:36 20:40	07:32 19:23	18:29 17:13	16:27 (8) 16:40 (8)	16:28 16:22
29	05:43 21:44	06:38 20:38	19:40 (10) 19:44 (10)	07:34 19:21	17:11 16:39 (8)	16:29 (8) 16:21
30	05:45 21:42	06:40 20:36	19:37 (10) 19:47 (10)	07:36 19:19	17:11 17:08	16:32 (8) 16:36 (8)
31	05:46 21:40	06:42 20:33	19:36 (10) 19:48 (10)	07:35 17:06	16:35 16:22	16:21 16:22
Potential sun hours	515	461	383	328	257	231
Total, worst case	328	26	109	169		
Sun reduction	0.27	0.27	0.29	0.23		
Oper. time red.	1.00	1.00	1.00	1.00		
Wind dir. red.	0.63	0.59	0.59	0.58		
Total reduction	0.17	0.16	0.17	0.14		
Total, real	55	4	19	23		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: CT - H98  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June
1	08:58 16:24	08:27 17:16	15:55 (16) 16:03 (16)	07:29 18:13	07:12 20:12	06:02 21:09
2	08:58 16:25	08:25 17:18		07:26 18:15	07:10 20:14	06:00 21:11
3	08:58 16:26	08:24 17:20		07:24 18:17	07:07 20:16	05:58 21:13
4	08:58 16:27	08:22 17:22		07:21 18:19	07:05 20:18	05:56 21:14
5	08:57 16:28	08:20 17:24	16:46 (15) 16:50 (15)	07:19 18:21	07:02 20:20	05:54 21:16
6	08:57 16:30	08:18 17:26	16:42 (15) 16:54 (15)	07:17 18:22	07:00 20:22	05:52 21:18
7	08:56 16:31	15:50 (16) 15:51 (16)	08:16 17:28	16:41 (15) 16:56 (15)	07:14 18:24	06:58 20:24
8	08:56 16:33	15:47 (16) 15:54 (16)	08:14 17:30	16:39 (15) 16:58 (15)	07:12 18:26	06:55 20:25
9	08:55 16:34	15:47 (16) 15:57 (16)	08:12 17:32	16:37 (15) 16:58 (15)	07:09 18:28	06:53 20:27
10	08:55 16:36	15:46 (16) 15:58 (16)	08:10 17:34	16:37 (15) 16:59 (15)	07:07 18:30	06:50 20:29
11	08:54 16:37	15:45 (16) 16:00 (16)	08:08 17:36	16:36 (15) 17:00 (15)	07:05 18:32	06:48 20:31
12	08:53 16:39	15:45 (16) 16:01 (16)	08:06 17:38	16:36 (15) 17:00 (15)	07:02 18:34	06:45 20:33
13	08:52 16:40	15:44 (16) 16:02 (16)	08:04 17:40	16:36 (15) 17:01 (15)	07:00 18:36	06:43 20:35
14	08:51 16:42	15:44 (16) 16:03 (16)	08:02 17:42	16:36 (15) 17:01 (15)	06:57 18:38	06:41 20:37
15	08:51 16:44	15:43 (16) 16:03 (16)	08:00 17:44	16:35 (15) 17:01 (15)	06:55 18:40	06:38 20:39
16	08:50 16:45	15:44 (16) 16:04 (16)	07:58 17:46	16:36 (15) 17:01 (15)	06:52 18:42	06:36 20:41
17	08:48 16:47	15:44 (16) 16:05 (16)	07:56 17:48	16:36 (15) 17:00 (15)	06:50 18:44	06:33 20:42
18	08:47 16:49	15:44 (16) 16:06 (16)	07:54 17:51	16:37 (15) 17:00 (15)	06:47 18:46	06:31 20:44
19	08:46 16:51	15:44 (16) 16:06 (16)	07:51 17:53	16:37 (15) 16:59 (15)	06:45 18:48	06:29 20:46
20	08:45 16:52	15:44 (16) 16:07 (16)	07:49 17:55	16:38 (15) 16:58 (15)	06:42 20:48	06:27 21:42
21	08:44 16:54	15:44 (16) 16:07 (16)	07:47 17:57	16:40 (15) 16:57 (15)	06:40 18:51	06:24 20:50
22	08:42 16:56	15:44 (16) 16:08 (16)	07:45 17:59	16:42 (15) 16:54 (15)	06:37 18:53	06:22 20:52
23	08:41 16:58	15:44 (16) 16:08 (16)	07:42 18:01	16:46 (15) 16:50 (15)	06:35 18:55	06:20 20:54
24	08:40 17:00	15:45 (16) 16:08 (16)	07:40 18:03	06:32 18:57	06:17 20:56	05:21 21:49
25	08:38 17:02	15:45 (16) 16:08 (16)	07:38 18:05	06:30 18:59	06:15 20:58	05:20 21:50
26	08:37 17:04	15:46 (16) 16:08 (16)	07:36 18:07	06:27 19:01	06:13 20:59	05:18 21:52
27	08:35 17:06	15:47 (16) 16:08 (16)	07:33 18:09	06:25 19:03	06:11 21:01	05:17 21:53
28	08:34 17:08	15:48 (16) 16:07 (16)	07:31 18:11	06:22 19:05	06:08 21:03	05:16 21:55
29	08:32 17:10	15:49 (16) 16:07 (16)		07:20 20:07	06:06 21:05	05:15 21:56
30	08:31 17:12	15:50 (16) 16:06 (16)		07:17 20:08	06:04 21:07	05:13 21:57
31	08:29 17:14	15:51 (16) 16:04 (16)		07:15 20:10	05:12 21:09	05:12 21:59
Potential sun hours	248	272	367	421	496	513
Total, worst case	451	372				
Sun reduction	0.17	0.22				
Oper. time red.	1.00	1.00				
Wind dir. red.	0.62	0.58				
Total reduction	0.11	0.13				
Total, real	48	48				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: CT - H98  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	July	August	September	October	November	December
1	05:07 22:15	05:48 21:39	06:44 20:31	07:38 19:16	07:37 17:04	16:07 (15) 16:19
2	05:08 22:14	05:50 21:37	06:45 20:28	07:40 19:13	07:39 17:02	16:07 (15) 16:18
3	05:09 22:14	05:51 21:35	06:47 20:26	07:42 19:11	07:41 17:00	16:08 (15) 16:17
4	05:10 22:14	05:53 21:33	06:49 20:23	07:43 19:09	07:43 16:58	16:10 (15) 16:17
5	05:11 22:13	05:55 21:31	06:51 20:21	07:45 19:06	07:45 16:56	16:12 (15) 16:16
6	05:11 22:12	05:57 21:29	06:53 20:19	07:47 19:04	07:47 16:54	08:41 16:16
7	05:12 22:12	05:58 21:27	06:54 20:16	07:49 19:01	07:49 16:53	08:42 16:15
8	05:13 22:11	06:00 21:25	06:56 20:14	07:51 18:59	07:51 16:51	08:43 16:15
9	05:15 22:10	06:02 21:23	06:58 20:11	07:53 18:56	07:53 16:49	08:45 16:14
10	05:16 22:09	06:04 21:21	07:00 20:09	07:55 18:54	07:55 16:47	15:25 (16) 15:34 (16)
11	05:17 22:08	06:06 21:19	07:02 20:06	07:57 18:51	07:57 16:45	15:23 (16) 15:36 (16)
12	05:18 22:07	06:07 21:17	07:03 20:04	07:58 18:49	07:59 16:44	15:21 (16) 15:38 (16)
13	05:19 22:06	06:09 21:15	07:05 20:01	08:00 18:47	08:01 16:42	15:20 (16) 15:39 (16)
14	05:21 22:05	06:11 21:13	07:07 19:59	08:02 18:44	08:03 16:40	15:20 (16) 15:39 (16)
15	05:22 22:04	06:13 21:10	07:09 19:56	08:04 18:42	08:05 16:39	15:19 (16) 15:40 (16)
16	05:23 22:03	06:15 21:08	07:11 19:54	08:06 18:40	08:07 16:37	15:19 (16) 15:41 (16)
17	05:25 22:02	06:16 21:06	07:12 19:51	08:08 18:37	08:09 16:36	15:19 (16) 15:42 (16)
18	05:26 22:01	06:18 21:04	07:14 19:49	08:10 18:35	08:11 16:34	15:19 (16) 15:42 (16)
19	05:27 21:59	06:20 21:01	07:16 19:46	08:12 18:33	08:12 17:15 (15) 17:23 (15)	15:19 (16) 15:43 (16)
20	05:29 21:58	06:22 20:59	07:18 19:44	08:14 18:30	08:14 17:12 (15) 17:26 (15)	15:19 (16) 15:43 (16)
21	05:30 21:57	06:24 20:57	07:20 19:41	08:16 18:28	08:16 17:10 (15) 17:28 (15)	15:20 (16) 15:43 (16)
22	05:32 21:55	06:25 20:55	07:21 19:39	08:18 18:26	08:18 17:08 (15) 17:29 (15)	15:20 (16) 15:43 (16)
23	05:33 21:54	06:27 20:52	07:23 19:36	08:20 18:24	08:20 17:07 (15) 17:29 (15)	15:21 (16) 15:43 (16)
24	05:35 21:52	06:29 20:50	07:25 19:33	08:22 18:21	08:22 17:06 (15) 17:30 (15)	15:21 (16) 15:43 (16)
25	05:36 21:51	06:31 20:48	07:27 19:31	08:24 17:19	08:23 16:06 (15) 16:30 (15)	15:22 (16) 15:43 (16)
26	05:38 21:49	06:33 20:45	07:29 19:28	08:26 17:17	08:25 16:05 (15) 16:30 (15)	15:23 (16) 15:43 (16)
27	05:40 21:47	06:34 20:43	07:31 19:26	08:27 17:15	08:27 16:05 (15) 16:30 (15)	15:24 (16) 15:43 (16)
28	05:41 21:46	06:36 20:40	07:32 19:23	08:29 17:13	08:29 16:06 (15) 16:31 (15)	15:24 (16) 15:42 (16)
29	05:43 21:44	06:38 20:38	07:34 19:21	08:30 17:10	08:30 16:06 (15) 16:30 (15)	15:25 (16) 15:42 (16)
30	05:45 21:42	06:40 20:36	07:36 19:18	08:33 17:08	08:32 16:06 (15) 16:30 (15)	15:26 (16) 15:42 (16)
31	05:46 21:40	06:42 20:33	07:35 19:16	08:35 17:06	08:35 16:06 (15) 16:29 (15)	08:59 16:22
Potential sun hours	515	461	383	327	257	230
Total, worst case				277	500	47
Sun reduction				0.23	0.20	0.12
Oper. time red.				1.00	1.00	1.00
Wind dir. red.				0.58	0.61	0.62
Total reduction				0.14	0.12	0.07
Total, real				38	61	3

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: CU - H99  
 Assumptions for shadow calculations Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:59 16:24	08:27 17:16	07:29 18:13	07:59 (6) 20:13	06:02 21:09	05:12 22:00	05:08 22:15	05:48 21:39	06:44 20:31	07:38 19:16	07:38 17:05	08:34 16:19
2	08:58 16:25	08:26 17:18	07:26 18:15	07:51 (5) 20:14	06:00 21:11	05:11 22:01	05:08 22:15	05:50 21:37	06:46 20:29	07:40 19:14	08:18 (5) 17:03	08:35 16:19
3	08:58 16:26	08:24 17:20	07:24 18:17	07:49 (5) 20:16	05:58 21:13	05:10 22:02	05:09 22:14	05:52 21:35	06:48 20:26	07:42 19:11	08:16 (5) 17:01	08:37 16:18
4	08:58 16:28	08:22 17:22	07:22 18:19	07:46 (5) 20:18	05:56 21:15	05:09 22:04	05:10 22:14	05:54 21:33	06:49 20:24	07:44 19:09	08:14 (5) 17:01	08:38 16:17
5	08:57 16:29	08:20 17:24	07:19 18:21	07:44 (5) 20:20	05:54 21:16	05:08 22:05	05:11 22:13	05:55 21:31	06:51 20:21	07:46 19:06	08:12 (5) 17:01	08:40 16:17
6	08:57 16:30	08:18 17:26	07:17 18:23	07:42 (5) 20:22	05:52 21:18	05:08 22:06	05:12 22:12	05:57 21:29	06:53 20:19	07:47 19:04	08:31 (5) 17:01	08:41 16:16
7	08:57 16:32	08:16 17:28	07:14 18:25	07:39 (5) 20:24	05:50 21:20	05:07 22:07	05:13 22:12	05:59 21:27	06:55 20:16	07:49 19:01	08:16 (5) 17:01	08:42 16:15
8	08:56 16:33	08:14 17:30	07:12 18:27	07:37 (5) 20:26	05:48 21:22	05:06 22:08	05:14 22:11	06:01 21:25	06:57 20:14	07:51 18:59	08:18 (5) 17:01	08:44 16:15
9	08:55 16:34	08:13 17:32	07:10 18:29	07:36 (5) 20:28	05:46 21:24	05:06 22:09	05:15 22:10	06:02 21:23	06:58 20:11	07:53 18:57	08:20 (5) 17:01	08:45 16:15
10	08:55 16:36	08:11 17:35	07:07 18:31	07:37 (5) 20:29	05:44 21:25	05:05 22:10	05:16 22:09	06:04 21:21	07:00 20:09	07:55 18:54	08:22 (5) 17:01	08:46 16:14
11	08:54 16:38	08:09 17:37	07:05 18:33	07:38 (5) 20:31	05:42 21:27	05:05 22:10	05:17 22:08	06:06 21:19	07:02 20:06	07:57 18:52	08:24 (5) 17:01	08:47 16:14
12	08:53 16:39	08:06 17:39	07:02 18:34	07:42 (5) 20:33	05:41 21:29	05:04 22:11	05:18 22:07	06:08 21:17	07:04 20:04	07:59 18:49	08:26 (5) 17:01	08:48 16:14
13	08:52 16:41	08:04 17:41	07:00 18:36	07:47 (5) 20:35	05:39 21:31	05:04 22:12	05:20 22:06	06:10 21:15	07:06 20:01	08:01 18:47	08:32 (6) 17:01	08:49 16:14
14	08:52 16:42	08:02 17:43	06:57 18:38	06:41 20:37	05:37 21:32	05:04 22:13	05:21 22:05	06:11 21:13	07:07 19:59	08:03 18:45	08:31 (6) 17:01	08:50 16:14
15	08:51 16:44	08:00 17:45	06:55 18:40	06:39 20:39	05:35 21:34	05:03 22:13	05:22 22:04	06:13 21:11	07:09 19:56	08:04 18:42	08:32 (6) 17:01	08:51 16:14
16	08:50 16:46	07:58 17:47	06:52 18:42	06:36 20:41	05:34 21:36	05:03 22:14	05:24 22:03	06:15 21:08	07:11 19:54	08:06 18:40	08:34 (6) 17:01	08:52 16:14
17	08:49 16:48	07:56 17:49	06:50 18:44	06:34 20:43	05:32 21:38	05:03 22:14	05:25 22:02	06:17 21:06	07:13 19:51	08:08 18:38	08:36 (6) 17:01	08:53 16:14
18	08:47 16:49	07:54 17:51	06:47 18:46	06:31 20:45	05:30 21:39	05:03 22:15	05:26 22:01	06:19 21:04	07:15 19:49	08:10 18:35	08:38 (6) 17:01	08:54 16:14
19	08:46 16:51	07:52 17:53	06:45 18:48	06:29 20:46	05:29 21:41	05:03 22:15	05:28 21:59	06:20 21:02	07:16 19:46	08:12 18:33	08:40 (6) 17:01	08:55 16:14
20	08:45 16:53	07:49 17:55	06:43 18:50	06:27 20:48	05:27 21:43	05:03 22:15	05:29 21:58	06:22 20:59	07:18 19:44	08:14 18:31	08:42 (6) 17:01	08:55 16:15
21	08:44 16:55	07:47 17:57	06:40 18:52	06:24 20:50	05:26 21:44	05:03 22:16	05:31 21:57	06:24 20:57	07:20 19:41	08:16 18:28	08:44 (6) 17:01	08:56 16:15
22	08:43 16:57	07:45 17:59	06:38 18:54	06:22 20:52	05:24 21:46	05:03 22:16	05:32 21:55	06:26 20:55	07:22 19:39	08:18 18:26	08:46 (6) 17:01	08:56 16:16
23	08:41 16:59	07:43 18:01	06:35 18:55	06:20 20:54	05:23 21:47	05:04 22:16	05:34 21:54	06:28 20:52	07:24 19:36	08:20 18:24	08:50 (6) 17:01	08:57 16:16
24	08:40 17:00	07:40 18:03	06:33 18:57	06:18 20:56	05:21 21:49	05:04 22:16	05:35 21:52	06:29 20:50	07:25 19:34	08:22 18:22	08:55 (6) 17:01	08:57 16:16
25	08:38 17:02	07:38 18:05	06:30 18:59	06:15 20:58	05:20 21:50	05:04 22:16	05:37 21:51	06:31 20:48	07:27 19:31	08:24 17:19	08:56 (6) 17:01	08:58 16:17
26	08:37 17:04	07:36 18:07	06:28 19:01	06:13 21:00	05:19 21:52	05:05 22:16	05:39 21:49	06:33 20:45	07:29 19:29	08:26 17:17	08:57 (6) 17:01	08:58 16:18
27	08:35 17:06	07:33 18:09	06:25 19:03	06:11 21:01	05:17 21:53	05:05 22:16	05:40 21:47	06:35 20:43	07:31 19:26	08:28 17:15	08:58 (6) 17:01	08:58 16:19
28	08:34 17:08	07:31 18:11	06:23 19:05	06:09 21:03	05:16 21:55	05:06 22:16	05:42 21:46	06:37 20:41	07:33 19:24	08:30 17:13	08:59 (6) 17:01	08:58 16:20
29	08:32 17:10	07:29 18:07	06:20 19:05	06:07 21:05	05:15 21:56	05:06 22:16	05:43 21:44	06:38 20:38	07:35 19:21	08:32 17:11	08:59 (6) 17:01	08:59 16:21
30	08:31 17:12	07:28 18:09	06:18 19:02	06:05 21:07	05:14 21:57	05:07 22:15	05:45 21:42	06:40 20:36	07:36 19:19	08:34 17:09	08:59 (6) 17:01	08:59 16:22
31	08:29 17:14	07:25 18:05	06:15 19:01	06:03 21:03	05:13 21:59	05:07 22:15	05:47 21:41	06:42 20:33	07:36 17:07	08:36 17:07	08:59 (6) 17:01	08:59 16:23
Potential sun hours	248	272	367	421	496	513	515	461	382	328	257	231
Total, worst case		147	218							370		
Sun reduction		0.22	0.22							0.23		
Oper. time red.		1.00	1.00							1.00		
Wind dir. red.		0.62	0.61							0.61		
Total reduction		0.14	0.14							0.14		
Total, real		20	30							53		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

### SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: CV - H100

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January	February	March	April	May	June
1	08:58 16:24	08:27 17:16	07:29 18:13	07:12 20:12	18:53 (16) 06:02	19:44 (15) 05:11
2	08:58 16:25	08:25 17:18	07:26 18:15	07:10 20:14	18:53 (16) 24 19:17 (16)	06:00 21:09
3	08:58 16:26	08:24 17:20	07:24 18:17	07:07 20:16	18:52 (16) 24 19:16 (16)	05:58 21:12
4	08:58 16:27	08:22 17:22	07:21 18:19	07:05 20:18	18:53 (16) 22 19:15 (16)	05:56 21:14
5	08:57 16:28	08:20 17:24	07:19 18:21	07:02 20:20	18:53 (16) 21 19:14 (16)	05:54 21:16
6	08:57 16:30	08:18 17:26	07:17 18:22	07:00 20:22	18:54 (16) 19 19:13 (16)	05:52 21:18
7	08:56 16:31	08:16 17:28	07:14 18:24	06:58 20:24	18:56 (16) 15 19:11 (16)	05:50 21:20
8	08:56 16:33	08:14 17:30	07:12 18:26	06:55 20:25	18:58 (16) 10 19:08 (16)	05:48 21:22
9	08:55 16:34	08:12 17:32	07:09 18:28	06:53 20:27	06:53 21:23	05:46 22:09
10	08:55 16:36	08:10 17:34	07:07 18:30	06:50 20:29	06:50 21:25	05:44 22:09
11	08:54 16:37	08:08 17:36	07:04 18:32	06:48 20:31	06:48 21:27	05:04 22:10
12	08:53 16:39	08:06 17:38	07:02 18:34	06:45 20:33	06:45 21:29	05:04 22:11
13	08:52 16:40	08:04 17:40	07:00 18:36	06:43 20:35	06:43 21:31	05:04 22:12
14	08:51 16:42	08:02 17:42	06:57 18:38	06:41 20:37	06:41 21:32	05:03 22:12
15	08:50 16:44	08:00 17:44	06:55 18:40	06:38 20:39	19:48 (15) 7 19:55 (15)	05:35 21:34
16	08:49 16:45	07:58 17:46	06:52 18:42	06:36 20:41	19:44 (15) 13 19:57 (15)	05:33 21:36
17	08:48 16:47	07:56 17:48	06:50 18:44	06:33 20:42	19:42 (15) 16 19:58 (15)	05:32 21:37
18	08:47 16:49	07:54 17:51	06:47 18:46	06:31 20:44	19:41 (15) 19 20:00 (15)	05:30 21:39
19	08:46 16:51	07:51 17:53	06:45 18:48	06:29 20:46	19:40 (15) 21 20:01 (15)	05:28 21:41
20	08:45 16:53	07:49 17:55	06:42 18:50	06:26 20:48	19:39 (15) 21 20:00 (15)	05:27 21:42
21	08:44 16:54	07:47 17:57	06:40 18:51	06:24 20:50	19:38 (15) 23 20:01 (15)	05:25 21:44
22	08:42 16:56	07:45 17:59	06:37 18:53	06:22 20:52	19:38 (15) 23 20:01 (15)	05:24 21:46
23	08:41 16:58	07:42 18:01	06:35 18:55	06:20 20:54	19:38 (15) 23 20:01 (15)	05:22 21:47
24	08:40 17:00	07:40 18:03	06:32 18:57	06:17 20:56	19:38 (15) 23 20:01 (15)	05:21 21:49
25	08:38 17:02	07:38 18:05	06:30 18:59	18:02 (16) 06:15	19:37 (15) 22 19:59 (15)	05:20 21:50
26	08:37 17:04	07:36 18:07	06:27 19:01	17:59 (16) 06:13	19:38 (15) 21 19:59 (15)	05:18 21:52
27	08:35 17:06	07:33 18:09	06:25 19:03	17:58 (16) 06:11	19:38 (15) 20 19:58 (15)	05:17 21:53
28	08:34 17:08	07:31 18:11	06:22 19:05	17:56 (16) 06:08	19:39 (15) 18 19:57 (15)	05:16 21:55
29	08:32 17:10	07:29 18:13	06:20 19:07	18:55 (16) 06:06	19:40 (15) 16 19:56 (15)	05:15 21:56
30	08:30 17:12	07:27 18:15	06:17 19:09	18:54 (16) 06:04	19:41 (15) 14 19:55 (15)	05:14 21:57
31	08:29 17:14	07:25 18:17	06:15 19:11	18:54 (16) 06:02	05:12 21:59	22:15
Potential sun hours	248	272	367	421	496	513
Total, worst case			134	459	8	
Sun reduction			0.22	0.34	0.36	
Oper. time red.			1.00	1.00	1.00	
Wind dir. red.			0.58	0.59	0.59	
Total reduction			0.13	0.20	0.21	
Total, real			17	92	2	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Calculation: Tirawley Shadow Flicker Worst Case Shadow receptor: CV - H100

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

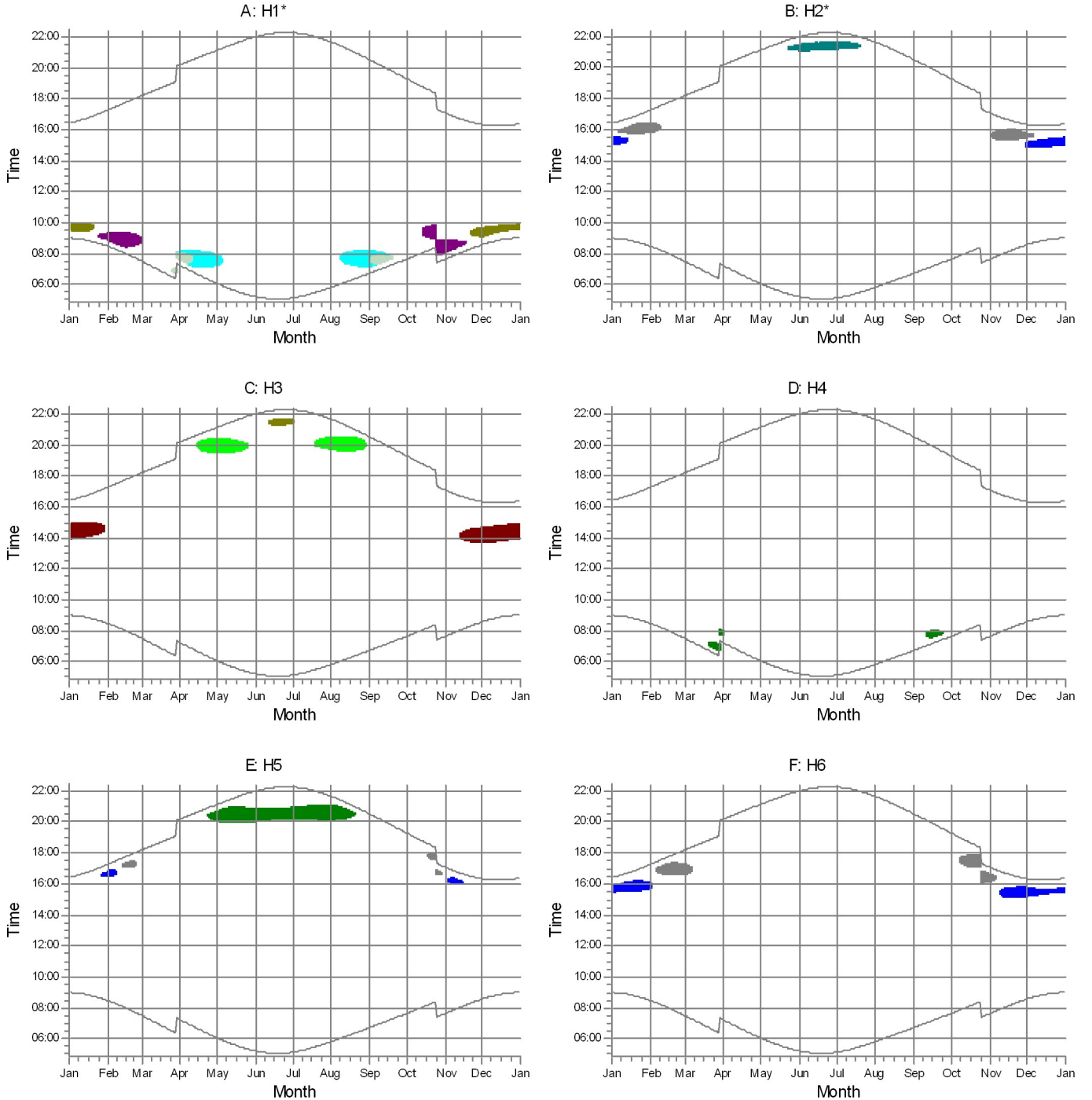
	July	August	September	October	November	December		
1	05:07	05:48	06:44	07:38	07:37	08:33		
	22:15	21:39	20:31	19:16	17:04	16:19		
2	05:08	05:50	06:45	07:40	07:39	08:35		
	22:14	21:37	20:28	19:13	17:02	16:18		
3	05:09	05:52	06:47	07:42	07:41	08:36		
	22:14	21:35	20:26	19:11	17:00	16:17		
4	05:10	05:53	06:49	18:55 (16)	07:43	07:43	08:38	
	22:13	21:33	20:23	19:05 (16)	19:09	16:58	16:17	
5	05:11	05:55	06:51	18:52 (16)	07:45	07:45	08:39	
	22:13	21:31	20:21	19:07 (16)	19:06	16:56	16:16	
6	05:11	05:57	06:53	18:51 (16)	07:47	07:47	08:41	
	22:12	21:29	20:19	19:09 (16)	19:04	16:54	16:16	
7	05:12	05:59	06:54	18:49 (16)	07:49	07:49	08:42	
	22:12	21:27	20:16	19:10 (16)	19:01	16:53	16:15	
8	05:14	06:00	06:56	18:47 (16)	07:51	07:51	08:43	
	22:11	21:25	20:14	19:09 (16)	18:59	16:51	16:15	
9	05:15	06:02	06:58	18:47 (16)	07:53	07:53	08:45	
	22:10	21:23	20:11	19:10 (16)	18:56	16:49	16:14	
10	05:16	06:04	07:00	18:46 (16)	07:55	07:55	08:46	
	22:09	21:21	20:09	19:10 (16)	18:54	16:47	16:14	
11	05:17	06:06	07:02	18:46 (16)	07:57	07:57	08:47	
	22:08	21:19	20:06	19:10 (16)	18:51	16:45	16:14	
12	05:18	06:07	19:51 (15)	07:03	18:45 (16)	07:58	08:48	
	22:07	21:17	20:01 (15)	20:04	19:09 (16)	18:49	16:44	16:13
13	05:19	06:09	19:50 (15)	07:05	18:45 (16)	08:00	08:01	08:49
	22:06	21:15	20:03 (15)	20:01	19:09 (16)	18:47	16:42	16:13
14	05:21	06:11	19:47 (15)	07:07	18:45 (16)	08:02	08:03	08:50
	22:05	21:12	20:04 (15)	19:59	19:08 (16)	18:44	16:40	16:13
15	05:22	06:13	19:46 (15)	07:09	18:46 (16)	08:04	08:05	08:51
	22:04	21:10	20:05 (15)	19:56	19:07 (16)	18:42	16:39	16:13
16	05:23	06:15	19:46 (15)	07:11	18:46 (16)	08:06	08:07	08:52
	22:03	21:08	20:06 (15)	19:54	19:05 (16)	18:40	16:37	16:13
17	05:25	06:16	19:44 (15)	07:12	18:47 (16)	08:08	08:09	08:53
	22:02	21:06	20:06 (15)	19:51	19:03 (16)	18:37	16:36	16:14
18	05:26	06:18	19:44 (15)	07:14	18:49 (16)	08:10	08:11	08:54
	22:01	21:04	20:06 (15)	19:49	19:01 (16)	18:35	16:34	16:14
19	05:27	06:20	19:43 (15)	07:16	18:53 (16)	08:12	08:12	08:55
	21:59	21:01	20:06 (15)	19:46	3 18:56 (16)	18:33	16:33	16:14
20	05:29	06:22	19:43 (15)	07:18		08:14	08:14	08:55
	21:58	20:59	20:07 (15)	19:44		18:30	16:31	16:14
21	05:30	06:24	19:43 (15)	07:20		08:16	08:16	08:56
	21:56	20:57	20:06 (15)	19:41		18:28	16:30	16:15
22	05:32	06:25	19:43 (15)	07:21		08:18	08:18	08:56
	21:55	20:55	20:05 (15)	19:38		18:26	16:29	16:15
23	05:33	06:27	19:43 (15)	07:23		08:20	08:20	08:57
	21:54	20:52	20:05 (15)	19:36		18:24	16:27	16:16
24	05:35	06:29	19:43 (15)	07:25		08:22	08:22	08:57
	21:52	20:50	20:03 (15)	19:33		18:21	16:26	16:16
25	05:37	06:31	19:44 (15)	07:27		07:24	08:23	08:58
	21:50	20:48	20:02 (15)	19:31		17:19	16:25	16:17
26	05:38	06:33	19:45 (15)	07:29		07:25	08:25	08:58
	21:49	20:45	20:01 (15)	19:28		17:17	16:24	16:18
27	05:40	06:34	19:47 (15)	07:31		07:27	08:27	08:58
	21:47	20:43	19:59 (15)	19:26		17:15	16:23	16:18
28	05:41	06:36	19:49 (15)	07:32		07:29	08:28	08:58
	21:46	20:40	6 19:55 (15)	19:23		17:13	16:22	16:19
29	05:43	06:38		07:34		07:31	08:30	08:58
	21:44	20:38		19:21		17:10	16:21	16:20
30	05:45	06:40		07:36		07:33	08:32	08:58
	21:42	20:36		19:18		17:08	16:20	16:21
31	05:46	06:42				07:35		08:58
	21:40	20:33				17:06		16:22
Potential sun hours	515	461	383	327	257	230		
Total, worst case		309	299					
Sun reduction		0.27	0.29					
Oper. time red.		1.00	1.00					
Wind dir. red.		0.59	0.58					
Total reduction		0.16	0.17					
Total, real		50	51					

Table layout: For each day in each month the following matrix apply

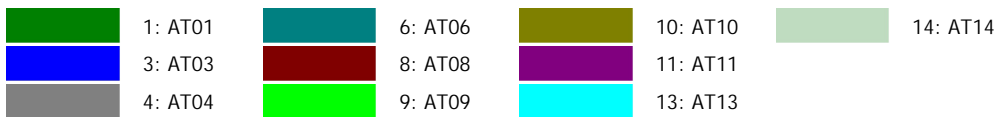
Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar, graphical

Calculation: Tirawley Shadow Flicker Worst Case



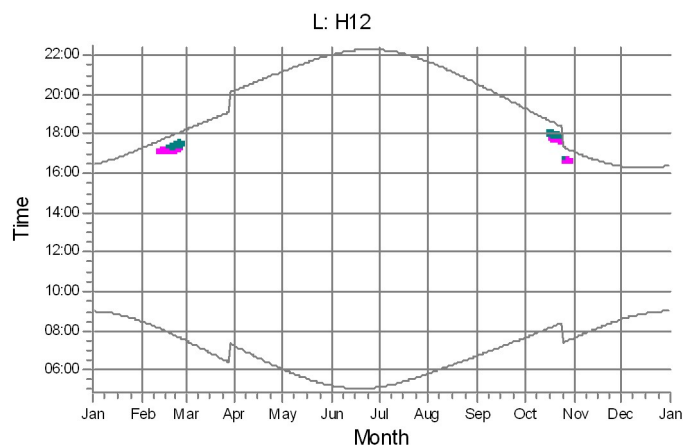
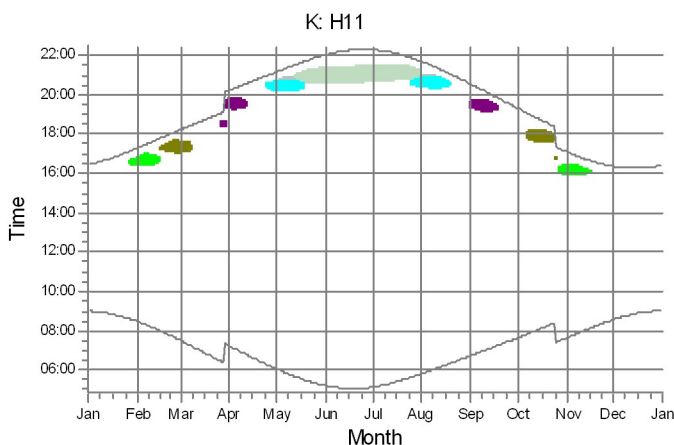
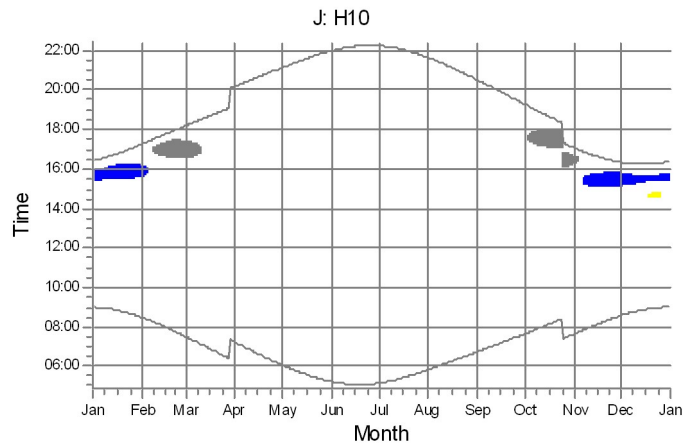
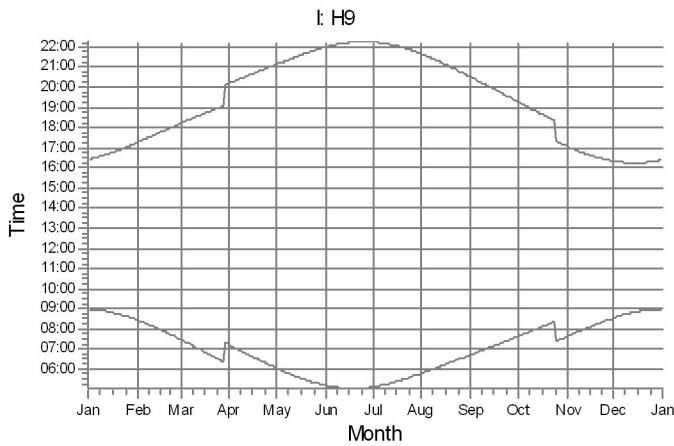
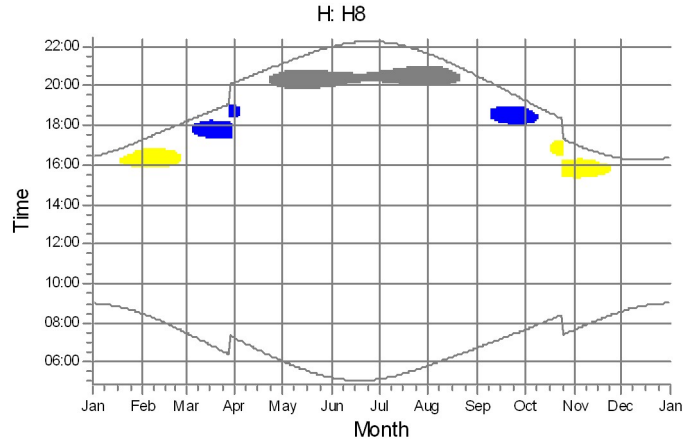
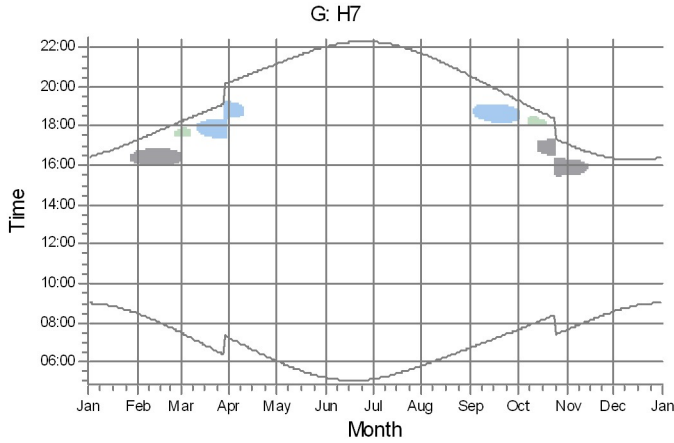
### WTGs











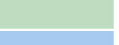





## SHADOW - Calendar, graphical

Calculation: Tirawley Shadow Flicker Worst Case

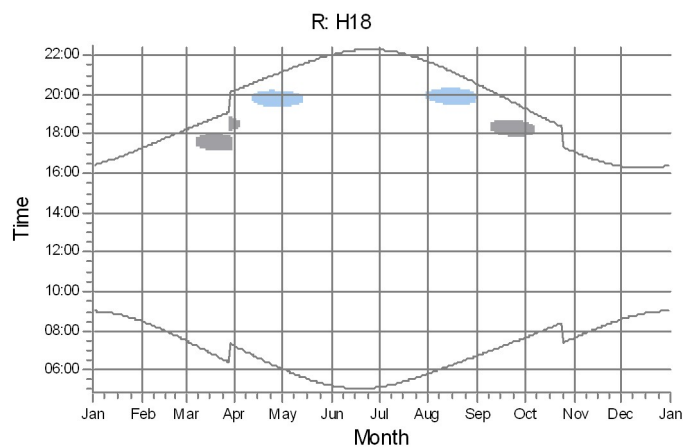
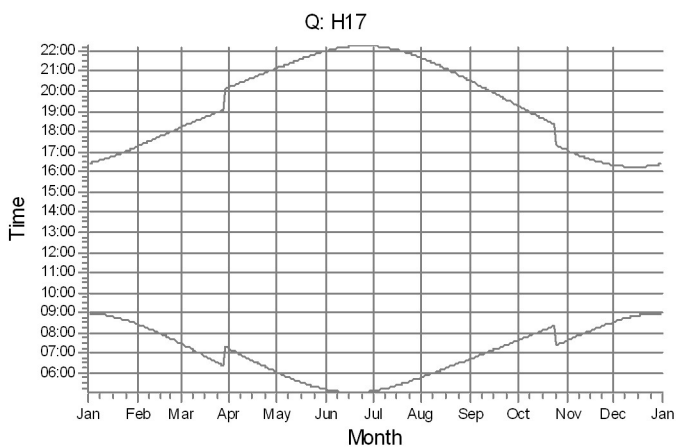
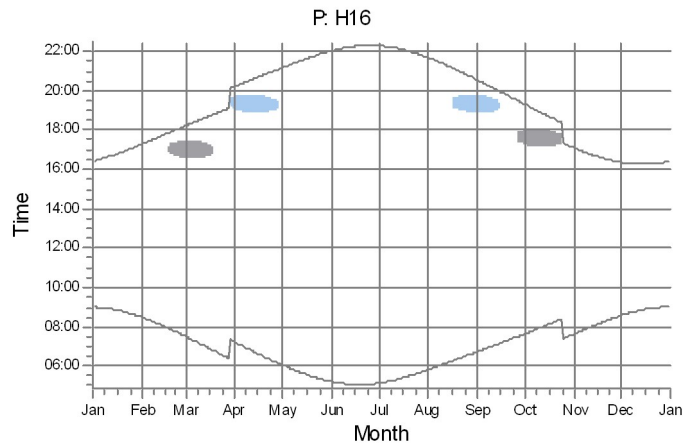
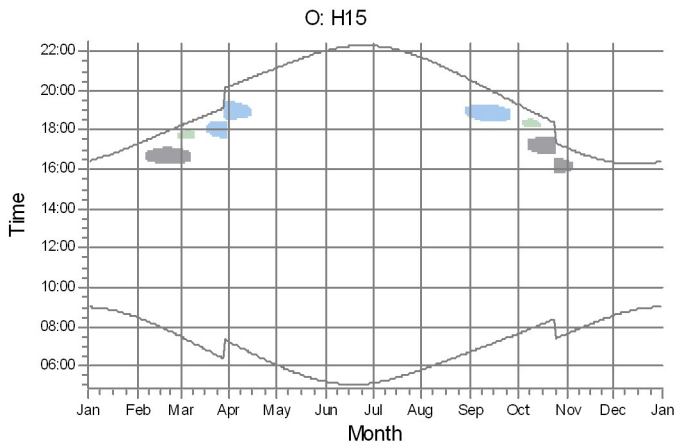
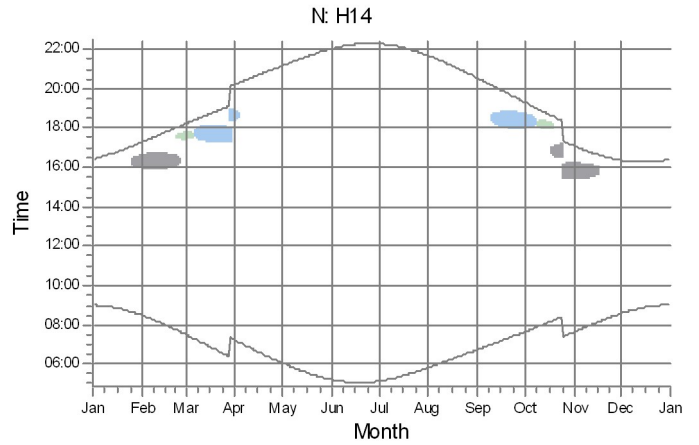
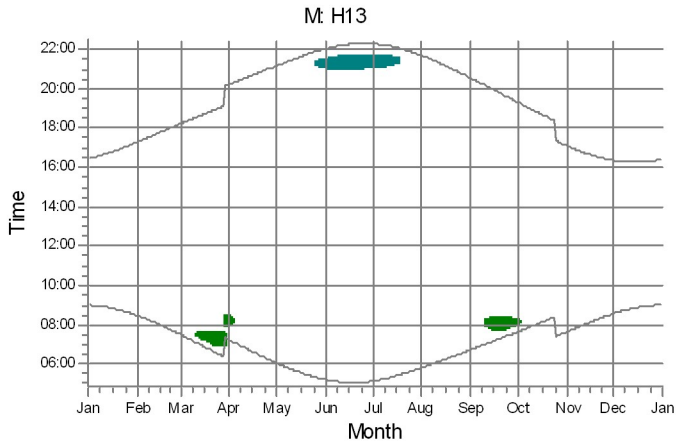


### WTGs

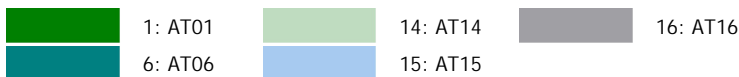
	2: AT02		6: AT06		12: AT12		16: AT16
	3: AT03		9: AT09		13: AT13		
	4: AT04		10: AT10		14: AT14		
	5: AT05		11: AT11		15: AT15		

