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Calculated:
04/01/2024 11:44/3.6.361

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SHADOW - Main Result

Calculation: Expected Scenario (cumulative)

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) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

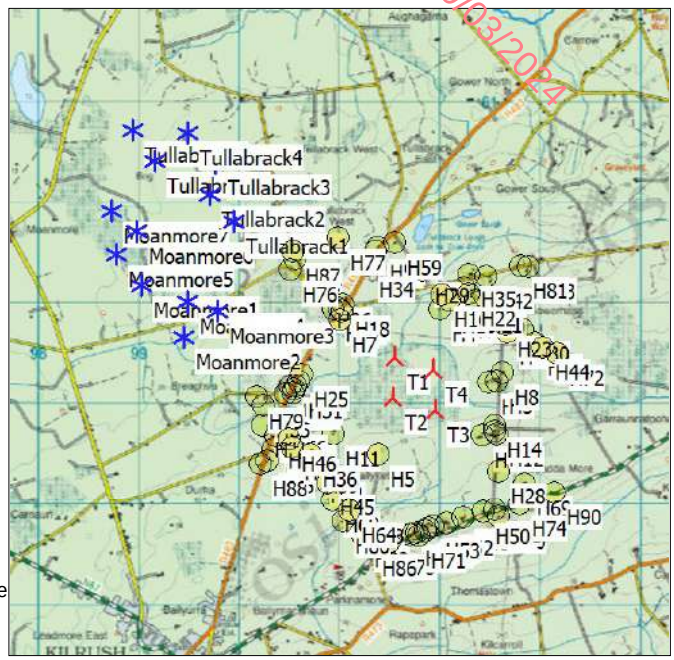
Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW
190	213	197	354	211	672	657	598	555	639	663	1,105

W	WNW	NW	NNW	Sum
721	761	698	526	8,760

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:
Height contours used: Elevation Grid Data Object: Ballykett WF Shadow Flicke
Receptor grid resolution: 1.0 m

All coordinates are in
Irish ITM-IRENET95 (IE), geocentric, GRS80



Scale 1:75,000

New WTG | Existing WTG | Shadow receptor

WTGs

	Easting	Northing	Z	Row data/Description	WTG type Valid	Manufact.	Type-generator	Power, rated	Rotor diameter	Hub height	Shadow data Calculation distance	RPM
			[m]					[kW]	[m]	[m]	[m]	[RPM]
1	501,526	658,498	29.7	T1	Yes	VESTAS	V136-4.2-4,000	4,000	136.0	82.0	2,042	0.0
2	501,504	658,098	31.8	T2	Yes	VESTAS	V136-4.2-4,000	4,000	136.0	82.0	2,042	0.0
3	501,928	657,974	31.0	T3	Yes	VESTAS	V136-4.2-4,000	4,000	136.0	82.0	2,042	0.0
4	501,913	658,375	30.9	T4	Yes	VESTAS	V136-4.2-4,000	4,000	136.0	82.0	2,042	0.0
5	499,008	659,207	24.5	Moanmore1	No	ENERCON	E-70 E4-2,000	2,000	71.0	113.5	1,642	20.0
6	499,420	658,691	18.2	Moanmore2	No	ENERCON	E-70 E4-2,000	2,000	71.0	113.5	1,642	20.0
7	499,759	658,952	18.6	Moanmore3	No	ENERCON	E-70 E4-2,000	2,000	71.0	113.5	1,642	20.0
8	499,463	659,043	21.1	Moanmore4	No	ENERCON	E-70 E4-2,000	2,000	71.0	113.5	1,642	20.0
9	498,754	659,507	19.0	Moanmore5	No	ENERCON	E-70 E4-2,000	2,000	71.0	113.5	1,642	20.0
10	498,952	659,738	20.0	Moanmore6	No	ENERCON	E-70 E4-2,000	2,000	71.0	113.5	1,642	20.0
11	498,712	659,940	19.6	Moanmore7	No	ENERCON	E-70 E4-2,000	2,000	71.0	113.5	1,642	20.0
12	499,920	659,842	22.8	Tullabrack1	Yes	ENERCON	E70/2300-2,300	2,300	71.0	113.0	2,041	0.0
13	499,679	660,102	27.0	Tullabrack2	Yes	ENERCON	E70/2300-2,300	2,300	71.0	113.0	2,041	0.0
14	499,745	660,417	28.6	Tullabrack3	Yes	ENERCON	E70/2300-2,300	2,300	71.0	113.0	2,041	0.0
15	499,460	660,716	19.9	Tullabrack4	Yes	ENERCON	E70/2300-2,300	2,300	71.0	113.0	2,041	0.0
16	499,143	660,437	20.0	Tullabrack5	Yes	ENERCON	E70/2300-2,300	2,300	71.0	113.0	2,041	0.0
17	498,924	660,742	15.0	Tullabrack6	Yes	ENERCON	E70/2300-2,300	2,300	71.0	113.0	2,041	0.0

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	502,460	658,250	37.6	2.0	2.0	0.5	90.0	"Green house mode"	2.5
B	H2	502,400	657,728	47.9	2.0	2.0	0.5	90.0	"Green house mode"	2.5
C	H3	502,538	658,258	37.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
D	H4	501,974	658,980	35.2	2.0	2.0	0.5	90.0	"Green house mode"	2.5
E	H5	501,368	657,536	46.8	2.0	2.0	0.5	90.0	"Green house mode"	2.5
F	H6	501,004	658,951	37.2	2.0	2.0	0.5	90.0	"Green house mode"	2.5
G	H7	500,980	658,864	33.8	2.0	2.0	0.5	90.0	"Green house mode"	2.5
H	H8	502,597	658,352	37.7	2.0	2.0	0.5	90.0	"Green house mode"	2.5
I	H9	502,520	657,769	45.5	2.0	2.0	0.5	90.0	"Green house mode"	2.5
J	H10	502,068	659,061	35.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5

To be continued on next page...

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SHADOW - Main Result

Calculation: Expected Scenario (cumulative)

...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	500,911	657,734	35.6	2.0	2.0	0.5	90.0	"Green house mode"	2.5
L	H12	502,536	657,735	45.9	2.0	2.0	0.5	90.0	"Green house mode"	2.5
M	H13	502,234	659,009	33.4	2.0	2.0	0.5	90.0	"Green house mode"	2.5
N	H14	502,524	657,817	46.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
O	H15	500,917	658,974	38.7	2.0	2.0	0.5	90.0	"Green house mode"	2.5
P	H16	501,999	659,116	33.7	2.0	2.0	0.5	90.0	"Green house mode"	2.5
Q	H17	500,972	658,979	38.9	2.0	2.0	0.5	90.0	"Green house mode"	2.5
R	H18	501,009	659,016	38.1	2.0	2.0	0.5	90.0	"Green house mode"	2.5
S	H19	502,647	658,743	41.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
T	H20	502,355	659,039	35.5	2.0	2.0	0.5	90.0	"Green house mode"	2.5
U	H21	502,330	659,060	34.8	2.0	2.0	0.5	90.0	"Green house mode"	2.5
V	H22	502,266	659,125	35.6	2.0	2.0	0.5	90.0	"Green house mode"	2.5
W	H23	502,626	658,821	40.2	2.0	2.0	0.5	90.0	"Green house mode"	2.5
X	H24	502,215	659,189	34.9	2.0	2.0	0.5	90.0	"Green house mode"	2.5
Y	H25	500,599	658,323	32.6	2.0	2.0	0.5	90.0	"Green house mode"	2.5
Z	H26	500,829	659,102	35.4	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AA	H27	500,569	658,254	30.1	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AB	H28	502,558	657,360	49.9	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AC	H29	501,807	659,352	38.6	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AD	H30	502,796	658,774	44.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AE	H31	500,539	658,210	31.3	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AF	H32	500,527	658,182	32.2	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AG	H33	500,513	658,146	31.8	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AH	H34	501,249	659,412	41.3	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AI	H35	502,269	659,318	39.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AJ	H36	500,683	657,529	50.2	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AK	H37	500,488	658,211	34.1	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AL	H38	502,923	658,648	41.1	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AM	H39	500,700	657,460	50.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AN	H40	500,437	658,130	32.2	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AO	H41	500,761	657,365	46.1	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AP	H42	502,437	659,304	40.1	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AQ	H43	502,205	656,909	54.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AR	H44	502,997	658,597	41.3	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AS	H45	500,855	657,246	46.7	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AT	H46	500,477	657,678	39.9	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AU	H47	500,461	657,717	37.7	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AV	H48	500,450	657,743	35.6	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AW	H49	500,505	657,596	41.8	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AX	H50	502,404	656,964	54.8	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AY	H51	501,340	659,545	43.9	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AZ	H52	502,042	656,845	59.1	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BA	H53	501,906	656,820	57.3	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BB	H54	501,855	656,799	57.6	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BC	H55	501,358	659,584	43.5	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BD	H56	500,379	657,834	33.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BE	H57	501,828	656,771	56.5	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BF	H58	500,368	657,798	33.3	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BG	H59	501,532	659,631	37.2	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BH	H60	501,710	656,737	51.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BI	H61	502,518	656,978	57.5	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BJ	H62	501,744	656,751	52.8	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BK	H63	501,154	656,963	35.4	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BL	H64	501,080	656,967	37.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BM	H65	500,217	658,015	29.7	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BN	H66	500,341	657,710	37.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BO	H67	501,677	656,728	49.6	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BP	H68	500,908	657,072	43.2	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BQ	H69	502,814	657,237	56.2	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BR	H70	502,557	656,913	56.3	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BS	H71	501,768	656,721	49.3	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BT	H72	503,144	658,544	41.8	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BU	H73	500,307	657,573	38.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BV	H74	502,770	657,040	61.2	2.0	2.0	0.5	90.0	"Green house mode"	2.5