## SHADOW - Calendar, graphical

Calculation: Tirawley Shadow Flicker Worst Case

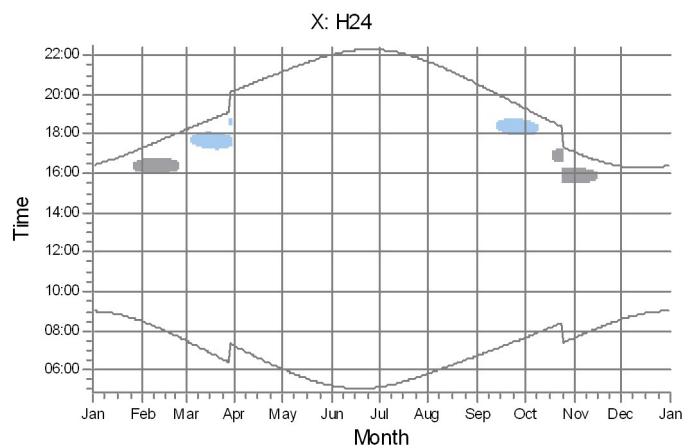
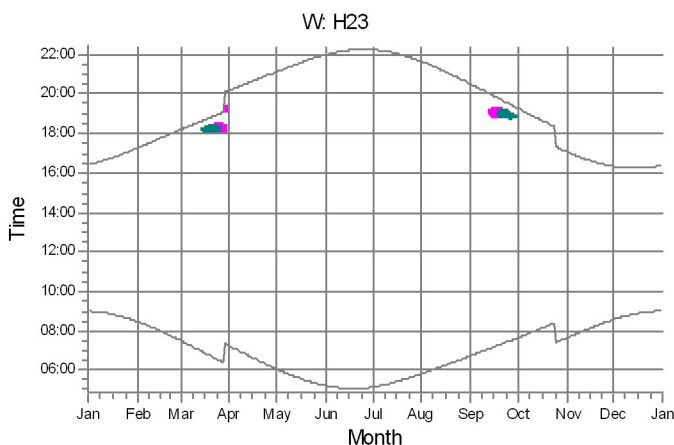
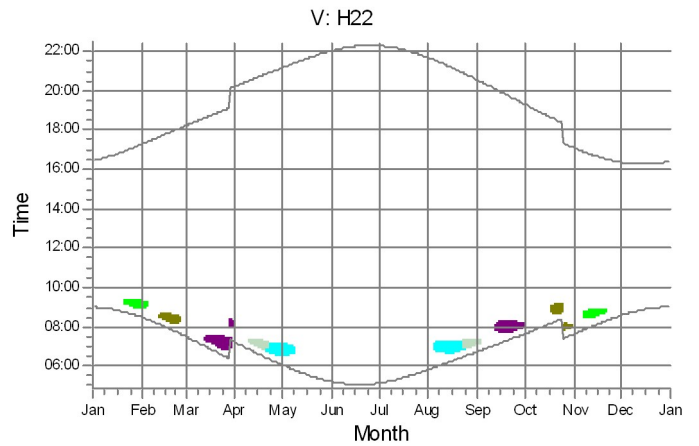
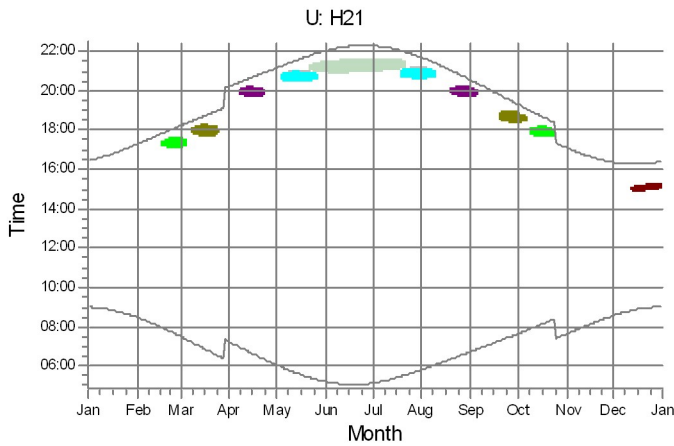
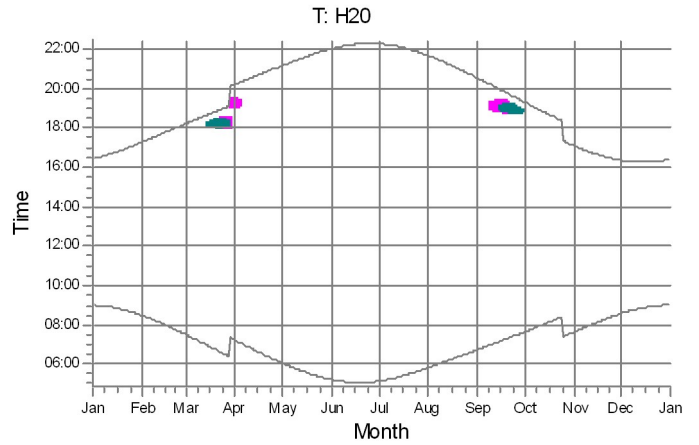
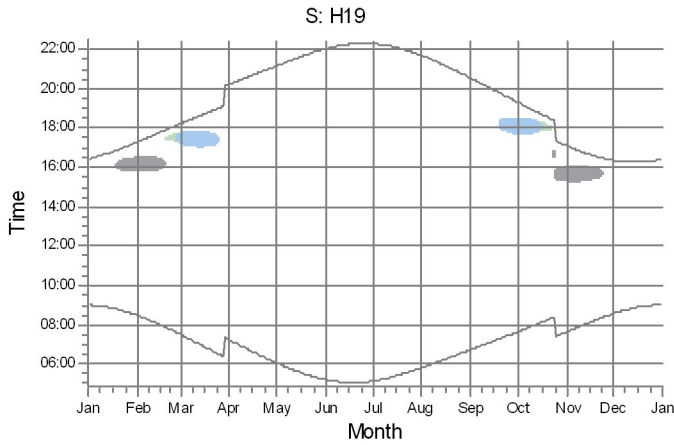


WTGs




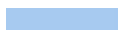









## SHADOW - Calendar, graphical

Calculation: Tirawley Shadow Flicker Worst Case

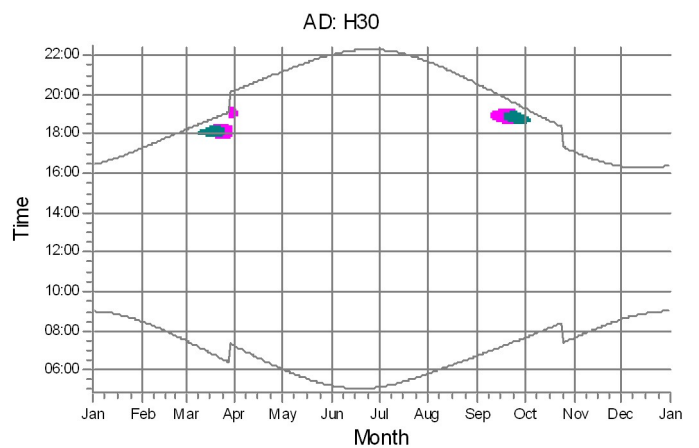
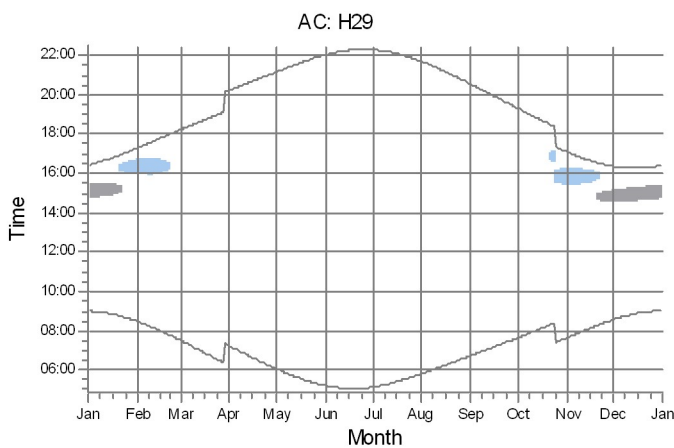
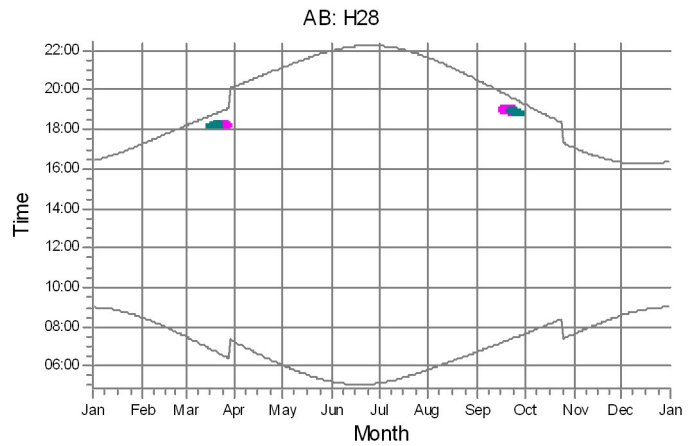
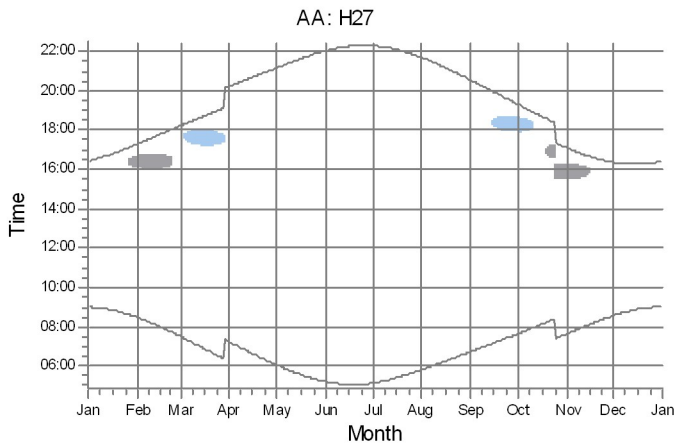
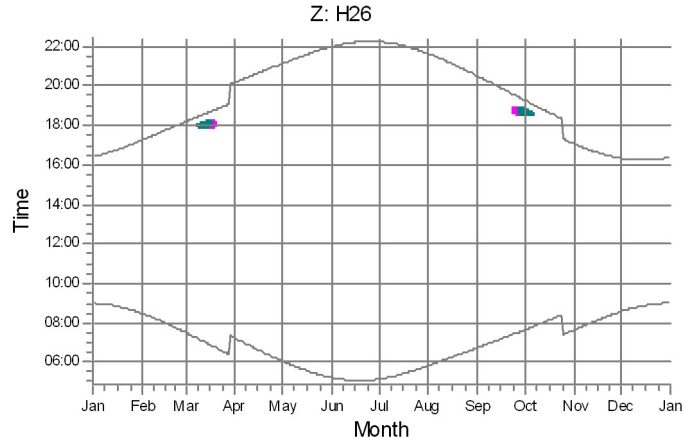
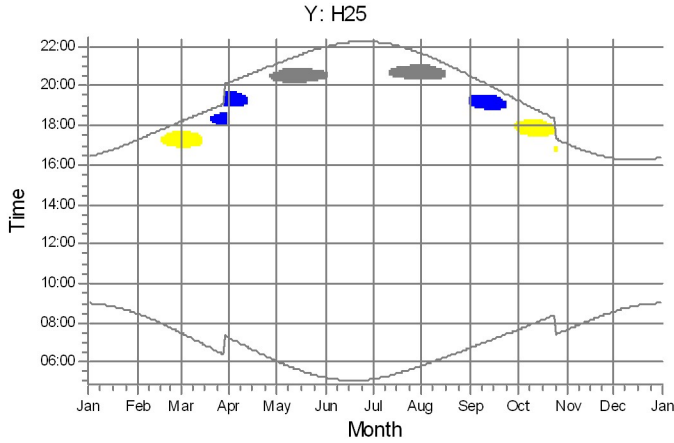


### WTGs

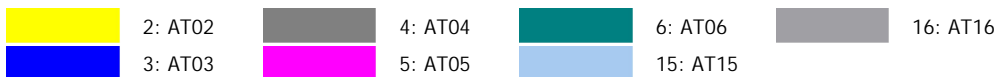
 5: AT05	 9: AT09	 12: AT12	 15: AT15
 6: AT06	 10: AT10	 13: AT13	 16: AT16
 8: AT08	 11: AT11	 14: AT14	

## SHADOW - Calendar, graphical

Calculation: Tirawley Shadow Flicker Worst Case

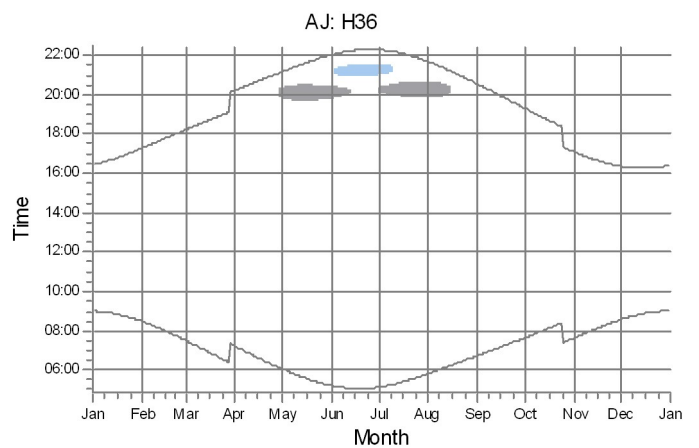
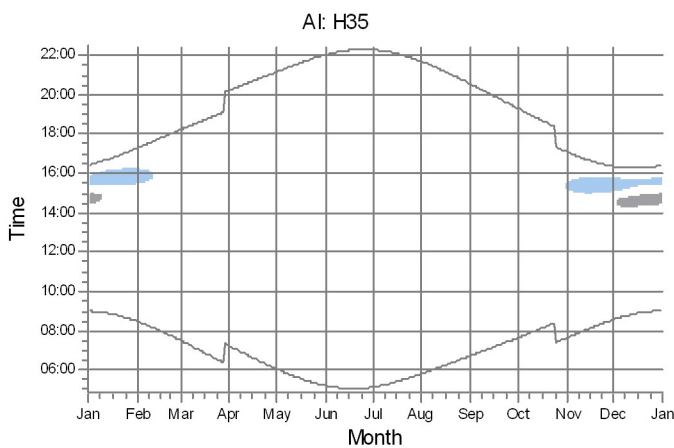
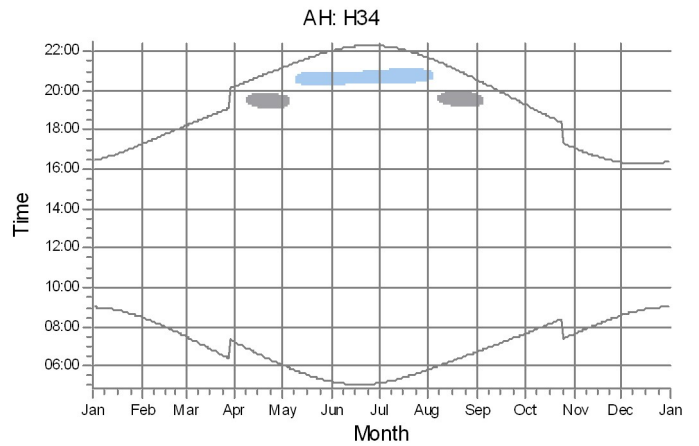
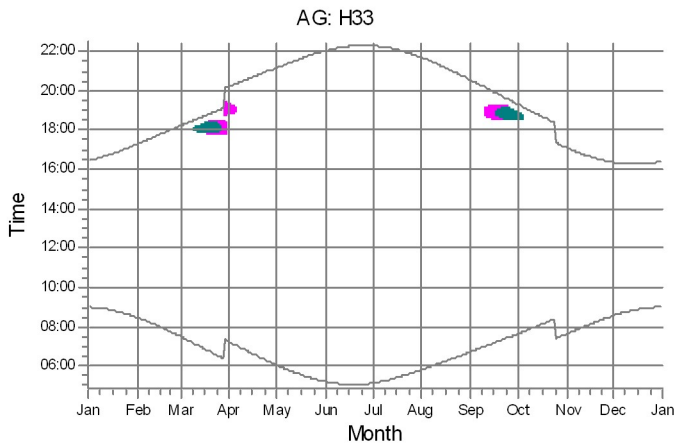
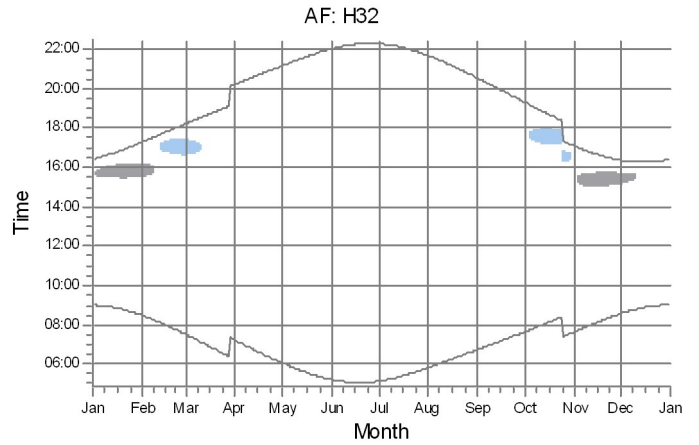
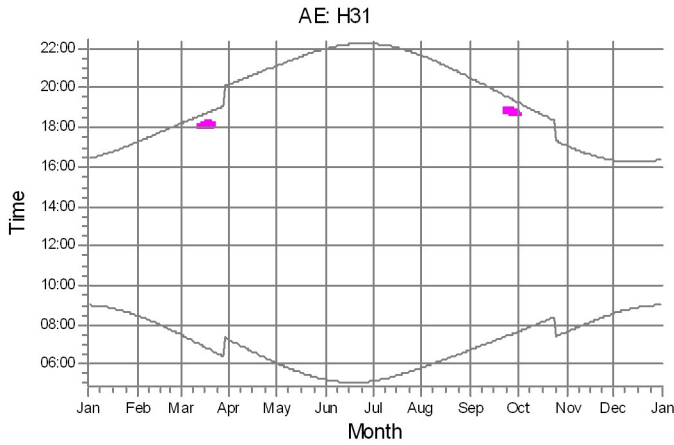


### WTGs

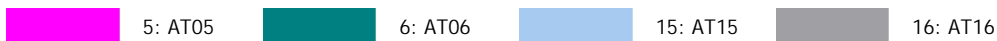


## SHADOW - Calendar, graphical

Calculation: Tirawley Shadow Flicker Worst Case

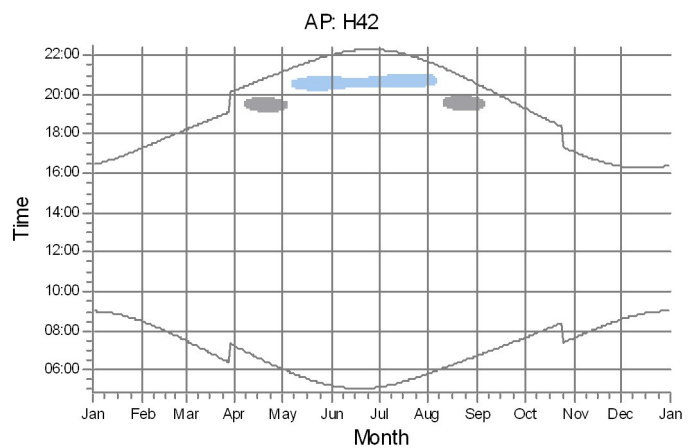
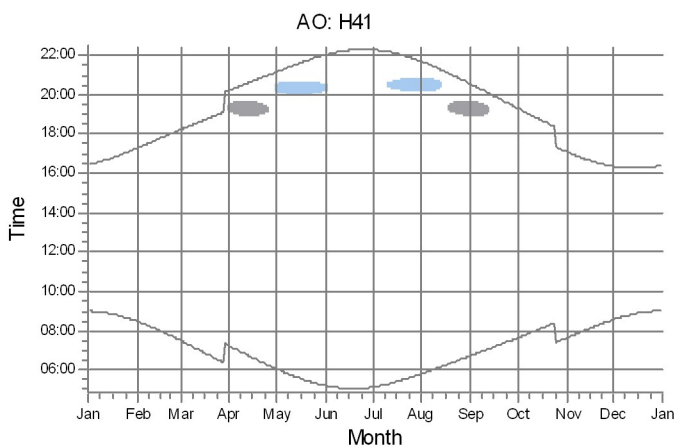
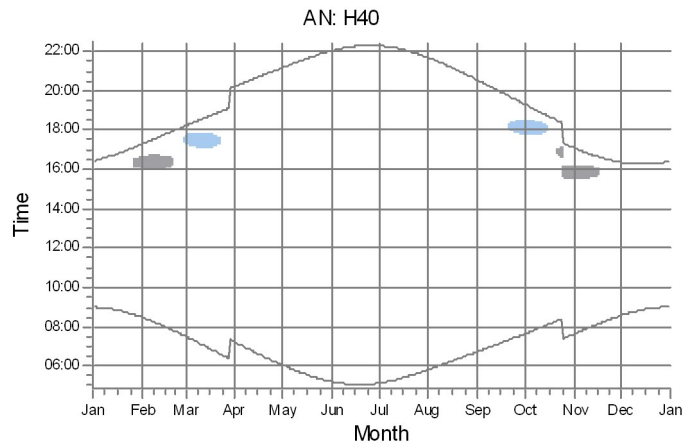
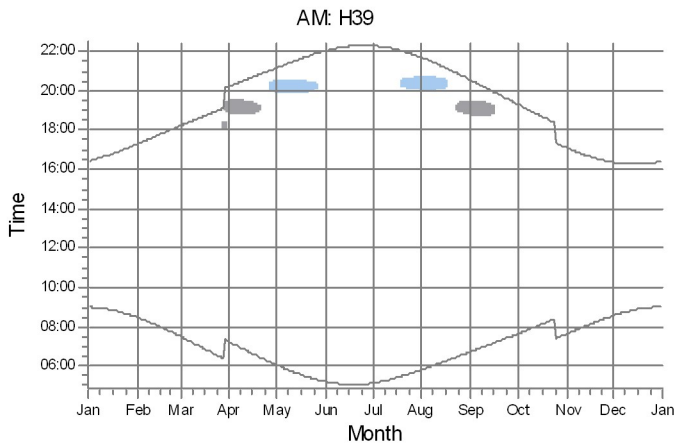
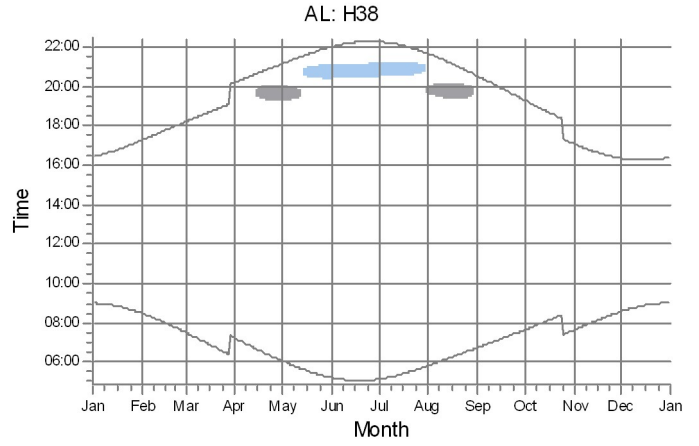
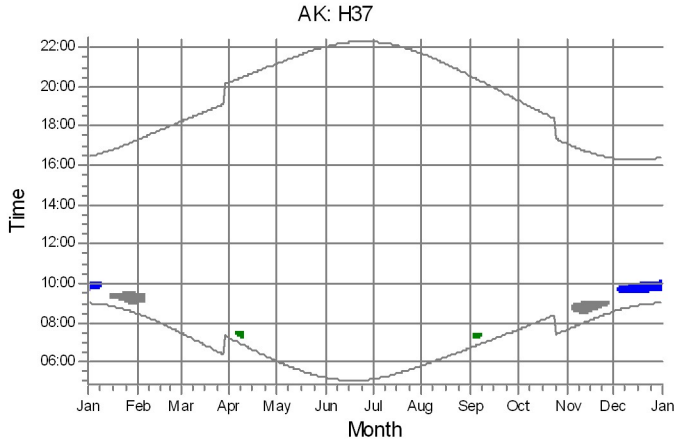


WTGs

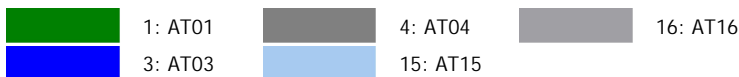


## SHADOW - Calendar, graphical

Calculation: Tirawley Shadow Flicker Worst Case



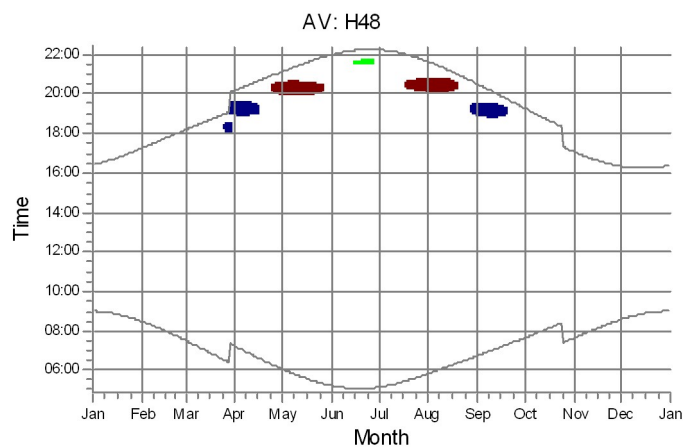
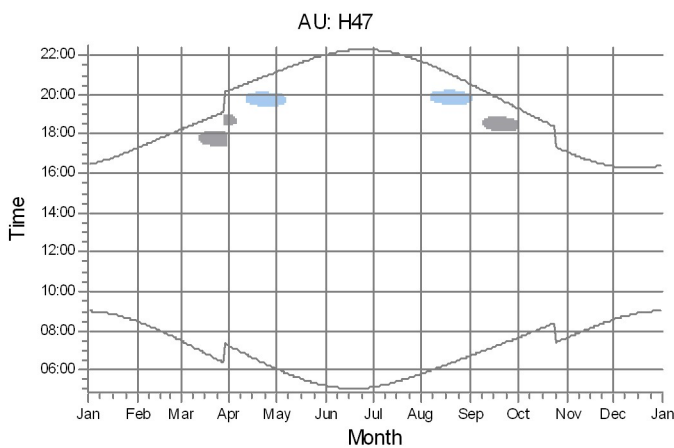
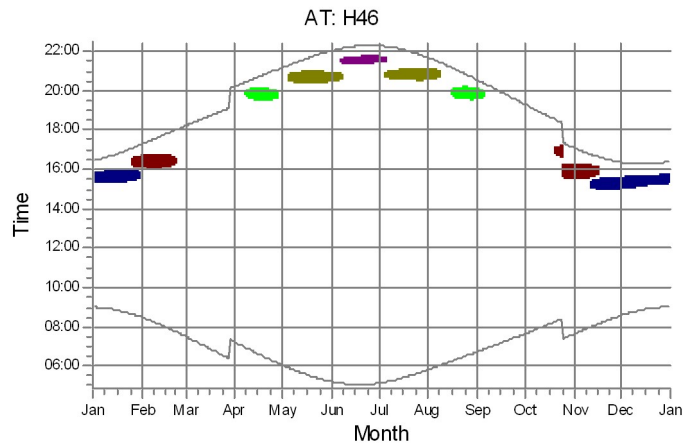
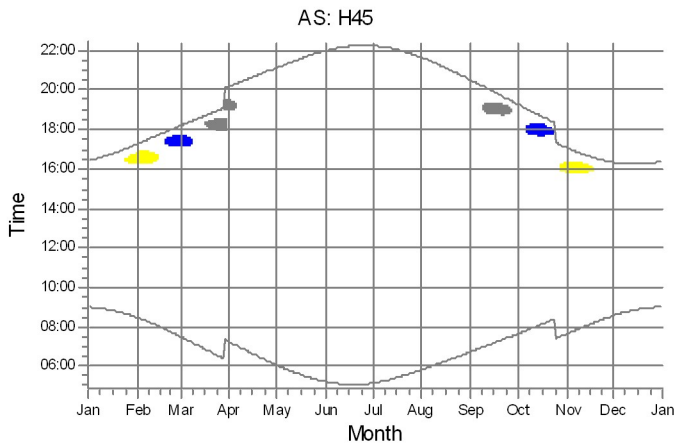
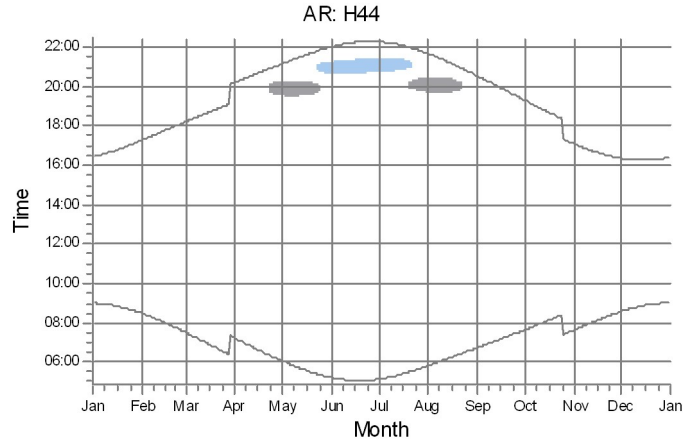
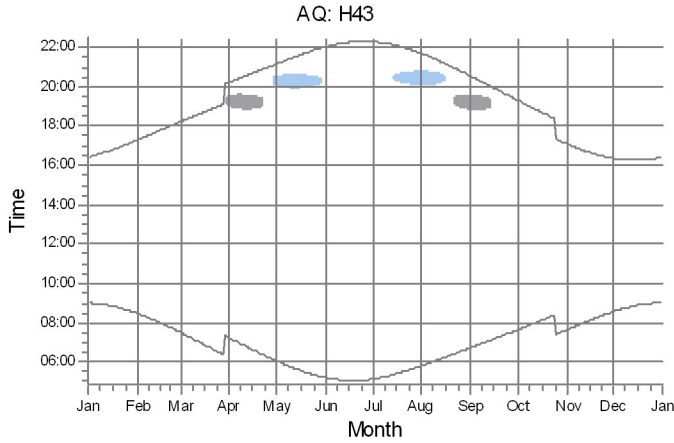
WTGs















## SHADOW - Calendar, graphical

Calculation: Tirawley Shadow Flicker Worst Case

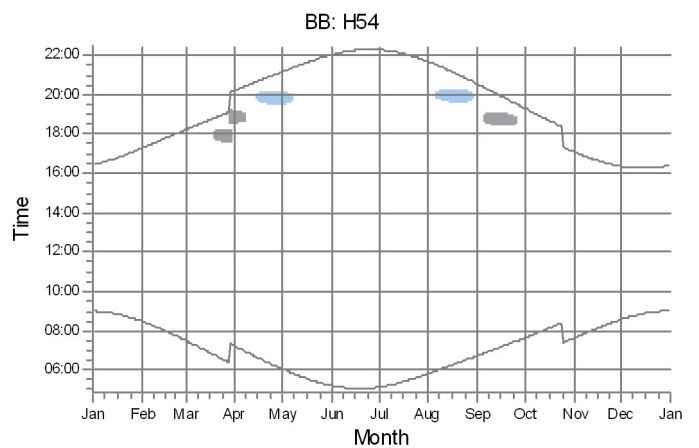
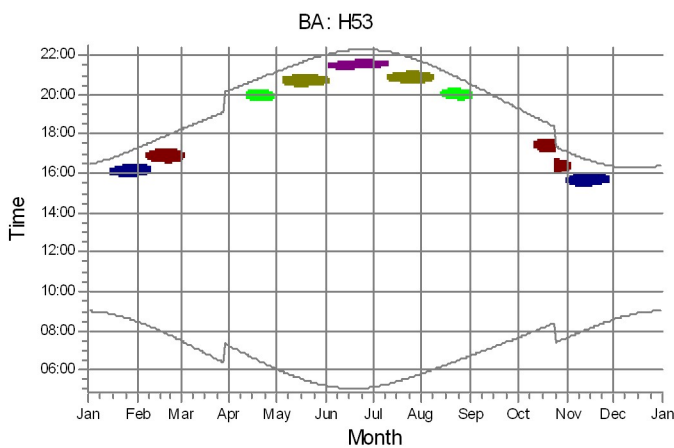
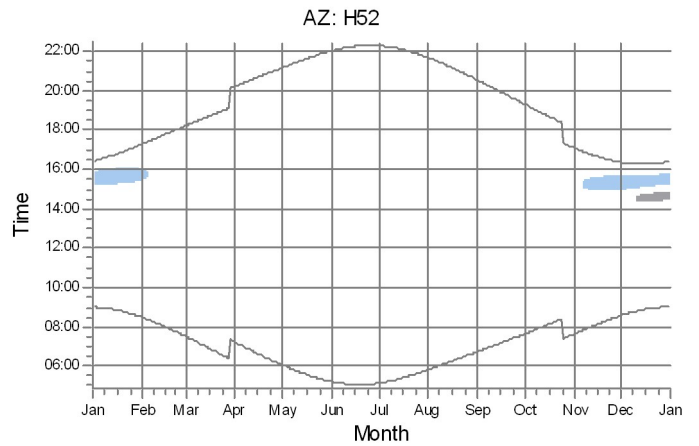
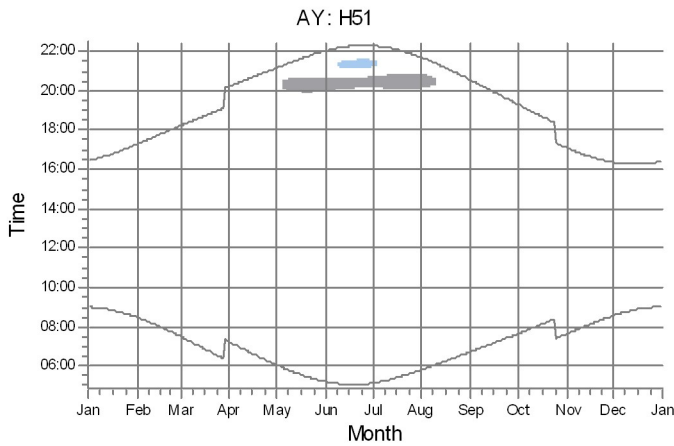
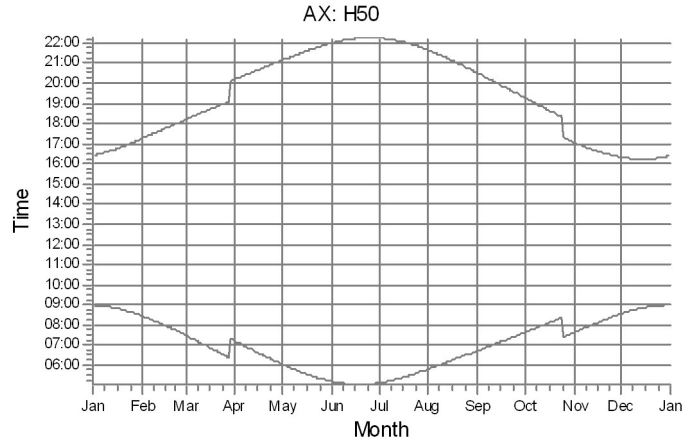
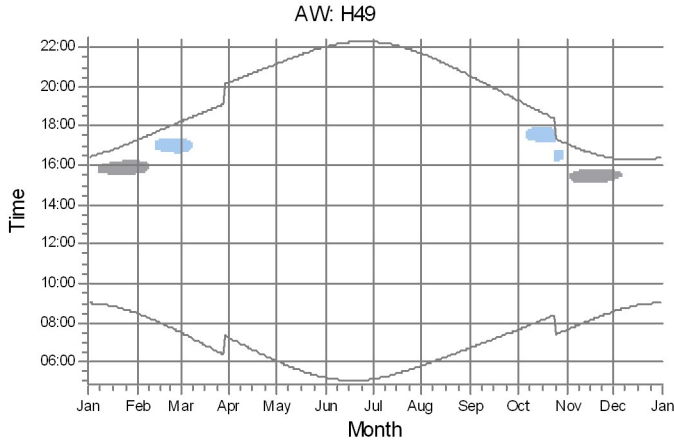


### WTGs

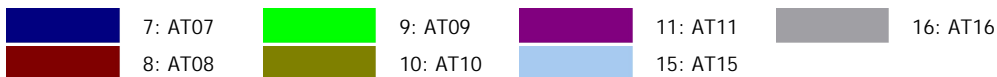
	2: AT02		7: AT07		10: AT10		16: AT16
	3: AT03		8: AT08		11: AT11		
	4: AT04		9: AT09		15: AT15		

## SHADOW - Calendar, graphical

Calculation: Tirawley Shadow Flicker Worst Case

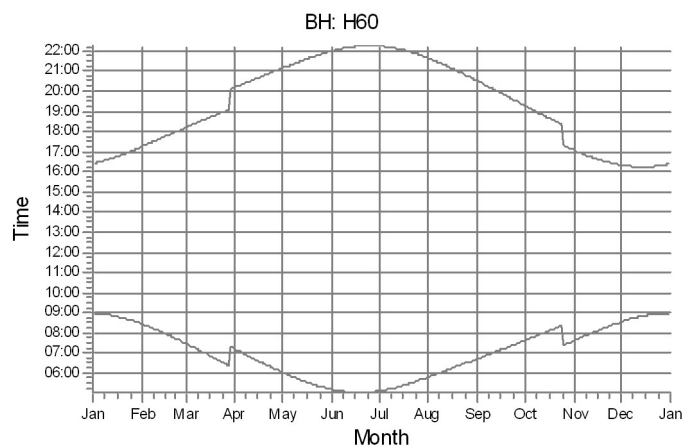
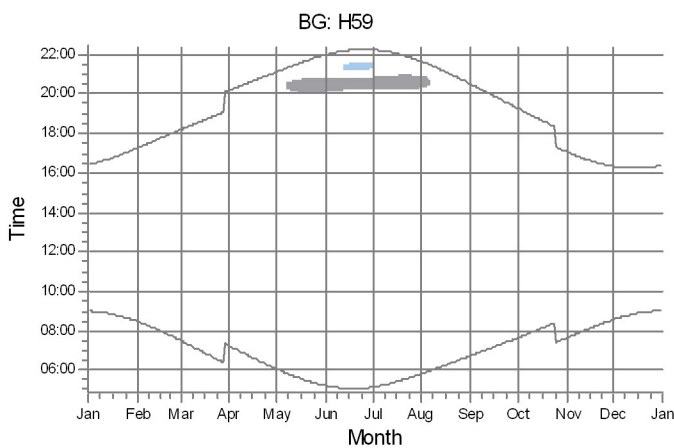
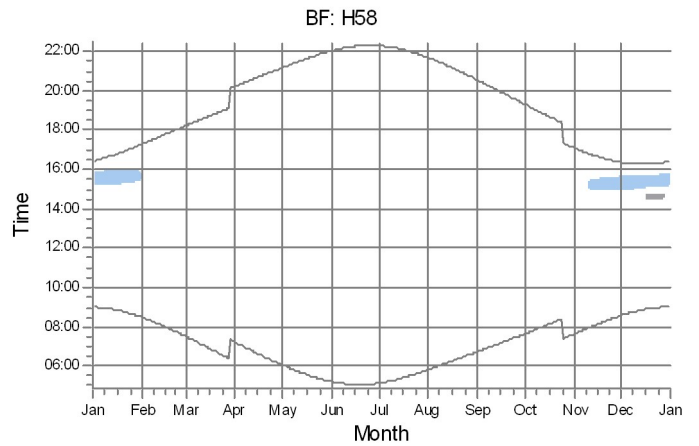
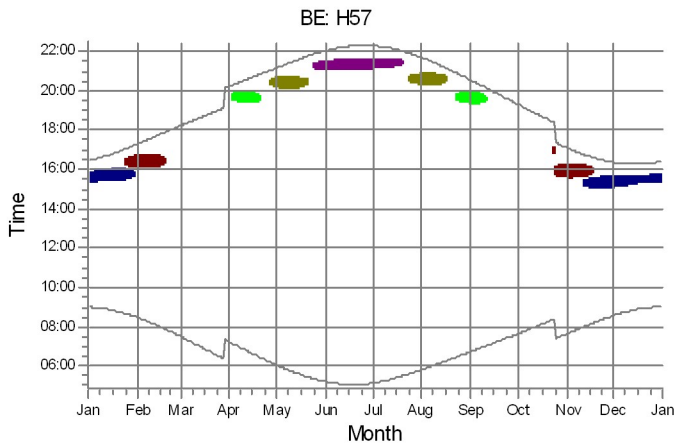
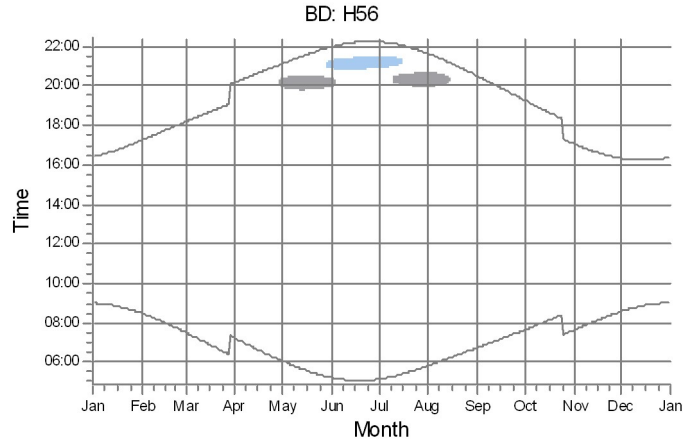
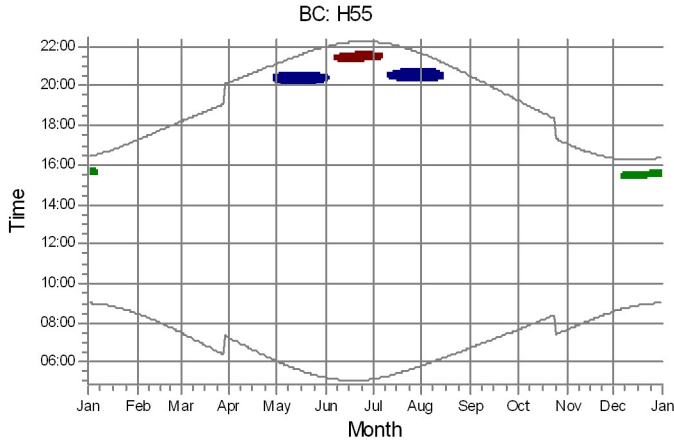


WTGs



## SHADOW - Calendar, graphical

Calculation: Tirawley Shadow Flicker Worst Case

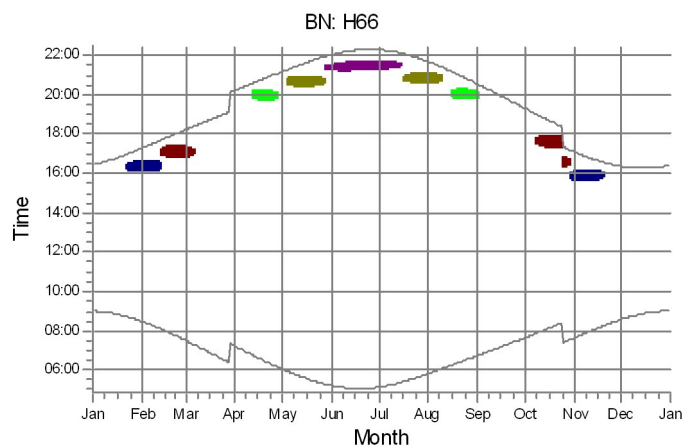
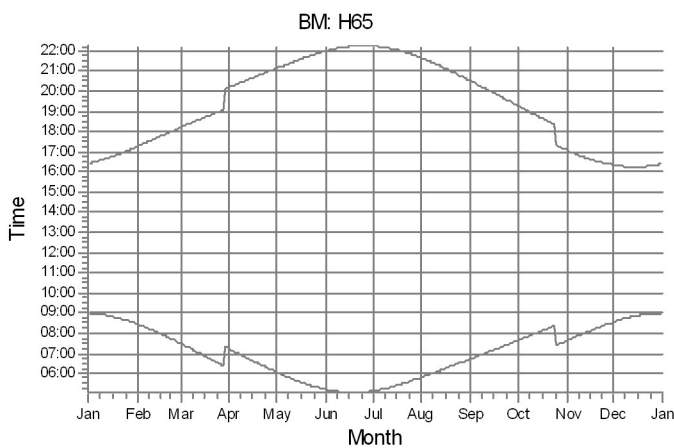
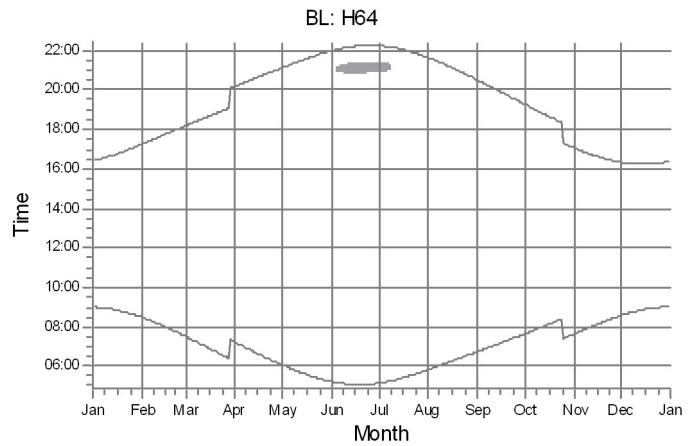
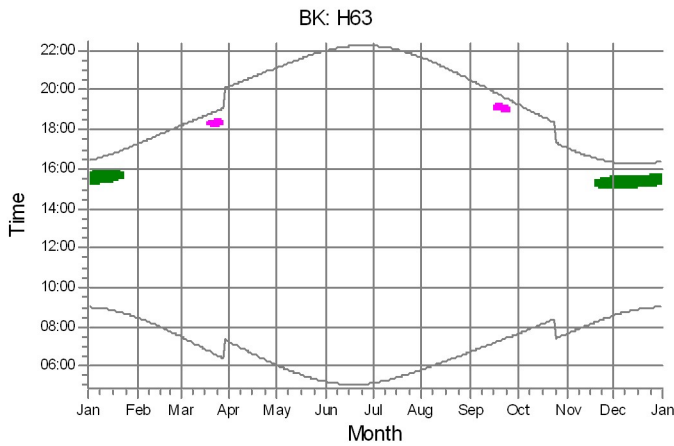
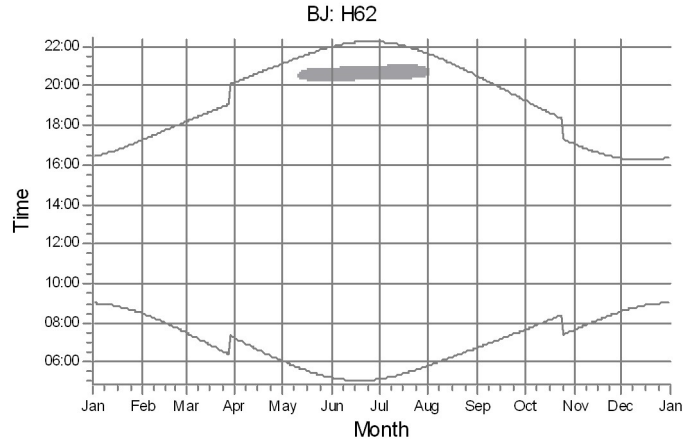
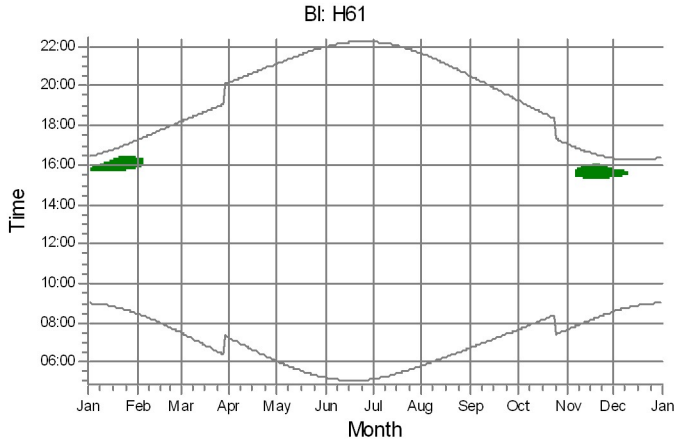


### WTGs









 1: AT01	 8: AT08	 10: AT10	 15: AT15
 7: AT07	 9: AT09	 11: AT11	 16: AT16

## SHADOW - Calendar, graphical

Calculation: Tirawley Shadow Flicker Worst Case

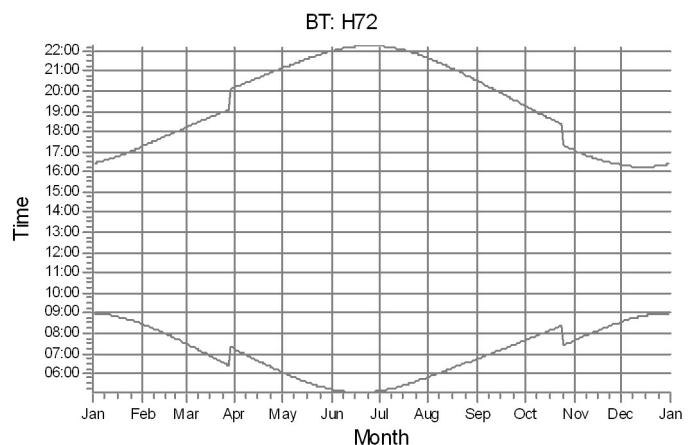
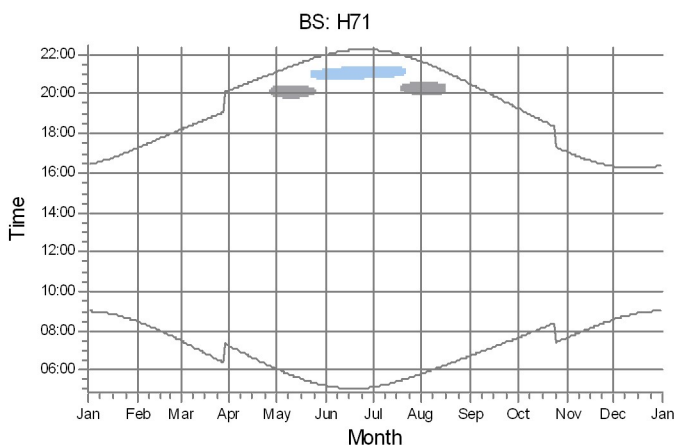
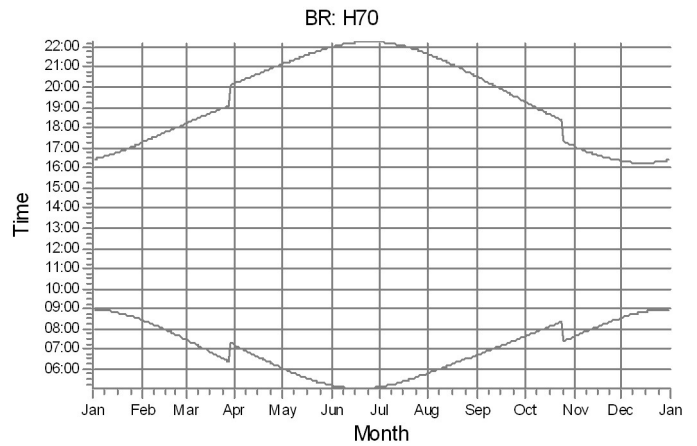
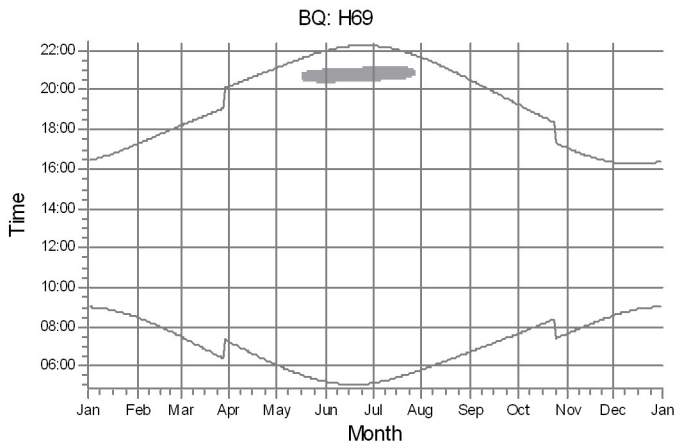
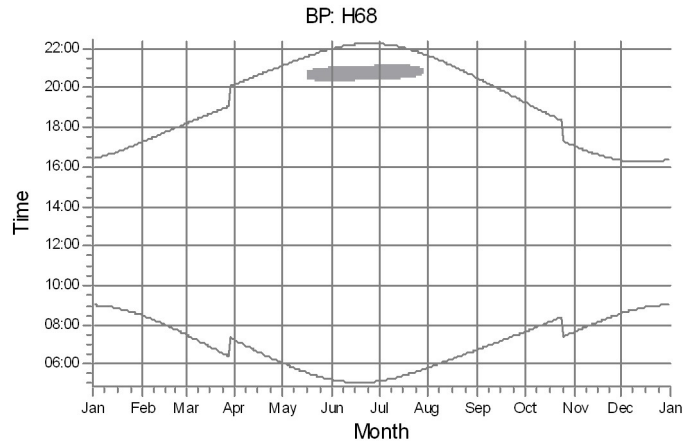
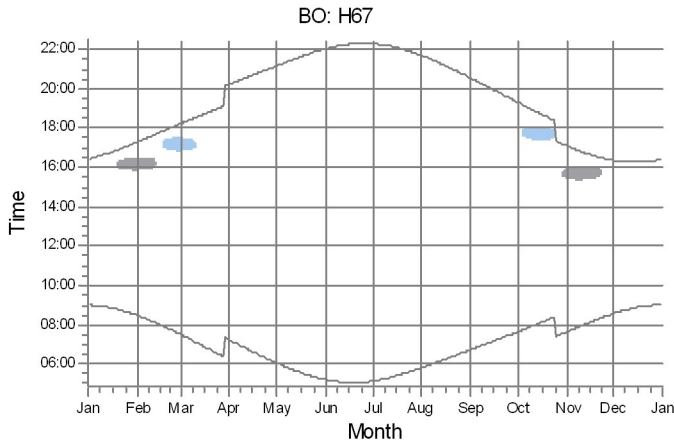


### WTGs

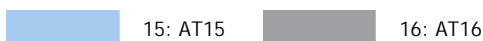
	1: AT01		7: AT07		9: AT09		11: AT11
	5: AT05		8: AT08		10: AT10		16: AT16

## SHADOW - Calendar, graphical

Calculation: Tirawley Shadow Flicker Worst Case

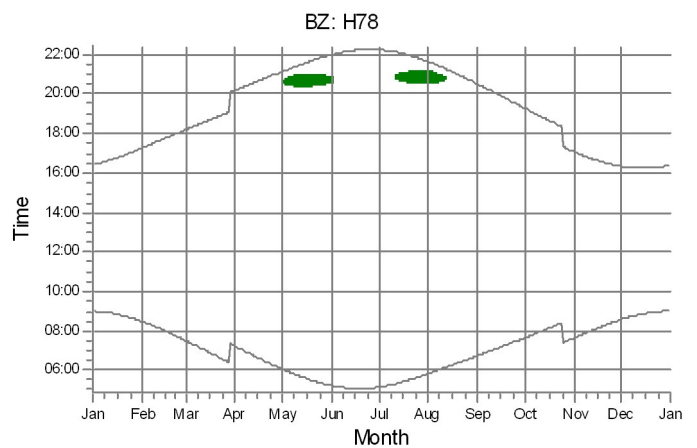
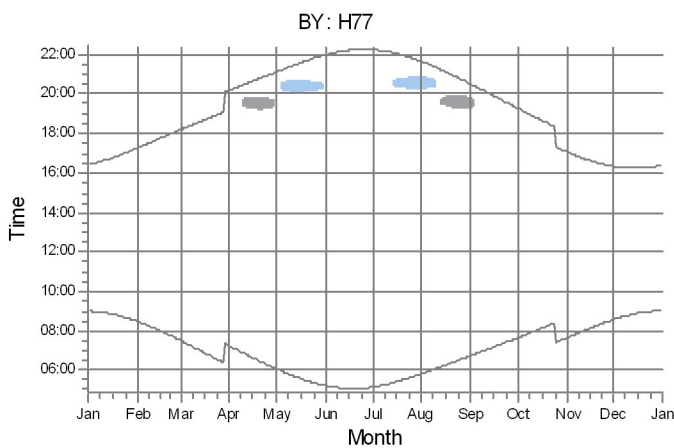
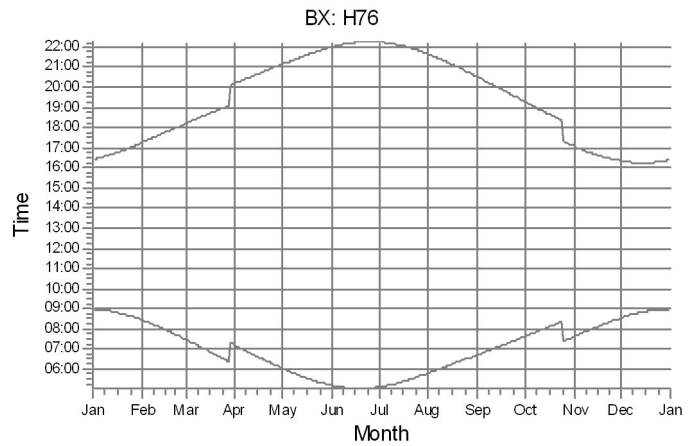
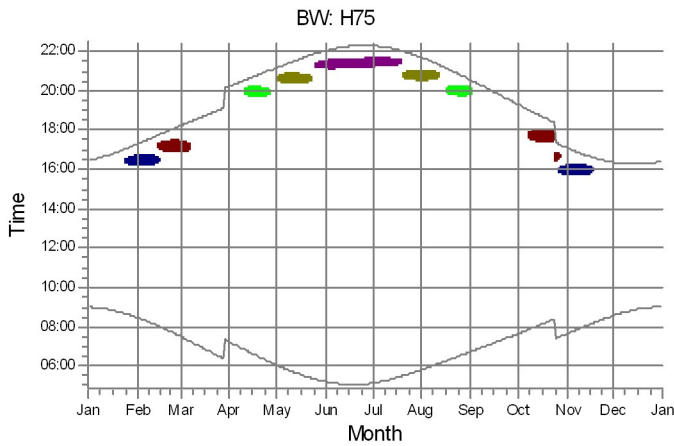
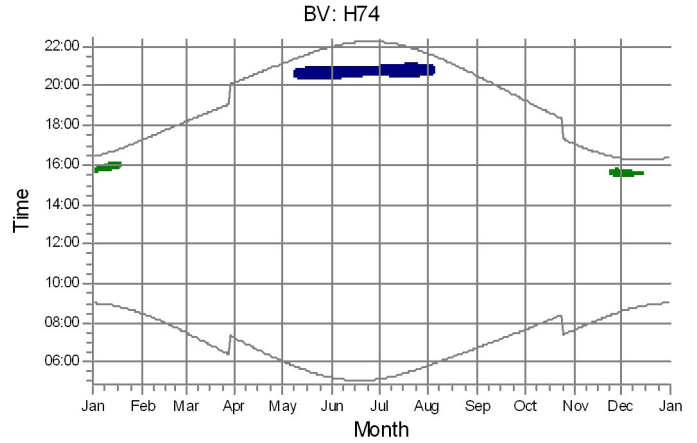
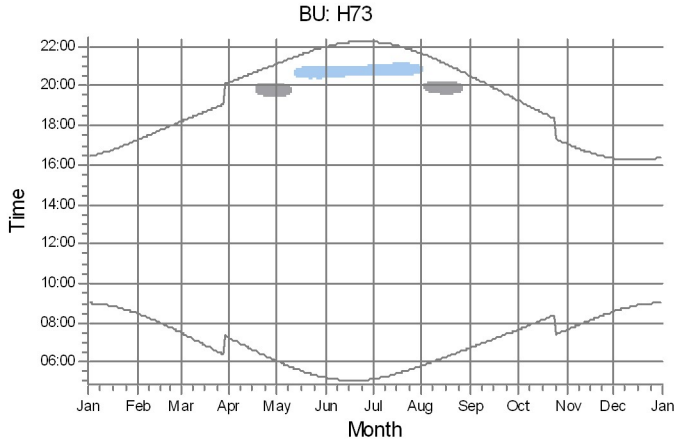


WTGs



## SHADOW - Calendar, graphical

Calculation: Tirawley Shadow Flicker Worst Case



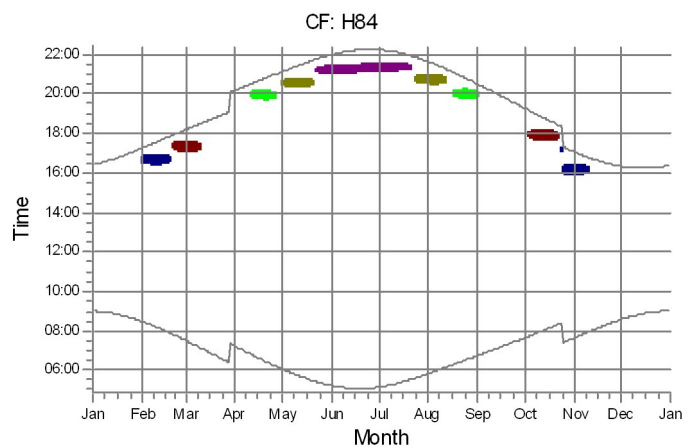
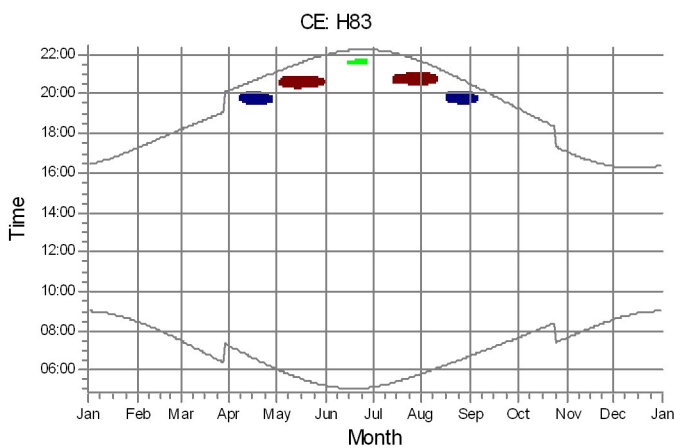
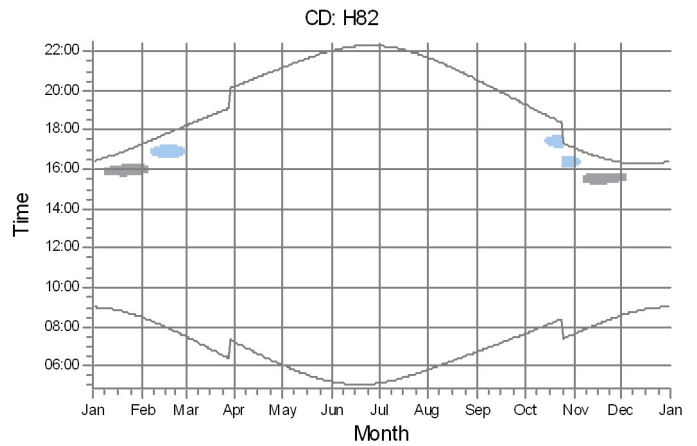
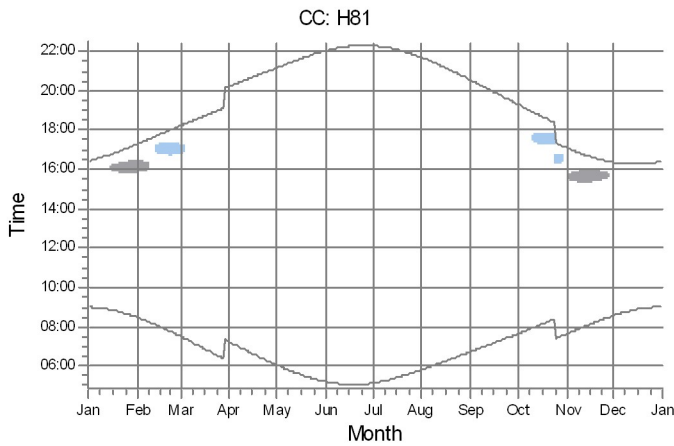
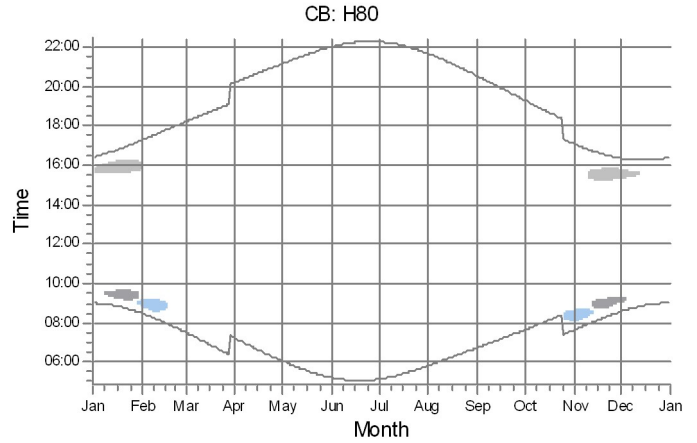
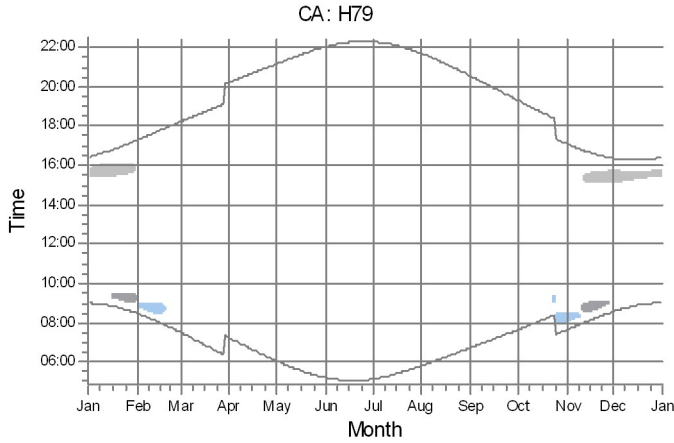
### WTGs

 1: AT01	 8: AT08	 10: AT10	 15: AT15
 7: AT07	 9: AT09	 11: AT11	 16: AT16




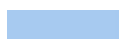






## SHADOW - Calendar, graphical

Calculation: Tirawley Shadow Flicker Worst Case

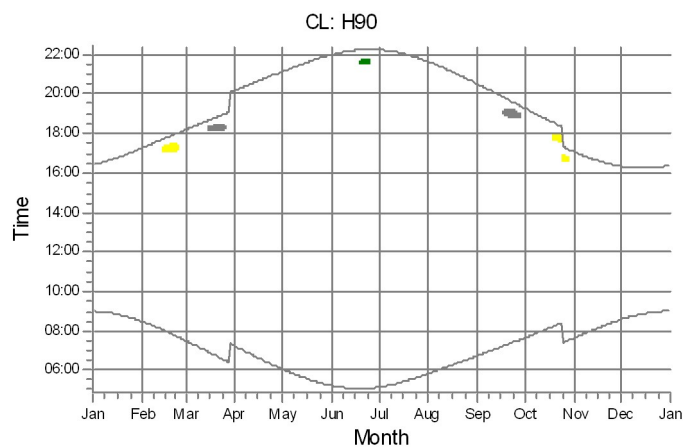
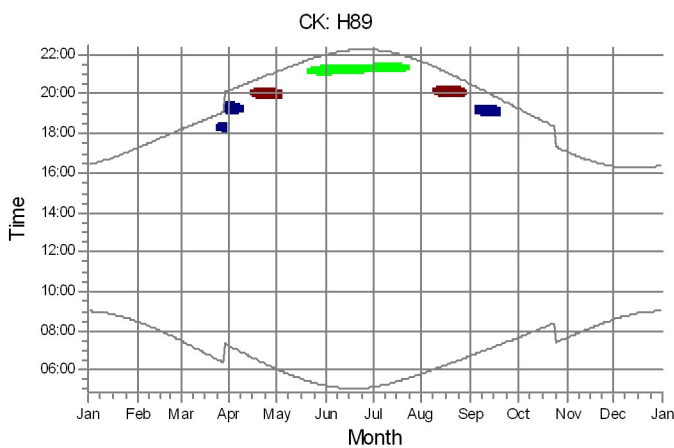
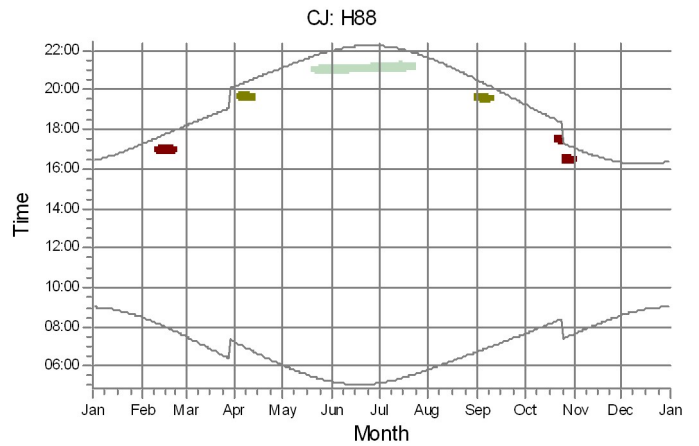
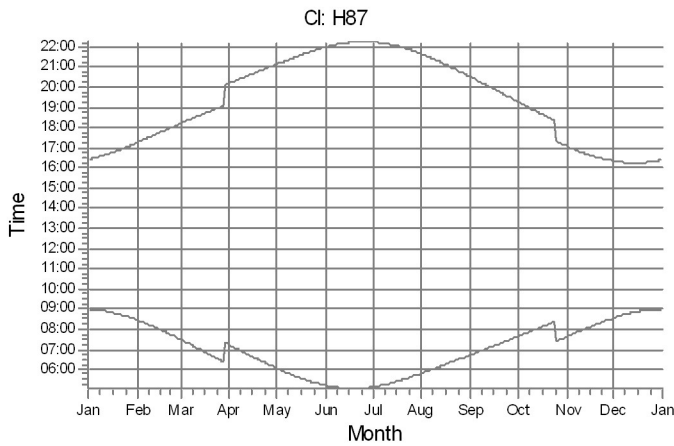
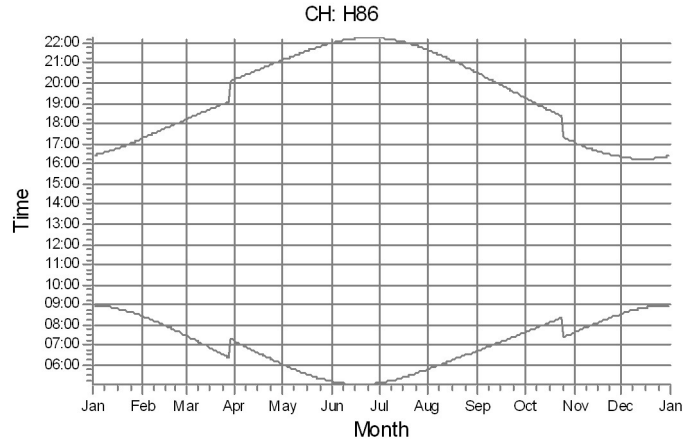
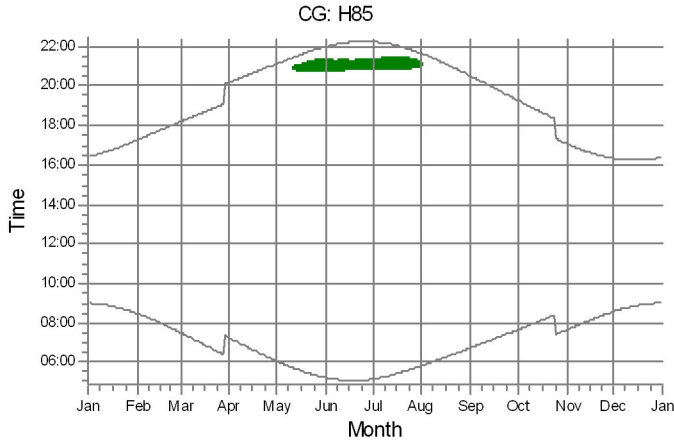


### WTGs









 7: AT07	 9: AT09	 11: AT11	 15: AT15
 8: AT08	 10: AT10	 12: AT12	 16: AT16

## SHADOW - Calendar, graphical

Calculation: Tirawley Shadow Flicker Worst Case

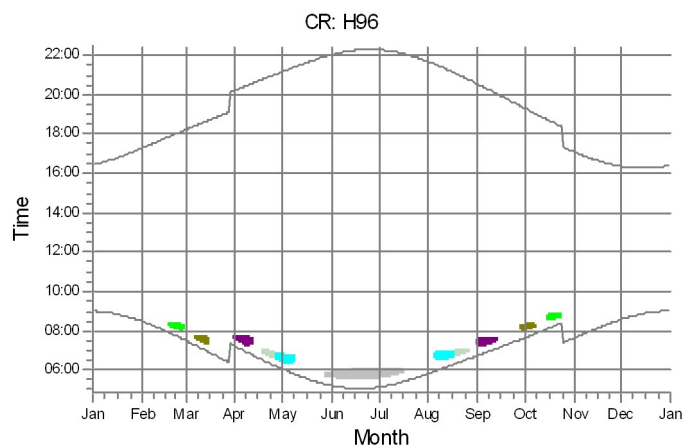
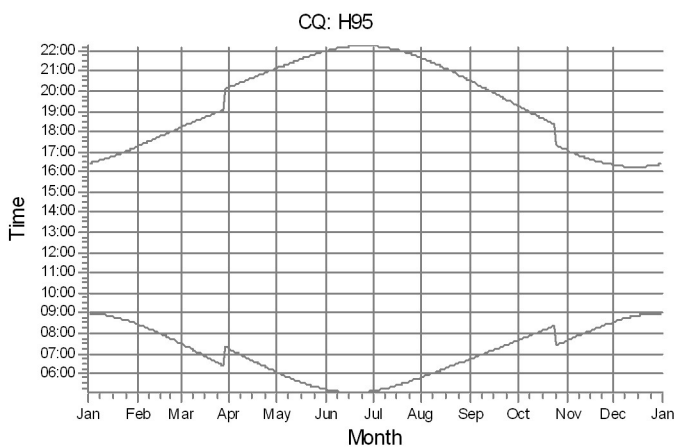
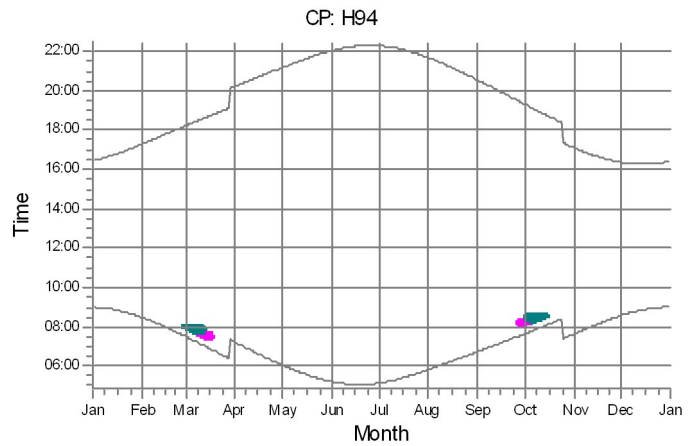
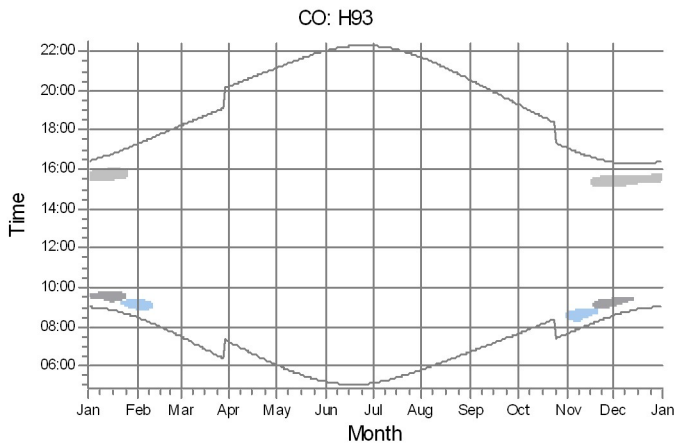
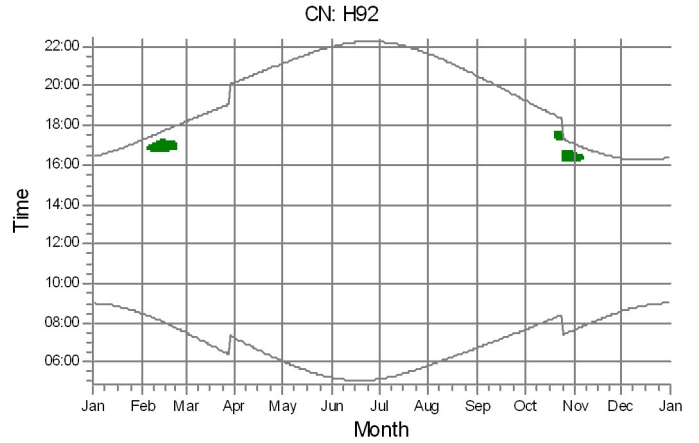
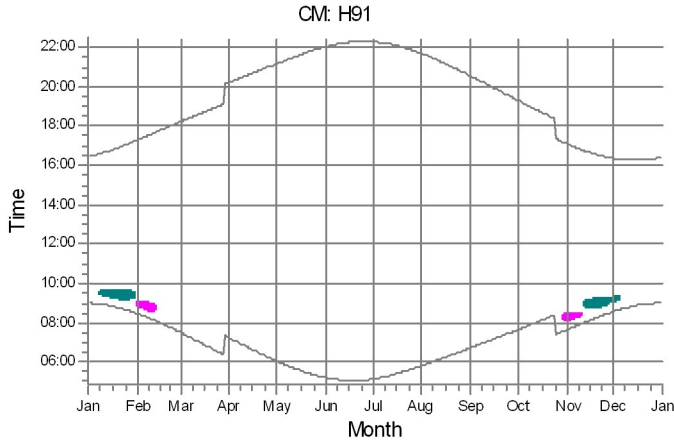


### WTGs




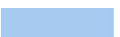







	1: AT01		4: AT04		8: AT08		10: AT10
	2: AT02		7: AT07		9: AT09		14: AT14

## SHADOW - Calendar, graphical

Calculation: Tirawley Shadow Flicker Worst Case

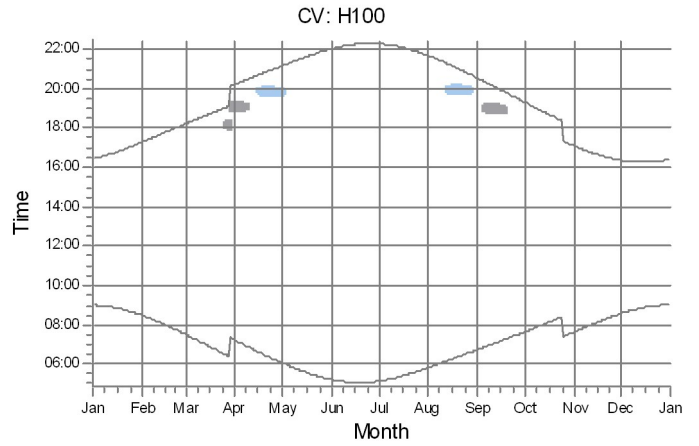
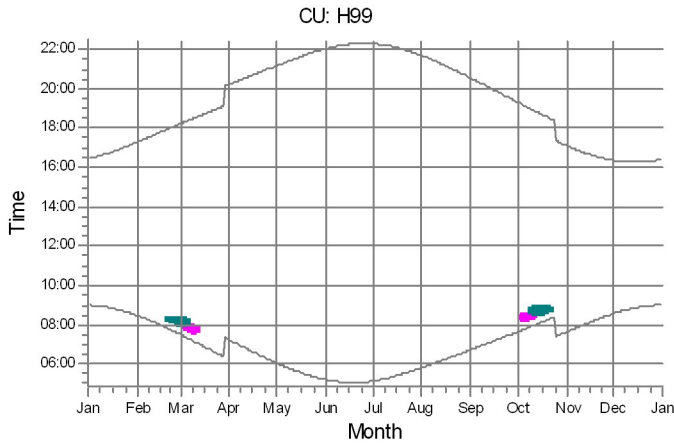
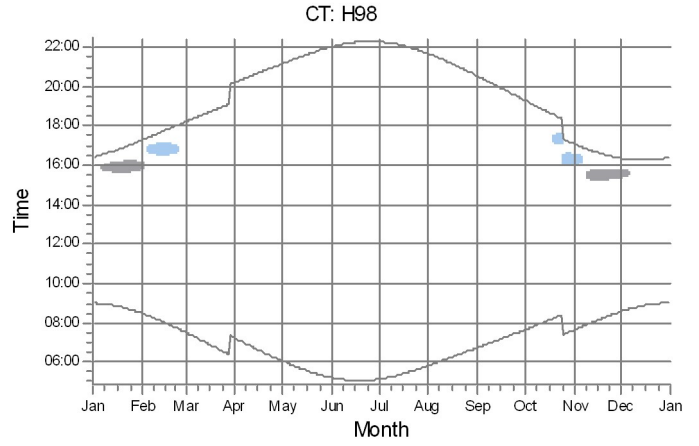
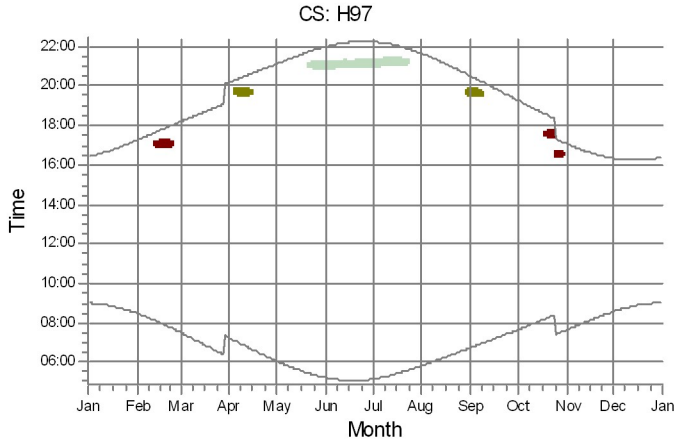


### WTGs

	1: AT01		9: AT09		12: AT12		15: AT15
	5: AT05		10: AT10		13: AT13		16: AT16
	6: AT06		11: AT11		14: AT14		

## SHADOW - Calendar, graphical

Calculation: Tirawley Shadow Flicker Worst Case



### WTGs

	5: AT05		8: AT08		14: AT14		16: AT16
	6: AT06		10: AT10		15: AT15		

### SHADOW - Calendar per WTG

Calculation: Tirawley Shadow Flicker Worst Case WTG: 1 - AT01  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January		February		March		April		May		June	
1	08:58	15:17-15:45/28	08:27	15:57-16:17/20	07:29	07:12	08:04-08:21/17	06:02	20:07-20:38/31	05:12	20:06-21:15/69	
	16:24		17:16		18:13		20:12		21:09		22:00	
2	08:58	15:18-15:47/29	08:25	16:00-16:16/16	07:26	07:10	08:09-08:16/7	06:00	20:06-20:40/34	05:11	20:06-21:14/68	
	16:25		17:18		18:15		20:14		21:11		22:01	
3	08:58	15:18-15:48/30	08:24	16:03-16:14/11	07:24	07:08		05:58	20:05-20:41/36	05:10	20:07-21:14/67	
	16:26		17:20		18:17		20:16		21:12		22:02	
4	08:58	15:19-15:49/30	08:22		07:22	07:05		05:56	20:04-20:43/39	05:09	20:08-21:15/67	
	16:27		17:22		18:19		20:18		21:14		22:03	
5	08:57	15:19-15:50/31	08:20	16:51-16:53/2	07:19	07:03	07:27-07:29/2	05:54	20:04-20:46/42	05:08	20:49-21:14/25	
	16:29		17:24		18:21		20:20		21:16		22:04	20:08-20:48/40
6	08:57	15:20-15:52/32	08:18	16:50-16:55/5	07:17	07:00	07:24-07:28/4	05:52	20:03-20:47/44	05:08	20:49-21:14/25	
	16:30		17:26		18:23		20:22		21:18		22:06	20:08-20:48/40
7	08:56	15:21-15:54/33	08:16	16:49-16:58/9	07:14	06:58	07:22-07:27/5	05:50	20:02-20:49/47	05:07	20:50-21:14/24	
	16:31		17:28		18:25		20:24		21:20		22:07	20:09-20:48/39
8	08:56	15:21-15:55/34	08:14	16:47-16:59/12	07:12	06:55	07:20-07:26/6	05:48	20:02-20:50/48	05:06	20:50-21:14/24	
	16:33		17:30		18:27		20:26		21:22		22:08	20:10-20:48/38
9	08:55	15:21-15:56/35	08:12	16:46-17:01/15	07:09	06:53	07:17-07:23/6	05:46	20:01-20:52/51	05:06	20:51-21:14/23	
	16:34		17:32		18:29		20:27		21:23		22:08	20:11-20:48/37
10	08:55	15:23-15:59/36	08:10	16:46-17:04/18	07:07	06:50		05:44	20:02-20:54/52	05:05	20:51-21:15/24	
	16:36		17:34		18:30		20:29		21:25		22:09	20:11-20:48/37
11	08:54	15:23-16:01/38	08:08	16:46-17:06/20	07:05	06:48	07:22-07:30/1	05:42	20:01-20:55/54	05:05	20:51-21:14/23	
	16:37		17:36		18:32		20:31		21:27		22:10	20:11-20:48/37
12	08:53	15:24-16:02/38	08:06	16:46-17:08/22	07:02	06:46	07:26-07:32/6	05:41	20:00-20:57/57	05:04	20:52-21:14/22	
	16:39		17:39		18:34		20:33		21:29		22:11	20:12-20:48/36
13	08:52	15:25-16:04/39	08:04	16:46-17:11/25	07:00	06:43	07:24-07:33/9	05:39	20:01-20:59/58	05:04	20:52-21:15/23	
	16:41		17:41		18:36		20:35		21:31		22:12	20:13-20:48/35
14	08:51	15:25-16:05/40	08:02	16:46-17:12/26	06:57	06:41	07:21-07:34/13	05:37	20:01-21:00/59	05:04	20:53-21:15/22	
	16:42		17:43		18:38		20:37		21:32		22:12	20:14-20:48/34
15	08:50	15:26-16:07/41	08:00	16:46-17:11/25	06:55	06:38	07:19-07:35/16	05:35	20:00-21:01/61	05:03	20:53-21:14/21	
	16:44		17:45		18:40		20:39		21:34		22:13	20:13-20:47/34
16	08:49	15:27-16:10/43	07:58	16:46-17:10/24	06:52	06:36	07:16-07:35/19	05:34	20:01-21:03/62	05:03	20:53-21:14/21	
	16:46		17:47		18:42		20:41		21:36		22:13	20:14-20:47/33
17	08:48	15:28-16:12/44	07:56	16:47-17:10/23	06:50	06:34	07:14-07:36/22	05:32	20:00-21:04/64	05:03	20:53-21:14/21	
	16:47		17:49		18:44		20:43		21:37		22:14	20:14-20:47/33
18	08:47	15:30-16:14/44	07:54	16:48-17:09/21	06:47	06:31	07:11-07:36/25	05:30	20:01-21:06/65	05:03	20:54-21:14/20	
	16:49		17:51		18:46		20:44		21:39		22:14	20:14-20:47/33
19	08:46	15:31-16:15/44	07:51	16:49-17:08/19	06:45	06:29	07:09-07:36/27	05:29	20:01-21:08/67	05:03	21:37-21:38/1	20:15-20:48/33
	16:51		17:53		18:48		20:46		21:41		22:15	20:54-21:14/20
20	08:45	15:33-16:18/45	07:49	16:51-17:06/15	06:42	06:27	07:06-07:36/30	05:27	20:01-21:09/68	05:03	21:38-21:39/1	20:16-20:49/33
	16:53		17:55		18:50		20:48		21:42		22:15	20:55-21:15/20
21	08:44	15:34-16:19/45	07:47	16:53-17:04/11	06:40	06:24	07:04-07:36/32	05:26	20:02-21:11/69	05:03	21:38-21:39/1	20:16-20:49/33
	16:55		17:57		18:52		20:50		21:44		22:15	20:55-21:15/20
22	08:42	15:38-15:47/9	07:45		06:37	07:01-07:35/34	06:22	05:24	20:02-21:12/70	05:03	21:38-21:39/1	20:16-20:49/33
	16:57	15:49-16:21/32	17:59		18:53		20:52		21:46		22:16	20:55-21:15/20
23	08:41	15:49-16:21/32	07:43		06:35	06:59-07:35/36	06:20	05:23	20:02-21:13/71	05:04	21:38-21:39/1	20:16-20:49/33
	16:58		18:01		18:55		20:54		21:47		22:16	20:55-21:15/20
24	08:40	15:50-16:22/32	07:40		06:32	06:56-07:34/38	06:18	05:21	20:02-21:14/72	05:04	20:56-21:16/20	
	17:00		18:03		18:57		20:56		21:49		22:16	20:16-20:49/33
25	08:38	15:51-16:21/30	07:38		06:30	06:54-07:33/39	06:15	05:20	20:03-21:14/71	05:04	20:56-21:16/20	
	17:02		18:05		18:59		20:58		21:50		22:16	20:16-20:49/33
26	08:37	15:51-16:21/30	07:36		06:27	06:51-07:32/41	06:13	05:19	20:03-21:15/72	05:05	20:55-21:16/21	
	17:04		18:07		19:01		20:59		21:52		22:16	20:16-20:49/33
27	08:35	15:52-16:21/29	07:33		06:25	06:49-07:31/42	06:11	05:17	20:04-21:15/71	05:05	20:56-21:17/21	
	17:06		18:09		19:03		21:01		21:53		22:16	20:16-20:50/34
28	08:34	15:53-16:21/28	07:31		06:22	06:46-07:29/43	06:09	05:16	20:04-21:15/71	05:06	20:55-21:17/22	
	17:08		18:11		19:05		21:03		21:54		22:16	20:16-20:50/34
29	08:32	15:54-16:20/26			07:20	07:45-08:28/43	06:07	05:15	20:05-21:15/70	05:06	20:56-21:18/22	
	17:10				20:07		21:05		21:56		22:15	20:16-20:51/35
30	08:30	15:55-16:19/24			07:17	07:46-08:26/40	06:04	05:14	20:05-21:15/70	05:07	20:56-21:18/22	
	17:12				20:09		21:07		21:57		22:15	20:16-20:52/36
31	08:29	15:56-16:18/22			07:15	08:02-08:24/22		05:13	20:06-21:15/69			
	17:14				20:10	07:48-07:58/10		21:59				
Potential sun hours	248		272		367		421		496		513	
Sum of minutes with flicker	1073		339		588		167		1815		1751	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker

### SHADOW - Calendar per WTG

Calculation: Tirawley Shadow Flicker Worst Case WTG: 1 - AT01

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	July		August		September		October		November		December	
1	05:08	20:55-21:18/23	05:48	20:11-21:06/55	06:44		07:38	08:05-08:12/7	07:37	16:16-16:33/17	08:33	15:06-15:43/37
	22:15	20:16-20:52/36	21:39		20:31		19:16		17:05		16:19	
2	05:08	20:56-21:19/23	05:50	20:11-21:05/54	06:46		07:40	08:07-08:10/3	07:39	16:16-16:30/14	08:35	15:05-15:41/36
	22:14	20:16-20:52/36	21:37		20:28		19:14		17:02		16:18	
3	05:09	20:56-21:19/23	05:52	20:11-21:03/52	06:47	07:15-07:21/6	07:42		07:41	16:17-16:28/11	08:36	15:05-15:41/36
	22:14	20:16-20:53/37	21:35		20:26		19:11		17:00		16:18	
4	05:10	20:56-21:20/24	05:54	20:12-21:01/49	06:49	07:17-07:23/6	07:44		07:43	16:18-16:27/9	08:38	15:06-15:40/34
	22:13	20:16-20:54/38	21:33		20:24		19:09		16:59		16:17	
5	05:11	20:55-21:20/25	05:55	20:12-21:00/48	06:51	07:18-07:23/5	07:45		07:45	16:19-16:25/6	08:39	15:06-15:39/33
	22:13	20:15-20:53/38	21:31		20:21		19:06		16:57		16:16	
6	05:12	20:55-21:20/25	05:57	20:12-20:57/45	06:53	07:20-07:24/4	07:47		07:47	16:21-16:22/1	08:41	15:06-15:39/33
	22:12	20:15-20:54/39	21:29		20:19		19:04		16:55		16:16	
7	05:13	20:15-21:21/66	05:59	20:13-20:56/43	06:55	07:22-07:24/2	07:49		07:49		08:42	15:06-15:38/32
	22:12		21:27		20:16		19:01		16:53		16:15	
8	05:14	20:15-21:21/66	06:01	20:14-20:55/41	06:56		07:51		07:51	15:32-15:44/12	08:43	15:07-15:38/31
	22:11		21:25		20:14		18:59		16:51		16:15	
9	05:15	20:14-21:21/67	06:02	20:13-20:52/39	06:58		07:53		07:53	15:30-15:46/16	08:45	15:07-15:37/30
	22:10		21:23		20:11		18:56		16:49		16:15	
10	05:16	20:14-21:22/68	06:04	20:14-20:50/36	07:00	08:03-08:08/5	07:55		07:55	15:29-15:49/20	08:46	15:07-15:36/29
	22:09		21:21		20:09		18:54		16:47		16:14	
11	05:17	20:14-21:22/68	06:06	20:16-20:49/33	07:02	07:58-08:13/15	07:57		07:57	15:27-15:50/23	08:47	15:07-15:35/28
	22:08		21:19		20:06		18:52		16:46		16:14	
12	05:18	20:13-21:22/69	06:08	20:16-20:46/30	07:04	07:55-08:16/21	07:59		07:59	15:26-15:51/25	08:48	15:09-15:36/27
	22:07		21:17		20:04	07:41-07:50/9	18:49		16:44		16:14	
13	05:20	20:14-21:23/69	06:09	20:17-20:44/27	07:05	07:52-08:17/25	08:00		08:01	15:25-15:52/27	08:49	15:09-15:36/27
	22:06		21:15		20:01	07:37-07:51/14	18:47		16:42		16:14	
14	05:21	20:14-21:23/69	06:11	20:18-20:43/25	07:07	07:35-08:18/43	08:02		08:03	15:25-15:52/27	08:50	15:09-15:35/26
	22:05		21:13		19:59		18:44		16:41		16:14	
15	05:22	20:13-21:23/70	06:13	20:19-20:40/21	07:09	07:36-08:20/44	08:04		08:05	15:24-15:53/29	08:51	15:10-15:35/25
	22:04		21:10		19:56		18:42		16:39		16:14	
16	05:24	20:13-21:23/70	06:15	20:21-20:38/17	07:11	07:38-08:21/43	08:06		08:07	15:24-15:54/30	08:52	15:10-15:35/25
	22:03		21:08		19:54		18:40		16:37		16:14	
17	05:25	20:13-21:23/70	06:17	20:23-20:36/13	07:13	07:39-08:20/41	08:08		08:09	15:24-15:54/30	08:53	15:10-15:35/25
	22:02		21:06		19:51		18:37		16:36		16:14	
18	05:26	20:13-21:24/71	06:18	20:25-20:34/9	07:14	07:41-08:21/40	08:10		08:11	15:24-15:56/32	08:54	15:11-15:35/24
	22:00		21:04		19:49		18:35		16:34		16:14	
19	05:28	20:12-21:24/72	06:20	20:31-20:32/1	07:16	07:43-08:21/38	08:12		08:12	15:24-15:56/32	08:54	15:12-15:36/24
	21:59		21:01		19:46		18:33		16:33		16:14	
20	05:29	20:12-21:23/71	06:22		07:18	07:45-08:21/36	08:14	17:27-17:32/5	08:14	15:13-15:22/9	08:55	15:12-15:36/24
	21:58		20:59		19:44		18:31		16:31	15:24-15:56/32	16:15	
21	05:31	20:12-21:23/71	06:24		07:20	07:46-08:21/35	08:16	17:23-17:35/12	08:16	15:10-15:56/46	08:56	15:12-15:36/24
	21:56		20:57		19:41		18:28		16:30		16:15	
22	05:32	20:11-21:21/70	06:26		07:22	07:48-08:20/32	08:18	17:20-17:37/17	08:18	15:09-15:54/45	08:56	15:13-15:37/24
	21:55		20:55		19:39		18:26		16:29		16:16	
23	05:34	20:12-21:20/68	06:27		07:23	07:50-08:20/30	08:20	17:19-17:38/19	08:20	15:08-15:53/45	08:57	15:13-15:37/24
	21:54		20:52		19:36		18:24		16:28		16:16	
24	05:35	20:11-21:19/68	06:29		07:25	07:52-08:20/28	08:22	17:17-17:39/22	08:22	15:07-15:51/44	08:57	15:13-15:37/24
	21:52		20:50		19:34		18:22		16:26		16:17	
25	05:37	20:12-21:18/66	06:31		07:27	07:54-08:19/25	07:24	16:16-16:40/24	08:23	15:07-15:50/43	08:58	15:15-15:39/24
	21:50		20:48		19:31		17:19		16:25		16:17	
26	05:38	20:11-21:16/65	06:33		07:29	07:55-08:18/23	07:26	16:16-16:40/24	08:25	15:06-15:49/43	08:58	15:15-15:39/24
	21:49		20:45		19:29		17:17		16:24		16:18	
27	05:40	20:12-21:15/63	06:35		07:31	07:57-08:17/20	07:28	16:15-16:40/25	08:27	15:05-15:47/42	08:58	15:15-15:40/25
	21:47		20:43		19:26		17:15		16:23		16:19	
28	05:42	20:11-21:13/62	06:37		07:33	07:59-08:16/17	07:29	16:16-16:41/25	08:28	15:05-15:45/40	08:58	15:16-15:41/25
	21:46		20:41		19:24		17:13		16:22		16:20	
29	05:43	20:11-21:12/61	06:38		07:34	08:01-08:15/14	07:31	16:15-16:40/25	08:30	15:05-15:45/40	08:58	15:16-15:42/26
	21:44		20:38		19:21		17:11		16:21		16:21	
30	05:45	20:11-21:10/59	06:40		07:36	08:03-08:14/11	07:33	16:15-16:37/22	08:32	15:05-15:44/39	08:58	15:17-15:43/26
	21:42		20:36		19:19		17:09		16:20		16:22	
31	05:47	20:11-21:08/57	06:42				07:35	16:15-16:35/20			08:58	15:17-15:44/27
	21:40		20:33				17:07				16:23	
Potential sun hours	515		461		382		328		257		231	
Sum of minutes with flicker	2043		638		632		250		829		859	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker



## SHADOW - Calendar per WTG

Calculation: Tirawley Shadow Flicker Worst Case WTG: 2 - AT02

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June
1	08:58 16:24	08:27 15:58-16:43/45 17:16	07:29 17:00-17:38/38 18:13	07:13 20:12	06:02 21:09	05:12 22:00
2	08:58 16:25	08:25 15:58-16:46/48 17:18	07:26 16:59-17:37/38 18:15	07:10 20:14	06:00 21:11	05:11 22:01
3	08:58 16:26	08:24 15:58-16:48/50 17:20	07:24 16:59-17:37/38 18:17	07:08 20:16	05:58 21:12	05:10 22:02
4	08:58 16:28	08:22 15:58-16:48/50 17:22	07:22 16:59-17:36/37 18:19	07:05 20:18	05:56 21:14	05:09 22:03
5	08:57 16:29	08:20 15:57-16:48/51 17:24	07:19 16:59-17:36/37 18:21	07:03 20:20	05:54 21:16	05:08 22:04
6	08:57 16:30	08:18 15:57-16:48/51 17:26	07:17 16:59-17:35/36 18:23	07:00 20:22	05:52 21:18	05:08 22:06
7	08:56 16:32	08:16 15:57-16:48/51 17:28	07:14 17:00-17:34/34 18:25	06:58 20:24	05:50 21:20	05:07 22:07
8	08:56 16:33	08:14 15:57-16:46/49 17:30	07:12 17:00-17:33/33 18:27	06:55 20:26	05:48 21:22	05:06 22:07
9	08:55 16:34	08:12 15:57-16:46/49 17:32	07:10 17:02-17:32/30 18:29	06:53 20:27	05:46 21:23	05:06 22:08
10	08:55 16:36	08:10 15:57-16:45/48 17:35	07:07 17:03-17:30/27 18:31	06:50 20:29	05:44 21:25	05:05 22:09
11	08:54 16:38	08:08 15:58-16:44/46 17:37	07:05 17:05-17:28/23 18:32	06:48 20:31	05:42 21:27	05:05 22:10
12	08:53 16:39	08:06 15:58-16:43/45 17:39	07:02 17:06-17:25/19 18:34	06:46 20:33	05:41 21:29	05:04 22:11
13	08:52 16:41	08:04 15:59-16:43/44 17:41	07:00 17:10-17:22/12 18:36	06:43 20:35	05:39 21:31	05:04 22:12
14	08:51 16:42	08:02 15:59-16:43/44 17:43	06:57 18:38	06:41 20:37	05:37 21:32	05:04 22:12
15	08:50 16:44	08:00 17:11-17:15/4 17:45	06:55 18:40	06:38 20:39	05:35 21:34	05:03 22:13
16	08:49 16:46	07:58 17:10-17:17/7 17:47	06:52 18:42	06:36 20:41	05:34 21:36	05:03 22:13
17	08:48 16:48	07:56 17:10-17:20/10 17:49	06:50 18:44	06:34 20:43	05:32 21:37	05:03 22:14
18	08:47 16:49	07:54 17:10-17:22/12 17:51	06:47 18:46	06:31 20:44	05:30 21:39	05:03 22:14
19	08:46 16:10-16:16/6 16:51	07:51 17:08-17:24/16 17:53	06:45 18:48	06:29 20:46	05:29 21:41	05:03 22:15
20	08:45 16:08-16:18/10 16:53	07:49 17:06-17:26/20 17:55	06:42 18:50	06:27 20:48	05:27 21:42	05:03 22:15
21	08:44 16:06-16:20/14 16:55	07:47 17:05-17:29/24 17:57	06:40 18:52	06:24 20:50	05:26 21:44	05:03 22:15
22	08:42 16:05-16:22/17 16:57	07:45 17:03-17:30/27 17:59	06:37 18:53	06:22 20:52	05:24 21:46	05:04 22:16
23	08:41 16:03-16:24/21 16:59	07:43 17:03-17:33/30 18:01	06:35 18:55	06:20 20:54	05:23 21:47	05:04 22:16
24	08:40 16:03-16:27/24 17:00	07:40 17:02-17:35/33 18:03	06:32 18:57	06:18 20:56	05:21 21:49	05:04 22:16
25	08:38 16:02-16:28/26 17:02	07:38 17:01-17:37/36 18:05	06:30 18:59	06:15 20:58	05:20 21:50	05:04 22:16
26	08:37 16:01-16:30/29 17:04	07:36 17:00-17:37/37 18:07	06:27 19:01	06:13 20:59	05:19 21:52	05:05 22:16
27	08:35 16:01-16:33/32 17:06	07:33 16:59-17:37/38 18:09	06:25 19:03	06:11 21:01	05:17 21:53	05:05 22:16
28	08:34 16:00-16:35/35 17:08	07:31 16:59-17:38/39 18:11	06:22 19:05	06:09 21:03	05:16 21:54	05:06 22:16
29	08:32 15:59-16:37/38 17:10		07:20 20:07	06:07 21:05	05:15 21:56	05:06 22:15
30	08:30 15:59-16:39/40 17:12		07:18 20:09	06:04 21:07	05:14 21:57	05:07 22:15
31	08:29 15:58-16:41/43 17:14		07:15 20:10		05:13 21:58	
Potential sun hours	248	272	367	421	496	513
Sum of minutes with flicker	335	1313	402	0	0	0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker

### SHADOW - Calendar per WTG

Calculation: Tirawley Shadow Flicker Worst Case WTG: 2 - AT02

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	July	August	September	October	November	December
1	05:08 22:15	05:48 21:39	06:44 20:31	07:38 19:16	17:48-18:04/16 17:05	07:37 16:19
2	05:08 22:14	05:50 21:37	06:46 20:28	07:40 19:14	17:44-18:05/21 17:03	07:39 16:19
3	05:09 22:14	05:52 21:35	06:47 20:26	07:42 19:11	17:41-18:07/26 17:01	07:41 16:18
4	05:10 22:13	05:54 21:33	06:49 20:24	07:44 19:09	17:40-18:08/28 16:59	07:43 16:17
5	05:11 22:13	05:55 21:31	06:51 20:21	07:45 19:06	17:38-18:09/31 16:57	07:45 16:17
6	05:12 22:12	05:57 21:29	06:53 20:19	07:47 19:04	17:37-18:10/33 16:55	07:47 16:16
7	05:13 22:11	05:59 21:27	06:55 20:16	07:49 19:01	17:36-18:11/35 16:53	07:49 16:15
8	05:14 22:11	06:01 21:25	06:56 20:14	07:51 18:59	17:35-18:11/36 16:51	07:51 16:15
9	05:15 22:10	06:02 21:23	06:58 20:11	07:53 18:57	17:34-18:11/37 16:49	07:53 16:15
10	05:16 22:09	06:04 21:21	07:00 20:09	07:55 18:54	17:34-18:11/37 16:47	07:55 16:14
11	05:17 22:08	06:06 21:19	07:02 20:06	07:57 18:52	17:33-18:11/38 16:46	07:57 16:14
12	05:19 22:07	06:08 21:17	07:04 20:04	07:59 18:49	17:33-18:11/38 16:44	07:59 16:14
13	05:20 22:06	06:10 21:15	07:05 20:01	08:00 18:47	17:33-18:11/38 16:42	08:01 16:14
14	05:21 22:05	06:11 21:13	07:07 19:59	08:02 18:45	17:33-18:11/38 16:41	08:03 16:14
15	05:22 22:04	06:13 21:10	07:09 19:56	08:04 18:42	17:33-18:10/37 16:39	08:05 16:14
16	05:24 22:03	06:15 21:08	07:11 19:54	08:06 18:40	17:33-18:09/36 16:37	08:07 16:14
17	05:25 22:02	06:17 21:06	07:13 19:51	08:08 18:38	17:33-18:08/35 16:36	08:09 16:14
18	05:26 22:00	06:19 21:04	07:14 19:49	08:10 18:35	17:34-18:05/31 16:46-16:59/13	08:11 16:34
19	05:28 21:59	06:20 21:01	07:16 19:46	08:12 18:33	17:34-18:03/29 16:42-17:03/21	08:12 16:33
20	05:29 21:58	06:22 20:59	07:18 19:44	08:14 18:31	17:35-18:01/26 16:39-17:05/26	08:14 16:32
21	05:31 21:56	06:24 20:57	07:20 19:41	08:16 18:28	17:36-17:58/22 16:37-17:06/29	08:16 16:30
22	05:32 21:55	06:26 20:55	07:22 19:39	08:18 18:26	17:37-17:56/19 16:35-17:08/33	08:18 16:29
23	05:34 21:54	06:28 20:52	07:23 19:36	08:20 18:24	17:39-17:53/14 16:33-17:09/36	08:20 16:28
24	05:35 21:52	06:29 20:50	07:25 19:34	08:22 18:22	17:40-17:51/11 16:32-17:10/38	08:22 16:26
25	05:37 21:50	06:31 20:48	07:27 19:31	07:24 17:19	16:40-16:48/8 15:30-16:10/40	08:23 16:25
26	05:39 21:49	06:33 20:45	07:29 19:29	07:26 17:17	16:40-16:46/6 15:29-16:11/42	08:25 16:24
27	05:40 21:47	06:35 20:43	07:31 19:26	07:28 17:15	16:41-16:44/3 15:29-16:11/42	08:27 16:23
28	05:42 21:46	06:37 20:41	07:33 19:24	07:29 17:13	15:29-16:13/44 16:41-16:44/3	08:28 16:22
29	05:43 21:44	06:38 20:38	07:34 19:21	07:31 17:11	15:28-16:13/45 16:40-16:48/8	08:30 16:21
30	05:45 21:42	06:40 20:36	07:36 19:19	07:33 17:09	15:28-16:13/45 15:27-16:14/47	08:32 16:20
31	05:47 21:40	06:42 20:33		07:35 17:07		08:58 16:23
Potential sun hours	515	461	382	328	257	231
Sum of minutes with flicker	0	0	8	1230	830	20

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker

## SHADOW - Calendar per WTG

Calculation: Tirawley Shadow Flicker Worst Case WTG: 3 - AT03  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January	February	March	April	May	June
1	08:58 09:44-10:01/17 15:04-15:26/22 16:24 15:32-15:45/13	08:27 15:44-16:05/21 17:16 16:33-16:43/10	07:29 17:13-17:38/25 18:13	07:13 19:02-19:37/35 20:12 18:32-18:53/21	06:02 21:09	05:12 22:00
2	08:58 09:45-10:01/16 15:05-15:27/22 16:25 15:33-15:47/14	08:25 15:47-16:04/17 17:18 16:34-16:46/12	07:26 17:13-17:37/24 18:15	07:10 19:02-19:37/35 20:14 18:36-18:50/14	06:00 21:11	05:11 22:01
3	08:58 09:46-10:01/15 15:05-15:26/21 16:26 15:32-15:48/16	08:24 15:50-16:01/11 17:20 16:35-16:49/14	07:24 17:14-17:36/22 18:17	07:08 19:03-19:37/34 20:16	05:58 21:12	05:10 22:02
4	08:58 09:47-10:01/14 15:06-15:27/21 16:28 15:33-15:50/17	08:22 16:36-16:50/14 17:22	07:22 17:14-17:34/20 18:19	07:05 19:02-19:35/33 20:18	05:56 21:14	05:09 22:03
5	08:57 09:48-10:00/12 15:07-15:27/20 16:29 15:32-15:51/19	08:20 16:37-16:49/12 17:24	07:19 17:16-17:33/17 18:21	07:03 19:03-19:35/32 20:20	05:54 21:16	05:08 22:04
6	08:57 09:50-10:00/10 15:08-15:27/19 16:30 15:33-15:53/20	08:18 16:38-16:48/10 17:26	07:17 17:17-17:31/14 18:23 17:43-17:55/12	07:00 19:03-19:33/30 20:22	05:52 21:18	05:08 22:06
7	08:56 09:51-09:59/8 15:09-15:27/18 16:32 15:33-15:54/21	08:16 16:41-16:46/5 17:28	07:14 17:21-17:27/6 18:25 17:40-17:58/18	06:58 19:04-19:32/28 20:24	05:50 21:20	05:07 22:07
8	08:56 09:54-09:57/3 15:10-15:26/16 16:33 15:33-15:55/22	08:14 17:30	07:12 17:36-17:59/23 18:27	06:55 19:04-19:30/26 20:26	05:48 21:22	05:06 22:08
9	08:55 15:33-15:57/24 16:34 15:11-15:26/15	08:12 17:32	07:10 17:35-18:02/27 18:29	06:53 19:06-19:29/23 20:27	05:46 21:23	05:06 22:08
10	08:55 15:34-15:59/25 16:36 15:13-15:26/13	08:10 17:35	07:07 17:32-18:03/31 18:31	06:50 19:08-19:27/19 20:29	05:44 21:25	05:05 22:09
11	08:54 15:34-16:01/27 16:38 15:15-15:25/10	08:08 17:37	07:05 17:31-18:05/34 18:32	06:48 19:10-19:24/14 20:31	05:42 21:27	05:05 22:10
12	08:53 15:34-16:03/29 16:39 15:17-15:23/6	08:06 17:39	07:02 17:29-18:07/38 18:34	06:46 20:33	05:41 21:29	05:04 22:11
13	08:52 15:34-16:05/31 16:41	08:04 17:41	07:00 17:29-18:08/39 18:36	06:43 20:35	05:39 21:31	05:04 22:12
14	08:51 15:33-16:05/32 16:42	08:02 17:43	06:57 17:27-18:08/41 18:38	06:41 20:37	05:37 21:32	05:04 22:12
15	08:50 15:33-16:06/33 16:44	08:00 17:45	06:55 17:27-18:09/42 18:40	06:38 20:39	05:35 21:34	05:03 22:13
16	08:49 15:34-16:07/33 16:46	07:58 17:47	06:52 17:26-18:09/43 18:42	06:36 20:41	05:34 21:36	05:03 22:13
17	08:48 15:34-16:08/34 16:48	07:56 17:49	06:50 17:25-18:10/45 18:44	06:34 20:43	05:32 21:37	05:03 22:14
18	08:47 15:34-16:08/34 16:49	07:54 17:51	06:47 17:24-18:09/45 18:46	06:31 20:44	05:30 21:39	05:03 22:14
19	08:46 15:35-16:08/33 16:51	07:51 17:22-17:24/2 17:53	06:45 17:25-18:09/44 18:48	06:29 20:46	05:29 21:41	05:03 22:15
20	08:45 15:35-16:09/34 16:53	07:49 17:19-17:26/7 17:55	06:42 17:24-18:09/45 18:50	06:27 20:48	05:27 21:42	05:03 22:15
21	08:44 15:35-16:09/34 16:55	07:47 17:18-17:29/11 17:57	06:40 18:18-18:25/7 18:52 17:24-18:09/45	06:24 20:50	05:26 21:44	05:03 22:15
22	08:42 15:36-16:09/33 16:57	07:45 17:16-17:30/14 17:59	06:37 18:14-18:26/12 18:53 17:24-18:08/44	06:22 20:52	05:24 21:46	05:04 22:16
23	08:41 15:36-16:09/33 16:59	07:43 17:15-17:33/18 18:01	06:35 18:12-18:29/17 18:55 17:24-18:08/44	06:20 20:54	05:23 21:47	05:04 22:16
24	08:40 15:37-16:10/33 17:00	07:40 17:14-17:35/21 18:03	06:32 18:09-18:30/21 18:57 17:24-18:06/42	06:18 20:56	05:21 21:49	05:04 22:16
25	08:38 15:37-16:09/32 17:02	07:38 17:13-17:37/24 18:05	06:30 18:08-18:32/24 18:59 17:25-18:06/41	06:15 20:58	05:20 21:50	05:04 22:16
26	08:37 15:38-16:09/31 17:04	07:36 17:13-17:38/25 18:07	06:27 18:06-18:34/28 19:01 17:25-18:04/39	06:13 20:59	05:19 21:52	05:05 22:16
27	08:35 15:39-16:09/30 17:06	07:33 17:12-17:38/26 18:09	06:25 18:06-18:36/30 19:03 17:26-18:04/38	06:11 21:01	05:17 21:53	05:05 22:16
28	08:34 15:40-16:09/29 17:08 16:34-16:35/1	07:31 17:13-17:38/25 18:11	06:22 18:04-18:37/33 19:05 17:26-18:02/36	06:09 21:03	05:16 21:54	05:06 22:16
29	08:32 15:41-16:08/27 17:10 16:34-16:37/3	07:29 15:41-16:08/27 17:10 16:34-16:37/3	06:20 19:04-19:38/34 20:07 18:28-19:01/33	06:07 21:05	05:15 21:56	05:06 22:15
30	08:31 15:42-16:07/25 17:12 16:33-16:39/6	07:27 15:42-16:07/25 17:12 16:33-16:39/6	06:18 19:03-19:37/34 20:09 18:28-18:58/30	06:04 21:07	05:14 21:57	05:07 22:15
31	08:29 15:43-16:06/23 17:14 16:33-16:41/8	07:25 15:43-16:06/23 17:14 16:33-16:41/8	06:15 19:03-19:38/35 20:10 18:31-18:57/26	06:03 21:09	05:13 21:58	05:07 22:15
Potential sun hours	248	272	367	421	496	513
Sum of minutes with flicker	1157	299	1348	344	0	0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker

### SHADOW - Calendar per WTG

Calculation: Tirawley Shadow Flicker Worst Case WTG: 3 - AT03

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	July	August	September	October	November	December
1	05:08 22:15	05:48 21:39	06:44 20:31	19:09-19:23/14 19:16	07:38 17:05	08:33 16:19
2	05:08 22:14	05:50 21:37	06:46 20:28	19:06-19:25/19 19:14	07:40 17:03	08:35 16:19
3	05:09 22:14	05:52 21:35	06:47 20:26	19:04-19:27/23 19:11	07:42 17:01	08:36 16:18
4	05:10 22:13	05:54 21:33	06:49 20:24	19:02-19:28/26 19:09	07:43 16:59	08:38 16:17
5	05:11 22:13	05:55 21:31	06:51 20:21	19:00-19:28/28 19:06	07:45 16:57	08:39 16:17
6	05:12 22:12	05:57 21:29	06:53 20:19	18:59-19:29/30 19:04	07:47 16:55	08:41 16:16
7	05:13 22:11	05:59 21:27	06:55 20:16	18:58-19:30/32 19:01	07:49 16:53	08:42 16:15
8	05:14 22:11	06:01 21:25	06:56 20:14	18:57-19:30/33 18:59	07:51 16:51	08:43 16:15
9	05:15 22:10	06:02 21:23	06:58 20:11	18:56-19:30/34 18:57	07:53 16:49	08:45 16:15
10	05:16 22:09	06:04 21:21	07:00 20:09	18:55-19:30/35 18:54	07:55 16:47	08:46 16:14
11	05:17 22:08	06:06 21:19	07:02 20:06	18:55-19:30/35 18:52	07:57 16:46	08:47 16:14
12	05:18 22:07	06:08 21:17	07:04 20:04	18:54-19:29/35 18:49	07:59 16:44	08:48 16:14
13	05:20 22:06	06:10 21:15	07:05 20:01	18:54-19:29/35 18:47	08:00 16:42	08:49 16:14
14	05:21 22:05	06:11 21:13	07:07 19:59	18:54-19:28/34 18:45	08:02 16:41	08:50 16:14
15	05:22 22:04	06:13 21:10	07:09 19:56	18:54-19:28/34 18:42	08:04 16:39	08:51 16:14
16	05:24 22:03	06:15 21:08	07:11 19:54	18:54-19:25/31 18:40	08:06 16:37	08:52 16:14
17	05:25 22:02	06:17 21:06	07:13 19:51	18:55-19:23/28 18:38	08:08 16:36	08:53 16:14
18	05:26 22:00	06:19 21:04	07:14 19:49	18:55-19:20/25 18:35	08:10 16:34	08:54 16:14
19	05:28 21:59	06:20 21:01	07:16 19:46	18:56-19:18/22 18:33	08:12 16:33	08:54 16:14
20	05:29 21:58	06:22 20:59	07:18 19:44	18:58-19:16/18 18:31	08:14 16:32	08:55 16:15
21	05:31 21:56	06:24 20:57	07:20 19:41	18:59-19:12/13 18:28	08:16 16:30	08:56 16:15
22	05:32 21:55	06:26 20:55	07:22 19:39	19:01-19:10/9 18:26	08:18 16:29	08:56 16:16
23	05:34 21:54	06:28 20:52	07:23 19:36	18:08-18:53/45 18:24	08:20 16:28	08:57 16:16
24	05:35 21:52	06:29 20:50	07:25 19:34	18:08-18:53/45 18:22	08:22 16:26	08:57 16:17
25	05:37 21:50	06:31 20:48	07:27 19:31	18:08-18:53/45 17:19	08:23 16:25	08:58 16:17
26	05:39 21:49	06:33 20:45	07:29 19:29	18:07-18:51/44 17:17	08:25 16:24	08:58 16:18
27	05:40 21:47	06:35 20:43	07:31 19:26	18:07-18:51/44 17:15	08:27 16:23	08:58 16:19
28	05:42 21:46	06:37 20:41	07:33 19:24	18:07-18:50/43 17:13	08:28 16:22	08:58 16:20
29	05:43 21:44	06:38 20:38	07:34 19:21	18:08-18:50/42 17:11	08:30 16:21	08:58 16:21
30	05:45 21:42	06:40 20:36	07:36 19:19	18:08-18:49/41 17:09	08:32 16:20	08:58 16:22
31	05:47 21:40	06:42 20:33		17:07		08:58 16:23
Potential sun hours	515	461	382	328	257	231
Sum of minutes with flicker	0	0	1391	504	777	1554

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker

### SHADOW - Calendar per WTG

Calculation: Tirawley Shadow Flicker Worst Case WTG: 4 - AT04

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January	February	March	April	May	June
1	08:58 16:24	08:27 09:04-09:27/23 17:16 15:53-16:23/30	07:29 16:41-17:21/40 18:13	07:13 19:04-19:23/19 20:12	06:02 20:01-20:38/37 21:09	05:12 20:05-20:39/34 22:00
2	08:58 16:25	08:25 09:04-09:26/22 17:18 15:54-16:22/28	07:26 16:41-17:19/38 18:15	07:10 19:06-19:21/15 20:14	06:00 20:00-20:40/40 21:11	05:11 20:05-20:38/33 22:01
3	08:58 16:26	08:24 09:06-09:25/19 17:20 15:55-16:21/26	07:24 16:42-17:18/36 18:17	07:08 19:09-19:18/9 20:16	05:58 19:59-20:41/42 21:13	05:10 20:07-20:39/32 22:02
4	08:58 16:28	08:22 09:07-09:23/16 17:22 15:56-16:21/25	07:22 16:42-17:17/35 18:19	07:05 20:18	05:56 19:59-20:44/45 21:14	05:09 20:07-20:38/31 22:03
5	08:57 16:29	08:20 09:10-09:21/11 17:24 15:58-16:19/21	07:19 16:44-17:16/32 18:21	07:03 20:20	05:54 19:59-20:46/47 21:16	05:08 20:08-20:37/29 22:04
6	08:57 16:30	08:18 16:52-16:55/3 17:26 16:00-16:18/18	07:17 16:45-17:13/28 18:23	07:00 20:22	05:52 19:58-20:47/49 21:18	05:08 20:09-20:37/28 22:06
7	08:56 15:52-15:54/2 16:32	08:16 16:49-16:58/9 17:28 16:02-16:16/14	07:14 16:47-17:12/25 18:25	06:58 20:24	05:50 19:57-20:49/52 21:20	05:07 20:10-20:36/26 22:07
8	08:56 15:51-15:55/4 16:33	08:14 16:46-17:00/14 17:30 16:07-16:11/4	07:12 16:49-17:09/20 18:27	06:55 20:26	05:48 19:57-20:49/52 21:22	05:06 20:11-20:37/26 22:08
9	08:55 15:51-15:57/6 16:34	08:12 16:44-17:01/17 17:32	07:10 16:53-17:05/12 18:29	06:53 20:27	05:46 19:56-20:49/53 21:23	05:06 20:11-20:36/25 22:08
10	08:55 15:51-15:59/8 16:36	08:10 16:43-17:04/21 17:34	07:07 18:31	06:50 20:29	05:44 19:57-20:50/53 21:25	05:05 20:12-20:36/24 22:09
11	08:54 15:51-16:01/10 16:37	08:08 16:42-17:06/24 17:37	07:05 18:32	06:48 20:31	05:42 19:57-20:49/52 21:27	05:05 20:12-20:35/23 22:10
12	08:53 15:50-16:03/13 16:39	08:06 16:41-17:08/27 17:39	07:02 18:34	06:46 20:33	05:41 19:56-20:49/53 21:29	05:04 20:13-20:35/22 22:11
13	08:52 15:50-16:04/14 16:41	08:04 16:40-17:11/31 17:41	07:00 18:36	06:43 20:35	05:39 19:57-20:49/52 21:31	05:04 20:14-20:35/21 22:12
14	08:51 15:49-16:05/16 16:42	08:02 16:40-17:13/33 17:43	06:57 18:38	06:41 20:37	05:37 19:56-20:49/53 21:32	05:04 20:15-20:34/19 22:12
15	08:50 15:49-16:07/18 16:44	08:00 16:38-17:15/37 17:45	06:55 18:40	06:38 20:39	05:35 19:56-20:48/52 21:34	05:03 20:15-20:33/18 22:13
16	08:49 09:21-09:22/1 16:46 15:49-16:10/21	07:58 16:38-17:17/39 17:47	06:52 18:14-18:15/1 18:42	06:36 20:41	05:34 19:57-20:48/51 21:36	05:03 20:16-20:33/17 22:13
17	08:48 09:20-09:23/3 16:47 15:49-16:12/23	07:56 16:38-17:20/42 17:49	06:50 18:13-18:17/4 18:44	06:34 20:43	05:32 19:56-20:48/52 21:37	05:03 20:16-20:33/17 22:14
18	08:47 09:19-09:24/5 16:49 15:50-16:14/24	07:54 16:38-17:22/44 17:51	06:47 18:11-18:19/8 18:46	06:31 20:44	05:30 19:57-20:48/51 21:39	05:03 20:17-20:33/16 22:14
19	08:46 09:17-09:25/8 16:51 15:49-16:16/27	07:51 16:37-17:24/47 17:53	06:45 18:09-18:21/12 18:48	06:29 20:46	05:29 19:58-20:48/50 21:41	05:03 20:17-20:33/16 22:15
20	08:45 09:16-09:26/10 16:53 15:49-16:18/29	07:49 16:37-17:26/49 17:55	06:42 18:07-18:22/15 18:50	06:27 20:48	05:27 19:58-20:47/49 21:42	05:03 20:19-20:34/15 22:15
21	08:44 09:14-09:26/12 16:55 15:49-16:20/31	07:47 16:37-17:25/48 17:57	06:40 18:06-18:25/19 18:52	06:24 20:50	05:26 19:58-20:46/48 21:44	05:03 20:19-20:34/15 22:15
22	08:42 09:13-09:27/14 16:57 15:49-16:22/33	07:45 16:37-17:23/46 17:59	06:37 18:04-18:26/22 18:53	06:22 20:52	05:24 19:59-20:46/47 21:46	05:03 20:19-20:34/15 22:16
23	08:41 09:11-09:27/16 16:58 15:49-16:22/33	07:43 16:37-17:23/46 18:01	06:35 18:04-18:29/25 18:55	06:20 20:21-20:23/2 20:54	05:23 19:59-20:45/46 21:47	05:04 20:18-20:34/16 22:16
24	08:40 09:10-09:28/18 17:00 15:50-16:23/33	07:40 16:38-17:23/45 18:03	06:32 18:02-18:30/28 18:57	06:18 20:14-20:26/12 20:56	05:21 20:00-20:45/45 21:49	05:04 20:19-20:35/16 22:16
25	08:38 09:08-09:28/20 17:02 15:50-16:23/33	07:38 16:38-17:22/44 18:05	06:30 18:02-18:30/28 18:59	06:15 20:11-20:28/17 20:58	05:20 20:00-20:44/44 21:50	05:04 20:19-20:35/16 22:16
26	08:37 09:06-09:27/21 17:04 15:49-16:23/34	07:36 16:39-17:22/43 18:07	06:27 18:02-18:29/27 19:01	06:13 20:09-20:30/21 20:59	05:19 20:01-20:43/42 21:52	05:05 20:18-20:35/17 22:16
27	08:35 09:05-09:28/23 17:06 15:50-16:24/34	07:33 16:39-17:21/42 18:09	06:25 18:02-18:29/27 19:03	06:11 20:07-20:32/25 21:01	05:17 20:02-20:43/41 21:53	05:05 20:18-20:36/18 22:16
28	08:34 09:03-09:28/25 17:08 15:51-16:23/32	07:31 16:40-17:21/41 18:11	06:22 18:01-18:28/27 19:05	06:09 20:05-20:33/28 21:03	05:16 20:02-20:42/40 21:54	05:06 20:19-20:37/18 22:16
29	08:32 09:01-09:28/27 17:10 15:51-16:23/32		07:20 19:02-19:28/26 20:07	06:07 20:03-20:35/32 21:05	05:15 20:03-20:41/38 21:56	05:06 20:18-20:37/19 22:15
30	08:31 09:01-09:27/26 17:12 15:51-16:23/32		07:18 19:02-19:26/24 20:09	06:04 20:02-20:36/34 21:07	05:14 20:04-20:40/36 21:57	05:07 20:18-20:39/21 22:15
31	08:29 09:02-09:27/25 17:14 15:52-16:22/30		07:15 19:03-19:25/22 20:11		05:13 20:04-20:39/35 21:59	
Potential sun hours	248	272	367	421	496	513
Sum of minutes with flicker	826	1049	581	214	1447	643

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker

### SHADOW - Calendar per WTG

Calculation: Tirawley Shadow Flicker Worst Case WTG: 4 - AT04  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	July	August	September	October	November	December	
1	05:08 20:17-20:39/22	05:48 20:06-20:59/53	06:44	07:38	07:37 16:12-16:33/21	08:33 15:33-15:43/10	
	22:15	21:39	20:31	19:16	17:05	16:19	
2	05:08 20:17-20:40/23	05:50 20:07-21:00/53	06:46	07:40	07:39 16:14-16:31/17	08:35 15:33-15:41/8	
	22:14	21:37	20:28	19:14	17:03	16:19	
3	05:09 20:17-20:41/24	05:52 20:07-21:00/53	06:47	07:42	07:41 16:15-16:28/13	08:36 15:35-15:41/6	
	22:14	21:35	20:26	19:11	17:01 15:35-15:41/6	16:18	
4	05:10 20:16-20:42/26	05:54 20:07-20:59/52	06:49	07:44 17:34-17:39/5	07:43 16:19-16:27/8	08:38 15:36-15:40/4	
	22:13	21:33	20:24	19:09	16:59 15:32-15:46/14	16:17	
5	05:11 20:16-20:42/26	05:55 20:07-20:59/52	06:51	07:45 17:28-17:44/16	07:45 08:43-08:47/4	15:29-15:48/19	08:39 15:37-15:39/2
	22:13	21:31	20:21	19:06	16:57 16:22-16:25/3	16:17	
6	05:12 20:15-20:42/27	05:57 20:07-20:57/50	06:53	07:47 17:24-17:47/23	07:47 08:39-08:51/12	08:41	
	22:12	21:29	20:19	19:04	16:55 15:27-15:49/22	16:16	
7	05:13 20:15-20:43/28	05:59 20:08-20:56/48	06:55	07:49 17:22-17:49/27	07:49 08:37-08:53/16	08:42	
	22:12	21:27	20:16	19:01	16:53 15:26-15:50/24	16:15	
8	05:14 20:14-20:44/30	06:01 20:08-20:54/46	06:56	07:51 17:20-17:50/30	07:51 08:35-08:55/20	08:43	
	22:11	21:25	20:14	18:59	16:51 15:25-15:51/26	16:15	
9	05:15 20:14-20:45/31	06:02 20:08-20:52/44	06:58 19:03-19:11/8	07:53 17:18-17:51/33	07:53 08:35-08:57/22	08:45	
	22:10	21:23	20:11	18:57	16:49 15:24-15:52/28	16:15	
10	05:16 20:13-20:45/32	06:04 20:09-20:50/41	07:00 19:00-19:14/4	07:55 17:17-17:52/35	07:55 08:34-08:58/24	08:46	
	22:09	21:21	20:09	18:54	16:47 15:24-15:54/30	16:14	
11	05:17 20:13-20:46/33	06:06 20:10-20:49/39	07:02 18:57-19:16/19	07:57 17:15-17:53/38	07:57 08:34-08:59/25	08:47	
	22:08	21:19	20:06	18:52	16:46 15:24-15:54/30	16:14	
12	05:18 20:13-20:48/35	06:08 20:10-20:46/36	07:04 18:55-19:16/21	07:59 17:14-17:53/39	07:59 08:33-08:59/26	08:48	
	22:07	21:17	20:04	18:49	16:44 15:23-15:55/32	16:14	
13	05:20 20:12-20:48/36	06:10 20:11-20:44/33	07:05 18:54-19:17/23	08:00 17:13-17:54/41	08:01 08:33-09:00/27	08:49	
	22:06	21:15	20:01	18:47	16:42 15:23-15:55/32	16:14	
14	05:21 20:12-20:48/36	06:11 20:12-20:43/31	07:07 18:53-19:18/25	08:02 17:13-17:54/41	08:03 08:35-09:00/25	08:50	
	22:05	21:13	19:59	18:45	16:41 15:23-15:55/32	16:14	
15	05:22 20:11-20:50/39	06:13 20:12-20:40/28	07:09 18:52-19:18/26	08:04 17:11-17:54/43	08:05 08:37-09:00/23	08:51	
	22:04	21:10	19:56	18:42	16:39 15:22-15:55/33	16:14	
16	05:24 20:10-20:51/41	06:15 20:14-20:38/24	07:11 18:50-19:18/28	08:06 17:10-17:54/44	08:07 08:39-09:00/21	08:52	
	22:03	21:08	19:54	18:40	16:37 15:22-15:56/34	16:14	
17	05:25 20:11-20:53/42	06:17 20:16-20:36/20	07:13 18:50-19:18/28	08:08 17:10-17:54/44	08:09 08:42-09:02/20	08:53	
	22:02	21:06	19:51	18:38	16:36 15:22-15:56/34	16:14	
18	05:26 20:10-20:53/43	06:19 20:17-20:34/17	07:14 18:50-19:17/27	08:10 17:09-17:54/45	08:11 08:44-09:02/18	08:54	
	22:00	21:04	19:49	18:35	16:34 15:24-15:57/33	16:14	
19	05:28 20:09-20:54/45	06:20 20:21-20:32/11	07:16 18:50-19:17/27	08:12 17:08-17:54/46	08:12 08:46-09:02/16	08:54	
	21:59	21:01	19:46	18:33	16:33 15:24-15:57/33	16:14	
20	05:29 20:10-20:55/45	06:22 20:18 18:50-19:16/26	07:18 18:50-19:16/26	08:14 17:08-17:55/47	08:14 08:48-09:02/14	08:55	
	21:58	20:59	19:44	18:31	16:32 15:24-15:57/33	16:15	
21	05:31 20:09-20:56/47	06:24 20:17-20:34/17	07:20 18:49-19:12/23	08:16 17:07-17:56/49	08:16 08:50-09:02/12	08:56	
	21:56	20:57	19:41	18:28	16:30 15:25-15:56/31	16:15	
22	05:32 20:08-20:56/48	06:26 20:15 18:50-19:10/20	07:22 18:50-19:10/20	08:18 17:07-17:56/49	08:18 08:52-09:02/10	08:56	
	21:55	20:55	19:39	18:26	16:29 15:25-15:54/29	16:16	
23	05:34 20:09-20:57/48	06:28 20:14 18:51-19:08/17	07:23 18:51-19:08/17	08:20 17:07-17:53/46	08:20 08:54-09:02/8	08:57	
	21:54	20:52	19:36	18:24	16:28 15:26-15:53/27	16:16	
24	05:35 20:08-20:57/49	06:29 20:13 18:52-19:05/13	07:25 18:52-19:05/13	08:22 17:07-17:51/44	08:22 08:56-09:02/6	08:57	
	21:52	20:50	19:34	18:22	16:26 15:27-15:51/24	16:17	
25	05:37 20:08-20:58/50	06:31 20:11 18:54-19:03/9	07:27 18:54-19:03/9	07:24 16:07-16:48/41	08:23 08:58-09:01/3	08:58	
	21:50	20:48	19:31	17:19	16:25 15:27-15:50/23	16:17	
26	05:39 20:07-20:58/51	06:33 20:10 18:54-19:00/6	07:29 18:54-19:00/6	07:26 16:07-16:46/39	08:25 09:00-09:01/1	08:58	
	21:49	20:45	19:29	17:17	16:24 15:28-15:49/21	16:18	
27	05:40 20:08-20:59/51	06:35 20:11 18:55-18:57/2	07:31 18:55-18:57/2	07:28 16:08-16:44/36	08:27 15:28-15:47/19	08:58	
	21:47	20:43	19:26	17:15	16:23	16:19	
28	05:42 20:07-20:59/52	06:37 20:12 16:09-16:42/33	07:33 16:09-16:42/33	07:30 16:09-16:42/33	08:28 15:29-15:46/17	08:58	
	21:46	20:41	19:24	17:13	16:22	16:20	
29	05:43 20:07-21:00/53	06:38 20:13 16:10-16:40/30	07:34 16:10-16:40/30	07:31 16:10-16:40/30	08:30 15:30-15:45/15	08:58	
	21:44	20:38	19:21	17:11	16:21	16:21	
30	05:45 20:07-20:59/52	06:40 20:14 16:11-16:37/26	07:36 16:11-16:37/26	07:33 16:11-16:37/26	08:32 15:31-15:44/13	08:58	
	21:42	20:36	19:19	17:09	16:20	16:22	
31	05:47 20:07-21:00/53	06:42 20:15 16:11-16:35/24	07:35 16:11-16:35/24	07:35 16:11-16:35/24	08:35 15:31-15:44/13	08:58	
	21:40	20:33	17:07	17:07	16:20	16:23	
Potential sun hours	515	461	382	328	257	231	
Sum of minutes with flicker	1218	731	362	1014	1129	30	

Table layout: For each day in each month the following matrix apply

Day in month Sun rise (hh:mm) First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker  
 Sun set (hh:mm) First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker



### SHADOW - Calendar per WTG

Calculation: Tirawley Shadow Flicker Worst Case WTG: 5 - AT05

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January	February	March	April	May	June	
1	08:58 16:24	08:27 17:16	08:56-08:58/2 18:13	07:29 18:13	07:13 20:12	18:53-19:25/32 21:09	05:12 22:00
2	08:58 16:25	08:25 17:18	08:54-08:59/5 18:15	07:26 18:15	07:10 20:14	18:55-19:23/28 21:11	05:11 22:01
3	08:58 16:26	08:24 17:20	08:52-08:59/7 18:17	07:24 18:17	07:08 20:16	19:01-19:05/4 19:08-19:21/13	05:10 22:02
4	08:58 16:28	08:22 17:22	08:50-08:59/9 18:19	07:22 18:19	07:05 20:18	19:12-19:15/3 21:14	05:09 22:03
5	08:57 16:29	08:20 17:24	08:48-08:59/11 18:21	07:19 18:21	07:03 20:20	05:54 21:16	05:08 22:05
6	08:57 16:30	08:18 17:26	08:46-08:59/13 18:23	07:17 18:23	07:00 20:22	05:52 21:18	05:08 22:06
7	08:56 16:32	08:16 17:28	08:44-08:59/15 18:25	07:14 18:25	07:14 20:24	06:58 21:20	05:07 22:07
8	08:56 16:33	08:14 17:30	08:42-08:58/16 18:27	07:12 18:27	07:12 20:26	06:58 21:22	05:06 22:08
9	08:55 16:34	08:12 17:32	08:40-08:57/17 18:29	07:10 17:58-18:01/3	07:10 20:28	07:34-07:53/19 21:24	05:06 22:09
10	08:55 16:36	08:10 17:34	08:40-08:55/15 18:31	07:07 17:56-18:03/7	07:07 20:29	07:32-07:53/21 21:25	05:05 22:09
11	08:54 16:37	08:08 17:37	08:42-08:54/12 17:05-17:06/1	07:05 18:32	07:29-07:50/21 17:56-18:05/9	06:48 20:31	05:05 22:10
12	08:53 16:39	08:06 17:39	08:45-08:51/6 17:05-17:08/3	07:02 18:34	07:42-07:47/5 07:27-07:40/13	17:54-18:07/13 20:33	05:04 22:11
13	08:52 16:41	08:04 17:41	08:42-08:51/7 17:04-17:11/7	07:00 18:36	07:24-07:39/15 17:54-18:09/15	06:43 20:35	05:04 22:12
14	08:51 16:42	08:02 17:43	08:42-08:51/8 17:04-17:13/9	06:57 18:38	07:22-07:39/17 17:54-18:11/17	06:41 20:37	05:04 22:12
15	08:51 16:44	08:00 17:45	08:42-08:51/9 17:03-17:15/12	06:55 18:40	07:20-07:38/18 17:54-18:13/19	06:38 20:39	05:03 22:13
16	08:50 16:46	07:58 17:47	08:42-08:51/10 17:03-17:17/14	06:52 18:42	07:22-07:37/15 17:53-18:15/22	06:36 20:41	05:03 22:14
17	08:48 16:47	07:56 17:49	08:42-08:51/11 17:04-17:19/15	06:50 18:44	07:23-07:34/11 17:52-18:17/25	06:34 20:43	05:03 22:14
18	08:47 16:49	07:54 17:51	08:42-08:51/12 17:04-17:22/18	06:47 18:46	07:27-07:31/4 17:50-18:19/29	06:31 20:44	05:03 22:15
19	08:46 16:51	07:52 17:53	08:42-08:51/13 17:04-17:23/19	06:45 18:48	17:50-18:21/31	06:29 20:46	05:03 22:15
20	08:45 16:53	07:49 17:55	08:42-08:51/14 17:04-17:26/22	06:42 18:50	17:49-18:22/33	06:27 20:48	05:03 22:15
21	08:44 16:55	07:47 17:57	08:42-08:51/15 17:05-17:28/23	06:40 18:52	17:49-18:25/36	06:24 20:50	05:03 22:15
22	08:42 16:57	07:45 17:59	08:42-08:51/16 17:06-17:27/21	06:37 18:54	17:48-18:26/38	06:22 20:52	05:03 22:16
23	08:41 16:58	07:43 18:01	08:42-08:51/17 17:07-17:26/19	06:35 18:55	17:48-18:29/41	06:20 20:54	05:04 22:16
24	08:40 17:00	07:40 18:03	08:42-08:51/18 17:10-17:25/15	06:32 18:57	17:47-18:30/43	06:18 20:56	05:04 22:16
25	08:38 17:02	07:38 18:05	08:42-08:51/19 17:12-17:21/9	06:30 18:59	17:48-18:32/44	06:15 20:58	05:04 22:16
26	08:37 17:04	07:36 18:07	08:42-08:51/20 17:12-17:21/9	06:27 19:01	17:47-18:31/44	06:13 21:00	05:05 22:16
27	08:35 17:06	07:33 18:09	08:42-08:51/21 17:12-17:21/9	06:25 19:03	17:48-18:31/43	06:11 21:01	05:05 22:16
28	08:34 17:08	07:31 18:11	08:42-08:51/22 17:12-17:21/9	06:22 19:05	17:48-18:30/42	06:09 21:03	05:06 22:16
29	08:32 17:10		08:42-08:51/23 17:12-17:21/9	07:20 20:07	18:49-19:29/40	06:07 21:05	05:06 22:15
30	08:31 17:12		08:42-08:51/24 17:12-17:21/9	07:18 20:09	18:50-19:28/38	06:04 21:07	05:07 22:15
31	08:29 17:14		08:42-08:51/25 17:12-17:21/9	07:15 20:11	18:51-19:27/36	05:13 21:59	05:07 22:15
Potential sun hours	248	272	367	421	496	513	
Sum of minutes with flicker	0	335	906	80	0	0	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker

### SHADOW - Calendar per WTG

Calculation: Tirawley Shadow Flicker Worst Case WTG: 5 - AT05

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	July	August	September	October	November	December	
1	05:08 22:15	05:48 21:39	06:44 20:31	07:38 19:16	08:05-08:19/14 18:34-18:48/14	07:37 17:05	08:09-08:25/16 16:19
2	05:08 22:14	05:50 21:37	06:46 20:29	07:40 19:14	08:07-08:28/21 18:34-18:45/11	07:39 17:03	08:09-08:26/17 16:19
3	05:09 22:14	05:52 21:35	06:47 20:26	07:42 19:11	08:09-08:30/21 18:34-18:42/8	07:41 17:01	08:12-08:28/16 16:18
4	05:10 22:13	05:54 21:33	06:49 20:24	07:44 19:09	08:10-08:30/20 18:35-18:40/5	07:43 16:59	08:14-08:28/14 16:17
5	05:11 22:13	05:55 21:31	06:51 20:21	07:46 19:06	08:12-08:31/19 18:36-18:37/1	07:45 16:57	08:16-08:29/13 16:16
6	05:12 22:12	05:57 21:29	06:53 20:19	07:47 19:04	08:14-08:31/17 18:37-18:38/1	07:47 16:55	08:18-08:29/11 16:16
7	05:13 22:12	05:59 21:27	06:55 20:16	07:49 19:01	08:16-08:31/15 18:38-18:39/1	07:49 16:53	08:20-08:29/9 16:15
8	05:14 22:11	06:01 21:25	06:56 20:14	07:51 18:59	08:18-08:31/13 18:40-18:41/1	07:51 16:51	08:22-08:29/7 16:15
9	05:15 22:10	06:02 21:23	06:58 20:11	07:53 18:57	08:20-08:31/11 18:42-18:43/1	07:53 16:49	08:25-08:29/4 16:15
10	05:16 22:09	06:04 21:21	07:00 20:09	07:55 18:54	08:22-08:30/8 18:44-18:45/1	07:55 16:47	08:27-08:29/2 16:14
11	05:17 22:08	06:06 21:19	07:02 20:06	07:57 18:52	08:24-08:29/5 18:46-18:47/1	07:57 16:46	08:29-08:29/0 16:14
12	05:18 22:07	06:08 21:17	07:04 20:04	07:59 18:49	08:26-08:28/2 18:48-18:49/1	07:59 16:44	08:31-08:31/0 16:14
13	05:20 22:06	06:09 21:15	07:05 20:01	08:01 18:47	08:28-08:29/1 18:50-18:51/1	08:01 16:42	08:33-08:33/0 16:14
14	05:21 22:05	06:11 21:13	07:07 19:59	08:02 18:45	08:30-08:31/0 18:52-18:53/1	08:03 16:41	08:35-08:35/0 16:14
15	05:22 22:04	06:13 21:10	07:09 19:56	08:04 18:42	08:32-08:33/0 18:54-18:55/1	08:05 16:39	08:37-08:37/0 16:14
16	05:24 22:03	06:15 21:08	07:11 19:54	08:06 18:40	08:34-08:35/0 18:56-18:57/1	08:07 16:37	08:39-08:39/0 16:14
17	05:25 22:02	06:17 21:06	07:13 19:51	08:08 18:37	08:36-08:37/0 18:58-18:59/1	08:09 16:36	08:41-08:41/0 16:14
18	05:26 22:01	06:18 21:04	07:14 19:49	08:10 18:35	08:38-08:39/0 19:00-19:01/1	08:11 16:34	08:43-08:43/0 16:14
19	05:28 21:59	06:20 21:02	07:16 19:46	08:12 18:33	08:40-08:41/0 19:02-19:03/1	08:13 16:33	08:45-08:45/0 16:14
20	05:29 21:58	06:22 20:59	07:18 19:44	08:14 18:31	08:42-08:43/0 19:04-19:05/1	08:14 16:32	08:47-08:47/0 16:15
21	05:31 21:57	06:24 20:57	07:20 19:41	08:16 18:28	08:44-08:45/0 19:06-19:07/1	08:16 16:30	08:49-08:49/0 16:15
22	05:32 21:55	06:26 20:55	07:22 19:39	08:18 18:26	08:46-08:47/0 19:08-19:09/1	08:18 16:29	08:51-08:51/0 16:16
23	05:34 21:54	06:28 20:52	07:23 19:36	08:20 18:24	08:48-08:49/0 19:10-19:11/1	08:20 16:28	08:53-08:53/0 16:16
24	05:35 21:52	06:29 20:50	07:25 19:34	08:22 18:22	08:50-08:51/0 19:12-19:13/1	08:22 16:26	08:55-08:55/0 16:17
25	05:37 21:51	06:31 20:48	07:27 19:31	08:24 17:19	08:52-08:53/0 19:14-19:15/1	08:24 16:25	08:57-08:57/0 16:17
26	05:38 21:49	06:33 20:45	07:29 19:29	08:26 17:17	08:54-08:55/0 19:16-19:17/1	08:25 16:24	08:59-08:59/0 16:18
27	05:40 21:47	06:35 20:43	07:31 19:26	08:28 17:15	08:56-08:57/0 19:18-19:19/1	08:27 16:23	09:01-09:01/0 16:19
28	05:42 21:46	06:37 20:41	07:33 19:24	08:30 17:13	08:58-08:59/0 19:20-19:21/1	08:29 16:22	09:03-09:03/0 16:20
29	05:44 21:44	06:38 20:38	07:34 19:21	08:32 17:11	09:00-09:01/0 19:22-19:23/1	08:30 16:21	09:05-09:05/0 16:21
30	05:45 21:42	06:40 20:36	07:36 19:19	08:34 17:09	09:02-09:03/0 19:24-19:25/1	08:32 16:20	09:07-09:07/0 16:22
31	05:47 21:40	06:42 20:33		08:36 17:07	09:04-09:05/0 19:26-19:27/1	08:34 16:19	09:09-09:09/0 16:23
Potential sun hours	515	461	382	328	257	231	
Sum of minutes with flicker	0	0	790	431	109	0	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker

## SHADOW - Calendar per WTG

Calculation: Tirawley Shadow Flicker Worst Case WTG: 6 - AT06

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June
1	08:58 16:24	08:27 17:16	07:29 07:54-08:22/28 18:13	07:13 20:12	06:02 21:09	05:12 21:04-21:25/21 22:00
2	08:58 16:25	08:25 17:18	07:26 07:51-08:20/29 18:15	07:10 20:14	06:00 21:11	05:11 21:03-21:26/23 22:01
3	08:58 16:26	08:24 17:20	07:24 07:49-08:19/30 18:17	07:08 20:16	05:58 21:13	05:10 21:03-21:26/23 22:02
4	08:58 16:28	08:22 17:22	07:22 07:46-08:17/31 18:19	07:05 20:18	05:56 21:14	05:09 21:03-21:28/25 22:03
5	08:57 16:29	08:20 17:24	07:19 07:44-08:14/30 18:21	07:03 20:20	05:54 21:16	05:08 21:02-21:29/27 22:05
6	08:57 16:30	08:18 17:26	07:17 07:42-08:05/23 18:23	07:00 20:22	05:52 21:18	05:08 21:03-21:30/27 22:06
7	08:56 16:32	08:16 17:28	07:14 07:39-08:04/25 18:25	06:58 20:24	05:50 21:20	05:07 21:02-21:31/29 22:07
8	08:56 09:30-09:32/2 16:33	08:14 17:30	07:12 07:40-08:03/23 18:27	06:55 20:26	05:48 21:22	05:06 21:01-21:31/30 22:08
9	08:55 09:29-09:32/3 16:34	08:12 17:32	07:10 07:40-08:02/22 18:29	06:53 20:28	05:46 21:24	05:06 21:02-21:32/30 22:09
10	08:55 09:28-09:33/5 16:36	08:10 17:34	07:07 07:41-08:01/20 18:31	06:50 20:29	05:44 21:25	05:05 21:02-21:34/32 22:09
11	08:54 09:27-09:33/6 16:37	08:08 17:37	07:05 07:42-07:59/17 18:32	06:48 20:31	05:42 21:27	05:05 21:01-21:33/32 22:10
12	08:53 09:26-09:34/8 16:39	08:06 17:39	07:02 07:44-07:57/13 18:34	06:46 20:33	05:41 21:29	05:04 21:02-21:34/32 22:11
13	08:52 09:25-09:34/9 16:41	08:04 17:41	07:00 07:49-07:51/2 18:36	06:43 20:35	05:39 21:31	05:04 21:02-21:35/33 22:12
14	08:51 09:24-09:35/11 16:42	08:02 17:43	06:57 17:55-18:11/16 18:38	06:41 20:37	05:37 21:32	05:04 21:02-21:35/33 22:12
15	08:51 09:23-09:36/13 16:44	08:00 17:45	06:55 17:54-18:13/19 18:40	06:38 20:39	05:35 21:34	05:03 21:01-21:35/34 22:13
16	08:50 09:21-09:35/14 16:46	07:58 17:47	06:52 17:53-18:15/22 18:42	06:36 20:41	05:34 21:36	05:03 21:02-21:35/33 22:14
17	08:48 09:20-09:36/16 16:47	07:56 17:18-17:19/1 17:49	06:50 17:53-18:17/24 18:44	06:34 20:43	05:32 21:37	05:03 21:02-21:35/33 22:14
18	08:47 09:19-09:36/17 16:49	07:54 17:18-17:22/4 17:51	06:47 17:53-18:19/26 18:46	06:31 20:44	05:30 21:39	05:03 21:02-21:36/34 22:15
19	08:46 09:17-09:36/19 16:51	07:52 08:17-08:18/1 17:53	06:45 17:53-18:21/28 18:48	06:29 20:46	05:29 21:41	05:03 21:02-21:36/34 22:15
20	08:45 09:16-09:36/20 16:53	07:49 08:15-08:20/5 17:55	06:42 17:53-18:22/29 18:50	06:27 20:48	05:27 21:42	05:03 21:03-21:37/34 22:15
21	08:44 09:14-09:36/22 16:55	07:47 08:13-08:21/8 17:57	06:40 17:54-18:25/31 18:52	06:24 20:50	05:26 21:44	05:03 21:03-21:37/34 22:15
22	08:43 09:13-09:36/23 16:57	07:45 08:10-08:22/12 17:59	06:37 17:54-18:25/31 18:54	06:22 20:52	05:24 21:46	05:03 21:03-21:37/34 22:16
23	08:41 09:12-09:36/24 16:58	07:43 08:08-08:22/14 18:01	06:35 17:56-18:25/29 18:55	06:20 20:54	05:23 21:47	05:04 21:03-21:37/34 22:16
24	08:40 09:13-09:36/23 17:00	07:40 08:06-08:23/17 18:03	06:32 17:57-18:23/26 18:57	06:18 20:56	05:21 21:13-21:15/2 21:49	05:04 21:04-21:38/34 22:16
25	08:38 09:14-09:35/21 17:02	07:38 08:03-08:23/20 18:05	06:30 18:00-18:22/22 18:59	06:15 20:58	05:20 21:12-21:16/4 21:50	05:04 21:04-21:37/33 22:16
26	08:37 09:15-09:34/19 17:04	07:36 08:01-08:23/22 18:07	06:27 18:06-18:19/13 19:01	06:13 21:00	05:19 21:11-21:18/7 21:52	05:05 21:04-21:37/33 22:16
27	08:35 09:17-09:34/17 17:06	07:33 07:59-08:23/24 18:09	06:25 18:09-18:17/8 19:03	06:11 21:01	05:17 21:10-21:19/9 21:53	05:05 21:05-21:38/33 22:16
28	08:34 09:19-09:32/13 17:08	07:31 07:56-08:22/26 18:11	06:23 19:05	06:09 21:03	05:16 21:08-21:20/12 21:55	05:06 21:04-21:37/33 22:16
29	08:32 09:21-09:29/8 17:10		07:20 20:07	06:07 21:05	05:15 21:07-21:21/14 21:56	05:06 21:05-21:38/33 22:15
30	08:31 17:12		07:18 20:09	06:04 21:07	05:14 21:06-21:23/17 21:57	05:07 21:06-21:38/32 22:15
31	08:29 17:14		07:15 20:11		05:13 21:05-21:24/19 21:59	
Potential sun hours	248	272	367	421	496	513
Sum of minutes with flicker	313	239	658	0	84	932

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker

## SHADOW - Calendar per WTG

Calculation: Tirawley Shadow Flicker Worst Case WTG: 6 - AT06

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	July	August	September	October	November	December
1	05:08 21:06-21:38/32 22:15	05:48 21:39	06:44 20:31	07:38 08:25-08:34/9 19:16 18:36-18:48/12	07:37 17:05	08:33 09:09-09:15/6 16:19
2	05:08 21:06-21:38/32 22:14	05:50 21:37	06:46 20:31	07:40 08:22-08:37/15 19:14 18:36-18:45/9	07:39 17:03	08:35 09:11-09:16/5 16:19
3	05:09 21:07-21:38/31 22:14	05:52 21:35	06:47 20:26	07:42 08:20-08:38/18 19:11 18:35-18:42/7	07:41 17:01	08:36 09:12-09:15/3 16:18
4	05:10 21:08-21:38/30 22:14	05:54 21:33	06:49 20:24	07:44 08:18-08:38/20 19:09 18:35-18:40/5	07:43 16:59	08:38 09:14-09:16/2 16:17
5	05:11 21:07-21:36/29 22:13	05:55 21:31	06:51 20:21	07:46 08:16-08:39/23 19:06 18:36-18:37/1	07:45 16:57	08:39 16:16
6	05:12 21:08-21:36/28 22:12	05:57 21:29	06:53 20:19	07:47 08:16-08:39/23 19:04	07:47 16:55	08:41 16:16
7	05:13 21:08-21:35/27 22:12	05:59 21:27	06:55 20:16	07:49 08:16-08:40/24 19:01	07:49 16:53	08:42 16:15
8	05:14 21:09-21:35/26 22:11	06:01 21:25	06:56 20:14	07:51 08:41-08:47/6 18:59 08:18-08:40/22	07:51 16:51	08:43 16:15
9	05:15 21:10-21:34/24 22:10	06:02 21:23	06:58 20:11	07:53 08:20-08:51/31 18:57	07:53 16:49	08:45 16:15
10	05:16 21:10-21:33/23 22:09	06:04 21:21	07:00 20:09	07:55 08:22-08:52/30 18:54	07:55 16:47	08:46 16:14
11	05:17 21:11-21:33/22 22:08	06:06 21:19	07:02 20:06	07:57 08:24-08:54/30 18:52	07:57 16:46	08:47 16:14
12	05:18 21:13-21:33/20 22:07	06:08 21:17	07:04 20:04	07:59 08:26-08:54/28 18:49	07:59 16:44	08:48 16:14
13	05:20 21:14-21:32/18 22:06	06:10 21:15	07:05 20:01	08:01 08:28-08:55/27 18:47	08:01 08:53-09:01/8 16:42	08:49 16:14
14	05:21 21:15-21:31/16 22:05	06:11 21:13	07:07 19:59	08:02 08:30-08:55/25 18:45	08:03 08:50-09:04/14 16:41	08:50 16:14
15	05:22 21:16-21:29/13 22:04	06:13 21:10	07:09 19:56	08:04 08:32-08:55/23 18:42	08:05 08:49-09:06/17 16:39	08:51 16:14
16	05:24 21:17-21:28/11 22:03	06:15 21:08	07:11 18:59-19:04/5 19:54	08:06 08:34-08:55/21 18:40 17:55-18:04/9	08:07 08:49-09:08/19 16:37	08:52 16:14
17	05:25 21:20-21:28/8 22:02	06:17 21:06	07:13 18:55-19:07/12 19:51	08:08 08:36-08:55/19 18:38 17:53-18:06/13	08:09 08:48-09:09/21 16:36	08:53 16:14
18	05:26 21:21-21:26/5 22:01	06:19 21:04	07:14 18:49-19:09/20 19:49	08:10 08:38-08:54/16 17:51 17:51-18:05/14	08:11 08:47-09:10/23 16:34	08:54 16:14
19	05:28 21:22-21:25/3 21:59	06:20 21:02	07:16 18:45-19:10/25 19:46	08:12 08:40-08:54/14 18:33 17:50-18:03/13	08:13 08:47-09:11/24 16:33	08:55 16:14
20	05:29 21:58	06:22 20:59	07:18 18:43-19:11/28 19:44	08:14 08:42-08:53/11 18:31 17:49-18:00/11	08:14 08:48-09:11/23 16:32	08:55 16:15
21	05:31 21:57	06:24 20:57	07:20 18:40-19:10/30 19:41	08:16 08:44-08:51/7 18:28 17:48-17:58/10	08:16 08:50-09:12/22 16:30	08:56 16:15
22	05:32 21:55	06:26 20:55	07:22 18:39-19:10/31 19:39	08:18 08:46-08:50/4 18:26 17:48-17:56/8	08:18 08:52-09:12/20 16:29	08:56 16:16
23	05:34 21:54	06:28 20:52	07:24 18:38-19:08/30 19:36	08:20 17:47-17:53/6 18:24	08:20 08:54-09:13/19 16:28	08:57 16:16
24	05:35 21:52	06:29 20:50	07:25 18:37-19:05/28 19:34	08:22 17:47-17:51/4 18:22	08:22 08:56-09:13/17 16:26	08:57 16:17
25	05:37 21:51	06:31 20:48	07:27 18:36-19:03/27 19:31	07:24 16:47-16:48/1 17:19	08:23 08:58-09:14/16 16:25	08:58 16:17
26	05:38 21:49	06:33 20:45	07:29 18:35-19:00/25 19:29	07:26 17:17	08:25 09:00-09:14/14 16:24	08:58 16:18
27	05:40 21:47	06:35 20:43	07:31 18:35-18:57/22 19:26	07:28 17:15	08:27 09:02-09:15/13 16:23	08:58 16:19
28	05:42 21:46	06:37 20:41	07:33 18:35-18:55/20 19:24	07:30 17:13	08:29 09:04-09:15/11 16:22	08:58 16:20
29	05:43 21:44	06:38 20:38	07:34 18:35-18:53/18 19:21	07:32 17:11	08:30 09:05-09:14/9 16:21	08:58 16:21
30	05:45 21:42	06:40 20:36	07:36 18:36-18:50/14 19:19	07:34 17:09	08:32 09:07-09:15/8 16:20	08:59 16:22
31	05:47 21:40	06:42 20:33		07:35 17:07		08:58 16:23
Potential sun hours	515	461	382	328	257	231
Sum of minutes with flicker	398	0	335	569	298	16

Table layout: For each day in each month the following matrix apply

Day in month Sun rise (hh:mm) Sun set (hh:mm) First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker  
 First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

### SHADOW - Calendar per WTG

Calculation: Tirawley Shadow Flicker Worst Case WTG: 7 - AT07

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January		February		March		April		May		June	
1	08:58	15:21-15:45/24	08:27	15:56-16:43/47	07:29	07:12	19:02-19:34/32	06:02	20:16-20:32/16	05:12	20:21-20:54/33	
	16:24		17:16		18:13	20:12		21:09		22:00		
2	08:58	15:21-15:47/26	08:25	15:56-16:46/50	07:26	07:10	19:02-19:35/33	06:00	20:14-20:34/20	05:11	20:27-20:54/27	
	16:25		17:18		18:15	20:14		21:11		22:01	20:24-20:26/2	
3	08:58	15:22-15:48/26	08:24	15:57-16:48/51	07:24	07:08	19:00-19:34/34	05:58	20:12-20:35/23	05:10	20:27-20:53/26	
	16:26		17:20		18:17	20:16		21:13		22:02		
4	08:58	15:21-15:48/27	08:22	15:58-16:50/52	07:22	07:05	19:00-19:34/34	05:56	20:11-20:36/25	05:09	20:28-20:54/26	
	16:27		17:22		18:19	20:18		21:14		22:03		
5	08:57	15:21-15:48/27	08:20	15:59-16:51/52	07:19	07:03	19:01-19:34/33	05:54	20:11-20:38/27	05:08	20:28-20:53/25	
	16:29		17:24		18:21	20:20		21:16		22:05		
6	08:57	15:22-15:50/28	08:18	16:00-16:52/52	07:17	07:00	19:00-19:33/33	05:52	20:10-20:38/28	05:07	20:28-20:53/25	
	16:30		17:26		18:23	20:22		21:18		22:06		
7	08:56	15:22-15:50/28	08:16	16:02-16:53/51	07:14	06:58	19:00-19:33/33	05:50	20:09-20:39/30	05:07	20:29-20:53/24	
	16:31		17:28		18:25	20:24		21:20		22:07		
8	08:56	15:22-15:51/29	08:14	16:05-16:53/48	07:12	06:55	19:00-19:32/32	05:48	20:08-20:39/31	05:06	20:29-20:53/24	
	16:33		17:30		18:27	20:26	19:47-19:51/4	21:22		22:08		
9	08:55	15:23-15:52/29	08:12	16:12-16:53/41	07:09	06:53	19:43-19:55/12	05:46	20:08-20:44/36	05:06	20:30-20:53/23	
	16:34		17:32		18:28	20:27	19:01-19:31/30	21:23		22:09		
10	08:55	15:23-15:53/30	08:10	16:13-16:53/40	07:07	06:50	19:41-19:58/17	05:44	20:08-20:47/39	05:05	20:30-20:52/22	
	16:36		17:34		18:30	20:29	19:02-19:31/29	21:25		22:09		
11	08:54	15:23-15:53/30	08:08	16:15-16:53/38	07:05	06:48	19:38-19:58/20	05:42	20:07-20:48/41	05:05	20:31-20:52/21	
	16:37		17:36		18:32	20:31	19:02-19:29/27	21:27		22:10		
12	08:53	15:23-15:54/31	08:06	16:18-16:53/35	07:02	06:46	19:37-20:00/23	05:40	20:07-20:49/42	05:04	20:32-20:53/21	
	16:39		17:38		18:34	20:33	19:03-19:28/25	21:29		22:11		
13	08:52	15:23-15:54/31	08:04	16:22-16:53/31	07:00	06:43	19:36-20:00/24	05:39	20:08-20:51/43	05:04	20:33-20:53/20	
	16:41		17:41		18:36	20:35	19:04-19:25/21	21:31		22:12		
14	08:51	15:24-15:55/31	08:02	16:31-16:52/21	06:57	06:41	19:35-20:00/25	05:37	20:07-20:51/44	05:03	20:32-20:52/20	
	16:42		17:43	16:28-16:29/1	18:38	20:37	19:06-19:23/17	21:32		22:12		
15	08:50	15:23-15:54/31	08:00	16:31-16:51/20	06:55	06:38	19:35-20:01/26	05:35	20:07-20:51/44	05:03	20:33-20:52/19	
	16:44	16:01-16:06/5	17:45		18:40	20:39	19:09-19:21/12	21:34		22:13		
16	08:49	15:24-15:55/31	07:58	16:33-16:50/17	06:52	06:36	19:34-20:01/27	05:33	20:08-20:52/44	05:03	20:33-20:52/19	
	16:46	15:59-16:09/10	17:47		18:42	20:41		21:36		22:14		
17	08:48	15:24-15:56/32	07:56	16:35-16:48/13	06:50	06:34	19:33-20:00/27	05:32	20:07-20:52/45	05:03	20:34-20:52/18	
	16:47	15:58-16:11/13	17:49		18:44	20:43		21:37		22:14		
18	08:47	15:25-15:56/31	07:54	16:38-16:46/8	06:47	06:31	19:33-20:00/27	05:30	20:08-20:53/45	05:03	20:34-20:52/18	
	16:49	15:57-16:13/16	17:51		18:46	20:44		21:39		22:14		
19	08:46	15:25-16:14/49	07:51		06:45	06:38	19:34-20:00/26	05:29	20:08-20:53/45	05:03	20:34-20:52/18	
	16:51		17:53		18:48	20:46		21:41		22:15		
20	08:45	15:26-16:16/50	07:49		06:42	06:27	19:33-19:59/26	05:27	20:09-20:53/44	05:03	20:35-20:52/17	
	16:53		17:55		18:50	20:48		21:42		22:15		
21	08:44	15:26-16:16/50	07:47		06:40	06:24	19:34-19:58/24	05:25	20:10-20:54/44	05:03	20:36-20:53/17	
	16:55		17:57		18:52	20:50		21:44		22:15		
22	08:42	15:27-16:18/51	07:45		06:37	06:22	19:34-19:57/23	05:24	20:09-20:53/44	05:03	20:36-20:53/17	
	16:56		17:59		18:53	20:52		21:46		22:16		
23	08:41	15:27-16:23/56	07:43		06:35	06:20	19:35-19:56/21	05:23	20:10-20:54/44	05:04	20:35-20:53/18	
	16:58		18:01		18:55	20:54		21:47		22:16		
24	08:40	15:28-16:26/58	07:40		06:32	06:17	19:37-19:55/18	05:21	20:11-20:54/43	05:04	20:35-20:53/18	
	17:00		18:03		18:57	20:56		21:49		22:16		
25	08:38	15:29-16:28/59	07:38		06:30	06:15	19:38-19:53/15	05:20	20:12-20:54/42	05:04	20:36-20:54/18	
	17:02		18:05		18:59	20:58		21:50		22:16		
26	08:37	15:30-16:30/60	07:36		06:27	06:13	19:40-19:50/10	05:19	20:13-20:55/42	05:05	20:36-20:54/18	
	17:04		18:07		19:01	20:59		21:52		22:16		
27	08:35	15:32-16:33/61	07:33		06:25	06:11	18:09-18:31/22	05:17	20:14-20:55/41	05:05	20:36-20:55/19	
	17:06		18:09		19:03	21:01		21:53		22:16		
28	08:34	15:54-16:34/40	07:31		06:22	06:09	18:07-18:32/25	05:16	20:15-20:55/40	05:06	20:35-20:55/20	
	17:08	15:33-15:52/19	18:11		19:05	21:03		21:55		22:16		
29	08:32	15:54-16:35/41			07:20	06:06	19:06-19:33/27	05:15	20:16-20:55/39	05:06	20:36-20:56/20	
	17:10	15:35-15:49/14			20:07	21:05		21:56		22:15		
30	08:31	15:54-16:36/42			07:17	06:04	19:04-19:33/29	05:14	20:18-20:54/36	05:07	20:36-20:57/21	
	17:12	15:38-15:46/8			20:09	21:07	20:18-20:30/12	21:57		22:15		
31	08:29	15:54-16:37/43			07:15	05:13	19:03-19:34/31	05:13	20:19-20:54/35			
	17:14				20:10	21:59		21:59				
Potential sun hours	248		272		367	421		496		513	634	
Sum of minutes with flicker	1267		668		179	832		1162				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker

## SHADOW - Calendar per WTG

Calculation: Tirawley Shadow Flicker Worst Case WTG: 7 - AT07

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	July		August		September		October		November		December	
1	05:08	20:35-20:57/22	05:48	20:17-20:59/42	06:44	19:37-19:57/20	07:38		07:37	15:42-16:22/40	08:33	15:05-15:35/30
	22:15		21:39		20:31	19:01-19:28/27	19:16		17:04		16:19	
2	05:08	20:36-20:57/21	05:50	20:18-20:58/40	06:46	19:39-19:56/17	07:40		07:39	15:41-16:22/41	08:35	15:05-15:35/30
	22:14		21:37		20:28	19:00-19:29/29	19:14		17:02	15:38-15:39/1	16:18	
3	05:09	20:36-20:58/22	05:52	20:17-20:55/38	06:47	19:41-19:53/12	07:42		07:41	15:33-16:22/49	08:36	15:06-15:35/29
	22:14		21:35		20:26	18:59-19:29/30	19:11		17:00		16:18	
4	05:10	20:35-20:58/23	05:53	20:18-20:53/35	06:49	18:57-19:29/32	07:44		07:43	15:31-16:22/51	08:38	15:07-15:36/29
	22:13		21:33		20:24	19:44-19:48/4	19:09		16:58		16:17	
5	05:11	20:35-20:58/23	05:55	20:19-20:49/30	06:51	18:56-19:29/33	07:45		07:45	15:30-16:21/51	08:39	15:07-15:35/28
	22:13		21:31		20:21		19:06		16:57		16:16	
6	05:12	20:35-20:59/24	05:57	20:19-20:48/29	06:53	18:56-19:29/33	07:47		07:47	15:28-16:21/53	08:41	15:08-15:36/28
	22:12		21:29		20:19		19:04		16:55		16:16	
7	05:13	20:35-21:00/25	05:59	20:19-20:47/28	06:55	18:56-19:30/34	07:49		07:49	15:27-16:19/52	08:42	15:08-15:35/27
	22:12		21:27		20:16		19:01		16:53		16:15	
8	05:14	20:35-21:00/25	06:00	20:21-20:47/26	06:56	18:55-19:28/33	07:51		07:51	15:26-16:18/52	08:43	15:09-15:36/27
	22:11		21:25		20:14		18:59		16:51		16:15	
9	05:15	20:34-21:01/27	06:02	20:21-20:45/24	06:58	18:55-19:28/33	07:53		07:53	15:26-16:16/50	08:45	15:10-15:36/26
	22:10		21:23		20:11		18:56		16:49		16:14	
10	05:16	20:34-21:01/27	06:04	20:22-20:44/22	07:00	18:55-19:28/33	07:55		07:55	16:10-16:13/3	08:46	15:10-15:36/26
	22:09		21:21		20:09		18:54		16:47	15:26-16:09/43	16:14	
11	05:17	20:29-21:01/32	06:06	20:24-20:43/19	07:02	18:55-19:27/32	07:57		07:57	15:26-16:09/43	08:47	15:11-15:35/24
	22:08		21:19		20:06		18:52		16:45		16:14	
12	05:18	20:27-21:02/35	06:08	20:25-20:40/15	07:04	18:55-19:26/31	07:59		07:59	15:26-16:08/42	08:48	15:12-15:36/24
	22:07		21:17		20:04		18:49		16:44	15:10-15:18/8	16:14	
13	05:20	20:27-21:03/36	06:09	20:28-20:37/9	07:05	18:55-19:25/30	08:00		08:01	15:26-16:07/41	08:49	15:13-15:35/22
	22:06		21:15		20:01		18:47		16:42	15:07-15:21/14	16:14	
14	05:21	20:26-21:03/37	06:11		07:07	18:56-19:24/28	08:02		08:03	15:26-16:06/40	08:50	15:13-15:35/22
	22:05		21:13		19:59		18:44		16:40	15:05-15:24/19	16:14	
15	05:22	20:24-21:03/39	06:13		07:09	18:57-19:22/25	08:04		08:05	15:04-16:05/61	08:51	15:14-15:35/21
	22:04		21:10		19:56		18:42		16:39		16:14	
16	05:23	20:23-21:03/40	06:15		07:11	18:58-19:19/21	08:06		08:07	15:03-16:03/60	08:52	15:15-15:35/20
	22:03		21:08		19:54		18:40		16:37		16:14	
17	05:25	20:22-21:03/41	06:17	19:47-19:58/11	07:13	18:59-19:18/19	08:08		08:09	15:03-16:02/59	08:53	15:16-15:35/19
	22:02		21:06		19:51		18:37		16:36		16:14	
18	05:26	20:22-21:04/42	06:18	19:44-19:59/15	07:14	19:00-19:16/16	08:10		08:11	15:02-16:00/58	08:54	15:16-15:35/19
	22:01		21:04		19:49		18:35		16:34		16:14	
19	05:28	20:21-21:04/43	06:20	19:42-20:01/19	07:16	19:02-19:14/12	08:12		08:12	15:02-15:58/56	08:55	15:16-15:35/19
	21:59		21:01		19:46		18:33		16:33		16:14	
20	05:29	20:20-21:04/44	06:22	19:41-20:02/21	07:18		08:14		08:14	15:02-15:53/51	08:55	15:17-15:36/19
	21:58		20:59		19:44		18:30		16:31		16:15	
21	05:31	20:20-21:04/44	06:24	19:39-20:02/23	07:20		08:16		08:16	15:02-15:52/50	08:56	15:17-15:36/19
	21:57		20:57		19:41		18:28		16:30		16:15	
22	05:32	20:20-21:04/44	06:26	19:38-20:03/25	07:22		08:18		08:18	15:02-15:52/50	08:56	15:18-15:37/19
	21:55		20:55		19:39		18:26		16:29		16:15	
23	05:34	20:20-21:04/44	06:27	19:38-20:03/25	07:23		08:20		08:20	15:02-15:51/49	08:57	15:18-15:37/19
	21:54		20:52		19:36		18:24		16:27		16:16	
24	05:35	20:19-21:04/45	06:29	19:37-20:04/27	07:25		08:22	17:06-17:16/10	08:22	15:02-15:33/31	08:57	15:18-15:37/19
	21:52		20:50		19:34		18:21		16:26	15:34-15:50/16	16:17	
25	05:37	20:18-21:03/45	06:31	19:36-20:03/27	07:27		07:24	16:04-16:18/14	08:23	15:02-15:34/32	08:58	15:20-15:39/19
	21:51		20:48		19:31		17:19		16:25	15:36-15:49/13	16:17	
26	05:38	20:18-21:03/45	06:33	19:36-20:03/27	07:29		07:26	16:02-16:20/18	08:25	15:03-15:34/31	08:58	15:20-15:39/19
	21:49		20:45		19:29		17:17		16:24	15:38-15:48/10	16:18	
27	05:40	20:18-21:02/44	06:35	19:36-20:03/27	07:31		07:28	16:01-16:20/19	08:27	15:03-15:35/32	08:58	15:20-15:40/20
	21:47		20:43		19:26		17:15		16:23	15:41-15:46/5	16:19	
28	05:42	20:18-21:02/44	06:36	19:35-20:02/27	07:33		07:29	15:55-16:22/27	08:29	15:03-15:34/31	08:58	15:20-15:41/21
	21:46		20:41	19:10-19:22/12	19:24		17:13		16:22		16:20	
29	05:43	20:18-21:02/44	06:38	19:36-20:01/25	07:34		07:31	15:51-16:22/31	08:30	15:03-15:34/31	08:58	15:20-15:42/22
	21:44		20:38	19:07-19:24/17	19:21		17:11		16:21		16:20	
30	05:45	20:18-21:01/43	06:40	19:36-20:00/24	07:36		07:33	15:47-16:23/36	08:32	15:04-15:35/31	08:58	15:21-15:43/22
	21:42		20:36	19:05-19:26/21	19:19		17:09		16:20		16:21	
31	05:47	20:18-21:01/43	06:42	19:37-20:00/23			07:35	15:44-16:23/39			08:58	15:21-15:44/23
	21:40		20:33	19:03-19:28/25			17:06				16:22	
Potential sun hours	515		461		382		328		257		231	
Sum of minutes with flicker	1113		778		584		194		1450		711	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker



### SHADOW - Calendar per WTG

Calculation: Tirawley Shadow Flicker Worst Case WTG: 8 - AT08

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January	February	March	April	May	June
1	08:58 13:58-14:51/53 16:24	08:27 16:09-16:39/30 17:16	07:29 16:45-17:34/49 18:13	07:12 20:12	06:02 19:52-20:33/41 21:09	05:12 22:00
2	08:58 13:59-14:51/52 16:25	08:25 16:09-16:39/30 17:18	07:26 16:49-17:34/45 18:15	07:10 20:14	06:00 19:53-20:33/40 21:11	05:11 22:01
3	08:58 14:00-14:52/52 16:26	08:24 16:08-16:40/32 17:20	07:24 16:54-17:34/40 18:17	07:08 20:16	05:58 19:56-20:40/44 21:13	05:10 22:02
4	08:58 14:00-14:52/52 16:27	08:22 16:08-16:41/33 17:22	07:22 16:56-17:32/36 18:19	07:05 20:18	05:56 20:01-20:42/41 21:14	05:09 22:03
5	08:57 14:00-14:52/52 16:29	08:20 16:07-16:41/34 17:24	07:19 17:00-17:32/32 18:21	07:03 20:20	05:54 20:01-20:45/44 21:16	05:08 22:05
6	08:57 14:01-14:53/52 16:30	08:18 16:07-16:42/35 17:26	07:17 17:09-17:30/21 18:23	07:00 20:22	05:52 20:01-20:46/45 21:18	05:07 22:06
7	08:56 14:01-14:53/52 16:31	08:16 16:07-16:42/35 17:28	07:14 17:10-17:29/19 18:25	06:58 20:24	05:50 20:00-20:47/47 21:20	05:07 21:23-21:29/6 22:07
8	08:56 14:02-14:53/51 16:33	08:14 16:07-16:42/35 17:30	07:12 17:12-17:27/15 18:27	06:55 20:26	05:48 20:00-20:47/47 21:22	05:06 21:21-21:30/9 22:08
9	08:55 14:03-14:54/51 16:34	08:12 16:06-16:41/35 17:32	07:09 17:15-17:24/9 18:28	06:53 20:27	05:46 20:00-20:48/48 21:23	05:05 21:21-21:32/11 22:09
10	08:55 14:04-14:54/50 16:36	08:10 16:43-17:03/20 17:34	07:07 18:30	06:50 20:29	05:44 20:01-20:49/48 21:25	05:05 21:20-21:32/12 22:09
11	08:54 14:04-14:54/50 16:37	08:08 16:07-17:05/58 17:36	07:05 18:32	06:48 20:31	05:42 20:01-20:49/48 21:27	05:04 21:19-21:34/15 22:10
12	08:53 14:05-14:54/49 16:39	08:06 16:07-17:07/60 17:38	07:02 18:34	06:46 20:33	05:40 20:01-20:49/48 21:29	05:04 21:19-21:35/16 22:11
13	08:52 14:06-14:54/48 16:41	08:04 16:08-17:10/62 17:40	07:00 18:36	06:43 20:35	05:39 20:01-20:49/48 21:31	05:04 21:19-21:36/17 22:12
14	08:51 14:07-14:54/47 16:42	08:02 16:09-17:11/62 17:43	06:57 18:38	06:41 20:37	05:37 20:01-20:49/48 21:32	05:03 21:18-21:35/17 22:12
15	08:50 14:06-14:53/47 16:44	08:00 16:09-17:13/64 17:45	06:55 18:40	06:38 20:01-20:08/7 20:39	05:35 20:02-20:49/47 21:34	05:03 21:19-21:36/17 22:13
16	08:50 14:08-14:53/45 16:46	07:58 16:10-17:16/66 17:47	06:52 18:42	06:36 19:57-20:10/13 20:41	05:33 20:03-20:49/46 21:36	05:03 21:19-21:36/17 22:14
17	08:48 14:09-14:54/45 16:47	07:56 16:11-17:18/67 17:49	06:50 18:44	06:34 19:55-20:12/17 20:43	05:32 20:03-20:49/46 21:37	05:03 21:19-21:37/18 22:14
18	08:47 14:10-14:54/44 16:49	07:54 16:13-17:20/67 17:51	06:47 18:46	06:31 19:53-20:13/20 20:44	05:30 20:04-20:49/45 21:39	05:03 21:19-21:37/18 22:15
19	08:46 14:10-14:53/43 16:51	07:51 16:36-17:20/44 17:53	06:45 18:48	06:29 19:52-20:14/22 20:46	05:29 20:04-20:48/44 21:41	05:03 21:19-21:38/19 22:15
20	08:45 14:12-14:53/41 16:53	07:49 16:36-17:22/46 17:55	06:42 18:50	06:27 19:51-20:14/23 20:48	05:27 20:06-20:48/42 21:42	05:03 21:19-21:38/19 22:15
21	08:44 14:13-14:52/39 16:55	07:47 16:37-17:27/50 17:57	06:40 18:52	06:24 19:50-20:15/25 20:50	05:25 20:07-20:48/41 21:44	05:03 21:20-21:39/19 22:15
22	08:42 14:14-14:52/38 16:56	07:45 16:36-17:29/53 17:59	06:37 18:53	06:22 19:50-20:15/25 20:52	05:24 20:08-20:47/39 21:46	05:03 21:20-21:39/19 22:16
23	08:41 14:15-14:50/35 16:58	07:43 16:37-17:31/54 18:01	06:35 18:55	06:20 19:50-20:15/25 20:54	05:23 20:09-20:47/38 21:47	05:04 21:20-21:39/19 22:16
24	08:40 14:18-14:50/32 17:00	07:40 16:38-17:33/55 18:03	06:32 18:57	06:17 19:49-20:15/26 20:56	05:21 20:26-20:46/20 21:49	05:04 21:20-21:38/18 22:16
25	08:38 16:17-16:28/11 17:02	07:38 16:38-17:33/55 18:05	06:30 18:59	06:15 19:49-20:26/37 20:58	05:20 20:28-20:46/18 21:50	05:04 21:21-21:39/18 22:16
26	08:37 16:15-16:30/15 17:04	07:36 16:39-17:34/55 18:07	06:27 19:01	06:13 19:49-20:27/38 20:59	05:18 20:29-20:45/16 21:52	05:05 21:21-21:39/18 22:16
27	08:35 16:14-16:33/19 17:06	07:33 16:40-17:34/54 18:09	06:25 19:03	06:11 19:49-20:29/40 21:01	05:17 20:30-20:44/14 21:53	05:05 21:22-21:39/17 22:16
28	08:34 16:13-16:34/21 17:08	07:31 16:42-17:34/52 18:11	06:22 19:05	06:09 19:49-20:30/41 21:03	05:16 20:31-20:43/12 21:55	05:06 21:21-21:39/18 22:16
29	08:32 16:11-16:35/24 17:10		07:20 20:07	06:06 19:50-20:32/42 21:05	05:15 20:33-20:42/9 21:56	05:06 21:22-21:39/17 22:15
30	08:31 16:10-16:36/26 17:12		07:17 20:09	06:04 19:51-20:32/41 21:07	05:14 20:35-20:40/5 21:57	05:07 21:23-21:39/16 22:15
31	08:29 16:09-16:37/28 17:14		07:15 20:10		05:13 21:59	
Potential sun hours	248	272	367	421	496	513
Sum of minutes with flicker	1354	1437	266	442	1143	390

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker

### SHADOW - Calendar per WTG

Calculation: Tirawley Shadow Flicker Worst Case WTG: 8 - AT08  
 Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	July	August	September	October	November	December
1	05:08 21:23-21:38/15 22:15	05:48 20:11-20:59/48 21:39	06:44 20:31	07:38 19:16	07:37 16:13-16:32/19 17:04 15:36-16:11/35	08:33 13:46-14:36/50 16:19
2	05:08 21:24-21:38/14 22:14	05:50 20:11-20:59/48 21:37	06:46 20:28	07:40 19:14	07:39 15:36-16:11/35 17:02 16:15-16:28/13	08:35 13:46-14:36/50 16:18
3	05:09 21:26-21:38/12 22:14	05:52 20:10-20:58/48 21:35	06:47 20:26	07:42 19:11	07:41 15:36-16:11/35 17:00	08:36 13:46-14:37/51 16:18
4	05:10 21:26-21:36/10 22:13	05:53 20:10-20:58/48 21:33	06:49 20:24	07:44 17:54-17:59/5 19:09	07:43 15:37-16:12/35 16:58	08:38 13:47-14:38/51 16:17
5	05:11 21:27-21:35/8 22:13	05:55 20:11-20:58/47 21:31	06:51 20:21	07:45 17:50-18:03/13 19:06	07:45 15:37-16:11/34 16:57	08:39 13:46-14:38/52 16:16
6	05:12 21:30-21:33/3 22:12	05:57 20:10-20:56/46 21:29	06:53 20:19	07:47 17:47-18:05/18 19:04	07:47 15:37-16:11/34 16:55	08:41 13:47-14:39/52 16:16
7	05:13 22:12	05:59 20:10-20:55/45 21:27	06:55 20:16	07:49 17:45-18:06/21 19:01	07:49 15:37-16:10/33 16:53	08:42 13:47-14:39/52 16:15
8	05:14 22:11	06:00 20:11-20:54/43 21:25	06:56 20:14	07:51 17:39-18:07/28 18:59	07:51 15:38-16:10/32 16:51	08:43 13:48-14:40/52 16:15
9	05:15 22:10	06:02 20:08-20:51/43 21:23	06:58 20:11	07:53 17:33-18:07/34 18:56	07:53 15:38-16:09/31 16:49	08:45 13:48-14:40/52 16:14
10	05:16 22:09	06:04 20:04-20:48/44 21:21	07:00 20:09	07:55 17:30-18:08/38 18:54	07:55 15:40-16:09/29 16:47	08:46 13:48-14:40/52 16:14
11	05:17 22:08	06:06 20:01-20:43/42 21:19	07:02 20:06	07:57 17:27-18:08/41 18:52	07:57 15:41-16:09/28 16:45	08:47 13:48-14:41/53 16:14
12	05:18 22:07	06:08 20:00-20:41/41 21:17	07:04 20:04	07:59 17:20-18:08/48 18:49	07:59 15:42-16:08/26 16:44	08:48 13:49-14:42/53 16:14
13	05:19 22:06	06:09 19:59-20:41/42 21:15	07:05 20:01	08:00 17:17-18:07/50 18:47	08:01 15:43-16:07/24 16:42	08:49 14:58-15:02/4 16:14 13:49-14:42/53
14	05:21 20:42-20:50/8 22:05	06:11 19:58-20:40/42 21:13	07:07 19:59	08:02 17:14-18:07/53 18:44	08:03 15:45-16:06/21 16:40 14:00-14:14/14	08:50 14:57-15:03/6 16:14 13:50-14:43/53
15	05:22 20:40-20:51/11 22:04	06:13 19:57-20:38/41 21:10	07:09 19:56	08:04 17:12-18:07/55 18:42	08:05 15:46-16:04/18 16:39 13:56-14:17/21	08:51 14:57-15:05/8 16:14 13:50-14:44/53
16	05:23 20:39-20:52/13 22:03	06:15 19:56-20:36/40 21:08	07:11 19:54	08:06 17:11-18:06/55 18:40	08:07 15:48-16:03/15 16:37 13:54-14:20/26	08:52 14:57-15:06/9 16:14 13:51-14:44/53
17	05:25 20:38-20:53/15 22:02	06:17 19:56-20:34/38 21:06	07:13 19:51	08:08 17:10-18:05/55 18:37	08:09 15:51-16:01/10 16:36 13:53-14:22/29	08:53 14:57-15:07/10 16:14 13:51-14:45/54
18	05:26 20:38-20:55/17 22:01 20:24-20:31/7	06:18 19:55-20:31/36 21:04	07:14 19:49	08:10 17:09-18:04/55 18:35	08:11 13:52-14:24/32 16:34	08:54 14:57-15:07/10 16:14 13:51-14:44/53
19	05:28 20:37-20:56/19 21:59 20:22-20:34/12	06:20 19:55-20:21/26 21:01	07:16 19:46	08:12 17:08-18:02/54 18:33	08:12 13:50-14:25/35 16:33	08:55 14:57-15:08/11 16:14 13:52-14:45/53
20	05:29 20:36-20:56/20 21:58 20:20-20:35/15	06:22 19:55-20:21/26 20:59	07:18 19:44	08:14 17:07-18:00/53 18:30	08:14 13:49-14:27/38 16:31	08:55 14:58-15:09/11 16:15 13:53-14:46/53
21	05:31 20:19-20:57/38 21:57	06:24 19:54-20:20/26 20:57	07:20 19:41	08:16 17:07-17:57/50 18:28 16:50-17:00/10	08:16 13:49-14:28/39 16:30	08:56 14:58-15:09/11 16:15 13:53-14:46/53
22	05:32 20:17-20:57/40 21:55	06:26 19:55-20:19/24 20:55	07:22 19:39	08:18 17:07-17:52/45 18:26 16:47-17:03/16	08:18 13:48-14:29/41 16:29	08:56 14:59-15:10/11 16:15 13:54-14:47/53
23	05:34 20:17-20:59/42 21:54	06:27 19:55-20:19/24 20:52	07:23 19:36	08:20 17:06-17:50/44 18:24 16:44-17:05/21	08:20 13:47-14:30/43 16:27	08:57 14:59-15:10/11 16:16 13:54-14:47/53
24	05:35 20:16-20:59/43 21:52	06:29 19:56-20:18/22 20:50	07:25 19:34	08:22 16:42-17:49/67 18:21	08:22 13:47-14:31/44 16:26	08:57 14:59-15:10/11 16:17 13:54-14:47/53
25	05:37 20:14-20:58/44 21:51	06:31 19:56-20:16/20 20:48	07:27 19:31	07:24 15:40-16:47/67 17:19	08:23 13:47-14:32/45 16:25	08:58 15:00-15:11/11 16:17 13:55-14:48/53
26	05:38 20:14-20:59/45 21:49	06:33 19:58-20:15/17 20:45	07:29 19:29	07:26 15:39-16:44/65 17:17	08:25 13:47-14:33/46 16:24	08:58 15:01-15:11/10 16:18 13:55-14:48/53
27	05:40 20:13-20:59/46 21:47	06:35 20:00-20:13/13 20:43	07:31 19:26	07:28 15:38-16:42/64 17:15	08:27 13:47-14:33/46 16:23	08:58 15:02-15:11/9 16:19 13:56-14:49/53
28	05:42 20:13-21:00/47 21:46	06:36 20:02-20:08/6 20:41	07:33 19:24	07:30 15:38-16:40/62 17:13	08:29 13:46-14:33/47 16:22	08:58 15:03-15:11/8 16:20 13:56-14:49/53
29	05:43 20:13-21:00/47 21:44	06:38 20:38	07:34 19:21	07:31 15:37-16:39/62 17:11	08:30 13:46-14:34/48 16:21	08:58 15:04-15:10/6 16:20 13:57-14:50/53
30	05:45 20:12-21:00/48 21:42	06:40 20:36	07:36 19:19	07:33 15:37-16:36/59 17:09	08:32 13:46-14:35/49 16:20	08:58 15:06-15:10/4 16:21 13:57-14:50/53
31	05:47 20:12-21:00/48 21:40	06:42 20:33	 	07:35 16:12-16:34/22 17:06 15:36-16:11/35	 	08:58 13:58-14:51/53 16:22
Potential sun hours	515	461	382	328	257	231
Sum of minutes with flicker	687	986	0	1365	1150	1789