To be continued on next page...

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SHADOW - Main Result

Calculation: Expected Scenario (cumulative)

...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	501,470	656,658	42.7	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BX	H76	500,489	659,366	32.9	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BY	H77	500,969	659,682	39.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BZ	H78	500,204	657,814	33.9	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CA	H79	500,153	658,099	29.5	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CB	H80	501,005	656,860	33.7	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CC	H81	502,780	659,409	49.1	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CD	H82	501,199	656,728	41.1	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CE	H83	502,860	659,401	49.7	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CF	H84	500,534	659,465	34.7	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CG	H85	500,251	657,459	39.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CH	H86	501,272	656,641	45.5	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CI	H87	500,512	659,542	35.7	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CJ	H88	500,186	657,430	38.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CK	H90	503,117	657,153	61.6	2.0	2.0	0.5	90.0	"Green house mode"	2.5

Calculation Results

Shadow receptor

		Shadow, worst case			Shadow, expected values
No.	Name	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	116:27	193	0:59	21:51
B	H2	89:34	116	1:04	18:33
C	H3	85:38	162	0:54	16:06
D	H4	68:05	96	0:52	6:47
E	H5	4:54	35	0:12	0:54
F	H6	73:22	154	1:05	9:07
G	H7	88:08	174	1:04	11:14
H	H8	70:39	148	0:56	12:38
I	H9	61:23	134	0:52	13:21
J	H10	49:38	88	0:44	4:53
K	H11	51:00	115	0:44	10:00
L	H12	59:17	126	0:50	12:48
M	H13	58:10	102	1:02	5:45
N	H14	61:40	140	0:52	13:18
O	H15	62:34	158	0:56	7:51
P	H16	42:02	68	0:44	3:48
Q	H17	64:21	152	0:59	7:59
R	H18	69:24	168	0:58	8:20
S	H19	55:40	149	0:39	6:45
T	H20	61:14	100	1:03	5:55
U	H21	51:30	94	0:59	4:58
V	H22	22:46	74	0:34	2:28
W	H23	47:21	131	0:39	5:35
X	H24	31:56	76	0:35	3:07
Y	H25	51:40	172	0:44	10:23
Z	H26	47:44	153	0:44	5:57
AA	H27	48:48	160	0:43	9:57
AB	H28	12:40	57	0:19	2:26
AC	H29	0:30	8	0:06	0:06
AD	H30	34:40	143	0:31	4:24
AE	H31	40:53	138	0:39	8:27
AF	H32	40:19	128	0:38	8:24
AG	H33	40:55	133	0:36	8:34
AH	H34	7:25	69	0:13	1:30
AI	H35	23:30	56	0:30	2:08
AJ	H36	16:54	80	0:19	3:19
AK	H37	35:25	130	0:30	7:19
AL	H38	25:44	106	0:27	3:47
AM	H39	6:37	45	0:19	1:25
AN	H40	36:45	148	0:28	7:43
AO	H41	10:09	47	0:20	2:04

To be continued on next page...

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SHADOW - Main Result

Calculation: Expected Scenario (cumulative)

...continued from previous page

No.	Name	Shadow, worst case Shadow hours per year [h/year]	Shadow days per year [days/year]	Max shadow hours per day [h/day]	Shadow, expected values Shadow hours per year [h/year]
AP	H42	12:58	57	0:24	1:21
AQ	H43	0:00	0	0:00	0:00
AR	H44	21:28	97	0:25	3:20
AS	H45	8:36	48	0:15	1:34
AT	H46	20:44	73	0:31	4:27
AU	H47	23:17	102	0:32	4:58
AV	H48	26:51	112	0:32	5:40
AW	H49	24:23	90	0:30	4:59
AX	H50	0:00	0	0:00	0:00
AY	H51	3:58	40	0:12	0:52
AZ	H52	0:00	0	0:00	0:00
BA	H53	0:00	0	0:00	0:00
BB	H54	0:00	0	0:00	0:00
BC	H55	3:57	40	0:11	0:52
BD	H56	36:54	142	0:27	7:32
BE	H57	0:00	0	0:00	0:00
BF	H58	35:13	134	0:28	7:10
BG	H59	2:46	32	0:09	0:36
BH	H60	0:00	0	0:00	0:00
BI	H61	0:00	0	0:00	0:00
BJ	H62	0:00	0	0:00	0:00
BK	H63	0:00	0	0:00	0:00
BL	H64	0:00	0	0:00	0:00
BM	H65	18:55	93	0:23	4:04
BN	H66	24:34	114	0:26	5:03
BO	H67	0:00	0	0:00	0:00
BP	H68	0:00	0	0:00	0:00
BQ	H69	6:23	61	0:12	1:14
BR	H70	0:00	0	0:00	0:00
BS	H71	0:00	0	0:00	0:00
BT	H72	14:51	81	0:20	2:27
BU	H73	13:37	69	0:24	2:54
BV	H74	0:00	0	0:00	0:00
BW	H75	0:00	0	0:00	0:00
BX	H76	37:40	170	0:30	4:55
BY	H77	18:45	124	0:16	3:41
BZ	H78	18:50	98	0:21	4:01
CA	H79	15:22	80	0:20	3:12
CB	H80	0:00	0	0:00	0:00
CC	H81	12:50	58	0:23	1:10
CD	H82	0:00	0	0:00	0:00
CE	H83	15:29	66	0:21	1:26
CF	H84	52:36	204	0:33	7:59
CG	H85	11:42	62	0:21	2:26
CH	H86	0:00	0	0:00	0:00
CI	H87	72:24	213	0:46	12:05
CJ	H88	9:51	57	0:19	2:03
CK	H90	10:04	70	0:14	1:57

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

No.	Name	Worst case [h/year]	Expected [h/year]
1	T1	332:36	48:53
2	T2	247:04	41:49
3	T3	326:22	56:35
4	T4	275:27	45:40
5	Moanmore1	5:04	0:52
6	Moanmore2	39:52	7:26
7	Moanmore3	39:38	5:59
8	Moanmore4	35:57	6:28
9	Moanmore5	0:00	0:00
10	Moanmore6	4:24	0:58

To be continued on next page...

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RECEIVED: 29/03/2024

SHADOW - Main Result

Calculation: Expected Scenario (cumulative)

...continued from previous page

No.	Name	Worst case [h/year]	Expected [h/year]
11	Moanmore7	0:00	0:00
12	Tullabrack1	53:11	10:55
13	Tullabrack2	15:58	3:14
14	Tullabrack3	10:32	2:11
15	Tullabrack4	2:04	0:23
16	Tullabrack5	8:36	1:41
17	Tullabrack6	0:56	0:10

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.