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker

### SHADOW - Calendar per WTG

Calculation: Tirawley Shadow Flicker Worst Case WTG: 9 - AT09

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January	February	March	April	May	June
1	08:58 16:24	08:27 09:00-09:15/15 17:16 16:29-16:44/15	07:29 17:11-17:30/19 18:13	07:12 20:12	06:02 19:32-20:19/47 21:09	05:12 21:03-21:21/18 22:00
2	08:58 16:25	08:25 09:02-09:14/12 17:18 16:28-16:46/18	07:26 17:12-17:28/16 18:15	07:10 20:14	06:00 19:32-20:18/46 21:11	05:11 21:03-21:21/18 22:01
3	08:58 16:26	08:24 09:05-09:11/6 17:20 16:28-16:48/20	07:24 17:15-17:26/11 18:17	07:08 19:34-19:46/12 20:16	05:58 19:32-20:18/46 21:13	05:10 21:03-21:21/18 22:02
4	08:58 16:27	08:22 16:28-16:50/22 17:22	07:22 18:19	07:05 19:32-19:49/17 20:18	05:56 19:32-20:18/46 21:14	05:09 21:04-21:21/17 22:04
5	08:57 16:29	08:20 16:28-16:53/25 17:24	07:19 18:21	07:03 19:31-19:50/19 20:20	05:54 19:33-20:19/46 21:16	05:08 21:04-21:21/17 22:05
6	08:57 16:30	08:18 16:28-16:54/26 17:26	07:17 18:23	07:00 19:29-19:51/22 20:22	05:52 19:33-20:18/45 21:18	05:07 21:04-21:21/17 22:06
7	08:57 16:31	08:16 16:28-16:54/26 17:28	07:14 18:25	06:58 19:28-19:52/24 20:24	05:50 19:33-20:18/45 21:20	05:07 21:05-21:21/16 22:07
8	08:56 16:33	08:14 16:29-16:53/24 17:30	07:12 18:27	06:55 19:27-19:52/25 20:26	05:48 19:33-20:17/44 21:22	05:06 21:04-21:21/17 22:08
9	08:55 16:34	08:12 16:29-16:52/23 17:32	07:10 18:29	06:53 19:26-19:57/31 20:27	05:46 19:33-20:16/43 21:24	05:05 21:05-21:21/16 22:09
10	08:55 16:36	08:10 16:30-16:52/22 17:34	07:07 18:30	06:50 19:26-19:59/33 20:29	05:44 19:34-20:17/43 21:25	05:05 21:05-21:21/16 22:09
11	08:54 16:37	08:08 16:31-16:51/20 17:36	07:05 18:32	06:48 19:25-20:02/37 20:31	05:42 19:34-20:16/42 21:27	05:04 21:06-21:21/15 22:10
12	08:53 16:39	08:06 16:32-16:50/18 17:38	07:02 18:34	06:46 19:26-20:05/39 20:33	05:40 19:35-20:15/40 21:29	05:04 21:06-21:21/15 22:11
13	08:52 16:41	08:04 16:34-16:48/14 17:41	07:00 18:36	06:43 19:25-20:06/41 20:35	05:39 19:36-20:15/39 21:31	05:04 21:07-21:22/15 22:12
14	08:51 16:42	08:02 16:37-16:46/9 17:43	06:57 18:38	06:41 19:26-20:08/42 20:37	05:37 19:36-20:14/38 21:32	05:03 21:07-21:21/14 22:12
15	08:51 16:44	08:00 17:45	06:55 18:40	06:38 19:26-20:08/42 20:39	05:35 19:37-20:12/35 21:34	05:03 21:07-21:21/14 22:13
16	08:50 16:46	07:58 17:47	06:52 18:42	06:36 19:27-20:09/42 20:41	05:33 19:38-20:12/34 21:36	05:03 21:07-21:21/14 22:14
17	08:49 16:47	07:56 17:17-17:19/2 17:49	06:50 18:44	06:34 19:28-20:09/41 20:43	05:32 19:39-20:11/32 21:38	05:03 21:08-21:21/13 22:14
18	08:47 16:49	07:54 08:20-08:21/1 17:51 17:15-17:22/7	06:47 18:46	06:31 19:30-20:12/42 20:44	05:30 19:40-20:10/30 21:39	05:03 21:08-21:22/14 22:15
19	08:46 16:51	07:52 08:17-08:21/4 17:53 17:13-17:23/10	06:45 18:48	06:29 19:33-20:13/40 20:46	05:29 19:41-20:09/28 21:41	05:03 21:08-21:22/14 22:15
20	08:45 16:53	07:49 08:15-08:21/6 17:55 17:12-17:26/14	06:42 18:50	06:27 19:34-20:14/40 20:48	05:27 19:43-20:08/25 21:42	05:03 21:08-21:22/14 22:15
21	08:44 09:14-09:16/2 16:55	07:47 08:13-08:21/8 17:57 17:11-17:28/17	06:40 18:52	06:24 19:34-20:15/41 20:50	05:25 21:08-21:11/3 21:44 19:45-20:07/22	05:03 21:10-21:23/13 22:16
22	08:43 09:13-09:17/4 16:56	07:45 08:10-08:20/10 17:59 17:10-17:30/20	06:37 18:53	06:22 19:35-20:16/41 20:52	05:24 21:05-21:12/7 21:46 19:46-20:05/19	05:03 21:09-21:23/14 22:16
23	08:41 09:11-09:17/6 16:58	07:43 08:08-08:19/11 18:01 17:10-17:32/22	06:35 18:55	06:20 19:36-20:17/41 20:54	05:23 21:05-21:13/8 21:47 19:48-20:03/15	05:03 21:09-21:23/14 22:16
24	08:40 09:10-09:18/8 17:00	07:40 08:06-08:18/12 18:03 17:10-17:33/23	06:32 18:57	06:17 19:36-20:18/42 20:56	05:21 21:04-21:15/11 21:49 19:51-20:01/10	05:04 21:09-21:23/14 22:16
25	08:38 09:08-09:18/10 17:02	07:38 08:05-08:16/11 18:05 17:09-17:32/23	06:30 18:59	06:15 19:35-20:18/43 20:58	05:20 21:04-21:16/12 21:50	05:04 21:10-21:24/14 22:16
26	08:37 09:07-09:18/11 17:04	07:36 08:09-08:12/3 18:07 17:09-17:32/23	06:27 19:01	06:13 19:34-20:18/44 21:00	05:18 21:04-21:18/14 21:52	05:05 21:10-21:23/13 22:16
27	08:35 09:05-09:18/13 17:06 16:32-16:33/1	07:33 17:09-17:31/22 18:09	06:25 19:03	06:11 19:33-20:18/45 21:01	05:17 21:03-21:19/16 21:53	05:05 21:10-21:24/14 22:16
28	08:34 09:03-09:18/15 17:08 16:31-16:35/4	07:31 17:10-17:31/21 18:11	06:22 19:05	06:09 19:33-20:18/45 21:03	05:16 21:03-21:20/17 21:55	05:06 21:10-21:24/14 22:16
29	08:32 09:01-09:17/16 17:10 16:30-16:37/7	07:29 17:09-17:32/23 18:09	06:20 19:07	06:06 19:33-20:19/46 21:05	05:15 21:03-21:20/17 21:56	05:06 21:10-21:25/15 22:16
30	08:31 08:59-09:16/17 17:12 16:29-16:39/10	07:27 17:09-17:32/23 18:09	06:17 19:09	06:04 19:32-20:19/47 21:07	05:14 21:03-21:21/18 21:57	05:07 21:10-21:25/15 22:15
31	08:29 08:59-09:17/18 17:14 16:28-16:41/13	07:25 17:09-17:32/23 18:09	06:15 19:10	06:04 19:32-20:19/47 21:07	05:13 21:03-21:21/18 21:59	05:07 21:10-21:25/15 22:15
Potential sun hours	248	272	367	421	496	513
Sum of minutes with flicker	155	585	46	1024	1001	480

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker

### SHADOW - Calendar per WTG

Calculation: Tirawley Shadow Flicker Worst Case WTG: 9 - AT09

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	July	August	September	October	November	December
1	05:07 21:10-21:25/15 22:15	05:48 19:45-20:25/40 21:39	06:44 19:24-20:01/37 20:31	07:38 19:16	07:37 15:59-16:21/22 17:04	08:33 16:19
2	05:08 21:10-21:26/16 22:15	05:50 19:45-20:26/41 21:37	06:46 19:24-19:57/33 20:28	07:40 19:14	07:39 15:58-16:22/24 17:02	08:35 16:18
3	05:09 21:11-21:27/16 22:14	05:52 19:43-20:26/43 21:35	06:47 19:24-19:55/31 20:26	07:42 19:11	07:41 15:59-16:23/24 17:00	08:37 16:18
4	05:10 21:10-21:26/16 22:14	05:53 19:43-20:27/44 21:33	06:49 19:24-19:49/25 20:24	07:44 19:09	07:43 15:58-16:23/25 16:58	08:38 16:17
5	05:11 21:10-21:27/17 22:13	05:55 19:43-20:28/45 21:31	06:51 19:24-19:48/24 20:21	07:45 19:06	07:45 15:58-16:23/25 16:57	08:39 16:16
6	05:12 21:10-21:27/17 22:12	05:57 19:42-20:27/45 21:29	06:53 19:25-19:47/22 20:19	07:47 19:04	07:47 15:58-16:22/24 16:55	08:41 16:16
7	05:13 21:10-21:27/17 22:12	05:59 19:42-20:28/46 21:27	06:55 19:26-19:46/20 20:16	07:49 19:01	07:49 15:58-16:20/22 16:53	08:42 16:15
8	05:14 21:10-21:28/18 22:11	06:00 19:42-20:28/46 21:25	06:56 19:26-19:43/17 20:14	07:51 18:59	07:51 08:34-08:41/7 16:51	08:44 16:15
9	05:15 21:10-21:28/18 22:10	06:02 19:41-20:27/46 21:23	06:58 19:28-19:41/13 20:11	07:53 18:56	07:53 08:32-08:45/13 16:49	08:45 16:14
10	05:16 21:10-21:28/18 22:09	06:04 19:41-20:28/47 21:21	07:00 19:33-19:36/3 20:09	07:55 17:51-17:58/7 18:54	07:55 08:31-08:46/15 16:47	08:46 16:14
11	05:17 21:11-21:28/17 22:08	06:06 19:41-20:28/47 21:19	07:02 20:06	07:57 17:47-18:01/14 18:52	07:57 08:29-08:47/18 16:45	08:47 16:14
12	05:18 21:11-21:28/17 22:07	06:08 19:41-20:27/46 21:17	07:04 20:04	07:59 17:45-18:02/17 18:49	07:59 08:31-08:48/17 16:44	08:48 16:14
13	05:19 21:11-21:28/17 22:06	06:09 19:41-20:27/46 21:15	07:05 20:01	08:00 17:44-18:03/19 18:47	08:01 08:33-08:49/16 16:42	08:49 16:14
14	05:21 21:12-21:29/17 22:05	06:11 19:41-20:27/46 21:13	07:07 19:59	08:02 17:43-18:04/21 18:44	08:03 08:35-08:50/15 16:40	08:50 16:14
15	05:22 21:12-21:29/17 22:04	06:13 19:40-20:26/46 21:10	07:09 19:56	08:04 17:42-18:04/22 18:42	08:05 08:38-08:51/13 16:39	08:51 16:14
16	05:23 21:12-21:28/16 22:03	06:15 19:41-20:26/45 21:08	07:11 19:54	08:06 08:39-08:46/7 18:40	08:07 08:40-08:51/11 16:37	08:52 16:14
17	05:25 21:12-21:27/15 22:02	06:17 19:41-20:25/44 21:06	07:13 19:51	08:08 08:36-08:49/13 18:37	08:09 08:42-08:52/10 16:36	08:53 16:14
18	05:26 21:13-21:27/14 22:01	06:18 19:41-20:24/43 21:04	07:14 19:49	08:10 08:38-08:50/12 18:35	08:11 08:44-08:52/8 16:34	08:54 16:14
19	05:28 21:14-21:25/11 21:59	06:20 19:42-20:23/41 21:02	07:16 19:46	08:12 08:40-08:51/11 18:33	08:13 08:46-08:52/6 16:33	08:55 16:14
20	05:29 21:14-21:24/10 21:58	06:22 19:41-20:23/42 20:59	07:18 19:44	08:14 08:42-08:51/9 18:30	08:14 08:48-08:52/4 16:31	08:55 16:15
21	05:31 21:16-21:23/7 21:57	06:24 19:39-20:21/42 20:57	07:20 19:41	08:16 08:44-08:51/7 18:28	08:16 08:50-08:52/2 16:30	08:56 16:15
22	05:32 21:16-21:21/5 21:55	06:26 19:39-20:20/41 20:55	07:22 19:39	08:18 08:46-08:51/5 18:26	08:18 16:29	08:56 16:15
23	05:34 21:19-21:21/2 21:54	06:27 19:38-20:18/40 20:52	07:23 19:36	08:20 08:48-08:51/3 18:24	08:20 16:27	08:57 16:16
24	05:35 19:52-20:19/27 21:52	06:29 19:36-20:17/41 20:50	07:25 19:34	08:22 17:45-17:51/6 18:21	08:22 16:26	08:57 16:17
25	05:37 19:51-20:20/29 21:51	06:31 19:32-20:14/42 20:48	07:27 19:31	07:24 17:19	08:23 16:25	08:58 16:17
26	05:38 19:50-20:21/31 21:49	06:33 19:30-20:12/42 20:45	07:29 19:29	07:26 17:17	08:25 16:24	08:58 16:18
27	05:40 19:49-20:22/33 21:47	06:35 19:29-20:11/42 20:43	07:31 19:26	07:28 17:15	08:27 16:23	08:58 16:19
28	05:42 19:48-20:23/35 21:46	06:36 19:27-20:09/42 20:41	07:33 19:24	07:30 16:06-16:16/10 17:13	08:29 16:22	08:58 16:20
29	05:43 19:48-20:24/36 21:44	06:38 19:26-20:08/42 20:38	07:34 19:21	07:32 16:03-16:18/15 17:11	08:30 16:21	08:59 16:20
30	05:45 19:46-20:24/38 21:42	06:40 19:26-20:07/41 20:36	07:36 19:19	07:33 16:01-16:20/19 17:09	08:32 16:20	08:59 16:21
31	05:47 19:46-20:25/39 21:40	06:42 19:25-20:05/40 20:33	07:37 17:06	07:35 16:00-16:21/21 17:06	08:33 16:19	08:59 16:22
Potential sun hours	515	461	382	328	257	231
Sum of minutes with flicker	679	1344	225	387	407	0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker

### SHADOW - Calendar per WTG

Calculation: Tirawley Shadow Flicker Worst Case WTG: 10 - AT10

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January	February	March	April	May	June
1	08:58 09:33-09:52/19 16:24	08:27 17:16	07:29 17:06-17:34/28 18:13	07:12 20:12	06:02 20:13-20:38/25 21:09	05:12 20:31-20:49/18 22:00
2	08:58 09:33-09:53/20 16:25	08:25 17:18	07:26 17:06-17:33/27 18:15	07:10 20:14	06:00 20:12-20:40/28 21:11	05:11 20:32-20:48/16 22:01
3	08:58 09:33-09:53/20 16:26	08:24 17:20	07:24 17:08-17:32/24 18:17	07:08 20:16	19:37-19:46/9 21:13	05:10 20:32-20:47/15 22:02
4	08:58 09:32-09:53/21 16:27	08:22 17:22	07:22 17:08-17:30/22 18:19	07:05 20:18	19:35-19:48/13 21:14	05:09 20:34-20:47/13 22:04
5	08:57 09:32-09:54/22 16:29	08:20 17:24	07:19 17:10-17:29/19 18:21	07:03 20:20	19:34-19:50/16 21:16	05:08 20:35-20:46/11 22:05
6	08:57 09:31-09:54/23 16:30	08:18 17:26	07:17 17:12-17:26/14 18:23	07:00 20:22	19:33-19:51/18 21:18	05:07 20:36-20:45/9 22:06
7	08:57 09:30-09:54/24 16:31	08:16 17:28	07:14 07:39-07:41/2 18:25	06:58 20:24	19:33-19:51/18 21:20	05:07 20:38-20:44/6 22:07
8	08:56 09:30-09:55/25 16:33	08:14 17:30	07:12 07:37-07:41/4 18:27	06:55 20:26	19:32-19:51/19 21:22	05:06 22:08
9	08:55 09:29-09:54/25 16:34	08:12 17:32	07:10 07:34-07:41/7 18:29	06:53 20:27	19:32-19:51/19 21:24	05:05 22:09
10	08:55 09:28-09:54/26 16:36	08:10 17:34	07:07 07:32-07:41/9 18:30	06:50 20:29	19:32-19:50/18 21:25	05:05 22:09
11	08:54 09:27-09:54/27 16:37	08:08 17:36	07:05 07:29-07:39/10 18:32	06:48 20:31	19:33-19:49/16 21:27	05:04 22:10
12	08:53 09:28-09:54/26 16:39	08:06 08:33-08:34/1 17:38	07:02 07:27-07:39/12 18:34	06:46 20:33	19:35-19:49/14 21:29	05:04 21:23-21:30/7 22:11
13	08:52 09:29-09:54/25 16:40	08:04 08:31-08:35/4 17:40	07:00 07:24-07:37/13 18:36	06:43 20:35	19:37-19:46/9 21:31	05:04 21:22-21:31/9 22:12
14	08:52 09:30-09:54/24 16:42	08:02 08:29-08:36/7 17:43	06:57 07:25-07:35/10 18:38	06:41 20:37	19:40-19:43/3 21:32	05:03 21:20-21:32/12 22:12
15	08:51 09:31-09:54/23 16:44	08:00 08:27-08:36/9 17:45	06:55 17:45-18:10/25 18:40	06:38 20:39	20:13-20:53/40 21:34	05:03 21:20-21:33/13 22:13
16	08:50 09:32-09:52/20 16:46	07:58 08:24-08:35/11 17:47	06:52 17:44-18:10/26 18:42	06:36 20:41	20:14-20:53/39 21:36	05:03 21:20-21:34/14 22:14
17	08:49 09:33-09:52/19 16:47	07:56 08:22-08:35/13 17:49	06:50 17:44-18:10/26 18:44	06:34 20:43	20:15-20:53/38 21:38	05:03 21:19-21:34/15 22:14
18	08:47 09:35-09:51/16 16:49	07:54 08:20-08:35/15 17:51	06:47 17:44-18:09/25 18:46	06:31 20:44	20:17-20:53/36 21:39	05:03 21:19-21:35/16 22:15
19	08:46 09:37-09:49/12 16:51	07:52 08:17-08:34/17 17:53	06:45 17:44-18:08/24 18:48	06:29 20:46	20:18-20:53/35 21:41	05:03 21:19-21:35/16 22:15
20	08:45 09:41-09:46/5 16:53	07:49 08:15-08:34/19 17:55	06:42 17:44-18:07/23 18:50	06:27 20:48	20:21-20:53/32 21:42	05:03 21:19-21:35/16 22:15
21	08:44 16:55	07:47 08:13-08:33/20 17:57	06:40 17:46-18:06/20 18:52	06:24 20:50	20:25-20:53/28 21:44	05:03 21:20-21:36/16 22:16
22	08:43 16:56	07:45 08:13-08:31/18 17:59	06:37 17:47-18:04/17 18:53	06:22 20:52	20:24-20:52/28 21:46	05:03 21:20-21:36/16 22:16
23	08:41 16:58	07:43 08:15-08:29/14 18:01	06:35 17:49-18:02/13 18:55	06:20 20:54	20:25-20:52/27 21:47	05:03 21:20-21:36/16 22:16
24	08:40 17:00	07:40 08:18-08:26/8 18:03	06:32 17:52-17:57/5 18:57	06:17 20:56	20:26-20:52/26 21:49	05:04 21:20-21:36/16 22:16
25	08:38 17:02	07:38 17:05-17:35/30 18:05	06:30 18:59	06:15 20:58	20:26-20:52/26 21:50	05:04 21:21-21:37/16 22:16
26	08:37 17:04	07:36 17:06-17:35/29 18:07	06:27 19:01	06:13 21:00	20:27-20:52/25 21:52	05:05 21:22-21:36/14 22:16
27	08:35 17:06	07:33 17:05-17:34/29 18:09	06:25 19:03	06:11 21:01	20:28-20:51/23 21:53	05:05 21:23-21:36/13 22:16
28	08:34 17:08	07:31 17:06-17:34/28 18:11	06:22 19:05	06:09 21:03	20:17-20:31/14 21:55	05:06 21:23-21:35/12 22:16
29	08:32 17:10		07:20 20:07	06:06 21:05	20:16-20:33/17 21:56	05:06 21:25-21:35/10 22:16
30	08:31 17:12		07:17 20:09	06:04 21:07	20:14-20:34/20 21:57	05:07 21:26-21:34/8 22:15
31	08:29 17:14		07:15 20:10		20:30-20:50/20 21:59	
Potential sun hours	248	272	367	421	496	513
Sum of minutes with flicker	422	417	521	231	996	343

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker

### SHADOW - Calendar per WTG

Calculation: Tirawley Shadow Flicker Worst Case WTG: 10 - AT10

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	July		August		September		October		November		December	
1	05:07	21:28-21:32/4	05:48	20:21-21:02/41	06:44	19:32-19:48/16	07:38	08:05-08:17/12	07:37		08:33	09:09-09:36/27
	22:15		21:39		20:31		19:16	18:26-18:48/22	17:04		16:19	
2	05:08		05:50	20:21-21:02/41	06:46	19:31-19:49/18	07:40	08:07-08:18/11	07:39		08:35	09:11-09:38/27
	22:15		21:37		20:28		19:14	18:26-18:44/18	17:02		16:18	
3	05:09		05:52	20:20-21:00/40	06:47	19:30-19:49/19	07:42	08:09-08:19/10	07:41		08:37	09:12-09:38/26
	22:14		21:35		20:26		19:11	18:27-18:42/15	17:00		16:18	
4	05:10		05:53	20:20-21:00/40	06:49	19:29-19:48/19	07:44	08:10-08:18/8	07:43		08:38	09:14-09:39/25
	22:14		21:33		20:24		19:09	18:28-18:39/11	16:58		16:17	
5	05:11	20:44-20:49/5	05:55	20:21-20:59/38	06:51	19:29-19:47/18	07:45	08:12-08:18/6	07:45		08:39	09:15-09:39/24
	22:13		21:31		20:21		19:06	18:31-18:37/6	16:56		16:16	
6	05:12	20:43-20:51/8	05:57	20:20-20:57/37	06:53	19:29-19:47/18	07:47	08:14-08:17/3	07:47		08:41	09:17-09:40/23
	22:12		21:29		20:19		19:04		16:55		16:16	
7	05:13	20:42-20:52/10	05:59	20:20-20:56/36	06:55	19:29-19:45/16	07:49	08:16-08:17/1	07:49		08:42	09:18-09:40/22
	22:12		21:27		20:16		19:01	17:49-18:00/11	16:53		16:15	
8	05:14	20:41-20:53/12	06:00	20:21-20:54/33	06:56	19:29-19:42/13	07:51	17:46-18:03/17	07:51		08:44	09:20-09:41/21
	22:11		21:25		20:14		18:59		16:51		16:15	
9	05:15	20:40-20:54/14	06:02	20:20-20:52/32	06:58	19:31-19:40/9	07:53	17:44-18:04/20	07:53		08:45	09:21-09:41/20
	22:10		21:23		20:11		18:56		16:49		16:14	
10	05:16	20:39-20:55/16	06:04	20:21-20:50/29	07:00	19:34-19:37/3	07:55	17:42-18:06/24	07:55		08:46	09:22-09:42/20
	22:09		21:21		20:09		18:54		16:47		16:14	
11	05:17	20:39-20:56/17	06:06	20:22-20:48/26	07:02		07:57	17:41-18:06/25	07:57		08:47	09:24-09:43/19
	22:08		21:19		20:06		18:52		16:45		16:14	
12	05:18	20:38-20:57/19	06:08	20:22-20:43/21	07:04		07:59	17:40-18:07/27	07:59		08:48	09:25-09:43/18
	22:07		21:17		20:04		18:49		16:44		16:14	
13	05:19	20:37-20:57/20	06:09	20:23-20:42/19	07:05		08:00	17:39-18:07/28	08:01		08:49	09:26-09:44/18
	22:06		21:15		20:01		18:47		16:42		16:14	
14	05:21	20:38-20:59/21	06:11	20:24-20:41/17	07:07		08:02	17:39-18:08/29	08:03		08:50	09:27-09:44/17
	22:05		21:13		19:59		18:44		16:40		16:14	
15	05:22	20:37-20:59/22	06:13	20:26-20:38/12	07:09		08:04	17:38-18:08/30	08:05		08:51	09:28-09:45/17
	22:04		21:10		19:56		18:42		16:39		16:14	
16	05:23	20:36-21:00/24	06:15	20:29-20:35/6	07:11		08:06	17:38-18:07/29	08:07		08:52	09:29-09:45/16
	22:03		21:08		19:54		18:40		16:37		16:14	
17	05:25	20:36-21:00/24	06:17		07:13		08:08	17:38-18:07/29	08:09		08:53	09:30-09:46/16
	22:02		21:06		19:51		18:37		16:36		16:14	
18	05:26	20:36-21:01/25	06:18		07:14		08:10	08:48-08:59/11	08:11		08:54	09:30-09:46/16
	22:01		21:04		19:49		18:35	17:38-18:05/27	16:34		16:14	
19	05:28	20:35-21:01/26	06:20		07:16		08:12	08:46-09:01/15	08:13		08:55	09:31-09:46/15
	21:59		21:02		19:46		18:33	17:38-18:03/25	16:33		16:14	
20	05:29	20:35-21:02/27	06:22		07:18	18:36-18:48/12	08:14	08:44-09:03/19	08:14		08:55	09:32-09:47/15
	21:58		20:59		19:44		18:30	17:38-18:00/22	16:31		16:15	
21	05:31	20:35-21:03/28	06:24		07:20	18:33-18:49/16	08:16	08:44-09:04/20	08:16		08:56	09:32-09:47/15
	21:57		20:57		19:41		18:28	17:39-17:58/19	16:30		16:15	
22	05:32	20:35-21:03/28	06:26		07:22	18:31-18:50/19	08:18	08:46-09:04/18	08:18	09:17-09:22/5	08:56	09:33-09:48/15
	21:55		20:55		19:39		18:26	17:39-17:55/16	16:29		16:15	
23	05:34	20:35-21:04/29	06:27		07:23	18:29-18:51/22	08:20	08:48-09:05/17	08:20	09:14-09:26/12	08:57	09:33-09:48/15
	21:54		20:52		19:36		18:24	17:40-17:53/13	16:27		16:16	
24	05:35	20:30-21:03/33	06:29		07:25	18:28-18:52/24	08:22	08:50-09:05/15	08:22	09:12-09:28/16	08:57	09:34-09:49/15
	21:52		20:50		19:34		18:21	17:42-17:51/9	16:26		16:17	
25	05:37	20:27-21:03/36	06:31		07:27	18:28-18:52/24	07:24	07:52-08:05/13	08:23	09:11-09:30/19	08:58	09:34-09:49/15
	21:51		20:48		19:31		17:19	16:43-16:48/5	16:25		16:17	
26	05:38	20:26-21:04/38	06:33		07:29	18:26-18:51/25	07:26	07:55-08:06/11	08:25	09:11-09:31/20	08:58	09:34-09:50/16
	21:49		20:45		19:29		17:17		16:24		16:18	
27	05:40	20:25-21:03/38	06:35		07:31	18:26-18:51/25	07:28	07:57-08:05/8	08:27	09:10-09:33/23	08:58	09:34-09:50/16
	21:47		20:43		19:26		17:15		16:23		16:19	
28	05:42	20:24-21:04/40	06:36		07:33	18:25-18:51/26	07:30	07:59-08:05/6	08:29	09:10-09:34/24	08:58	09:34-09:50/16
	21:46		20:41		19:24		17:13		16:22		16:20	
29	05:43	20:23-21:03/40	06:38	19:40-19:44/4	07:34	08:06-08:13/7	07:32	08:01-08:04/3	08:30	09:09-09:34/25	08:59	09:34-09:51/17
	21:44		20:38		19:21	18:26-18:51/25	17:11		16:21		16:20	
30	05:45	20:22-21:03/41	06:40	19:37-19:47/10	07:36	08:04-08:16/12	07:33	08:03-08:04/1	08:32	09:09-09:35/26	08:59	09:34-09:51/17
	21:42		20:36		19:19	18:26-18:50/24	17:09		16:20		16:21	
31	05:47	20:22-21:03/41	06:42	19:35-19:48/13			07:35				08:59	09:34-09:52/18
	21:40		20:33				17:06				16:22	
Potential sun hours	515		461		383		328		257		231	
Sum of minutes with flicker	686		495		410		685		170		577	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker



## SHADOW - Calendar per WTG

Calculation: Tirawley Shadow Flicker Worst Case WTG: 11 - AT11

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June
1	08:58 16:24	08:27 08:56-09:16/20 17:16	07:29 18:13	07:12 07:37-07:41/4 20:12 19:19-19:45/26	06:02 21:09	05:12 21:06-21:25/19 22:00
2	08:58 16:25	08:26 08:54-09:17/23 17:18	07:26 18:15	07:10 07:34-07:40/6 20:14 19:19-19:47/28	06:00 21:11	05:11 21:05-21:26/21 22:01
3	08:58 16:26	08:24 08:52-09:17/25 17:20	07:24 18:17	07:08 07:32-07:41/9 20:16 19:18-19:46/28	05:58 21:13	05:10 21:05-21:27/22 22:02
4	08:58 16:27	08:22 08:50-09:18/28 17:22	07:22 18:19	07:05 07:29-07:40/11 20:18 19:19-19:46/27	05:56 21:14	05:09 21:06-21:28/22 22:04
5	08:57 16:29	08:20 08:48-09:18/30 17:24	07:19 18:21	07:03 07:27-07:40/13 20:20 19:19-19:46/27	05:54 21:16	05:08 21:05-21:29/24 22:05
6	08:57 16:30	08:18 08:46-09:19/33 17:26	07:17 18:23	07:00 07:24-07:39/15 20:22 19:19-19:44/25	05:52 21:18	05:07 21:05-21:30/25 22:06
7	08:57 16:31	08:16 08:44-09:19/35 17:28	07:14 18:25	06:58 07:22-07:39/17 20:24 19:20-19:44/24	05:50 21:20	05:07 21:06-21:31/25 22:07
8	08:56 16:33	08:14 08:42-09:19/37 17:30	07:12 18:27	06:55 07:19-07:37/18 19:20-19:42/22 20:26 19:51-19:58/7	05:48 21:22	05:06 21:05-21:31/26 22:08
9	08:55 16:34	08:12 08:40-09:20/40 17:32	07:10 18:29	06:53 07:19-07:36/17 19:21-19:41/20 20:27 19:49-20:00/11	05:46 21:24	05:05 21:06-21:33/27 22:09
10	08:55 16:36	08:10 08:37-09:19/42 17:34	07:07 18:30	06:50 07:21-07:34/13 19:23-19:39/16 20:29 19:48-20:02/14	05:44 21:25	05:05 21:05-21:33/28 22:10
11	08:54 16:37	08:08 08:35-09:19/44 17:36	07:05 18:32	06:48 07:22-07:31/9 19:25-19:36/11 20:31 19:46-20:03/17	05:42 21:27	05:04 21:06-21:34/28 22:10
12	08:53 16:39	08:06 08:33-09:19/46 17:38	07:02 18:34	06:46 19:45-20:05/20 20:33	05:40 21:29	05:04 21:06-21:35/29 22:11
13	08:52 16:40	08:04 08:31-09:19/48 17:40	07:00 07:24-07:25/1 18:36	06:43 19:44-20:06/22 20:35	05:39 21:31	05:04 21:07-21:36/29 22:12
14	08:52 16:42	08:02 08:29-09:19/50 17:43	06:57 07:22-07:27/5 18:38	06:41 19:43-20:06/23 20:37	05:37 21:32	05:03 21:06-21:36/30 22:13
15	08:51 16:44	08:00 08:29-09:19/50 17:45	06:55 07:19-07:27/8 18:40	06:38 19:43-20:06/23 20:39	05:35 21:34	05:03 21:06-21:36/30 22:13
16	08:50 16:46	07:58 08:28-09:18/50 17:47	06:52 07:17-07:29/12 18:42	06:36 19:43-20:05/22 20:41	05:33 21:36	05:03 21:07-21:37/30 22:14
17	08:49 16:47	07:56 08:29-09:17/48 17:49	06:50 07:14-07:28/14 18:44	06:34 19:43-20:05/22 20:43	05:32 21:38	05:03 21:07-21:37/30 22:14
18	08:47 16:49	07:54 08:30-09:17/47 17:51	06:47 07:11-07:28/17 18:46	06:31 19:44-20:05/21 20:44	05:30 21:39	05:03 21:07-21:38/31 22:15
19	08:46 16:51	07:52 08:30-09:15/45 17:53	06:45 07:09-07:29/20 18:48	06:29 19:44-20:04/20 20:46	05:28 21:41	05:03 21:07-21:38/31 22:15
20	08:45 16:53	07:49 08:31-09:15/44 17:55	06:42 07:06-07:28/22 18:50	06:27 19:44-20:02/18 20:48	05:27 21:43	05:03 21:07-21:38/31 22:15
21	08:44 16:55	07:47 08:33-09:14/41 17:57	06:40 07:04-07:28/24 18:52	06:24 19:46-20:00/14 20:50	05:25 21:44	05:03 21:08-21:39/31 22:16
22	08:43 16:56	07:45 08:33-09:12/39 17:59	06:37 07:01-07:27/26 18:53	06:22 19:48-19:58/10 20:52	05:24 21:46	05:03 21:08-21:39/31 22:16
23	08:41 16:58	07:43 08:35-09:10/35 18:01	06:35 06:59-07:27/28 18:55	06:20 20:54 21:47	05:22 21:12-21:13/1 21:49	05:03 21:08-21:39/31 22:16
24	08:40 17:00	07:40 08:37-09:09/32 18:03	06:32 06:56-07:26/30 18:57	06:17 20:56 21:49	05:21 21:10-21:15/5 21:49	05:04 21:08-21:39/31 22:16
25	08:38 09:08-09:09/1 17:02	07:38 08:38-09:06/28 18:05	06:30 06:56-07:25/29 18:59	06:15 20:58 21:50	05:20 21:09-21:16/7 21:50	05:04 21:09-21:39/30 22:16
26	08:37 09:07-09:11/4 17:04	07:36 08:41-09:03/22 18:07	06:27 06:56-07:23/27 19:01 18:29-18:34/5	06:13 21:00 21:52	05:18 21:09-21:18/9 21:52	05:05 21:09-21:39/30 22:16
27	08:35 09:05-09:11/6 17:06	07:33 08:45-09:00/15 18:09	06:25 06:58-07:22/24 19:03 18:26-18:36/10	06:11 21:01 21:53	05:17 21:08-21:19/11 21:53	05:05 21:10-21:39/29 22:16
28	08:34 09:03-09:12/9 17:08	07:31 18:11	06:22 06:58-07:20/22 19:05 18:24-18:37/13	06:09 21:03 21:55	05:16 21:08-21:20/12 21:55	05:06 21:09-21:39/30 22:16
29	08:32 09:01-09:13/12 17:10		07:20 08:00-08:18/18 20:07 19:23-19:40/17	06:06 21:05 21:56	05:15 21:07-21:22/15 21:56	05:06 21:10-21:39/29 22:16
30	08:31 08:59-09:14/15 17:12		07:17 08:02-08:14/12 20:09 19:21-19:41/20	06:04 21:07 21:57	05:14 21:07-21:23/16 21:57	05:07 21:09-21:38/29 22:15
31	08:29 08:58-09:15/17 17:14		07:15 19:21-19:43/22 20:10	21:07	05:13 21:06-21:24/18 21:59	
Potential sun hours	248	272	367	421	496	513
Sum of minutes with flicker	64	997	426	650	94	839

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker

## SHADOW - Calendar per WTG

Calculation: Tirawley Shadow Flicker Worst Case WTG: 11 - AT11

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	July	August	September	October	November	December
1	05:07 21:10-21:38/28	05:48	06:44 07:21-07:30/9 19:23-19:35/12	07:38	07:37 08:07-08:49/42	08:33
	22:15	21:39	20:31 19:45-20:02/17	19:16	17:04	16:19
2	05:08 21:11-21:38/27	05:50	06:46 07:18-07:32/14 19:21-19:37/16	07:40	07:39 08:09-08:48/39	08:35
	22:15	21:37	20:29 19:46-20:00/14	19:14	17:02	16:18
3	05:09 21:11-21:38/27	05:52	06:47 07:17-07:34/17 19:19-19:39/20	07:42	07:41 08:12-08:49/37	08:37
	22:14	21:35	20:26 19:47-19:58/11	19:11	17:00	16:18
4	05:10 21:10-21:37/27	05:53	06:49 07:17-07:35/18 19:17-19:39/22	07:44	07:43 08:14-08:49/35	08:38
	22:14	21:33	20:24 19:48-19:55/7	19:09	16:58	16:17
5	05:11 21:11-21:37/26	05:55	06:51 07:18-07:35/17	07:45	07:45 08:16-08:48/32	08:39
	22:13	21:31	20:21 19:16-19:40/24	19:06	16:56	16:16
6	05:12 21:11-21:36/25	05:57	06:53 07:20-07:35/15	07:47	07:47 08:18-08:48/30	08:41
	22:12	21:29	20:19 19:15-19:40/25	19:04	16:55	16:16
7	05:13 21:12-21:36/24	05:59	06:55 07:22-07:35/13	07:49	07:49 08:20-08:48/28	08:42
	22:12	21:27	20:16 19:14-19:41/27	19:01	16:53	16:15
8	05:14 21:12-21:35/23	06:00	06:56 07:24-07:35/11	07:51	07:51 08:22-08:47/25	08:44
	22:11	21:25	20:14 19:13-19:40/27	18:59	16:51	16:15
9	05:15 21:12-21:34/22	06:02	06:58 07:25-07:34/9	07:53	07:53 08:25-08:47/22	08:45
	22:10	21:23	20:11 19:13-19:40/27	18:56	16:49	16:14
10	05:16 21:13-21:34/21	06:04	07:00 07:27-07:34/7	07:55	07:55 08:27-08:47/20	08:46
	22:09	21:21	20:09 19:13-19:40/27	18:54	16:47	16:14
11	05:17 21:13-21:33/20	06:06	07:02 07:29-07:33/4	07:57	07:57 08:29-08:46/17	08:47
	22:08	21:19	20:06 19:13-19:38/25	18:52	16:45	16:14
12	05:18 21:13-21:32/19	06:08	07:04 07:31-07:32/1	07:59	07:59 08:31-08:46/15	08:48
	22:07	21:17	20:04 19:12-19:35/23	18:49	16:44	16:14
13	05:19 21:14-21:31/17	06:09	07:05 07:54-08:05/11	08:01	08:01 08:33-08:45/12	08:49
	22:06	21:15	20:01 19:12-19:33/21	18:47	16:42	16:14
14	05:21 21:15-21:31/16	06:11	07:07 07:51-08:08/17	08:02 09:21-09:28/7	08:03 08:35-08:44/9	08:50
	22:05	21:13	19:59 19:13-19:31/18	18:44	16:40	16:14
15	05:22 21:16-21:30/14	06:13	07:09 07:49-08:10/21	08:04 09:15-09:33/18	08:05 08:37-08:43/6	08:51
	22:04	21:10	19:56 19:14-19:28/14	18:42	16:39	16:14
16	05:23 21:16-21:28/12	06:15	07:11 07:47-08:12/25	08:06 09:12-09:37/25	08:07 08:40-08:43/3	08:52
	22:03	21:08	19:54 19:15-19:25/10	18:40	16:37	16:14
17	05:25 21:17-21:27/10	06:17	07:13 07:45-08:12/27	08:08 09:09-09:39/30	08:09 08:42-08:43/1	08:53
	22:02	21:06	19:51 19:17-19:23/6	18:37	16:36	16:14
18	05:26 21:18-21:27/9	06:18	07:14 07:44-08:13/29	08:10 09:07-09:41/34	08:11	08:54
	22:01	21:04	19:49	18:35	16:34	16:14
19	05:28 21:19-21:25/6	06:20	07:16 07:43-08:13/30	08:12 09:05-09:42/37	08:13	08:55
	21:59	21:02	19:46	18:33	16:33	16:14
20	05:29 21:20-21:24/4	06:22 19:57-20:01/4	07:18 07:45-08:14/29	08:14 09:04-09:43/39	08:14	08:55
	21:58	20:59	19:44	18:30	16:31	16:15
21	05:31 21:15:27	06:24 19:52-20:03/11	07:20 07:46-08:13/27	08:16 09:03-09:44/41	08:16	08:56
	21:57	20:57	19:41	18:28	16:30	16:15
22	05:32 21:15:5	06:26 19:50-20:05/15	07:22 07:48-08:13/25	08:18 09:01-09:45/44	08:18	08:56
	21:55	20:55	19:39	18:26	16:29	16:15
23	05:34 21:15:4	06:27 19:49-20:07/18	07:23 07:50-08:13/23	08:20 09:00-09:46/46	08:20	08:57
	21:54	20:52	19:36	18:24	16:27	16:16
24	05:35 21:15:2	06:29 19:48-20:08/20	07:25 07:52-08:12/20	08:22 08:59-09:46/47	08:22	08:57
	21:52	20:50	19:34	18:21	16:26	16:17
25	05:37 21:15:1	06:31 19:46-20:07/21	07:27 07:54-08:12/18	07:24 07:58-08:47/49	08:23	08:58
	21:51	20:48	19:31	17:19	16:25	16:17
26	05:38 21:14:9	06:33 19:46-20:08/22	07:29 07:55-08:10/15	07:26 07:58-08:47/49	08:25	08:58
	21:49	20:45	19:29	17:17	16:24	16:18
27	05:40 21:14:7	06:35 19:45-20:08/23	07:31 07:57-08:10/13	07:28 07:58-08:48/50	08:27	08:58
	21:47	20:43	19:26	17:15	16:23	16:19
28	05:42 21:14:6	06:36 19:44-20:07/23	07:33 07:59-08:09/10	07:30 07:59-08:49/50	08:29	08:58
	21:46	20:41	19:24	17:13	16:22	16:20
29	05:43 21:14:4	06:38 19:44-20:07/23	07:34 08:01-08:07/6	07:32 08:01-08:49/48	08:30	08:59
	21:44	20:38	19:21	17:11	16:21	16:20
30	05:45 21:14:2	06:40 19:45-20:07/22	07:36 08:03-08:06/3	07:34 08:03-08:49/46	08:32	08:59
	21:42	20:36	19:19	17:09	16:20	16:21
31	05:47 21:14:1	06:42 19:45-20:05/20		07:35 08:05-08:49/44		08:59
	21:41	20:33		17:06		16:22
Potential sun hours	515	461	383	327	257	230
Sum of minutes with flicker	377	222	877	704	373	0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker