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Calculated:
04/01/2024 11:44/3.6.361

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SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: A - H1

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January		February		March		April		May		June	
1	08:50		08:22		16:51 (3)		07:27		16:38 (3)		07:15	
	16:33		17:22	1	16:52 (3)		18:16	45	17:23 (3)		20:11	
2	08:50		08:20		16:48 (3)		07:25		16:40 (3)		07:12	
	16:34		17:24	6	16:54 (3)		18:17	42	17:22 (3)		20:13	
3	08:50		08:19		16:46 (3)		07:22		16:40 (3)		07:10	
	16:36		17:26	9	16:55 (3)		18:19	40	17:20 (3)		20:15	
4	08:50		08:17		16:44 (3)		07:20		16:42 (3)		07:08	
	16:37		17:28	13	16:57 (3)		18:21	37	17:19 (3)		20:17	
5	08:49		08:15		16:44 (3)		07:18		16:44 (3)		07:05	
	16:38		17:30	16	17:00 (3)		18:23	34	17:18 (3)		20:18	
6	08:49		08:14		16:43 (3)		07:16		16:45 (3)		07:03	
	16:39		17:32	19	17:02 (3)		18:25	33	17:58 (2)		20:20	5
7	08:49		08:12		16:41 (3)		07:13		16:48 (3)		07:01	
	16:40		17:34	23	17:04 (3)		18:27	32	18:00 (2)		20:22	10
8	08:48		08:10		16:40 (3)		07:11		16:51 (3)		06:58	
	16:42		17:36	26	17:06 (3)		18:29	29	18:03 (2)		20:24	15
9	08:48		08:08		16:39 (3)		07:09		16:59 (3)		06:56	
	16:43		17:38	29	17:08 (3)		18:30	14	18:04 (2)		20:25	18
10	08:47		08:06		16:39 (3)		07:06		17:50 (2)		06:54	
	16:45		17:40	31	17:10 (3)		18:32	16	18:06 (2)		20:27	22
11	08:46		08:04		16:38 (3)		07:04		17:49 (2)		06:51	
	16:46		17:42	35	17:13 (3)		18:34	19	18:08 (2)		20:29	25
12	08:46		08:02		16:37 (3)		07:02		17:48 (2)		06:49	
	16:48		17:43	38	17:15 (3)		18:36	22	18:10 (2)		20:31	28
13	08:45		08:01		16:37 (3)		06:59		17:48 (2)		06:47	
	16:49		17:45	40	17:17 (3)		18:38	24	18:12 (2)		20:32	32
14	08:44		07:59		16:36 (3)		06:57		17:47 (2)		06:45	
	16:51		17:47	43	17:19 (3)		18:39	26	18:13 (2)		20:34	35
15	08:43		07:57		16:36 (3)		06:55		17:47 (2)		06:42	
	16:52		17:49	45	17:21 (3)		18:41	28	18:15 (2)		20:36	38
16	08:42		07:55		16:36 (3)		06:52		17:48 (2)		06:40	
	16:54		17:51	47	17:23 (3)		18:43	29	18:17 (2)		20:38	40
17	08:41		07:53		16:36 (3)		06:50		17:47 (2)		06:38	
	16:56		17:53	49	17:25 (3)		18:45	31	18:18 (2)		20:39	43
18	08:40		07:51		16:35 (3)		06:48		17:48 (2)		06:36	
	16:57		17:55	52	17:27 (3)		18:47	30	18:18 (2)		20:41	45
19	08:39		07:49		16:35 (3)		06:45		17:49 (2)		06:33	
	16:59		17:57	53	17:28 (3)		18:48	28	18:17 (2)		20:43	47
20	08:38		07:46		16:35 (3)		06:43		17:49 (2)		06:31	
	17:01		17:59	53	17:28 (3)		18:50	26	18:15 (2)		20:45	50
21	08:37		07:44		16:35 (3)		06:41		17:51 (2)		06:29	
	17:02		18:01	53	17:28 (3)		18:52	23	18:14 (2)		20:46	52
22	08:36		07:42		16:35 (3)		06:38		17:52 (2)		06:27	
	17:04		18:03	53	17:28 (3)		18:54	19	18:11 (2)		20:48	54
23	08:35		07:40		16:35 (3)		06:36		17:54 (2)		06:25	
	17:06		18:04	52	17:27 (3)		18:55	15	18:09 (2)		20:50	56
24	08:34		07:38		16:35 (3)		06:34		17:59 (2)		06:23	
	17:08		18:06	52	17:27 (3)		18:57	5	18:04 (2)		20:52	58
25	08:32		07:36		16:36 (3)		06:31				06:20	
	17:09		18:08	51	17:27 (3)		18:59				20:53	59
26	08:31		07:34		16:36 (3)		06:29				06:18	
	17:11		18:10	50	17:26 (3)		19:01				20:55	58
27	08:29		07:31		16:36 (3)		06:26				06:16	
	17:13		18:12	49	17:25 (3)		19:03				20:57	57
28	08:28		07:29		16:37 (3)		06:24				06:14	
	17:15		18:14	47	17:24 (3)		19:04				20:59	57
29	08:27						07:22				06:12	
	17:17						20:06				21:00	56
30	08:25						07:19				06:10	
	17:19						20:08				21:02	56
31	08:23						07:17					
	17:21						20:10					
Potential sun hours	256		276		367		418		489		503	
Total, worst case				1035		647		1016		770		
Sun reduction				0.21		0.24		0.35		0.37		
Oper. time red.				1.00		1.00		1.00		1.00		
Wind dir. red.				0.65		0.67		0.68		0.68		
Total reduction				0.13		0.16		0.24		0.25		
Total, real				139		105		245		193		

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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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: A - H1