## SHADOW - Calendar per WTG

Calculation: Tirawley Shadow Flicker Worst Case WTG: 12 - AT12

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June
1	08:59 15:27-15:45/18 16:24	08:27 17:16	07:29 18:13	07:12 20:12	06:02 20:32-20:38/6 21:09	05:12 05:43-05:52/9 22:00
2	08:58 15:27-15:46/19 16:25	08:26 17:18	07:26 18:15	07:10 20:14	06:00 20:30-20:40/10 21:11	05:11 05:42-05:53/11 22:01
3	08:58 15:28-15:48/20 16:26	08:24 17:20	07:24 18:17	07:08 20:16	05:58 20:29-20:42/13 21:13	05:10 05:41-05:53/12 22:02
4	08:58 15:28-15:49/21 16:27	08:22 17:22	07:22 18:19	07:05 20:18	05:56 20:27-20:43/16 21:14	05:09 05:41-05:55/14 22:04
5	08:57 15:29-15:51/22 16:29	08:20 17:24	07:19 18:21	07:03 20:20	05:54 20:27-20:45/18 21:16	05:08 05:40-05:55/15 22:05
6	08:57 15:28-15:52/24 16:30	08:18 17:26	07:17 18:23	07:00 20:22	05:52 20:27-20:46/19 21:18	05:07 05:39-05:55/16 22:06
7	08:57 15:28-15:53/25 16:31	08:16 17:28	07:14 18:25	06:58 20:24	05:50 20:26-20:49/23 21:20	05:07 05:39-05:56/17 22:07
8	08:56 15:29-15:56/27 16:33	08:14 17:30	07:12 18:27	06:55 20:26	05:48 20:26-20:50/24 21:22	05:06 05:38-05:56/18 22:08
9	08:55 15:30-15:57/27 16:34	08:12 17:32	07:10 18:29	06:53 20:28	05:46 20:26-20:52/26 21:24	05:05 05:38-05:57/19 22:09
10	08:55 15:30-15:59/29 16:36	08:10 17:34	07:07 18:30	06:50 20:29	05:44 20:26-20:53/27 21:25	05:05 05:38-05:57/19 22:10
11	08:54 15:30-16:00/30 16:37	08:08 17:36	07:05 18:32	06:48 20:31	05:42 20:27-20:54/27 21:27	05:04 05:37-05:57/20 22:10
12	08:53 15:30-16:02/32 16:39	08:06 17:38	07:02 18:34	06:46 20:33	05:40 20:27-20:54/27 21:29	05:04 05:37-05:58/21 22:11
13	08:52 15:31-16:04/33 16:40	08:04 17:41	07:00 18:36	06:43 20:35	05:39 20:27-20:54/27 21:31	05:04 05:37-05:58/21 22:12
14	08:52 15:31-16:06/35 16:42	08:02 17:43	06:57 18:38	06:41 20:37	05:37 20:28-20:55/27 21:32	05:03 05:37-05:59/22 22:13
15	08:51 15:32-16:07/35 16:44	08:00 17:45	06:55 18:40	06:38 20:39	05:35 20:29-20:54/25 21:34	05:03 05:36-05:58/22 22:13
16	08:50 15:32-16:07/35 16:46	07:58 17:47	06:52 18:42	06:36 20:41	05:33 20:31-20:55/24 21:36	05:03 05:36-05:59/23 22:14
17	08:49 15:32-16:08/36 16:47	07:56 17:49	06:50 18:44	06:34 20:43	05:32 20:32-20:54/22 21:38	05:03 05:36-05:59/23 22:14
18	08:47 15:33-16:09/36 16:49	07:54 17:51	06:47 18:46	06:31 20:45	05:30 20:39-20:54/15 21:39	05:03 05:36-05:59/23 22:15
19	08:46 15:33-16:09/36 16:51	07:52 17:53	06:45 18:48	06:29 20:46	05:28 20:39-20:53/14 21:41	05:03 05:36-05:59/23 22:15
20	08:45 15:34-16:09/35 16:53	07:49 17:55	06:42 18:50	06:27 20:48	05:27 20:40-20:53/13 21:43	05:03 05:37-06:00/23 22:15
21	08:44 15:34-16:09/35 16:55	07:47 17:57	06:40 18:52	06:24 20:50	05:25 20:41-20:52/11 21:44	05:03 05:37-06:00/23 22:16
22	08:43 15:35-16:10/35 16:56	07:45 17:59	06:37 18:53	06:22 20:52	05:24 20:42-20:50/8 21:46	05:03 05:37-06:00/23 22:16
23	08:41 15:35-16:09/34 16:58	07:43 18:01	06:35 18:55	06:20 20:54	05:22 20:44-20:49/5 21:47	05:03 05:37-06:00/23 22:16
24	08:40 15:37-16:10/33 17:00	07:40 18:03	06:32 18:57	06:17 20:56	05:21 20:45-20:51/4 21:49	05:04 05:38-06:01/23 22:16
25	08:38 15:37-16:09/32 17:02	07:38 18:05	06:30 18:59	06:15 20:58	05:20 20:46-20:52/3 21:50	05:04 05:38-06:01/23 22:16
26	08:37 15:39-16:10/31 17:04	07:36 18:07	06:27 19:01	06:13 21:00	05:18 20:47-20:53/2 21:52	05:05 05:38-06:01/23 22:16
27	08:35 15:40-16:09/29 17:06	07:33 18:09	06:25 19:03	06:11 21:01	05:17 20:48-20:54/1 21:53	05:05 05:39-06:01/22 22:16
28	08:34 15:42-16:08/26 17:08	07:31 18:11	06:22 19:05	06:09 21:03	05:16 05:47-05:48/1 21:55	05:06 05:39-06:01/22 22:16
29	08:32 15:45-16:07/22 17:10		07:20 20:07	06:06 21:05	05:15 05:46-05:50/4 21:56	05:06 05:40-06:02/22 22:16
30	08:31 15:52-16:05/13 17:12		07:17 20:09	06:04 21:07	05:14 05:45-05:51/6 21:57	05:07 05:41-06:02/21 22:15
31	08:29 15:55-16:04/9 17:14		07:15 20:11		05:13 05:44-05:52/8 21:59	
Potential sun hours	248	272	367	421	496	513
Sum of minutes with flicker	874	0	0	0	446	596

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker

### SHADOW - Calendar per WTG

Calculation: Tirawley Shadow Flicker Worst Case WTG: 12 - AT12

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	July	August	September	October	November	December
1	05:07 05:41-06:01/20 22:15	05:48 20:37-21:05/28 21:39	06:44 07:38 20:31 19:16	07:38 17:04 20:31 19:16	07:38 17:04 20:31 19:16	08:34 15:12-15:42/30 16:19
2	05:08 05:42-06:02/20 22:15	05:50 20:37-21:05/28 21:37	06:46 07:40 20:29 19:14	07:40 17:02 20:29 19:14	07:39 17:02 20:29 19:14	08:35 15:13-15:42/29 16:18
3	05:09 05:43-06:02/19 22:14	05:52 20:36-21:03/27 21:35	06:47 07:42 20:26 19:11	07:42 17:00 20:26 19:11	07:41 17:00 20:26 19:11	08:37 15:13-15:40/27 16:18
4	05:10 05:44-06:02/18 22:14	05:53 20:36-21:02/26 21:33	06:49 07:44 20:24 19:09	07:44 16:58 20:24 19:09	07:43 16:58 20:24 19:09	08:38 15:14-15:40/26 16:17
5	05:11 05:44-06:01/17 22:13	05:55 20:37-21:00/23 21:31	06:51 07:46 20:21 19:06	07:46 16:56 20:21 19:06	07:45 16:56 20:21 19:06	08:40 15:14-15:38/24 16:16
6	05:12 05:45-06:01/16 22:12	05:57 20:36-20:58/22 21:29	06:53 07:47 20:19 19:04	07:47 16:55 20:19 19:04	07:47 16:55 20:19 19:04	08:41 15:15-15:38/23 16:16
7	05:13 05:46-06:01/15 22:12	05:59 20:37-20:55/18 21:27	06:55 07:49 20:16 19:01	07:49 16:53 20:16 19:01	07:49 16:53 20:16 19:01	08:42 15:15-15:37/22 16:15
8	05:14 05:47-06:01/14 22:11	06:00 20:37-20:55/18 21:25	06:56 07:51 20:14 18:59	07:51 16:51 20:14 18:59	07:51 16:51 20:14 18:59	08:44 15:16-15:37/21 16:15
9	05:15 05:48-06:01/13 22:10	06:02 20:37-20:52/15 21:23	06:58 07:53 20:11 18:56	07:53 16:49 20:11 18:56	07:53 16:49 20:11 18:56	08:45 15:16-15:36/20 16:14
10	05:16 05:49-06:01/12 22:09	06:04 20:38-20:51/13 21:21	07:00 07:55 20:09 18:54	07:55 16:47 20:09 18:54	07:55 16:47 20:09 18:54	08:46 15:16-15:35/19 16:14
11	05:17 05:50-06:00/10 22:08	06:06 20:39-20:48/9 21:19	07:02 07:57 20:06 18:52	07:57 16:45 20:06 18:52	07:57 16:45 20:06 18:52	08:47 15:18-15:36/18 16:14
12	05:18 05:51-06:00/9 22:08	06:08 20:41-20:46/5 21:17	07:04 07:59 20:04 18:49	07:59 16:44 20:04 18:49	07:59 16:44 20:04 18:49	08:48 15:18-15:35/17 16:14
13	05:19 05:53-06:00/7 22:06	06:09 21:15 21:15	07:05 08:01 20:01 18:47	08:01 16:42 20:01 18:47	08:01 16:42 20:01 18:47	08:49 15:19-15:35/16 16:14
14	05:21 05:54-05:59/5 22:05	06:11 21:13 21:13	07:07 08:02 19:59 18:44	08:02 16:40 19:59 18:44	08:03 16:40 19:59 18:44	08:50 15:19-15:35/16 16:13
15	05:22 05:55-05:57/2 22:04	06:13 21:10 21:10	07:09 08:04 19:56 18:42	08:04 16:39 19:56 18:42	08:05 16:39 19:56 18:42	08:51 15:20-15:35/15 16:14
16	05:23 22:03 22:03	06:15 21:08 21:08	07:11 08:06 19:54 18:40	08:06 16:37 19:54 18:40	08:07 16:37 19:54 18:40	08:52 15:21-15:35/14 16:14
17	05:25 22:02 22:02	06:17 21:06 21:06	07:13 08:08 19:51 18:37	08:08 16:36 19:51 18:37	08:09 16:36 19:51 18:37	08:53 15:22-15:35/13 16:14
18	05:26 22:01 22:01	06:18 21:04 21:04	07:14 08:10 19:49 18:35	08:10 16:34 19:49 18:35	08:11 16:34 19:49 18:35	08:54 15:21-15:35/14 16:14
19	05:28 21:59 21:59	06:20 21:02 21:02	07:16 08:12 19:46 18:33	08:12 16:33 19:46 18:33	08:13 16:33 19:46 18:33	08:55 15:22-15:35/13 16:14
20	05:29 21:58 21:58	06:22 20:59 20:59	07:18 08:14 19:44 18:30	08:14 16:31 19:44 18:30	08:14 16:31 19:44 18:30	08:55 15:23-15:36/13 16:15
21	05:30 21:57 21:57	06:24 20:57 20:57	07:20 08:16 19:41 18:28	08:16 16:30 19:41 18:28	08:16 16:30 19:41 18:28	08:56 15:23-15:36/13 16:15
22	05:32 21:55 21:55	06:26 20:55 20:55	07:22 08:18 19:39 18:26	08:18 16:29 19:39 18:26	08:18 16:29 19:39 18:26	08:57 15:24-15:37/13 16:15
23	05:34 21:54 21:54	06:27 20:52 20:52	07:23 08:20 19:36 18:24	08:20 16:27 19:36 18:24	08:20 16:27 19:36 18:24	08:57 15:24-15:37/13 16:16
24	05:35 21:52 21:52	06:29 20:50 20:50	07:25 08:22 19:34 18:21	08:22 16:26 19:34 18:21	08:22 16:26 19:34 18:21	08:57 15:25-15:38/13 16:17
25	05:37 21:51 21:51	06:31 20:49 20:49	07:27 08:24 19:31 17:19	08:24 16:25 19:31 17:19	08:24 16:25 19:31 17:19	08:58 15:25-15:38/13 16:17
26	05:38 21:49 21:49	06:33 20:44 20:44	07:29 08:25 19:29 17:17	08:25 16:24 19:29 17:17	08:25 16:24 19:29 17:17	08:58 15:25-15:39/14 16:18
27	05:40 21:47 21:47	06:35 20:41 20:41	07:31 08:27 19:26 17:15	08:27 16:23 19:26 17:15	08:27 16:23 19:26 17:15	08:58 15:26-15:40/14 16:19
28	05:42 21:46 21:46	06:36 20:40 20:40	07:33 08:29 19:24 17:13	08:29 16:22 19:24 17:13	08:29 16:22 19:24 17:13	08:58 15:26-15:40/14 16:20
29	05:43 21:44 21:44	06:38 20:39 20:39	07:34 08:30 19:21 17:11	08:30 16:21 19:21 17:11	08:30 16:21 19:21 17:11	08:59 15:26-15:41/15 16:20
30	05:45 21:42 21:42	06:40 20:38 20:38	07:36 08:32 19:19 17:09	08:32 16:20 19:19 17:09	08:32 16:20 19:19 17:09	08:59 15:27-15:43/16 16:21
31	05:47 21:41 21:41	06:42 20:38 20:38	07:36 08:32 19:19 17:09	08:32 16:20 19:19 17:09	08:32 16:20 19:19 17:09	08:59 15:27-15:44/17 16:22
Potential sun hours	515	461	383	327	257	230
Sum of minutes with flicker	403	232	0	0	614	545

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker

### SHADOW - Calendar per WTG

Calculation: Tirawley Shadow Flicker Worst Case WTG: 13 - AT13

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
 263 305 173 263 215 192 359 1,103 1,091 912 892 828 483 620 606 455 8,760

	January	February	March	April	May	June		
1	08:59 16:24	08:27 17:16	07:29 18:13	07:12 20:12	07:36-08:05/29	06:02 21:09	06:28-07:03/35 07:19-07:47/28	05:12 22:00
2	08:58 16:25	08:26 17:18	07:26 18:15	07:10 20:14	07:34-08:06/32	06:00 21:11	06:26-07:02/36 07:21-07:45/24	05:11 22:01
3	08:58 16:26	08:24 17:20	07:24 18:17	07:08 20:16	07:32-08:08/36	05:58 21:13	06:24-07:01/37 07:24-07:41/17	05:10 22:02
4	08:58 16:27	08:22 17:22	07:22 18:19	07:05 20:18	07:29-08:07/38	05:56 21:14	06:25-07:00/35 07:30-07:35/5	05:09 22:04
5	08:57 16:29	08:20 17:24	07:19 18:21	07:03 20:20	07:27-08:08/41	05:54 21:16	06:26-07:00/34 20:12-20:45/33	05:08 22:05
6	08:57 16:30	08:18 17:26	07:17 18:23	07:00 20:22	07:24-08:08/44	05:52 21:18	06:27-06:58/31 20:13-20:47/34	05:07 22:06
7	08:57 16:31	08:16 17:28	07:14 18:25	06:58 20:24	07:22-08:09/47	05:50 21:20	06:28-06:39/11 20:12-20:49/37	05:07 22:07
8	08:56 16:33	08:14 17:30	07:12 18:27	06:55 20:26	07:19-08:08/49	05:48 21:22	06:31-06:35/4 20:12-20:50/38	05:06 22:08
9	08:55 16:34	08:12 17:32	07:10 18:29	06:53 20:27	07:17-08:08/51	05:46 21:24	20:13-20:51/38	05:05 22:09
10	08:55 16:36	08:10 17:34	07:07 18:30	06:50 20:29	07:15-08:09/54	05:44 21:25	20:13-20:51/38	05:05 22:10
11	08:54 16:37	08:08 17:36	07:05 18:32	06:48 20:31	07:12-08:08/56	05:42 21:27	20:14-20:52/38	05:04 22:10
12	08:53 16:39	08:06 17:38	07:02 18:34	06:46 20:33	07:10-08:08/58	05:40 21:29	20:14-20:51/37	05:04 22:11
13	08:52 16:40	08:04 17:40	07:00 18:36	06:43 20:35	07:09-08:08/59	05:39 21:31	20:15-20:51/36	05:04 22:12
14	08:52 16:42	08:02 17:43	06:57 18:38	06:41 20:37	07:08-08:07/59	05:37 21:32	20:16-20:52/36	05:03 22:13
15	08:51 16:44	08:00 17:45	06:55 18:40	06:38 20:39	07:08-08:07/59	05:35 21:34	20:17-20:51/34	05:03 22:13
16	08:50 16:46	07:58 17:47	06:52 18:42	06:36 20:41	07:09-08:07/58	05:33 21:36	20:19-20:51/32	05:03 22:14
17	08:49 16:47	07:56 17:49	06:50 18:44	06:34 20:43	06:58-07:02/4 07:08-08:05/57	05:32 21:38	20:30-20:51/21 20:21-20:29/8	05:03 22:14
18	08:47 16:49	07:54 17:51	06:47 18:46	06:31 20:44	06:56-07:04/8 07:08-08:05/57	05:30 21:39	20:31-20:51/20	05:03 22:15
19	08:46 16:51	07:52 17:53	06:45 18:48	06:29 20:46	06:54-07:05/11 07:09-08:04/55	05:28 21:41	20:31-20:50/19	05:03 22:15
20	08:45 16:53	07:49 17:55	06:42 18:50	06:27 20:48	06:52-07:06/14 07:09-08:04/55	05:27 21:43	20:32-20:49/17	05:03 22:15
21	08:44 16:55	07:47 17:57	06:40 18:52	06:24 20:50	06:49-07:05/16 07:09-08:02/53	05:25 21:44	20:33-20:49/16	05:03 22:16
22	08:43 16:56	07:45 17:59	06:37 18:53	06:22 20:52	06:47-07:06/19 07:10-08:01/51	05:24 21:46	20:33-20:48/15	05:03 22:16
23	08:41 16:58	07:43 18:01	06:35 18:55	06:20 20:54	06:45-07:06/21 07:10-08:01/51	05:22 21:47	20:35-20:47/12	05:03 22:16
24	08:40 17:00	07:40 18:03	06:32 18:57	06:17 20:56	06:43-07:07/24 07:11-08:00/49	05:21 21:49	20:36-20:46/10	05:04 22:16
25	08:38 17:02	07:38 18:05	06:30 18:59	06:15 20:58	06:41-07:07/26 20:24-20:29/5	05:20 21:50	20:39-20:44/5	05:04 22:16
26	08:37 17:04	07:36 18:07	06:27 19:01	06:13 21:00	06:39-07:07/28 20:20-20:29/9	05:18 21:52	07:13-07:57/44	05:05 22:16
27	08:35 17:06	07:33 18:09	06:25 19:03	06:11 21:01	06:36-07:05/29 20:18-20:31/13	05:17 21:53	07:13-07:55/42	05:05 22:16
28	08:34 17:08	07:31 18:11	06:22 19:05	06:09 21:03	06:34-07:05/31 20:16-20:33/17	05:16 21:55	07:14-07:53/39	05:06 22:16
29	08:32 17:10		07:20 20:07	06:06 21:05	06:32-07:05/33 20:15-20:35/20	05:15 21:56	07:16-07:51/35	05:06 22:16
30	08:31 17:12		07:17 20:09	06:04 21:07	06:30-07:04/34 20:14-20:37/23	05:14 21:57	07:17-07:50/33	05:07 22:15
31	08:29 17:14		07:15 20:11			05:13 21:59		
Potential sun hours	248	272	367	421	496	1002		513
Sum of minutes with flicker	0	0	97	1822				0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
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### SHADOW - Calendar per WTG

Calculation: Tirawley Shadow Flicker Worst Case WTG: 13 - AT13

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	July	August	September	October	November	December
1	05:07 22:15	05:48 20:24-21:02/38 21:39	06:44 07:11-08:07/56 20:31	07:38 19:16	07:37 17:04	08:33 16:19
2	05:08 22:15	05:50 20:24-21:02/38 21:37	06:46 07:13-08:07/54 20:29	07:40 19:14	07:39 17:02	08:35 16:18
3	05:09 22:14	05:52 20:23-21:01/38 21:35	06:47 07:15-08:06/51 20:26	07:42 19:11	07:41 17:00	08:37 16:18
4	05:10 22:14	05:53 20:23-21:01/38 21:33	06:49 07:17-08:06/49 20:24	07:44 19:09	07:43 16:58	08:38 16:17
5	05:11 22:13	05:55 06:40-06:47/7 20:23-21:00/37 21:31	06:51 07:18-08:05/47 20:21	07:45 19:06	07:45 16:56	08:39 16:16
6	05:12 22:12	05:57 06:37-06:49/12 20:22-20:58/36 21:29	06:53 07:20-08:04/44 20:19	07:47 19:04	07:47 16:55	08:41 16:16
7	05:13 22:12	05:59 06:36-07:08/32 21:27	06:55 07:22-08:03/41 20:16	07:49 19:01	07:49 16:53	08:42 16:15
8	05:14 22:11	06:00 06:35-07:10/35 21:25	06:56 07:24-08:03/39 20:14	07:51 18:59	07:51 16:51	08:44 16:15
9	05:15 22:10	06:02 06:34-07:10/36 07:37-07:47/10 21:23	06:58 07:25-08:01/36 20:11	07:53 18:56	07:53 16:49	08:45 16:14
10	05:16 22:09	06:04 06:34-07:11/37 07:33-07:52/19 21:21	07:00 07:27-08:00/33 20:09	07:55 18:54	07:55 16:47	08:46 16:14
11	05:17 22:08	06:06 06:36-07:12/36 07:30-07:55/25 21:19	07:02 07:29-07:59/30 20:06	07:57 18:52	07:57 16:45	08:47 16:14
12	05:18 22:07	06:08 06:37-07:12/35 07:27-07:56/29 21:17	07:04 07:30-07:56/26 20:04	07:59 18:49	07:59 16:44	08:48 16:14
13	05:19 22:06	06:09 06:39-07:13/34 07:25-07:59/34 21:15	07:05 07:32-07:55/23 20:01	08:01 18:47	08:01 16:42	08:49 16:14
14	05:21 22:05	06:11 06:41-07:13/32 07:24-08:00/36 21:13	07:07 07:34-07:53/19 19:59	08:02 18:44	08:03 16:40	08:50 16:13
15	05:22 22:04	06:13 06:42-07:13/31 07:21-08:01/40 21:10	07:09 07:36-07:51/15 19:56	08:04 18:42	08:05 16:39	08:51 16:13
16	05:23 22:03	06:15 06:44-07:13/29 07:20-08:03/43 21:08	07:11 07:38-07:49/11 19:54	08:06 18:40	08:07 16:37	08:52 16:14
17	05:25 22:02	06:17 06:46-07:13/27 07:19-08:04/45 21:06	07:13 07:39-07:46/7 19:51	08:08 18:37	08:09 16:36	08:53 16:14
18	05:26 22:01	06:18 06:47-07:12/25 07:17-08:04/47 21:04	07:14 07:41-07:42/1 19:49	08:10 18:35	08:11 16:34	08:54 16:14
19	05:28 20:47-20:54/7 21:59	06:20 06:49-07:12/23 21:02	07:16 07:17-08:05/48 19:46	08:12 18:33	08:13 16:33	08:55 16:14
20	05:29 20:45-20:56/11 21:58	06:22 06:51-07:12/21 20:59	07:18 07:16-08:06/50 19:44	08:14 18:30	08:14 16:31	08:55 16:15
21	05:30 20:45-20:58/13 21:57	06:24 06:53-07:12/19 20:57	07:20 07:14-08:06/52 19:41	08:16 18:28	08:16 16:30	08:56 16:15
22	05:32 20:43-20:58/15 21:55	06:26 06:54-07:10/16 20:55	07:22 07:14-08:07/53 19:39	08:18 18:26	08:18 16:29	08:56 16:15
23	05:34 20:43-21:00/17 21:54	06:27 06:56-07:09/13 20:52	07:23 07:13-08:08/55 19:36	08:20 18:24	08:20 16:27	08:57 16:16
24	05:35 20:42-21:00/18 21:52	06:29 06:58-07:08/10 20:50	07:25 07:12-08:08/56 19:34	08:22 18:22	08:22 16:26	08:57 16:17
25	05:37 20:41-21:00/19 21:51	06:31 06:59-07:06/7 20:48	07:27 07:11-08:08/57 19:31	08:23 17:19	08:23 16:25	08:58 16:17
26	05:38 20:41-21:01/20 21:49	06:33 07:01-07:05/4 20:45	07:29 07:11-08:08/57 19:29	08:25 17:17	08:25 16:24	08:58 16:18
27	05:40 20:30-21:01/31 21:47	06:35 07:10-08:09/59 20:43	07:31 07:10-08:09/59 19:26	08:27 17:15	08:27 16:23	08:58 16:19
28	05:42 20:29-21:02/33 21:46	06:36 07:09-08:08/59 20:41	07:33 07:09-08:08/59 19:24	08:29 17:13	08:29 16:22	08:58 16:20
29	05:43 20:27-21:01/34 21:44	06:38 07:09-08:08/59 20:38	07:34 07:09-08:08/59 19:21	08:30 17:11	08:30 16:21	08:59 16:20
30	05:45 20:26-21:02/36 21:42	06:40 07:09-08:08/59 20:36	07:36 07:09-08:08/59 19:19	08:32 17:09	08:32 16:20	08:59 16:21
31	05:47 20:26-21:02/36 21:41	06:42 07:10-08:08/58 20:33		08:35 17:06		08:59 16:22
Potential sun hours	515	461	383	327	257	230
Sum of minutes with flicker	294	2077	582	0	0	0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker



### SHADOW - Calendar per WTG

Calculation: Tirawley Shadow Flicker Worst Case WTG: 14 - AT14

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January	February	March	April	May	June			
1	08:58 16:24	08:27 17:16	07:29 18:13	17:28-17:45/17	07:12 20:12	07:36-07:56/20	06:02 21:09	05:12 22:00	20:37-21:23/46
2	08:58 16:25	08:25 17:18	07:26 18:15	17:29-17:47/18	07:10 20:14	07:34-07:56/22	06:00 21:11	05:11 22:01	20:37-21:23/46
3	08:58 16:26	08:24 17:20	07:24 18:17	17:31-17:49/18	07:08 20:16	07:32-07:56/24	05:58 21:13	05:10 22:02	20:37-21:24/47
4	08:58 16:27	08:22 17:22	07:22 18:19	17:33-17:51/18	07:05 20:18	07:29-07:54/25	05:56 21:14	05:09 22:04	20:37-21:25/48
5	08:57 16:29	08:20 17:24	07:19 18:21	17:34-17:52/18	07:03 20:20	07:27-07:54/27	05:54 21:16	05:08 22:05	20:37-21:25/48
6	08:57 16:30	08:18 17:26	07:17 18:23	17:37-17:51/14	07:00 20:22	07:25-07:52/27	05:52 21:18	05:07 22:06	20:37-21:25/48
7	08:57 16:31	08:16 17:28	07:14 18:25	17:38-17:50/12	06:58 20:24	07:26-07:51/25	05:50 21:20	05:07 22:07	20:37-21:26/49
8	08:56 16:33	08:14 17:30	07:12 18:27	17:40-17:47/7	06:55 20:26	07:27-07:48/21	05:48 21:22	05:06 22:08	20:37-21:26/49
9	08:55 16:34	08:12 17:32	07:09 18:28		06:53 20:27	07:29-07:46/17	05:46 21:24	05:05 22:09	20:38-21:26/48
10	08:55 16:36	08:10 17:34	07:07 18:30		06:50 20:29	07:15-07:17/2	05:44 21:25	05:05 22:10	20:37-21:26/49
11	08:54 16:37	08:08 17:36	07:05 18:32		06:48 20:31	07:12-07:17/5	05:42 21:27	05:04 22:10	20:38-21:27/49
12	08:53 16:39	08:06 17:38	07:02 18:34		06:46 20:33	07:10-07:17/7	05:40 21:29	05:04 22:11	20:38-21:27/49
13	08:52 16:40	08:04 17:40	07:00 18:36		06:43 20:35	07:08-07:17/9	05:39 21:31	05:04 22:12	20:39-21:28/49
14	08:52 16:42	08:02 17:43	06:57 18:38		06:41 20:37	07:05-07:16/11	05:37 21:32	05:03 22:13	20:38-21:27/49
15	08:51 16:44	08:00 17:45	06:55 18:40		06:38 20:39	07:03-07:16/13	05:35 21:34	05:03 22:13	20:39-21:28/49
16	08:50 16:45	07:58 17:47	06:52 18:42		06:36 20:41	07:01-07:15/14	05:33 21:36	05:03 22:14	20:39-21:28/49
17	08:49 16:47	07:56 17:49	06:50 18:44		06:34 20:43	06:58-07:14/16	05:32 21:38	05:03 22:14	20:39-21:28/49
18	08:47 16:49	07:54 17:51	06:47 18:46		06:31 20:44	06:56-07:12/16	05:30 21:39	05:03 22:15	20:39-21:29/50
19	08:46 16:51	07:52 17:53	06:45 18:48		06:29 20:46	06:54-07:11/17	05:28 21:41	05:03 22:15	20:39-21:29/50
20	08:45 16:53	07:49 17:55	06:42 18:50	17:25-17:26/1	06:27 20:48	06:52-06:57/5	05:27 21:42	05:03 22:15	20:40-21:29/49
21	08:44 16:54	07:47 17:57	06:40 18:52	17:25-17:28/3	06:24 20:50	06:49-06:56/7	05:25 21:44	05:03 22:16	20:41-21:30/49
22	08:43 16:56	07:45 17:59	06:37 18:53	17:23-17:30/7	06:22 20:52	06:47-06:55/8	05:24 21:46	05:03 22:16	20:41-21:30/49
23	08:41 16:58	07:43 18:01	06:35 18:55	17:23-17:32/9	06:20 20:54	06:45-06:54/9	05:22 21:47	05:03 22:16	20:40-21:30/50
24	08:40 17:00	07:40 18:03	06:32 18:57	17:23-17:35/12	06:17 20:56	06:44-06:52/8	05:21 21:49	05:04 22:16	20:40-21:30/50
25	08:38 17:02	07:38 18:05	06:30 18:59	17:22-17:36/14	06:15 20:58	06:54-06:56/2	05:20 21:50	05:04 22:16	20:41-21:30/49
26	08:37 17:04	07:36 18:07	06:27 19:01	17:23-17:39/16	06:13 21:00	06:51-06:56/5	05:18 21:52	05:04 22:16	20:41-21:30/49
27	08:35 17:06	07:33 18:09	06:25 19:03	17:23-17:40/17	06:11 21:01	06:49-06:57/8	05:17 21:53	05:05 22:16	20:42-21:31/49
28	08:34 17:08	07:31 18:11	06:22 19:05	17:25-17:43/18	06:09 21:03	06:46-06:57/11	05:16 21:55	05:05 22:16	20:41-21:31/50
29	08:32 17:10		07:20 20:07		06:06 21:05	07:44-07:58/14	05:15 21:56	05:06 22:16	20:42-21:31/49
30	08:31 17:12		07:17 20:09		06:04 21:07	07:41-07:57/16	05:14 21:57	05:07 22:15	20:42-21:31/49
31	08:29 17:14		07:15 20:10			07:39-07:57/18	05:13 21:59		
Potential sun hours	248	272	367	421	496	513	1463		
Sum of minutes with flicker	0	97	196	374	580				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker

### SHADOW - Calendar per WTG

Calculation: Tirawley Shadow Flicker Worst Case WTG: 14 - AT14

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	July	August	September	October	November	December
1	05:07 20:42-21:31/49 22:15	05:48 21:39	06:44 07:11-07:16/5 20:31	07:38 19:16	07:37 17:04	08:33 16:19
2	05:08 20:43-21:31/48 22:15	05:50 21:37	06:45 07:13-07:15/2 20:28 07:30-07:42/12	07:40 19:14	07:39 17:02	08:35 16:18
3	05:09 20:43-21:32/49 22:14	05:52 21:35	06:47 07:27-07:44/17 20:26	07:42 19:11	07:41 17:00	08:37 16:18
4	05:10 20:42-21:31/49 22:14	05:53 21:33	06:49 07:25-07:46/21 20:24	07:44 19:09	07:43 16:58	08:38 16:17
5	05:11 20:43-21:31/48 22:13	05:55 21:31	06:51 07:22-07:47/25 20:21	07:45 18:18-18:22/4 19:06	07:45 16:56	08:39 16:16
6	05:12 20:43-21:31/48 22:12	05:57 21:29	06:53 07:21-07:48/27 20:19	07:47 18:15-18:25/10 19:04	07:47 16:55	08:41 16:16
7	05:13 20:43-21:31/48 22:12	05:59 21:27	06:55 07:22-07:49/27 20:16	07:49 18:13-18:26/13 19:01	07:49 16:53	08:42 16:15
8	05:14 20:44-21:31/47 22:11	06:00 21:25	06:56 07:24-07:49/25 20:14	07:51 18:11-18:27/16 18:59	07:51 16:51	08:44 16:15
9	05:15 20:44-21:31/47 22:10	06:02 21:23	06:58 07:25-07:49/24 20:11	07:53 18:08-18:27/19 18:56	07:53 16:49	08:45 16:14
10	05:16 20:44-21:31/47 22:09	06:04 21:21	07:00 07:27-07:49/22 20:09	07:55 18:06-18:25/19 18:54	07:55 16:47	08:46 16:14
11	05:17 20:44-21:31/47 22:08	06:06 21:19	07:02 07:29-07:49/20 20:06	07:57 18:04-18:22/18 18:52	07:57 16:45	08:47 16:14
12	05:18 20:44-21:30/46 22:07	06:08 21:17	07:04 07:30-07:48/18 20:04	07:59 18:03-18:20/17 18:49	07:59 16:44	08:48 16:14
13	05:19 20:45-21:30/45 22:06	06:09 21:15	07:05 07:32-07:48/16 20:01	08:00 18:00-18:17/17 18:47	08:01 16:42	08:49 16:14
14	05:21 20:46-21:30/44 22:05	06:11 21:13	07:07 07:34-07:48/14 19:59	08:02 17:57-18:15/18 18:44	08:03 16:40	08:50 16:13
15	05:22 20:46-21:29/43 22:04	06:13 21:10	07:09 07:36-07:47/11 19:56	08:04 17:56-18:13/17 18:42	08:05 16:39	08:51 16:13
16	05:23 20:46-21:28/42 22:03	06:15 21:08	07:11 07:38-07:47/9 19:54	08:06 17:55-18:10/15 18:40	08:07 16:37	08:52 16:14
17	05:25 20:46-21:27/41 22:02	06:17 21:06	07:13 07:39-07:45/6 19:51	08:08 17:54-18:08/14 18:37	08:09 16:36	08:53 16:14
18	05:26 20:47-21:27/40 22:01	06:18 21:04	07:14 07:41-07:44/3 19:49	08:10 17:54-18:05/11 18:35	08:11 16:34	08:54 16:14
19	05:28 20:48-21:25/37 21:59	06:20 06:50-06:58/8 21:02	07:16 19:46	08:12 17:54-18:03/9 18:33	08:13 16:33	08:55 16:14
20	05:29 20:48-21:23/35 21:58	06:22 06:51-07:00/9 20:59	07:18 19:44	08:14 17:54-18:00/6 18:30	08:14 16:31	08:55 16:15
21	05:30 20:49-21:23/34 21:57	06:24 06:53-07:01/8 20:57	07:20 19:41	08:16 17:55-17:58/3 18:28	08:16 16:30	08:56 16:15
22	05:32 20:49-21:21/32 21:55	06:26 06:54-07:01/7 20:55	07:22 19:39	08:18 18:26	08:18 16:29	08:56 16:15
23	05:34 20:51-21:21/30 21:54	06:27 06:56-07:01/5 20:52 07:03-07:13/10	07:23 19:36	08:20 18:24	08:20 16:27	08:57 16:16
24	05:35 20:51-21:19/28 21:52	06:29 06:58-07:15/17 20:50	07:25 19:34	08:22 18:21	08:22 16:26	08:57 16:16
25	05:37 20:51-21:17/26 21:51	06:31 06:59-07:15/16 20:48	07:27 19:31	07:24 17:19	08:23 16:25	08:58 16:17
26	05:38 20:53-21:16/23 21:49	06:33 07:01-07:16/15 20:45	07:29 19:29	07:26 17:17	08:25 16:24	08:58 16:18
27	05:40 20:54-21:14/20 21:47	06:35 07:03-07:17/14 20:43	07:31 19:26	07:28 17:15	08:27 16:23	08:58 16:19
28	05:42 20:56-21:13/17 21:46	06:36 07:05-07:18/13 20:41	07:33 19:24	07:30 17:13	08:29 16:22	08:58 16:19
29	05:43 20:57-21:11/14 21:44	06:38 07:06-07:17/11 20:38	07:34 19:21	07:32 17:11	08:30 16:21	08:59 16:20
30	05:45 21:01-21:10/9 21:42	06:40 07:08-07:17/9 20:36	07:36 19:19	07:33 17:09	08:32 16:20	08:59 16:21
31	05:47 21:40	06:42 07:10-07:17/7 20:33		07:35 17:06		08:59 16:22
Potential sun hours	515	461	383	327	257	230
Sum of minutes with flicker	1133	149	304	226	0	0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker

### SHADOW - Calendar per WTG

Calculation: Tirawley Shadow Flicker Worst Case WTG: 15 - AT15

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January	February	March	April	May	June
1	08:58 15:16-15:45/29 16:24	08:27 08:56-09:18/22 17:16 15:33-16:37/64	07:29 16:44-17:40/56 18:13	07:12 18:27-19:35/68 20:12	06:02 19:28-20:25/57 21:09	05:12 20:17-21:13/56 22:00
2	08:58 15:16-15:46/30 16:25	08:25 08:54-09:17/23 17:18 15:35-16:38/63	07:26 16:43-17:41/58 18:15	07:10 18:28-19:37/69 20:14	06:00 19:28-20:27/59 21:11	05:11 20:19-21:14/55 22:01
3	08:58 15:17-15:48/31 16:26	08:24 08:52-09:17/25 17:20 15:36-16:38/62	07:24 16:44-17:43/59 18:17	07:07 18:28-19:38/70 20:16	05:58 19:28-20:29/61 21:13	05:10 20:19-21:14/55 22:02
4	08:58 15:17-15:49/32 16:27	08:22 08:50-09:17/27 17:22 15:37-16:39/62	07:22 16:45-17:44/59 18:19	07:05 18:29-19:39/70 20:18	05:56 19:29-20:30/61 21:14	05:09 20:19-21:15/56 22:04
5	08:57 15:17-15:51/34 16:28	08:20 16:46-16:50/4 15:38-16:39/61 17:24 08:48-09:16/28	07:19 16:46-17:46/60 18:21	07:03 18:31-19:40/69 20:20	05:54 19:29-20:31/62 21:16	05:08 20:21-21:16/55 22:05
6	08:57 15:17-15:52/35 16:30	08:18 16:42-16:54/12 15:40-16:39/59 17:26 08:46-09:15/29	07:17 16:47-17:48/61 18:23	07:00 18:32-19:40/68 20:22	05:52 19:31-20:33/62 21:18	05:07 20:21-21:17/56 22:06
7	08:57 15:17-15:53/36 16:31	08:16 16:41-16:56/15 15:42-16:40/58 17:28 08:44-09:14/30	07:14 16:49-17:51/62 18:25	06:58 18:34-19:41/67 20:24	05:50 19:32-20:34/62 21:20	05:07 20:22-21:18/56 22:07
8	08:56 15:17-15:55/38 16:33	08:14 16:02-16:58/56 15:45-16:00/15 17:30 08:42-09:12/30	07:12 16:51-17:53/62 18:26	06:55 18:36-19:40/64 20:26	05:48 19:33-20:36/63 21:22	05:06 20:22-21:18/56 22:08
9	08:55 15:18-15:57/39 16:34	08:12 16:01-16:59/58 15:49-15:54/5 17:32 08:40-09:09/29	07:09 17:05-17:56/51 18:28 16:55-17:04/9	06:53 18:41-19:41/60 20:27	05:46 19:34-20:38/64 21:24	05:05 20:23-21:19/56 22:09
10	08:55 15:18-15:59/41 16:36	08:10 16:02-17:01/59 17:34 08:37-09:04/27	07:07 17:06-17:57/51 18:30	06:50 18:42-19:40/58 20:29	05:44 19:36-20:40/64 21:25	05:05 20:23-21:19/56 22:09
11	08:54 15:19-16:00/41 16:37	08:08 16:02-17:03/61 17:36 08:35-09:03/28	07:05 17:06-17:59/53 18:32	06:48 18:44-19:40/56 20:31	05:42 19:55-20:42/47 21:27 19:38-19:53/15	05:04 20:23-21:20/57 22:10
12	08:53 15:19-16:01/42 16:39	08:06 16:03-17:04/61 17:38 08:33-09:02/29	07:02 17:05-17:59/54 18:34	06:45 19:44-19:50/6 20:33 18:47-19:40/53	05:40 19:55-20:43/48 21:29 19:42-19:49/7	05:04 20:24-21:22/58 22:11
13	08:52 15:19-16:02/43 16:40	08:04 16:04-17:06/62 17:40 08:32-09:01/29	07:00 17:06-18:02/56 18:36	06:43 18:49-19:53/64 20:35	05:38 19:55-20:45/50 21:31	05:04 20:24-21:22/58 22:12
14	08:51 15:20-16:02/42 16:42	08:02 16:05-17:09/64 17:42 08:33-08:59/26	06:57 17:05-18:04/59 18:38	06:41 18:58-19:57/59 20:37	05:37 19:56-20:48/52 21:32	05:03 20:24-21:24/60 22:12
15	08:51 15:19-16:02/43 16:44	08:00 16:05-17:11/66 17:44 08:34-08:56/22	06:55 17:06-18:07/61 18:40	06:38 18:58-19:59/61 20:39	05:35 19:56-20:49/53 21:34	05:03 20:25-21:25/60 22:13
16	08:50 15:20-16:03/43 16:45	07:58 16:36-17:13/37 16:06-16:35/29 17:47 08:35-08:52/17	06:52 17:06-18:08/62 18:42	06:36 18:58-20:00/62 20:41	05:33 19:57-20:50/53 21:36	05:03 20:25-21:26/61 22:14
17	08:48 15:20-16:04/44 16:47	07:56 16:36-17:15/39 16:08-16:34/26 17:49 08:37-08:50/13	06:50 17:07-18:09/62 18:44	06:34 18:58-20:02/64 20:43	05:32 19:57-20:51/54 21:37	05:03 20:25-21:27/62 22:14
18	08:47 15:21-16:05/44 16:49	07:54 16:37-17:16/39 16:10-16:33/23 17:51 08:42-08:46/4	06:47 17:07-18:10/63 18:46	06:31 18:59-20:03/64 20:44	05:30 19:59-20:52/53 21:39	05:03 20:26-21:27/61 22:15
19	08:46 15:21-16:05/44 16:51	07:51 16:37-17:17/40 17:53 16:11-16:30/19	06:45 17:08-18:12/64 18:48	06:29 19:00-20:04/64 20:46	05:28 19:59-20:53/54 21:41	05:03 20:26-21:27/61 22:15
20	08:45 15:22-16:06/44 16:53	07:49 16:38-17:19/41 17:55 16:15-16:27/12	06:42 17:09-18:14/65 18:50	06:27 19:00-20:04/64 20:48	05:27 20:00-20:54/54 21:42	05:03 20:26-21:28/62 22:15
21	08:44 15:22-16:06/44 16:54	07:47 16:40-17:21/41 17:57	06:40 17:11-18:16/65 18:51	06:24 19:01-20:05/64 20:50	05:25 20:02-20:56/54 21:44	05:03 20:26-21:28/62 22:16
22	08:42 15:23-16:07/44 16:56 16:13-16:21/8	07:45 16:40-17:21/41 17:59	06:37 17:12-18:17/65 18:53	06:22 19:02-20:05/63 20:50	05:24 20:02-20:56/54 21:46	05:03 20:27-21:29/62 22:16
23	08:41 09:11-09:13/2 16:10-16:23/13 16:58 15:23-16:07/44	07:43 16:42-17:22/40 18:01	06:35 17:15-18:18/63 18:55	06:20 19:04-20:06/62 20:54	05:22 20:04-20:56/52 21:47	05:03 20:27-21:28/61 22:16
24	08:40 09:10-09:14/4 16:09-16:26/17 17:00 15:25-16:08/43	07:40 16:43-17:23/40 18:03	06:32 17:18-18:19/61 18:57	06:17 19:06-20:06/60 20:56	05:21 20:06-21:04/58 21:49	05:04 20:27-21:28/61 22:16
25	08:38 09:08-09:15/7 17:00 15:25-16:28/63	07:38 16:42-17:23/41 18:05	06:30 17:19-18:20/61 18:59	06:15 19:27-20:05/38 20:58 19:07-19:25/18	05:20 20:07-21:05/58 21:50	05:04 20:28-21:29/61 22:16
26	08:37 09:07-09:16/9 17:04 15:25-16:30/65	07:36 16:43-17:24/41 18:07	06:27 17:19-18:20/61 19:01	06:13 19:27-20:05/38 20:59 19:10-19:22/12	05:18 20:09-21:07/58 21:52	05:04 20:27-21:28/61 22:16
27	08:35 09:05-09:16/11 17:06 15:27-16:32/65	07:33 16:42-17:33/51 18:09	06:25 17:20-18:20/60 19:03	06:11 19:27-20:18/51 21:01	05:17 20:09-21:07/58 21:53	05:05 20:28-21:28/60 22:16
28	08:34 09:03-09:17/14 17:08 15:27-16:33/66	07:31 16:43-17:37/54 18:11	06:22 17:21-18:20/59 19:05	06:09 19:27-20:20/53 21:03	05:16 20:10-21:08/58 21:55	05:05 20:27-21:28/61 22:16
29	08:32 09:01-09:17/16 17:10 15:28-16:34/66		07:20 18:22-19:20/58 20:07 19:22-19:25/3	06:06 19:27-20:22/55 21:05	05:15 20:12-21:09/57 21:56	05:06 20:28-21:27/59 22:16
30	08:31 08:59-09:17/18 17:12 15:29-16:35/66		07:17 18:23-19:31/68 20:09	06:04 19:27-20:24/57 21:07	05:14 20:13-21:09/56 21:57	05:07 20:27-21:25/58 22:15
31	08:29 08:58-09:18/20 17:14 15:31-16:36/65		07:15 18:26-19:34/68 20:10		05:13 20:15-21:11/56 21:59	
	Potential sun hours 248 Sum of minutes with flicker 1545	272 2059	367 1879	421 1851	496 1774	513 1763

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
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### SHADOW - Calendar per WTG