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	July			August			September			October			November			December		
1	05:18			05:56		19:43 (4)	06:47		19:36 (4)	07:38		18:27 (2)	07:33		16:08 (3)	08:26		
	22:05			21:32	40	20:23 (4)	20:29	25	20:01 (4)	19:17	22	18:49 (2)	17:10	32	16:40 (3)	16:28		
2	05:19			05:57		19:43 (4)	06:49		19:36 (4)	07:40		18:27 (2)	07:35		16:09 (3)	08:27		
	22:05			21:31	42	20:25 (4)	20:26	22	19:58 (4)	19:15	20	18:47 (2)	17:08	29	16:38 (3)	16:27		
3	05:20			05:59		19:41 (4)	06:51		19:38 (4)	07:41		18:28 (2)	07:37		16:10 (3)	08:29		
	22:05			21:29	44	20:25 (4)	20:24	18	19:56 (4)	19:13	17	18:45 (2)	17:06	26	16:36 (3)	16:27		
4	05:20			06:01		19:41 (4)	06:52		19:40 (4)	07:43		18:28 (2)	07:39		16:11 (3)	08:30		
	22:04			21:27	45	20:26 (4)	20:22	15	19:55 (4)	19:10	15	18:43 (2)	17:04	23	16:34 (3)	16:26		
5	05:21			06:02		19:39 (4)	06:54		19:42 (4)	07:45		17:30 (3)	07:41		16:12 (3)	08:32		
	22:04			21:25	47	20:26 (4)	20:19	10	19:52 (4)	19:08	25	18:40 (2)	17:02	20	16:32 (3)	16:25		
6	05:22			06:04		19:39 (4)	06:56		19:45 (4)	07:47		17:25 (3)	07:43		16:14 (3)	08:33		
	22:03			21:23	49	20:28 (4)	20:17	5	19:50 (4)	19:06	30	18:37 (2)	17:00	16	16:30 (3)	16:25		
7	05:23			06:06		19:37 (4)	06:57			07:48		17:22 (3)	07:45		16:15 (3)	08:34		
	22:03			21:22	51	20:28 (4)	20:15			19:03	33	18:35 (2)	16:59	13	16:28 (3)	16:24		
8	05:24			06:07		19:37 (4)	06:59			07:50		17:20 (3)	07:46		16:17 (3)	08:35		
	22:02			21:20	52	20:29 (4)	20:12			19:01	33	18:33 (2)	16:57	9	16:26 (3)	16:24		
9	05:25			06:09		19:36 (4)	07:01			07:52		17:18 (3)	07:48		16:19 (3)	08:37		
	22:01			21:18	52	20:28 (4)	20:10			18:59	35	17:53 (3)	16:55	5	16:24 (3)	16:24		
10	05:26			06:10		19:36 (4)	07:02			07:54		17:15 (3)	07:50			08:38		
	22:00			21:16	53	20:29 (4)	20:08			18:56	39	17:54 (3)	16:54			16:24		
11	05:27			06:12		19:34 (4)	07:04			07:55		17:13 (3)	07:52			08:39		
	22:00			21:14	55	20:29 (4)	20:05			18:54	42	17:55 (3)	16:52			16:23		
12	05:28			06:14		19:34 (4)	07:06			07:57		17:12 (3)	07:54			08:40		
	21:59			21:12	56	20:30 (4)	20:03			18:52	44	17:56 (3)	16:50			16:23		
13	05:29			06:15		19:34 (4)	07:07			07:59		17:11 (3)	07:56			08:41		
	21:58			21:10	56	20:30 (4)	20:00			18:50	46	17:57 (3)	16:49			16:23		
14	05:30			06:17		19:33 (4)	07:09			08:01		17:10 (3)	07:57			08:42		
	21:57			21:08	57	20:30 (4)	19:58			18:47	48	17:58 (3)	16:47			16:23		
15	05:32			06:19		19:33 (4)	07:11			08:02		17:09 (3)	07:59			08:43		
	21:56			21:06	57	20:30 (1)	19:56			18:45	49	17:58 (3)	16:46			16:23		
16	05:33			06:20		19:32 (4)	07:13			08:04		17:08 (3)	08:01			08:44		
	21:55			21:04	58	20:30 (1)	19:53			18:43	51	17:59 (3)	16:44			16:23		
17	05:34			06:22		19:32 (4)	07:14			08:06		17:07 (3)	08:03			08:45		
	21:54			21:02	59	20:31 (1)	19:51			18:41	51	17:58 (3)	16:43			16:23		
18	05:35			06:24		19:31 (4)	07:16			08:08		17:06 (3)	08:05			08:45		
	21:53			21:00	59	20:30 (1)	19:48			18:39	52	17:58 (3)	16:42			16:24		
19	05:37			06:25		19:32 (4)	07:18			08:10		17:06 (3)	08:06			08:46		
	21:51			20:57	57	20:29 (1)	19:46			18:36	53	17:59 (3)	16:40			16:24		
20	05:38			06:27		19:32 (4)	07:19		18:42 (2)	08:11		17:06 (3)	08:08			08:47		
	21:50			20:55	55	20:27 (1)	19:44	13	18:55 (2)	18:34	53	17:59 (3)	16:39			16:24		
21	05:39			06:29		19:31 (4)	07:21		18:38 (2)	08:13		17:05 (3)	08:10			08:47		
	21:49			20:53	54	20:25 (1)	19:41	18	18:56 (2)	18:32	54	17:59 (3)	16:38			16:25		
22	05:41			06:31		19:32 (4)	07:23		18:36 (2)	08:15		17:05 (3)	08:11			08:48		
	21:48			20:51	51	20:23 (1)	19:39	22	18:58 (2)	18:30	54	17:59 (3)	16:37			16:25		
23	05:42			06:32		19:31 (4)	07:24		18:34 (2)	08:17		17:05 (3)	08:13			08:48		
	21:46			20:49	49	20:20 (1)	19:36	25	18:59 (2)	18:28	54	17:59 (3)	16:35			16:26		
24	05:44		19:59 (4)	06:34		19:32 (4)	07:26		18:32 (2)	08:19		17:05 (3)	08:15			08:49		
	21:45	10	20:09 (4)	20:47	47	20:19 (1)	19:34	27	18:59 (2)	18:26	51	17:56 (3)	16:34			16:26		
25	05:45		19:55 (4)	06:36		19:32 (4)	07:28		18:31 (2)	07:21		16:05 (3)	08:16			08:49		
	21:43	17	20:12 (4)	20:44	45	20:17 (1)	19:32	29	19:00 (2)	17:24	49	16:54 (3)	16:33			16:27		
26	05:47		19:53 (4)	06:37		19:32 (4)	07:29		18:30 (2)	07:22		16:05 (3)	08:18			08:49		
	21:42	22	20:15 (4)	20:42	42	20:14 (1)	19:29	31	19:01 (2)	17:22	47	16:52 (3)	16:32			16:28		
27	05:48		19:51 (4)	06:39		19:33 (4)	07:31		18:30 (2)	07:24		16:06 (3)	08:20			08:50		
	21:40	26	20:17 (4)	20:40	39	20:12 (1)	19:27	30	19:00 (2)	17:20	44	16:50 (3)	16:31			16:28		
28	05:50		19:49 (4)	06:41		19:32 (4)	07:33		18:28 (2)	07:26		16:06 (3)	08:21			08:50		
	21:39	29	20:18 (4)	20:38	38	20:10 (1)	19:25	29	18:57 (2)	17:18	42	16:48 (3)	16:30			16:29		
29	05:51		19:48 (4)	06:42		19:33 (4)	07:35		18:28 (2)	07:28		16:07 (3)	08:23			08:50		
	21:37	32	20:20 (4)	20:35	35	20:08 (1)	19:22	27	18:55 (2)	17:16	39	16:46 (3)	16:29			16:30		
30	05:53		19:46 (4)	06:44		19:34 (4)	07:36		18:28 (2)	07:30		16:07 (3)	08:24			08:50		
	21:36	35	20:21 (4)	20:33	32	20:06 (1)	19:20	24	18:52 (2)	17:14	37	16:44 (3)	16:29			16:31		
31	05:54		19:45 (4)	06:46		19:35 (4)				07:32		16:08 (3)				08:50		
	21:34	38	20:23 (4)	20:31	28	20:03 (1)				17:12	34	16:42 (3)				16:32		
Potential sun hours	506			456			381			330			263			240		
Total, worst case		209			1504			370			1263			173				
Sun reduction		0.26			0.30			0.28			0.24			0.19				
Oper. time red.		1.00			1.00			1.00			1.00			1.00				
Wind dir. red.		0.68			0.68			0.68			0.65			0.65				
Total reduction		0.18			0.20			0.19			0.16			0.12				
Total, real		38			303			71			196			21				

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)