Calculation: Tirawley Shadow Flicker Worst Case WTG: 15 - AT15

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	July	August	September	October	November	December	
1	05:07 20:28-21:25/57 22:15	05:48 20:05-20:53/48 21:39 19:50-20:01/11	06:44 18:43-19:39/56 20:31	07:38 17:45-18:40/55 19:16	07:37 15:31-16:30/59 17:04 08:07-08:33/26	08:33 15:01-15:42/41 16:19	
2	05:08 20:28-21:24/56 22:15	05:50 20:06-20:52/46 21:37 19:48-20:04/16	06:45 18:41-19:39/58 20:28	07:40 17:44-18:37/53 19:14	07:39 15:31-16:28/57 15:17-15:25/8 17:02 08:09-08:39/30	08:35 15:01-15:42/41 16:18	
3	05:09 20:28-21:24/56 22:14	05:52 19:45-20:50/65 21:35	06:47 18:39-19:39/60 20:26	07:42 17:44-18:35/51 19:11	07:41 15:31-16:26/55 15:14-15:30/16 17:00 08:12-08:42/30	08:37 15:01-15:40/39 16:17	
4	05:10 20:27-21:23/56 22:14	05:53 19:44-20:48/64 21:33	06:49 18:33-19:37/64 20:24	07:44 17:44-18:34/50 19:09	07:43 16:10-16:25/15 15:12-16:09/57 16:58 08:14-08:44/30	08:38 15:02-15:40/38 16:17	
5	05:11 20:27-21:23/56 22:13	05:55 19:43-20:45/62 21:31	06:51 18:30-19:37/67 20:21	07:45 17:29-18:31/62 19:06	07:45 16:12-16:23/11 15:10-16:09/59 16:56 08:16-08:45/29	08:39 15:02-15:38/36 16:16	
6	05:12 20:27-21:23/56 22:12	05:57 19:41-20:43/62 21:29	06:53 18:28-19:36/68 20:19	07:47 17:26-18:28/62 19:04	07:47 08:18-08:46/28 16:54 15:08-16:09/61	08:41 15:03-15:38/35 16:16	
7	05:13 20:27-21:23/56 22:12	05:59 19:40-20:42/62 21:27	06:54 18:26-19:35/69 20:16	07:49 17:24-18:26/62 19:01	07:49 08:20-08:46/26 16:53 15:07-16:08/61	08:42 15:03-15:37/34 16:15	
8	05:14 20:27-21:23/56 22:11	06:00 19:39-20:40/61 21:25	06:56 18:24-19:33/69 20:14	07:51 17:22-18:23/61 18:59	07:51 08:22-08:47/25 16:51 15:06-16:08/62	08:44 15:05-15:37/32 16:15	
9	05:15 20:27-21:22/55 22:10	06:02 19:38-20:39/61 21:23	06:58 18:22-19:32/70 20:11	07:53 17:20-18:20/60 18:56	07:53 08:25-08:48/23 16:49 15:06-16:09/63	08:45 15:05-15:36/31 16:14	
10	05:16 20:27-21:22/55 22:09	06:04 19:38-20:38/60 21:21	07:00 18:21-19:30/69 20:09	07:55 17:19-18:18/59 18:54	07:55 08:29-08:49/20 16:47 15:04-16:08/64	08:46 15:05-15:35/30 16:14	
11	05:17 20:26-21:21/55 22:08	06:06 19:36-20:35/59 21:19	07:02 18:20-19:29/69 20:06	07:57 17:18-18:17/59 18:52	07:57 08:29-08:49/20 16:45 15:02-16:07/65	08:47 15:07-15:36/29 16:14	
12	05:18 20:24-21:20/56 22:07	06:07 19:36-20:33/57 21:17	07:03 18:17-19:25/68 20:04	07:59 17:17-18:15/58 18:49	07:59 08:31-08:49/18 16:44 15:01-16:07/66	08:48 15:07-15:35/28 16:14	
13	05:19 20:22-21:18/56 22:06	06:09 19:36-20:32/56 21:15	07:05 18:15-19:22/67 20:01	08:00 17:16-18:12/56 18:47	08:01 08:33-08:49/16 16:42 15:00-16:06/66	08:49 15:08-15:35/27 16:13	
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15	05:22 20:20-21:18/58 22:04	06:13 19:35-20:27/52 21:10	07:09 18:11-19:10/59 19:56	08:04 17:15-17:56/41 18:42 17:59-18:03/4	08:05 08:37-08:48/11 16:39 14:59-16:04/65	08:51 15:09-15:35/26 16:13	
16	05:23 20:19-21:17/58 22:03	06:15 19:35-20:13/38 21:08 20:14-20:25/11	07:11 18:09-19:09/60 19:54	08:06 17:15-17:56/41 18:40	08:07 08:40-08:49/9 16:37 14:59-16:04/65	08:52 15:10-15:35/25 16:13	
17	05:25 20:18-21:16/58 22:02	06:16 19:35-20:13/38 21:06 19:17-19:30/13	07:12 18:08-19:08/60 19:51	08:08 17:14-17:55/41 18:37	08:09 08:42-08:49/7 16:36 14:59-16:02/63	08:53 15:10-15:35/25 16:14	
18	05:26 20:18-21:16/58 22:01	06:18 19:34-20:12/38 21:04 19:13-19:32/19	07:14 18:07-19:07/60 19:49	08:10 17:14-17:54/40 18:35	08:11 08:44-08:48/4 15:43-16:00/17 16:34 14:58-15:42/44	08:54 15:10-15:35/25 16:14	
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21	05:30 20:14-21:07/53 21:57	06:24 19:07-20:10/63 20:57	07:20 17:59-19:03/64 19:41	08:16 17:10-17:51/41 18:28	08:16 14:58-15:42/44 16:30	08:56 15:12-15:36/24 16:15	
22	05:32 20:12-21:06/54 21:55	06:25 19:05-20:09/64 20:55	07:22 17:56-19:01/65 19:39	08:18 17:08-17:49/41 18:26 16:44-16:58/14	08:18 14:58-15:42/44 16:29	08:56 15:13-15:37/24 16:15	
23	05:33 20:10-21:05/55 21:54	06:27 19:04-20:09/65 20:52	07:23 17:54-18:59/65 19:36	08:20 17:07-17:47/40 18:24 16:41-17:01/20	08:20 14:58-15:42/44 16:27	08:57 15:13-15:37/24 16:16	
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25	05:37 20:09-21:03/54 21:51	06:31 19:02-20:06/64 20:48	07:27 17:51-18:54/63 19:31	07:24 16:06-16:44/38 15:37-16:04/27 17:19 08:06-08:20/14	08:23 14:58-15:42/44 16:25	08:58 15:14-15:38/24 16:17	
26	05:38 20:09-21:02/53 21:49	06:33 19:01-20:05/64 20:45	07:29 17:49-18:51/62 19:29	07:26 15:35-16:42/67 17:17 08:04-08:22/18	08:25 14:59-15:42/43 16:24	08:58 15:14-15:39/25 16:18	
27	05:40 20:07-21:01/54 21:47	06:35 19:00-20:03/63 20:43	07:31 17:48-18:50/62 19:26	07:28 15:34-16:40/66 17:15 08:04-08:27/23	08:27 14:59-15:43/44 16:23	08:58 15:14-15:40/26 16:19	
28	05:41 20:07-21:00/53 21:46	06:36 18:59-20:00/61 20:41	07:32 17:47-18:48/61 19:24	07:29 15:34-16:38/64 17:13 08:03-08:29/26	08:29 14:59-15:42/43 16:22	08:58 15:15-15:40/25 16:19	
29	05:43 20:06-20:59/53 21:44	06:38 18:59-19:57/58 20:38	07:34 17:46-18:46/60 19:21	07:31 15:33-16:35/62 17:11 08:02-08:31/29	08:30 14:59-15:42/43 16:21	08:59 15:15-15:41/26 16:20	
30	05:45 20:06-20:57/51 21:42	06:40 18:50-19:54/64 20:36	07:36 17:46-18:43/57 19:19	07:33 15:32-16:33/61 17:08 08:03-08:32/29	08:32 15:00-15:42/42 16:20	08:59 15:16-15:43/27 16:21	
31	05:46 20:05-20:55/50 21:40	06:42 19:44-19:48/4 20:33 18:47-19:40/53	07:35 15:32-16:32/60 17:06 08:05-08:33/28	07:35 15:32-16:32/60 17:06 08:05-08:33/28	07:35 15:32-16:32/60 17:06 08:05-08:33/28	08:59 15:16-15:44/28 16:22	
	Potential sun hours Sum of minutes with flicker	515 1715	461 1864	383 1903	327 1888	257 2077	230 894

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
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### SHADOW - Calendar per WTG

Calculation: Tirawley Shadow Flicker Worst Case WTG: 16 - AT16

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

	January	February	March	April	May	June
1	08:58 09:33-09:34/1 16:24 14:31-15:20/49	08:27 15:37-16:35/58 17:16	07:29 16:23-17:20/57 18:13	07:12 18:20-19:25/65 20:12	06:02 19:15-20:19/64 21:09	05:12 19:54-20:59/65 22:00
2	08:58 09:33-09:35/2 16:25 14:32-15:21/49	08:25 15:38-16:37/59 17:18	07:26 16:24-17:20/56 18:15	07:10 18:25-19:27/62 20:14	06:00 19:16-20:20/64 21:11	05:11 19:55-20:59/64 22:01
3	08:58 09:33-09:36/3 16:26 14:34-15:21/47	08:24 15:39-16:38/59 17:20	07:24 16:26-17:20/54 18:17	07:07 18:36-19:29/53 20:16	05:58 19:18-20:21/63 21:13	05:10 19:55-20:59/64 22:02
4	08:58 09:32-09:36/4 16:27 14:34-15:21/47	08:22 15:41-16:39/58 17:22	07:21 16:27-17:20/53 18:19	07:05 18:40-19:31/51 20:18	05:56 19:21-20:22/61 21:14	05:09 19:56-20:59/63 22:03
5	08:57 09:32-09:38/6 16:29 14:36-15:22/46	08:20 15:42-16:40/58 17:24	07:19 16:30-17:20/50 18:21	07:03 18:42-19:32/50 20:20	05:54 19:23-20:23/60 21:16	05:08 19:58-21:00/62 22:05
6	08:57 09:31-09:38/7 16:30 14:37-14:50/13 14:51-15:22/31	08:18 15:44-16:41/57 17:26	07:17 16:34-17:19/45 18:23	07:00 18:44-19:33/49 20:22	05:52 19:25-20:25/60 21:18	05:07 19:58-20:59/61 22:06
7	08:56 15:36-15:51/15 16:31 09:30-09:38/8 14:51-15:22/31	08:16 15:48-16:42/54 17:28	07:14 16:38-17:19/41 18:25	06:58 18:52-19:34/42 20:24	05:50 19:26-20:27/61 21:20	05:07 20:00-21:11/71 22:07
8	08:56 15:35-15:54/19 16:33 09:30-09:39/9 14:52-15:22/30	08:14 15:52-16:47/55 17:30	07:12 17:34-17:37/3 18:26 16:38-17:18/40	06:55 18:51-19:34/43 20:26	05:48 19:27-20:30/63 21:22	05:06 20:01-21:11/70 22:08
9	08:55 15:35-15:57/22 16:34 09:29-09:40/11 14:53-15:23/30	08:12 15:51-16:49/58 17:32	07:09 17:28-17:43/15 18:28 16:39-17:17/38	06:53 18:51-19:39/48 20:27	05:46 19:28-20:33/65 21:24	05:05 20:02-21:13/71 22:09
10	08:55 15:35-15:58/23 16:36 09:28-09:40/12 14:54-15:23/29	08:10 15:52-16:51/59 17:34	07:07 17:24-17:46/22 18:30 16:39-17:16/37	06:50 18:50-19:41/51 20:29	05:44 19:30-20:34/64 21:25	05:05 20:03-21:13/70 22:09
11	08:54 15:34-16:00/26 16:37 09:27-09:40/13 14:55-15:23/28	08:08 15:53-16:53/60 17:36	07:05 17:22-17:48/26 18:32 16:40-17:15/35	06:48 18:51-19:43/52 20:31	05:42 19:33-20:36/63 21:27	05:04 20:06-21:14/68 22:10
12	08:53 15:34-16:01/27 16:39 09:26-09:41/15 14:56-15:23/27	08:06 15:54-16:55/61 17:38	07:02 17:20-17:49/29 18:34 16:41-17:13/32	06:45 18:52-19:45/53 20:33	05:40 19:37-20:37/60 21:29	05:04 20:09-21:15/66 22:11
13	08:52 15:34-16:02/28 16:40 09:25-09:41/16 14:56-15:23/27	08:04 15:55-16:56/61 17:40	07:00 17:19-17:51/32 18:36 16:43-17:12/29	06:43 18:52-19:45/53 20:35	05:39 19:37-20:39/62 21:31	05:04 20:09-21:15/66 22:12
14	08:51 15:34-16:03/29 16:42 09:24-09:41/17 14:57-15:23/26	08:02 15:57-16:57/60 17:42	06:57 17:17-17:52/35 18:38 16:44-17:10/26	06:41 18:53-19:46/53 20:37	05:37 19:38-20:41/63 21:32	05:03 20:10-21:16/66 22:12
15	08:51 15:33-16:04/31 16:44 09:23-09:41/18 14:57-15:22/25	08:00 15:57-16:57/60 17:44	06:55 17:16-17:55/39 18:40 16:46-17:08/22	06:38 18:54-19:47/53 20:39	05:35 19:39-20:43/64 21:34	05:03 20:11-21:16/65 22:13
16	08:50 15:33-16:05/32 16:45 09:21-09:41/20 14:58-15:22/24	07:58 16:00-16:58/58 17:47	06:52 17:15-17:56/41 18:42 16:49-17:04/15	06:36 18:54-19:50/56 20:41	05:33 19:40-20:44/64 21:36	05:03 20:11-21:17/66 22:14
17	08:48 15:33-16:08/35 16:47 09:20-09:41/21 15:00-15:22/22	07:56 16:02-16:59/57 17:49	06:50 17:14-17:58/44 18:44	06:34 18:56-19:52/56 20:43	05:32 19:40-20:45/65 21:37	05:03 20:11-21:17/66 22:14
18	08:47 15:33-16:10/37 16:49 09:19-09:41/22 15:01-15:22/21	07:54 16:03-17:05/62 17:51	06:47 17:13-17:58/45 18:46	06:31 18:59-19:56/57 20:44	05:30 19:42-20:48/66 21:39	05:03 20:12-21:18/66 22:15
19	08:46 15:32-16:11/39 16:51 09:17-09:40/23 15:02-15:20/18	07:51 16:03-17:09/66 17:53	06:45 17:13-18:02/49 18:48	06:29 19:01-19:59/58 20:46	05:28 19:42-20:49/67 21:41	05:03 20:12-21:18/66 22:15
20	08:45 15:33-16:13/40 16:53 09:16-09:40/24 15:05-15:19/14	07:49 16:05-17:12/67 17:55	06:42 17:12-18:04/52 18:50	06:27 19:02-20:00/58 20:48	05:27 19:44-20:51/67 21:42	05:03 20:12-21:18/66 22:15
21	08:44 15:32-16:14/42 16:54 09:14-09:39/25 15:07-15:17/10	07:47 16:06-17:14/68 17:57	06:40 17:12-18:06/54 18:51	06:24 19:03-20:01/58 20:50	05:25 19:46-20:52/66 21:44	05:03 20:12-21:18/66 22:16
22	08:42 15:33-16:16/43 16:56 09:13-09:38/25 15:08-15:21/9	07:45 16:06-17:15/69 17:59	06:37 17:12-18:07/55 18:53	06:22 19:05-20:02/57 20:52	05:24 19:47-20:53/66 21:46	05:03 20:13-21:19/66 22:16
23	08:41 15:33-16:17/44 16:58 09:11-09:34/23 15:09-15:22/8	07:43 16:07-17:16/69 18:01	06:35 17:12-18:08/56 18:55	06:20 19:08-20:03/55 20:54	05:22 19:48-20:54/66 21:47	05:03 20:13-21:19/66 22:16
24	08:40 15:33-16:19/46 17:00 09:10-09:33/23 15:10-15:23/7	07:40 16:09-17:18/69 18:03	06:32 17:12-18:08/56 18:57	06:17 19:10-20:04/54 20:56	05:21 19:48-20:55/67 21:49	05:04 20:13-21:19/66 22:16
25	08:38 15:33-16:20/47 17:02 09:08-09:32/24 15:11-15:24/6	07:38 16:10-17:18/68 18:05	06:30 17:13-18:13/60 18:59	06:15 19:10-20:05/55 20:58	05:20 19:49-20:56/67 21:50	05:04 20:14-21:19/65 22:16
26	08:37 15:33-16:21/48 17:04 09:07-09:32/25 15:12-15:25/5	07:36 16:12-17:19/67 18:07	06:27 17:12-18:14/62 19:01	06:13 19:10-20:06/56 20:59	05:18 19:50-20:56/66 21:52	05:04 20:13-21:19/66 22:16
27	08:35 15:34-16:25/51 17:06 09:06-09:30/24 15:13-15:26/4	07:33 16:14-17:19/65 18:09	06:25 17:14-18:16/62 19:03	06:11 19:11-20:11/60 21:01	05:17 19:50-20:56/66 21:53	05:05 20:14-21:20/66 22:16
28	08:34 15:34-16:27/53 17:08 09:07-09:28/21 15:14-15:27/3	07:31 16:20-17:20/60 18:11	06:22 17:14-18:17/63 19:05	06:09 19:12-20:15/63 21:03	05:16 19:50-20:57/67 21:55	05:05 20:13-21:19/66 22:16
29	08:32 15:35-16:29/54 17:10 09:08-09:23/15 15:15-15:28/2		07:20 18:15-19:20/65 20:07	06:06 19:12-20:17/65 21:05	05:15 19:51-20:57/66 21:56	05:06 20:14-21:19/65 22:15
30	08:31 15:35-16:31/56 17:12 09:09-09:22/13 15:16-15:29/1		07:17 18:16-19:22/66 20:09	06:04 19:13-20:18/65 21:07	05:14 19:52-20:57/65 21:57	05:07 20:13-21:19/66 22:15
31	08:29 15:36-16:33/57 17:14 09:12-09:21/9		07:15 18:18-19:24/66 20:10		05:13 19:53-20:59/66 21:59	
Potential sun hours	248	272	367	421	496	513
Sum of minutes with flicker	2110	1722	1727	1651	1994	1992

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker

### SHADOW - Calendar per WTG

Calculation: Tirawley Shadow Flicker Worst Case WTG: 16 - AT16

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BELMULLET]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 1.36 2.16 2.65 4.82 5.79 4.41 4.42 4.07 3.73 2.48 1.71 0.89

#### Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
263	305	173	263	215	192	359	1,103	1,091	912	892	828	483	620	606	455	8,760

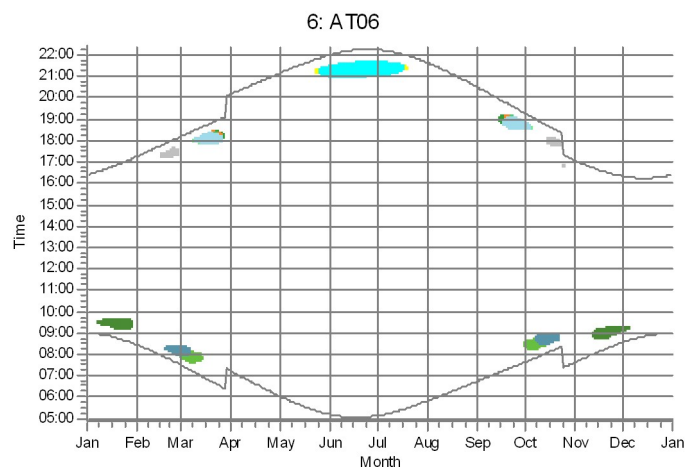
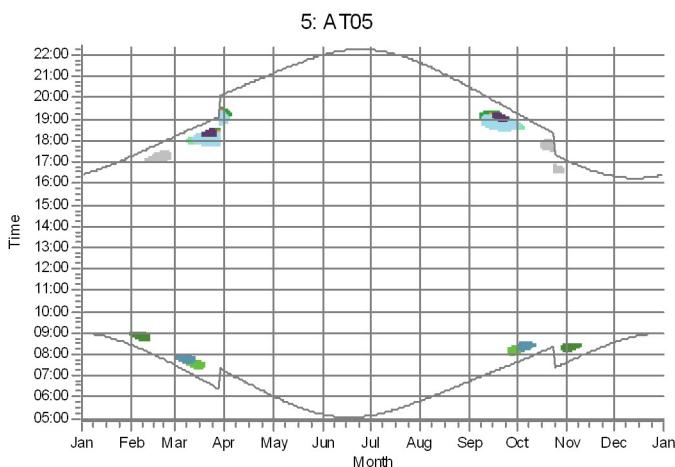
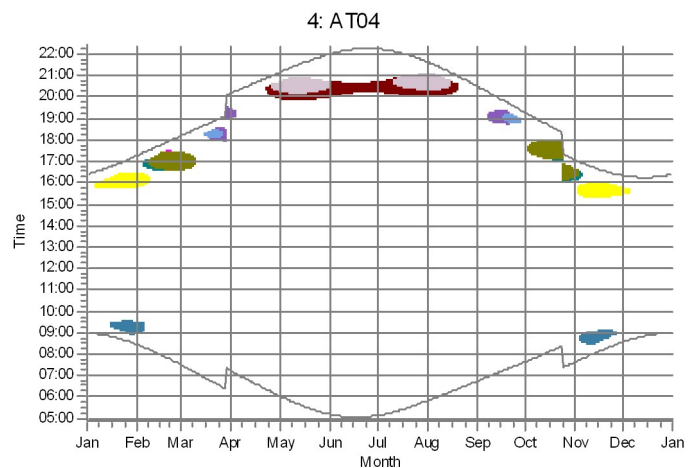
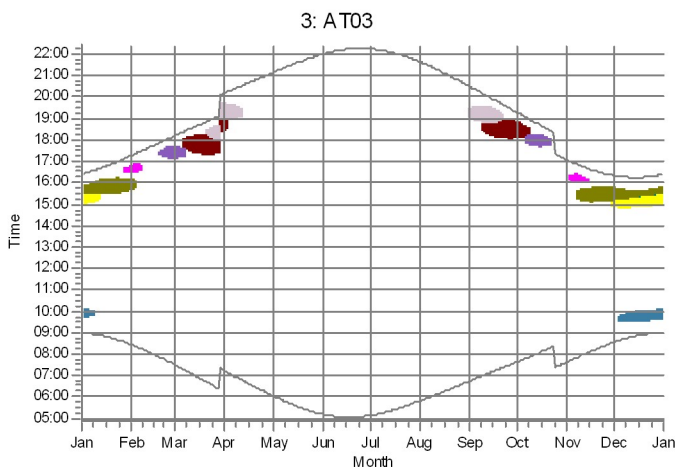
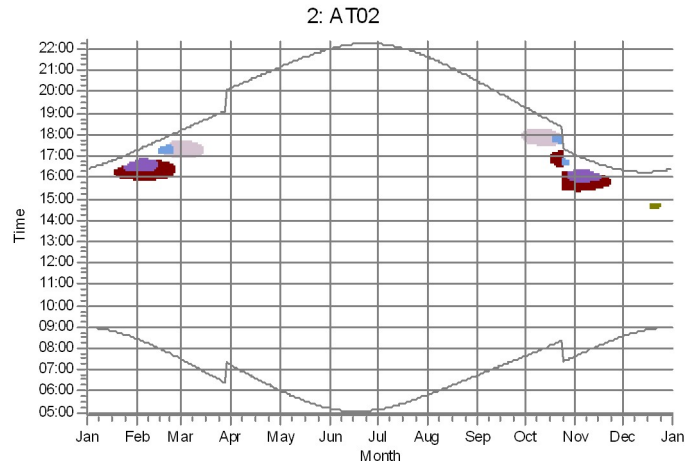
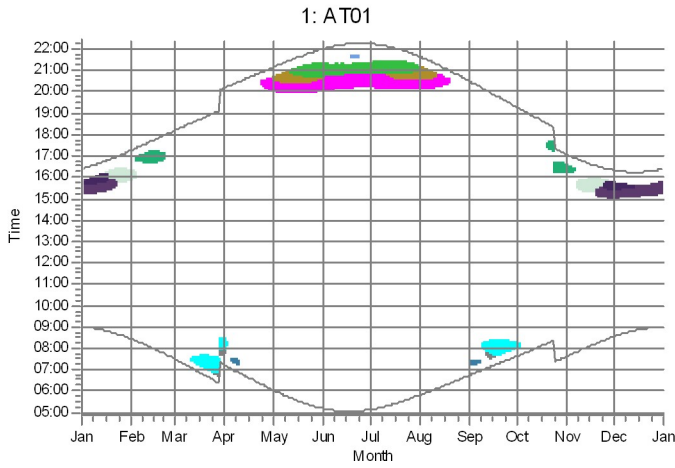
	July	August	September	October	November	December	
1	05:07 20:11-21:19/68 22:15	05:48 19:46-20:47/61 21:39	06:44 18:50-19:42/52 20:31	07:38 17:59-18:29/30 19:16 17:21-17:53/32	07:37 15:22-16:21/59 17:04	08:33 15:16-15:42/26 14:36-15:05/29 16:19 09:09-09:22/13	
2	05:08 20:09-21:19/70 22:14	05:50 19:42-20:46/64 21:37	06:45 18:49-19:40/51 20:28	07:40 17:59-18:27/28 19:14 17:19-17:52/33	07:39 15:21-16:18/57 17:02	08:35 15:17-15:40/23 14:36-15:05/29 16:18 09:11-09:23/12	
3	05:09 20:08-21:18/70 22:14	05:52 19:39-20:44/65 21:35	06:47 18:49-19:37/48 20:26	07:42 18:01-18:25/24 19:11 17:17-17:53/36	07:41 15:20-16:15/55 17:00	08:36 15:18-15:40/22 14:36-15:06/30 16:17 09:12-09:23/11	
4	05:10 20:06-21:17/71 22:14	05:53 19:38-20:42/64 21:33	06:49 18:48-19:31/43 20:24	07:44 18:03-18:22/19 19:09 17:16-17:54/38	07:43 15:17-16:12/55 16:58	08:38 15:20-15:39/19 14:26-14:32/6 16:17 09:14-09:23/9 14:37-15:07/30	
5	05:11 20:06-21:17/71 22:13	05:55 19:37-20:39/62 21:31	06:51 18:48-19:30/42 20:21	07:45 18:07-18:18/11 19:06 17:15-17:54/39	07:45 15:14-16:11/57 16:56	08:39 15:21-15:37/16 14:24-14:34/10 16:16 09:15-09:23/8 14:36-15:07/31	
6	05:12 20:05-21:16/71 22:12	05:57 19:35-20:36/61 21:29	06:53 18:40-19:29/49 20:19	07:47 17:15-17:55/40 19:04	07:47 15:12-16:10/58 16:54	08:41 09:17-09:24/7 15:23-15:35/12 16:16 14:23-14:36/13 14:37-15:08/31	
7	05:13 20:04-21:06/62 22:12	05:59 19:34-20:34/60 21:27	06:54 18:38-19:28/50 20:16	07:49 17:14-17:55/41 19:01	07:49 15:10-16:09/59 16:53	08:42 09:18-09:24/6 15:24-15:34/10 16:15 14:22-15:08/46	
8	05:14 20:04-21:06/62 22:11	06:00 19:32-20:32/60 21:25	06:56 18:35-19:25/50 20:14	07:51 17:07-17:55/48 18:59	07:51 15:09-16:08/59 16:51	08:43 09:20-09:25/5 15:27-15:33/6 16:15 14:22-15:09/47	
9	05:15 20:03-21:06/63 22:10	06:02 19:29-20:31/62 21:23	06:58 18:32-19:23/51 20:11	07:53 17:04-17:55/51 18:56	07:53 15:08-16:06/58 16:49	08:45 09:21-09:24/3 16:14 14:22-15:09/47	
10	05:16 20:03-21:06/63 22:09	06:04 19:27-20:30/63 21:21	07:00 18:19-19:21/62 20:09	07:55 17:01-17:55/54 18:54	07:55 15:08-16:06/58 16:47	08:46 09:22-09:24/2 16:14 14:21-15:10/49	
11	05:17 20:02-21:06/64 22:08	06:06 19:24-20:28/64 21:19	07:02 18:14-19:19/65 20:06	07:57 16:59-17:54/55 18:52	07:57 15:07-16:04/57 16:45 08:43-08:52/9	08:47 09:24-09:25/1 16:14 14:22-15:11/49	
12	05:18 20:01-21:06/65 22:07	06:07 19:23-20:27/64 21:17	07:03 18:10-19:15/65 20:04	07:59 16:57-17:54/57 18:49	07:59 15:07-16:03/56 16:44 08:41-08:54/13	08:48 09:25-09:26/1 16:14 14:22-15:11/49	
13	05:19 20:01-21:06/65 22:06	06:09 19:22-20:26/64 21:15	07:05 18:08-19:13/65 20:01	08:00 16:56-17:53/57 18:47	08:01 15:07-16:01/54 16:42 08:40-08:55/15	08:49 14:22-15:12/50 16:13	
14	05:21 20:01-21:07/66 22:05	06:11 19:20-20:24/64 21:13	07:07 18:06-19:11/65 19:59	08:02 16:50-17:53/63 18:44	08:03 15:06-15:59/53 16:40 08:39-09:00/21	08:50 14:22-15:12/50 16:13	
15	05:22 20:00-21:06/66 22:04	06:13 19:19-20:21/62 21:10	07:09 18:04-19:08/64 19:56	08:04 16:46-17:52/66 18:42	08:05 15:06-15:57/51 16:39 08:38-09:02/24	08:51 14:22-15:12/50 16:13	
16	05:23 19:59-21:06/67 22:03	06:15 19:18-20:15/57 21:08	07:11 18:02-19:05/63 19:54	08:06 16:43-17:51/68 18:40	08:07 15:06-15:54/48 16:37 08:40-09:05/25	08:52 14:23-15:13/50 16:13	
17	05:25 19:59-21:05/66 22:02	06:16 19:18-20:14/56 21:06	07:12 18:01-19:03/62 19:51	08:08 16:41-17:50/69 18:37	08:09 15:07-15:54/47 16:36 08:42-09:06/24	08:53 14:23-15:14/51 16:14	
18	05:26 19:59-21:06/67 22:01	06:18 19:16-20:11/55 21:04	07:14 18:00-19:01/61 19:49	08:10 16:39-17:49/70 18:35	08:11 15:07-15:53/46 16:34 08:44-09:07/23	08:54 14:23-15:13/50 16:14	
19	05:27 19:58-21:05/67 21:59	06:20 19:16-20:09/53 21:01	07:16 17:59-18:56/57 19:46	08:12 16:38-17:47/69 18:33	08:13 15:08-15:52/44 16:33 08:46-09:09/23	08:55 14:23-15:14/51 16:14	
20	05:29 19:58-21:04/66 21:58	06:22 19:13-20:08/55 20:59	07:18 17:58-18:54/56 19:44	08:14 16:37-17:46/69 18:30	08:14 15:08-15:51/43 16:31 08:48-09:13/25	08:55 14:24-15:15/51 16:14	
21	05:30 19:58-21:04/66 21:57	06:24 19:10-20:07/57 20:57	07:20 17:57-18:53/56 19:41	08:16 16:36-17:44/68 18:28	08:16 15:08-15:50/42 14:43-14:53/10 16:30 08:50-09:15/25	08:56 14:24-15:15/51 16:15	
22	05:32 19:57-21:03/66 21:55	06:26 19:08-20:06/58 20:55	07:22 17:57-18:51/54 19:39	08:18 16:35-17:41/66 18:26	08:18 15:09-15:49/40 14:41-14:55/14 16:29 08:52-09:16/24	08:56 14:25-15:16/51 16:15	
23	05:33 19:55-21:01/66 21:54	06:27 19:06-20:04/58 20:52	07:23 17:57-18:49/52 19:36	08:20 16:33-17:38/65 18:24	08:20 15:10-15:48/38 14:39-14:57/18 16:27 08:54-09:17/23	08:57 14:25-15:16/51 16:16	
24	05:35 19:54-21:01/67 21:52	06:29 19:03-20:01/58 20:50	07:25 17:57-18:47/50 19:34	08:22 16:32-17:29/57 18:21	08:22 15:10-15:47/37 14:38-14:59/21 16:26 08:56-09:18/22	08:57 14:25-15:16/51 16:16	
25	05:37 19:52-20:59/67 21:51	06:31 19:01-19:58/57 20:48	07:27 17:56-18:41/45 19:31	07:24 15:31-16:28/57 17:19	08:23 15:11-15:46/35 14:38-15:00/22 16:25 08:58-09:19/21	08:58 14:26-15:17/51 16:17	
26	05:38 19:52-20:57/65 21:49	06:33 18:59-19:54/55 20:45	07:29 17:56-18:40/44 19:29	07:26 15:29-16:28/59 17:17	08:25 15:12-15:44/32 14:37-15:01/24 16:24 09:00-09:20/20	08:58 14:27-15:17/50 16:18	
27	05:40 19:50-20:55/65 21:47	06:35 18:57-19:52/55 20:43	07:31 17:56-18:39/43 19:26 17:32-17:44/12	07:28 15:26-16:27/61 17:15	08:27 15:13-15:44/31 14:37-15:02/25 16:23 09:02-09:21/19	08:58 14:27-15:18/51 16:19	
28	05:41 19:50-20:54/64 21:46	06:36 18:55-19:48/53 20:41	07:32 17:57-18:37/40 19:24 17:28-17:47/19	07:29 15:26-16:27/61 17:13	08:29 15:13-15:42/29 14:36-15:02/26 16:22 09:04-09:21/17	08:58 14:28-15:18/50 16:19	
29	05:43 19:49-20:52/63 21:44	06:38 18:53-19:47/54 20:38	07:34 17:57-18:34/37 19:21 17:25-17:50/25	07:31 15:24-16:25/61 17:11	08:30 15:14-15:42/28 14:36-15:03/27 16:21 09:05-09:21/16	08:58 14:29-15:19/50 16:20	
30	05:45 19:48-20:51/63 21:42	06:40 18:52-19:46/54 20:36	07:36 17:58-18:31/33 19:19 17:23-17:51/28	07:33 15:23-16:24/61 17:08	08:32 15:15-15:42/27 14:36-15:04/28 16:20 09:07-09:22/15	08:59 14:29-15:19/50 16:21	
31	05:46 19:48-20:49/61 21:40	06:42 18:51-19:44/53 20:33		07:35 15:22-16:23/61 17:06		08:59 14:30-15:20/50 16:22	
	Potential sun hours Sum of minutes with flicker	515 2049	461 1828	383 1659	327 1844	257 2032	230 1667

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker



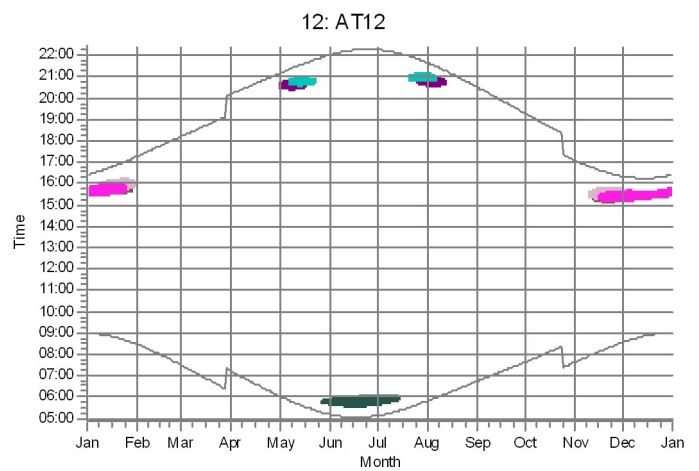
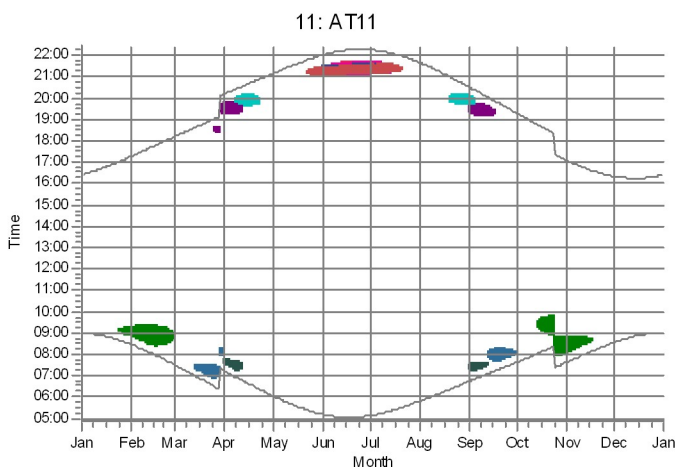
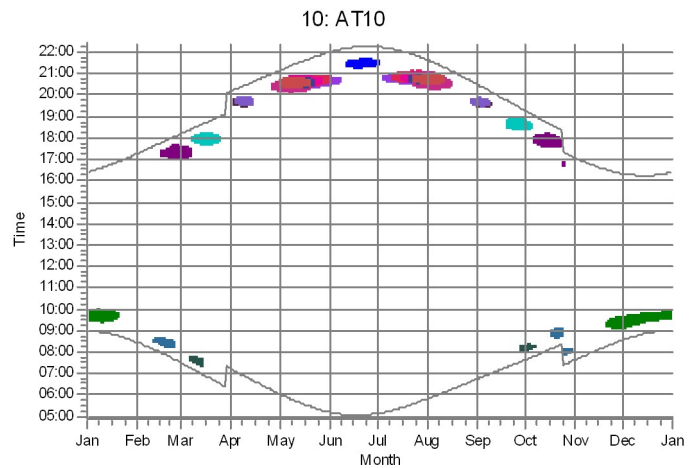
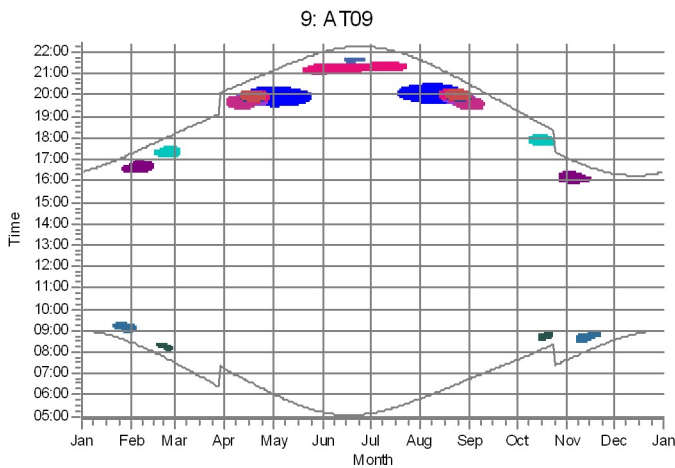
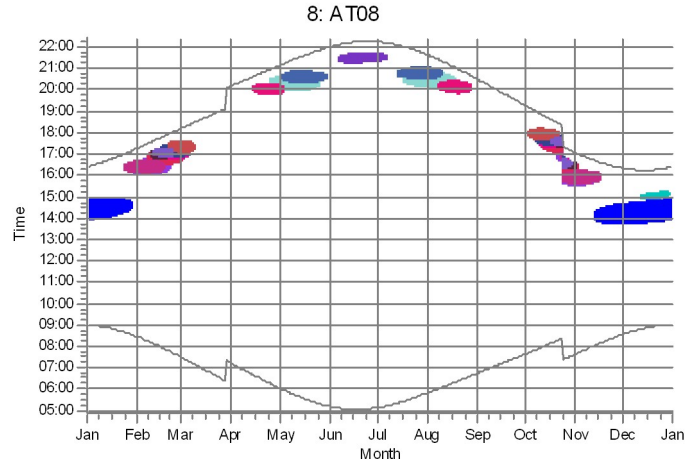
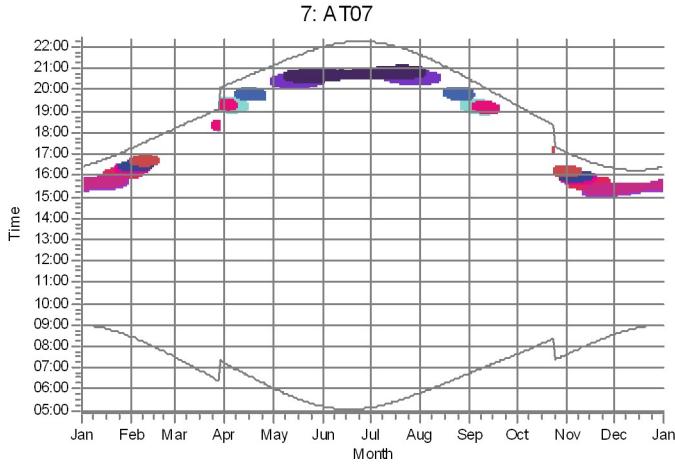
**SHADOW - Calendar per WTG, graphical**  
 Calculation: Tirawley Shadow Flicker Worst Case



Shadow receptors

B: H2*	H: H8	T: H20	AB: H28	AK: H37	BK: H63	CL: H90	CU: H99
D: H4	J: H10	W: H23	AD: H30	AS: H45	BV: H74	CM: H91	
E: H5	L: H12	Y: H25	AE: H31	BC: H55	BZ: H78	CN: H92	
F: H6	M: H13	Z: H26	AG: H33	BI: H61	CG: H85	CP: H94	

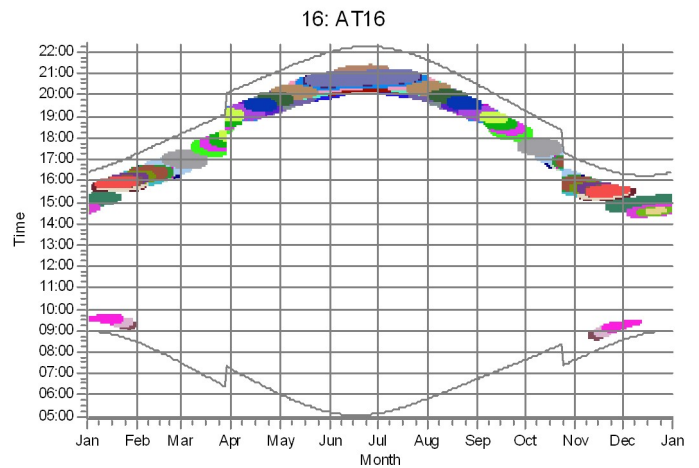
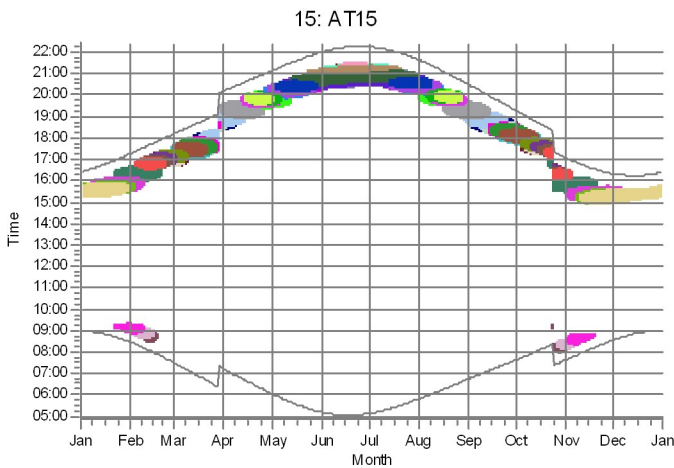
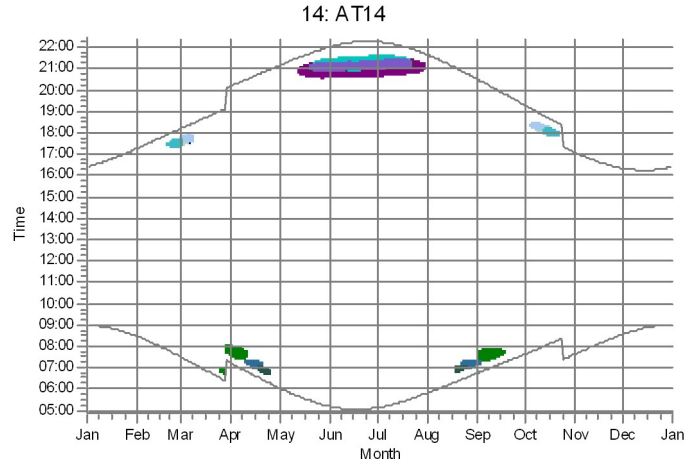
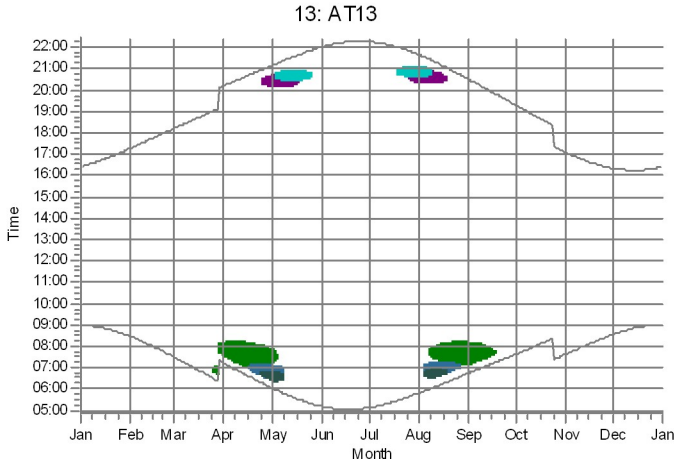
**SHADOW - Calendar per WTG, graphical**  
 Calculation: Tirawley Shadow Flicker Worst Case



Shadow receptors

A: H1*	U: H21	AV: H48	BE: H57	BW: H75	CE: H83	CK: H89	CS: H97
C: H3	V: H22	BA: H53	BN: H66	CA: H79	CF: H84	CO: H93	
K: H11	AT: H46	BC: H55	BV: H74	CB: H80	CJ: H88	CR: H96	

**SHADOW - Calendar per WTG, graphical**  
 Calculation: Tirawley Shadow Flicker Worst Case

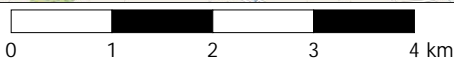
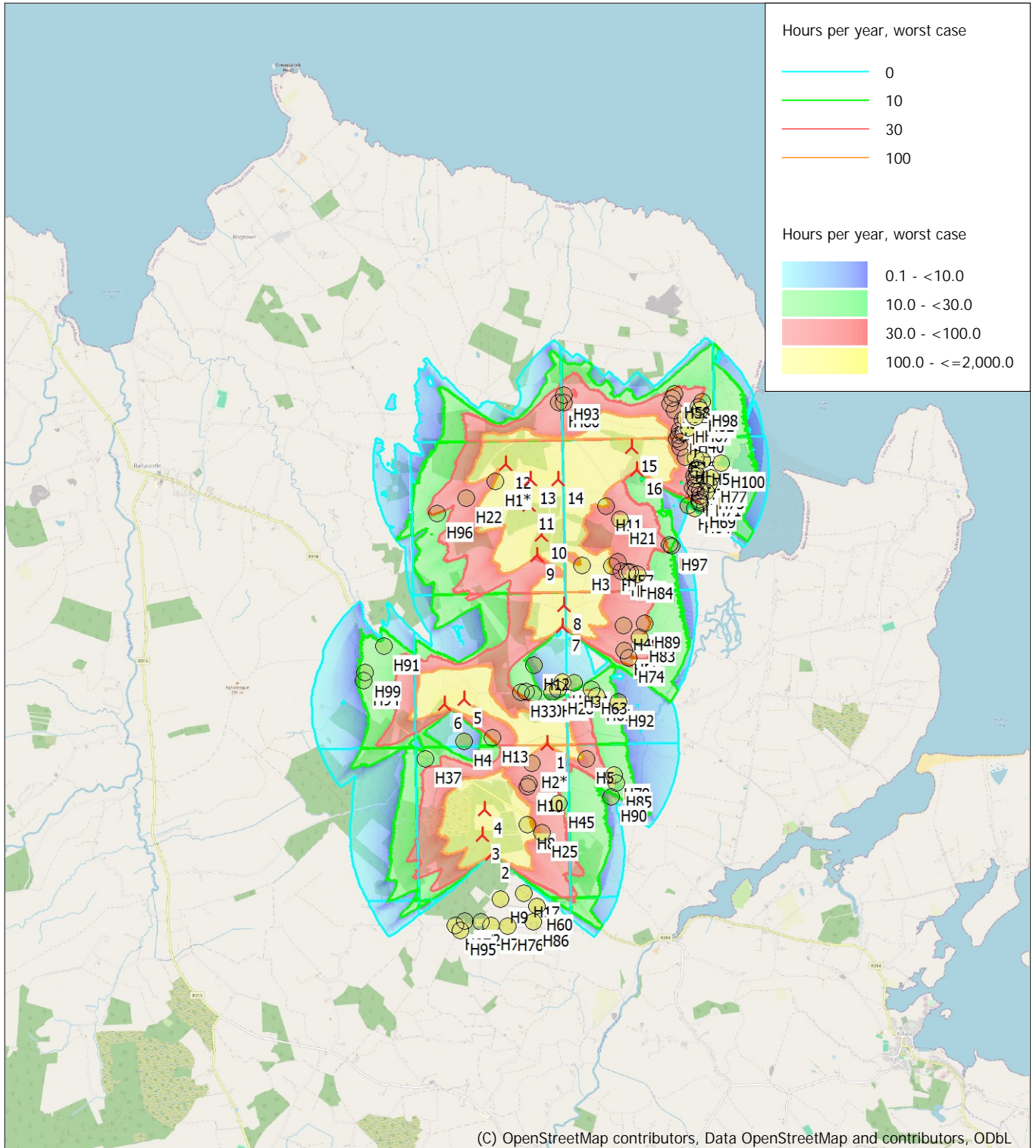


Shadow receptors

A: H1*	R: H18	AC: H29	AM: H39	AU: H47	BF: H58	BQ: H69	CC: H81	CT: H98
G: H7	S: H19	AF: H32	AN: H40	AW: H49	BG: H59	BS: H71	CD: H82	CV: H100
K: H11	U: H21	AH: H34	AO: H41	AY: H51	BJ: H62	BU: H73	CJ: H88	
N: H14	V: H22	AI: H35	AP: H42	AZ: H52	BL: H64	BY: H77	CO: H93	
O: H15	X: H24	AJ: H36	AQ: H43	BB: H54	BO: H67	CA: H79	CR: H96	
P: H16	AA: H27	AL: H38	AR: H44	BD: H56	BP: H68	CB: H80	CS: H97	

## SHADOW - Map

Calculation: Tirawley Shadow Flicker Worst Case



Map: EMD OpenStreetMap , Print scale 1:75,000, Map center Irish ITM-IRENET95 (IE), geocentric, GRS80 East: 515,390 North: 836,260

▲ New WTG

● Shadow receptor

Flicker map level: Elevation Grid Data Object: 6289 Tirawley WF\_EMDGrid\_2.wpg (3)

Time step: 2 minutes, Day step: 3 days, Map resolution: 10 m, Visibility resolution: 5 m, Eye height: 1.5 m