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: B - H2

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50 16:33	08:22 17:22	07:27 18:16	07:15 20:11	06:08 21:04 18	20:17 (2) 05:21 20:35 (2) 21:51 63	20:13 (3) 05:18 21:16 (3) 22:05 62	20:20 (3) 05:56 21:22 (3) 21:32 37	20:25 (3) 06:47 21:02 (3) 20:29	07:38 19:17	07:33 17:10	08:26 16:28
2	08:50 16:34	08:20 17:24	07:25 18:18	07:12 20:13	06:06 21:06 19	20:17 (2) 05:21 20:36 (2) 21:52 63	20:13 (3) 05:19 21:16 (3) 22:05 61	20:20 (3) 05:57 21:21 (3) 21:31 34	20:26 (3) 06:49 21:00 (3) 20:26	07:40 19:15	07:35 17:08	08:27 16:27
3	08:50 16:36	08:19 17:26	07:22 18:19	07:10 20:15	06:04 21:07 22	20:16 (2) 05:20 20:38 (2) 21:54 63	20:13 (3) 05:20 21:16 (3) 22:05 62	20:20 (3) 05:59 21:22 (3) 21:29 32	20:26 (3) 06:51 20:58 (2) 20:24	07:41 19:13	07:37 17:06	08:29 16:27
4	08:50 16:37	08:17 17:28	07:20 18:21	07:08 20:17	06:02 21:09 23	20:17 (2) 05:19 20:40 (2) 21:55 63	20:14 (3) 05:20 21:17 (3) 22:04 62	20:20 (3) 06:01 21:22 (3) 21:27 30	20:27 (3) 06:52 20:57 (2) 20:22	07:43 19:10	07:39 17:04	08:30 16:26
5	08:49 16:38	08:15 17:30	07:18 18:23	07:05 20:18	06:00 21:11 24	20:17 (2) 05:18 20:41 (2) 21:56 62	20:14 (3) 05:21 21:16 (3) 22:04 62	20:21 (3) 06:02 21:23 (3) 21:25 28	20:27 (2) 06:54 20:55 (2) 20:19	07:45 19:08	07:41 17:02	08:32 16:25
6	08:49 16:39	08:14 17:32	07:16 18:25	07:03 20:20	05:59 21:12 26	20:17 (2) 05:18 20:43 (2) 21:57 63	20:14 (3) 05:22 21:17 (3) 22:03 62	20:20 (3) 06:04 21:22 (3) 21:23 27	20:27 (2) 06:56 20:54 (2) 20:17	07:47 19:06	07:43 17:00	08:33 16:25
7	08:49 16:41	08:12 17:34	07:13 18:27	07:01 20:22	05:57 21:14 28	20:16 (2) 05:17 20:44 (2) 21:58 63	20:14 (3) 05:23 21:17 (3) 22:03 63	20:20 (3) 06:06 21:23 (3) 21:22 26	20:26 (2) 06:57 20:52 (2) 20:15	07:48 19:03	07:45 16:59	08:34 16:25
8	08:48 16:42	08:10 17:36	07:11 18:29	06:58 20:24	05:55 21:16 29	20:17 (2) 05:16 20:46 (2) 21:58 62	20:15 (3) 05:24 21:17 (3) 22:02 63	20:20 (3) 06:07 21:23 (3) 21:20 24	20:26 (2) 06:59 20:50 (2) 20:12	07:50 19:01	07:46 16:57	08:35 16:24
9	08:48 16:43	08:08 17:38	07:09 18:30	06:56 20:25	05:53 21:18 31	20:16 (3) 05:16 20:47 (2) 21:59 62	20:15 (3) 05:25 21:17 (3) 22:01 63	20:20 (3) 06:09 21:23 (3) 21:18 23	20:25 (2) 07:01 20:48 (2) 20:10	07:52 18:59	07:48 16:55	08:37 16:24
10	08:47 16:45	08:06 17:40	07:06 18:32	06:54 20:27	05:51 21:19 34	20:15 (3) 05:15 20:49 (3) 22:00 62	20:15 (3) 05:26 21:17 (3) 22:00 64	20:20 (3) 06:10 21:24 (3) 21:16 21	20:26 (2) 07:02 20:47 (2) 20:08	07:54 18:57	07:50 16:54	08:38 16:24
11	08:46 16:46	08:04 17:42	07:04 18:34	06:51 20:29	05:50 21:21 36	20:15 (3) 05:15 20:51 (3) 22:01 62	20:16 (3) 05:27 21:18 (3) 22:00 63	20:21 (3) 06:12 21:24 (3) 21:14 19	20:25 (2) 07:04 20:44 (2) 20:05	07:55 18:54	07:52 16:52	08:39 16:23
12	08:46 16:48	08:02 17:44	07:02 18:36	06:49 20:31	05:48 21:23 38	20:14 (3) 05:15 20:52 (3) 22:02 62	20:15 (3) 05:28 21:17 (3) 21:59 63	20:21 (3) 06:14 21:24 (3) 21:12 17	20:26 (2) 07:06 20:43 (2) 20:03	07:57 18:52	07:54 16:50	08:40 16:23
13	08:45 16:49	08:01 17:45	06:59 18:38	06:47 20:32	05:46 21:24 40	20:14 (3) 05:14 20:54 (3) 22:02 61	20:16 (3) 05:29 21:17 (3) 21:58 63	20:21 (3) 06:15 21:24 (3) 21:10 15	20:26 (2) 07:07 20:41 (2) 20:00	07:59 18:50	07:56 16:49	08:41 16:23
14	08:44 16:51	07:59 17:47	06:57 18:39	06:45 20:34	05:45 21:26 42	20:13 (3) 05:14 20:55 (3) 22:03 62	20:16 (3) 05:30 21:18 (3) 21:57 62	20:21 (3) 06:17 21:23 (3) 21:08 13	20:26 (2) 07:09 20:39 (2) 19:58	08:01 18:47	07:57 16:47	08:42 16:23
15	08:43 16:52	07:57 17:49	06:55 18:41	06:42 20:36	05:43 21:27 44	20:13 (3) 05:14 20:57 (3) 22:04 61	20:17 (3) 05:32 21:18 (3) 21:56 62	20:21 (3) 06:19 21:23 (3) 21:06 10	20:27 (2) 07:11 20:37 (2) 19:56	08:02 18:45	07:59 16:46	08:43 16:23
16	08:42 16:54	07:55 17:51	06:52 18:43	06:40 20:38	05:41 21:29 46	20:12 (3) 05:14 20:58 (3) 22:04 61	20:17 (3) 05:33 21:18 (3) 21:55 61	20:21 (3) 06:20 21:22 (3) 21:04 8	20:27 (2) 07:13 20:35 (2) 19:53	08:04 18:43	08:01 16:44	08:44 16:23
17	08:41 16:56	07:53 17:53	06:50 18:45	06:38 20:39	05:40 21:31 46	20:13 (3) 05:14 20:59 (3) 22:05 61	20:17 (3) 05:34 21:18 (3) 21:54 60	20:21 (3) 06:22 21:21 (3) 21:02 5	20:28 (2) 07:14 20:33 (2) 19:51	08:06 18:41	08:03 16:43	08:45 16:24
18	08:40 16:57	07:51 17:55	06:48 18:47	06:36 20:41	05:38 21:32 48	20:13 (3) 05:14 21:01 (3) 22:05 61	20:17 (3) 05:35 21:18 (3) 21:53 59	20:21 (3) 06:24 21:20 (3) 21:00 3	20:28 (2) 07:16 20:31 (2) 19:48	08:08 18:39	08:05 16:42	08:45 16:24
19	08:39 16:59	07:49 17:57	06:45 18:48	06:33 20:43	05:37 21:34 50	20:12 (3) 05:14 21:02 (3) 22:05 61	20:18 (3) 05:37 21:19 (3) 21:51 58	20:21 (3) 06:25 21:19 (3) 20:57	07:18 19:46	08:10 18:36	08:06 16:40	08:46 16:24
20	08:38 17:01	07:46 17:59	06:43 18:50	06:31 20:45	05:35 21:35 51	20:12 (3) 05:14 21:03 (3) 22:06 61	20:18 (3) 05:38 21:19 (3) 21:50 56	20:22 (3) 06:27 21:18 (3) 20:55	07:19 19:44	08:11 18:34	08:08 16:39	08:47 16:24
21	08:37 17:02	07:44 18:01	06:41 18:52	06:29 20:46	05:34 21:37 53	20:12 (3) 05:14 21:05 (3) 22:06 61	20:18 (3) 05:39 21:19 (3) 21:49 55	20:22 (3) 06:29 21:17 (3) 20:53	07:21 19:41	08:13 18:32	08:10 16:38	08:47 16:25
22	08:36 17:04	07:42 18:03	06:38 18:54	06:27 20:48	05:33 21:38 55	20:12 (3) 05:14 21:07 (3) 22:06 61	20:19 (3) 05:41 21:20 (3) 21:48 53	20:22 (3) 06:31 21:15 (3) 20:51	07:23 19:39	08:15 18:30	08:11 16:37	08:48 16:25
23	08:35 17:06	07:40 18:04	06:36 18:55	06:25 20:50	05:31 21:39 56	20:11 (3) 05:14 21:07 (3) 22:06 61	20:19 (3) 05:42 21:20 (3) 21:46 52	20:23 (3) 06:32 21:15 (3) 20:49	07:24 19:36	08:17 18:28	08:13 16:35	08:48 16:26
24	08:33 17:08	07:38 18:06	06:34 18:57	06:23 20:52	05:30 21:41 56	20:12 (3) 05:15 21:08 (3) 22:06 61	20:19 (3) 05:44 21:20 (3) 21:45 51	20:22 (3) 06:34 21:13 (3) 20:47	07:26 19:34	08:19 18:26	08:15 16:34	08:49 16:26
25	08:32 17:09	07:36 18:08	06:31 18:59	06:20 20:53 3	20:22 (2) 20:25 (2) 21:42 58	05:29 20:12 (3) 05:15 21:10 (3) 22:06 61	20:19 (3) 05:45 21:20 (3) 21:43 50	20:22 (3) 06:36 21:12 (3) 20:44	07:28 19:32	07:21 17:24	08:16 16:33	08:49 16:27
26	08:31 17:11	07:34 18:10	06:29 19:01	06:18 20:55 6	20:21 (2) 20:27 (2) 21:44 59	05:28 20:12 (3) 05:15 21:11 (3) 22:06 61	20:19 (3) 05:47 21:20 (3) 21:42 48	20:23 (3) 06:37 21:11 (3) 20:42	07:29 19:29	07:22 17:22	08:18 16:32	08:49 16:28
27	08:29 17:13	07:31 18:12	06:26 19:03	06:16 20:57 9	20:20 (2) 20:29 (2) 21:45 60	05:26 20:12 (3) 05:16 21:12 (3) 22:06 61	20:19 (3) 05:48 21:20 (3) 21:40 46	20:23 (3) 06:39 21:09 (3) 20:40	07:31 19:27	07:24 17:20	08:20 16:31	08:50 16:28
28	08:28 17:15	07:29 18:14	06:24 19:04	06:14 20:59 11	20:19 (2) 20:30 (2) 21:46 61	05:25 20:12 (3) 05:16 21:13 (3) 22:06 62	20:19 (3) 05:50 21:21 (3) 21:39 44	20:23 (3) 06:41 21:07 (3) 20:38	07:33 19:25	07:26 17:18	08:21 16:30	08:50 16:29
29	08:27 17:17		07:22 20:06	06:12 21:00 14	20:18 (2) 20:32 (2) 21:48 62	05:24 20:12 (3) 05:17 21:14 (3) 22:06 61	20:19 (3) 05:51 21:20 (3) 21:37 42	20:24 (3) 06:42 21:06 (3) 20:35	07:35 19:22	07:28 17:16	08:23 16:29	08:50 16:30
30	08:25 17:19		07:19 20:08	06:10 21:02 15	20:18 (2) 20:33 (2) 21:49 63	05:23 20:12 (3) 05:17 21:15 (3) 22:06 61	20:20 (3) 05:53 21:21 (3) 21:36 41	20:24 (3) 06:44 21:05 (3) 20:33	07:36 19:20	07:30 17:14	08:24 16:29	08:50 16:31
31	08:23 17:21		07:17 20:10		05:22 21:50 64	20:13 (3) 21:17 (3)	05:54 21:34 39	20:25 (3) 06:46 21:04 (3) 20:31		07:32 17:12		08:50 16:32
Potential sun hours	256	276	367	418	489	503	506	456	381	330	263	240
Total, worst case				58	1342	1850	1752	372				
Sun reduction				0.35	0.37	0.30	0.26	0.30				
Oper. time red.				1.00	1.00	1.00	1.00	1.00				
Wind dir. red.				0.69	0.68	0.68	0.68	0.68				
Total reduction				0.24	0.25	0.20	0.18	0.20				
Total, real				14	335	374	315	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)

Licensed user:
Jennings O'Donovan
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IE-F91 RHH9 Sligo
+353719161416
abyrne / abyrne@jodireland.com

Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: C - H3

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January	February		March		April		May		June
1	08:50	08:22		07:27		16:50 (3)	07:15		06:08	19:29 (4)	05:21
	16:33	17:22		18:16	42	17:32 (3)	20:11		21:04	38	20:07 (4)	21:51
2	08:50	08:20		07:25		16:51 (3)	07:12		06:06		19:30 (4)	05:21
	16:34	17:24		18:17	40	17:31 (3)	20:13		21:06	36	20:06 (4)	21:52
3	08:50	08:19		07:22		16:51 (3)	07:10	19:45 (4)	06:04		19:32 (4)	05:20
	16:36	17:26		18:19	38	17:29 (3)	20:15	4	19:49 (4)	21:07	32	20:04 (4)	21:54
4	08:50	08:17		07:20		16:52 (3)	07:08		19:42 (4)	06:02		19:34 (4)	05:19
	16:37	17:28		18:21	36	17:28 (3)	20:17	9	19:51 (4)	21:09	29	20:03 (4)	21:55
5	08:49	08:15		07:18		16:54 (3)	07:05		19:39 (4)	06:00		19:35 (4)	05:18
	16:38	17:30		18:23	33	17:27 (3)	20:18	13	19:52 (4)	21:11	26	20:01 (4)	21:56
6	08:49	08:14		07:16		16:55 (3)	07:03		19:37 (4)	05:59		19:37 (4)	05:18
	16:39	17:32		18:25	29	17:24 (3)	20:20	17	19:54 (4)	21:13	22	19:59 (4)	21:57
7	08:49	08:12	17:00 (3)	07:13		16:58 (3)	07:01		19:35 (4)	05:57		19:39 (4)	05:17
	16:40	17:34	4 17:04 (3)	18:27	28	18:00 (2)	20:22	21	19:56 (4)	21:14	17	19:56 (4)	21:58
8	08:48	08:10	16:58 (3)	07:11		17:01 (3)	06:58		19:33 (4)	05:55		19:44 (4)	05:16
	16:42	17:36	8 17:06 (3)	18:29	26	18:03 (2)	20:24	24	19:57 (4)	21:16	8	19:52 (4)	21:58
9	08:48	08:08	16:56 (3)	07:09		17:06 (3)	06:56		19:32 (4)	05:53			05:16
	16:43	17:38	12 17:08 (3)	18:30	18	18:04 (2)	20:25	26	19:58 (4)	21:18			21:59
10	08:47	08:06	16:55 (3)	07:06		17:53 (2)	06:54		19:31 (4)	05:51			05:15
	16:45	17:40	15 17:10 (3)	18:32	13	18:06 (2)	20:27	29	20:00 (1)	21:19			22:00
11	08:46	08:04	16:54 (3)	07:04		17:52 (2)	06:51		19:30 (4)	05:50			05:15
	16:46	17:42	19 17:13 (3)	18:34	16	18:08 (2)	20:29	32	20:02 (1)	21:21			22:01
12	08:46	08:02	16:53 (3)	07:02		17:51 (2)	06:49		19:28 (4)	05:48			05:15
	16:48	17:43	22 17:15 (3)	18:36	19	18:10 (2)	20:31	35	20:03 (1)	21:23			22:02
13	08:45	08:01	16:52 (3)	06:59		17:51 (2)	06:47		19:28 (4)	05:46			05:14
	16:49	17:45	25 17:17 (3)	18:38	21	18:12 (2)	20:32	37	20:05 (1)	21:24			22:02
14	08:44	07:59	16:51 (3)	06:57		17:50 (2)	06:45		19:27 (4)	05:45			05:14
	16:51	17:47	28 17:19 (3)	18:39	23	18:13 (2)	20:34	40	20:07 (1)	21:26			22:03
15	08:43	07:57	16:50 (3)	06:55		17:50 (2)	06:42		19:27 (4)	05:43			05:14
	16:52	17:49	31 17:21 (3)	18:41	25	18:15 (2)	20:36	42	20:09 (1)	21:27			22:04
16	08:42	07:55	16:50 (3)	06:52		17:51 (2)	06:40		19:26 (4)	05:41			05:14
	16:54	17:51	33 17:23 (3)	18:43	26	18:17 (2)	20:38	45	20:11 (1)	21:29			22:04
17	08:41	07:53	16:49 (3)	06:50		17:50 (2)	06:38		19:25 (4)	05:40			05:14
	16:56	17:53	36 17:25 (3)	18:45	29	18:19 (2)	20:39	47	20:12 (1)	21:31			22:05
18	08:40	07:51	16:48 (3)	06:48		17:51 (2)	06:36		19:25 (4)	05:38			05:14
	16:57	17:55	39 17:27 (3)	18:47	27	18:18 (2)	20:41	48	20:13 (1)	21:32			22:05
19	08:39	07:49	16:48 (3)	06:45		17:52 (2)	06:33		19:25 (4)	05:37			05:14
	16:59	17:57	41 17:29 (3)	18:48	25	18:17 (2)	20:43	50	20:15 (1)	21:34			22:05
20	08:38	07:46	16:48 (3)	06:43		17:53 (2)	06:31		19:25 (4)	05:35			05:14
	17:01	17:59	43 17:31 (3)	18:50	22	18:15 (2)	20:45	52	20:17 (1)	21:35			22:06
21	08:37	07:44	16:48 (3)	06:41		17:54 (2)	06:29		19:25 (4)	05:34			05:14
	17:02	18:01	45 17:33 (3)	18:52	19	18:13 (2)	20:46	54	20:19 (1)	21:37			22:06
22	08:36	07:42	16:48 (3)	06:38		17:56 (2)	06:27		19:25 (4)	05:33			05:14
	17:04	18:03	47 17:35 (3)	18:54	14	18:10 (2)	20:48	54	20:19 (1)	21:38			22:06
23	08:35	07:40	16:47 (3)	06:36		18:01 (2)	06:25		19:25 (4)	05:31			05:14
	17:06	18:04	48 17:35 (3)	18:55	4	18:05 (2)	20:50	53	20:18 (1)	21:40			22:06
24	08:33	07:38	16:47 (3)	06:34			06:23		19:25 (4)	05:30			05:15
	17:08	18:06	48 17:35 (3)	18:57			20:52	52	20:17 (1)	21:41			22:06
25	08:32	07:36	16:48 (3)	06:31			06:20		19:26 (4)	05:29			05:15
	17:09	18:08	46 17:34 (3)	18:59			20:53	50	20:16 (1)	21:42			22:06
26	08:31	07:34	16:48 (3)	06:29			06:18		19:26 (4)	05:28			05:15
	17:11	18:10	46 17:34 (3)	19:01			20:55	48	20:14 (1)	21:44			22:06
27	08:29	07:31	16:48 (3)	06:26			06:16		19:27 (4)	05:26			05:16
	17:13	18:12	45 17:33 (3)	19:03			20:57	45	20:12 (1)	21:45			22:06
28	08:28	07:29	16:49 (3)	06:24			06:14		19:27 (4)	05:25			05:16
	17:15	18:14	43 17:32 (3)	19:04			20:59	44	20:11 (4)	21:46			22:06
29	08:27			07:22			06:12		19:28 (4)	05:24			05:17
	17:17			20:06			21:00	42	20:10 (4)	21:48			22:06
30	08:25			07:19			06:10		19:29 (4)	05:23			05:17
	17:19			20:08			21:02	39	20:08 (4)	21:49			22:06
31	08:23			07:17						05:22			
	17:21			20:10						21:50			
Potential sun hours	256	276		367			418			489			503
Total, worst case			724		573			1052			208		
Sun reduction			0.21		0.24			0.35			0.37		
Oper. time red.			1.00		1.00			1.00			1.00		
Wind dir. red.			0.66		0.67			0.69			0.69		
Total reduction			0.14		0.16			0.24			0.25		
Total, real			99		94			254			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)

Licensed user:
Jennings O'Donovan
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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: C - H3

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	July		August			September			October			November			December
1	05:18		05:56			06:47		19:29 (4)	07:38		18:30 (2)	07:33		16:25 (3)	08:26
	22:05		21:32			20:29	32	20:01 (1)	19:17	19	18:49 (2)	17:10	15	16:40 (3)	16:28
2	05:19		05:57			06:49		19:29 (4)	07:40		18:30 (2)	07:35		16:26 (3)	08:27
	22:05		21:31			20:26	29	19:58 (1)	19:15	17	18:47 (2)	17:08	12	16:38 (3)	16:27
3	05:20		05:59			06:51		19:30 (4)	07:41		18:30 (2)	07:37		16:28 (3)	08:29
	22:05		21:29			20:24	26	19:56 (4)	19:13	15	18:45 (2)	17:06	8	16:36 (3)	16:27
4	05:20		06:01			06:52		19:31 (4)	07:43		18:31 (2)	07:39		16:30 (3)	08:30
	22:04		21:27			20:22	24	19:55 (4)	19:10	12	18:43 (2)	17:04	4	16:34 (3)	16:26
5	05:21		06:02		19:52 (4)	06:54		19:31 (4)	07:45		17:39 (3)	07:41			08:32
	22:04		21:25	12	20:04 (4)	20:19	21	19:52 (4)	19:08	23	18:40 (2)	17:02			16:25
6	05:22		06:04		19:49 (4)	06:56		19:33 (4)	07:47		17:35 (3)	07:43			08:33
	22:03		21:23	19	20:08 (4)	20:17	17	19:50 (4)	19:06	27	18:37 (2)	17:00			16:25
7	05:23		06:06		19:46 (4)	06:57		19:34 (4)	07:48		17:32 (3)	07:45			08:34
	22:03		21:22	23	20:09 (4)	20:15	13	19:47 (4)	19:03	29	18:35 (2)	16:59			16:24
8	05:24		06:07		19:44 (4)	06:59		19:36 (4)	07:50		17:30 (3)	07:46			08:35
	22:02		21:20	27	20:11 (4)	20:12	9	19:45 (4)	19:01	31	18:01 (3)	16:57			16:24
9	05:25		06:09		19:42 (4)	07:01		19:39 (4)	07:52		17:28 (3)	07:48			08:37
	22:01		21:18	30	20:12 (4)	20:10	4	19:43 (4)	18:59	34	18:02 (3)	16:55			16:24
10	05:26		06:10		19:41 (4)	07:02			07:54		17:26 (3)	07:50			08:38
	22:00		21:16	33	20:14 (4)	20:08			18:56	37	18:03 (3)	16:54			16:24
11	05:27		06:12		19:39 (4)	07:04			07:55		17:25 (3)	07:52			08:39
	22:00		21:14	36	20:15 (4)	20:05			18:54	39	18:04 (3)	16:52			16:23
12	05:28		06:14		19:38 (4)	07:06			07:57		17:23 (3)	07:54			08:40
	21:59		21:12	38	20:16 (4)	20:03			18:52	41	18:04 (3)	16:50			16:23
13	05:29		06:15		19:37 (4)	07:07			07:59		17:23 (3)	07:56			08:41
	21:58		21:10	40	20:17 (4)	20:00			18:50	42	18:05 (3)	16:49			16:23
14	05:30		06:17		19:35 (4)	07:09			08:01		17:22 (3)	07:57			08:42
	21:57		21:08	42	20:17 (4)	19:58			18:47	44	18:06 (3)	16:47			16:23
15	05:32		06:19		19:35 (4)	07:11			08:02		17:21 (3)	07:59			08:43
	21:56		21:06	43	20:18 (1)	19:56			18:45	45	18:06 (3)	16:46			16:23
16	05:33		06:20		19:33 (4)	07:13			08:04		17:20 (3)	08:01			08:44
	21:55		21:04	46	20:19 (1)	19:53			18:43	47	18:07 (3)	16:44			16:23
17	05:34		06:22		19:33 (4)	07:14			08:06		17:19 (3)	08:03			08:45
	21:54		21:02	48	20:21 (1)	19:51			18:41	47	18:06 (3)	16:43			16:23
18	05:35		06:24		19:31 (4)	07:16			08:08		17:19 (3)	08:05			08:45
	21:53		21:00	51	20:22 (1)	19:48			18:39	47	18:06 (3)	16:42			16:24
19	05:37		06:25		19:31 (4)	07:18			08:10		17:18 (3)	08:06			08:46
	21:51		20:57	52	20:23 (1)	19:46			18:36	48	18:06 (3)	16:40			16:24
20	05:38		06:27		19:31 (4)	07:19			08:11		17:18 (3)	08:08			08:47
	21:50		20:55	53	20:24 (1)	19:44			18:34	47	18:05 (3)	16:39			16:24
21	05:39		06:29		19:30 (4)	07:21		18:42 (2)	08:13		17:18 (3)	08:10			08:47
	21:49		20:53	54	20:24 (1)	19:41	13	18:55 (2)	18:32	45	18:03 (3)	16:38			16:25
22	05:41		06:31		19:30 (4)	07:23		18:40 (2)	08:15		17:18 (3)	08:11			08:48
	21:48		20:51	53	20:23 (1)	19:39	17	18:57 (2)	18:30	43	18:01 (3)	16:37			16:25
23	05:42		06:32		19:29 (4)	07:24		18:38 (2)	08:17		17:18 (3)	08:13			08:48
	21:46		20:49	51	20:20 (1)	19:36	21	18:59 (2)	18:28	41	17:59 (3)	16:35			16:26
24	05:44		06:34		19:29 (4)	07:26		18:35 (2)	08:19		17:19 (3)	08:15			08:49
	21:45		20:47	50	20:19 (1)	19:34	24	18:59 (2)	18:26	37	17:56 (3)	16:34			16:26
25	05:45		06:36		19:29 (4)	07:28		18:34 (2)	07:21		16:19 (3)	08:16			08:49
	21:43		20:44	48	20:17 (1)	19:32	26	19:00 (2)	17:24	35	16:54 (3)	16:33			16:27
26	05:47		06:37		19:28 (4)	07:29		18:33 (2)	07:22		16:19 (3)	08:18			08:49
	21:42		20:42	46	20:14 (1)	19:29	28	19:01 (2)	17:22	33	16:52 (3)	16:32			16:28
27	05:48		06:39		19:28 (4)	07:31		18:33 (2)	07:24		16:20 (3)	08:20			08:50
	21:40		20:40	44	20:12 (1)	19:27	27	19:00 (2)	17:20	30	16:50 (3)	16:31			16:28
28	05:50		06:41		19:28 (4)	07:33		18:31 (2)	07:26		16:21 (3)	08:21			08:50
	21:39		20:38	42	20:10 (1)	19:25	26	18:57 (2)	17:18	27	16:48 (3)	16:30			16:29
29	05:51		06:42		19:28 (4)	07:35		18:31 (2)	07:28		16:22 (3)	08:23			08:50
	21:37		20:35	40	20:08 (1)	19:22	24	18:55 (2)	17:16	24	16:46 (3)	16:29			16:30
30	05:53		06:44		19:29 (4)	07:36		18:31 (2)	07:30		16:22 (3)	08:24			08:50
	21:36		20:33	37	20:06 (1)	19:20	21	18:52 (2)	17:14	22	16:44 (3)	16:29			16:31
31	05:54		06:46		19:28 (4)				07:32		16:23 (3)				08:50
	21:34		20:31	35	20:03 (1)				17:12	19	16:42 (3)				16:32
Potential sun hours	506		456			381			330			263			240
Total, worst case				1093			402			1047			39		
Sun reduction				0.30			0.28			0.24			0.19		
Oper. time red.				1.00			1.00			1.00			1.00		
Wind dir. red.				0.69			0.68			0.66			0.66		
Total reduction				0.20			0.19			0.16			0.12		
Total, real				221			78			165			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)

Licensed user:
Jennings O'Donovan
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
abyrne / abyrne@jodireland.com

Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: D - H4

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January			February			March	April	May	June	July	August	September	October	November			December		
1	08:50		15:17 (1)	08:22		15:33 (1)	07:27	07:15	06:08	05:21	05:18	05:56	06:47	07:38	07:33			08:26		15:02 (1)
	16:33	41	15:58 (1)	17:22	37	16:10 (1)	18:16	20:11	21:04	21:51	22:06	21:32	20:29	19:17	17:10			16:28	51	15:53 (1)
2	08:50		15:17 (1)	08:20		15:34 (1)	07:25	07:12	06:06	05:21	05:19	05:57	06:49	07:40	07:35			08:27		15:03 (1)
	16:34	41	15:58 (1)	17:24	35	16:09 (1)	18:18	20:13	21:06	21:52	22:05	21:31	20:26	19:15	17:08			16:27	50	15:53 (1)
3	08:50		15:17 (1)	08:19		15:35 (1)	07:23	07:10	06:04	05:20	05:20	05:59	06:51	07:41	07:37			08:29		15:02 (1)
	16:36	43	16:00 (1)	17:26	33	16:08 (1)	18:19	20:15	21:07	21:54	22:05	21:29	20:24	19:13	17:06			16:27	50	15:52 (1)
4	08:50		15:18 (1)	08:17		15:37 (1)	07:20	07:08	06:02	05:19	05:20	06:01	06:52	07:43	07:39		15:16 (1)	08:30		15:03 (1)
	16:37	43	16:01 (1)	17:28	29	16:06 (1)	18:21	20:17	21:09	21:55	22:04	21:27	20:22	19:10	17:04	13	15:29 (1)	16:26	49	15:52 (1)
5	08:49		15:18 (1)	08:15		15:40 (1)	07:18	07:05	06:00	05:18	05:21	06:02	06:54	07:45	07:41		15:12 (1)	08:32		15:03 (1)
	16:38	44	16:02 (1)	17:30	25	16:05 (1)	18:23	20:18	21:11	21:56	22:04	21:25	20:19	19:08	17:02	21	15:33 (1)	16:25	47	15:50 (1)
6	08:49		15:19 (1)	08:14		15:43 (1)	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43		15:10 (1)	08:33		15:04 (1)
	16:39	45	16:04 (1)	17:32	20	16:03 (1)	18:25	20:20	21:13	21:57	22:03	21:24	20:17	19:06	17:00	25	15:35 (1)	16:25	45	15:49 (1)
7	08:49		15:18 (1)	08:12		15:47 (1)	07:13	07:01	05:57	05:17	05:23	06:06	06:57	07:48	07:45		15:08 (1)	08:34		15:05 (1)
	16:40	47	16:05 (1)	17:34	12	15:59 (1)	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:03	16:59	29	15:37 (1)	16:24	44	15:49 (1)
8	08:48		15:18 (1)	08:10			07:11	06:58	05:55	05:16	05:24	06:07	06:59	07:50	07:46		15:06 (1)	08:35		15:05 (1)
	16:42	48	16:06 (1)	17:36			18:29	20:24	21:16	21:59	22:02	21:20	20:12	19:01	16:57	33	15:39 (1)	16:24	44	15:49 (1)
9	08:48		15:19 (1)	08:08			07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48		15:05 (1)	08:37		15:05 (1)
	16:43	50	16:09 (1)	17:38			18:30	20:25	21:18	21:59	22:01	21:18	20:10	18:59	16:55	35	15:40 (1)	16:24	43	15:48 (1)
10	08:47		15:19 (1)	08:06			07:07	06:54	05:51	05:15	05:26	06:10	07:02	07:54	07:50		15:04 (1)	08:38		15:07 (1)
	16:45	51	16:10 (1)	17:40			18:32	20:27	21:19	22:00	22:01	21:16	20:08	18:57	16:54	37	15:41 (1)	16:24	41	15:48 (1)
11	08:46		15:20 (1)	08:04			07:04	06:51	05:50	05:15	05:27	06:12	07:04	07:55	07:52		15:03 (1)	08:39		15:07 (1)
	16:46	51	16:11 (1)	17:42			18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:54	16:52	39	15:42 (1)	16:23	41	15:48 (1)
12	08:46		15:20 (1)	08:03			07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54		15:02 (1)	08:40		15:07 (1)
	16:48	51	16:11 (1)	17:44			18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:50	41	15:43 (1)	16:23	41	15:48 (1)
13	08:45		15:20 (1)	08:01			07:00	06:47	05:46	05:14	05:29	06:15	07:08	07:59	07:56		15:01 (1)	08:41		15:08 (1)
	16:49	51	16:11 (1)	17:45			18:38	20:32	21:24	22:02	21:58	21:10	20:00	18:50	16:49	43	15:44 (1)	16:23	39	15:47 (1)
14	08:44		15:20 (1)	07:59			06:57	06:45	05:45	05:14	05:30	06:17	07:09	08:01	07:57		15:01 (1)	08:42		15:09 (1)
	16:51	52	16:12 (1)	17:47			18:39	20:34	21:26	22:03	21:57	21:08	19:58	18:47	16:47	44	15:45 (1)	16:23	38	15:47 (1)
15	08:43		15:21 (1)	07:57			06:55	06:42	05:43	05:14	05:32	06:19	07:11	08:02	07:59		15:00 (1)	08:43		15:09 (1)
	16:52	51	16:12 (1)	17:49			18:41	20:36	21:27	22:04	21:56	21:06	19:56	18:45	16:46	46	15:46 (1)	16:23	38	15:47 (1)
16	08:42		15:21 (1)	07:55			06:52	06:40	05:41	05:14	05:33	06:20	07:13	08:04	08:01		15:00 (1)	08:44		15:10 (1)
	16:54	52	16:13 (1)	17:51			18:43	20:38	21:29	22:04	21:55	21:04	19:53	18:43	16:44	47	15:47 (1)	16:23	38	15:48 (1)
17	08:42		15:22 (1)	07:53			06:50	06:38	05:40	05:14	05:34	06:22	07:14	08:06	08:03		15:00 (1)	08:45		15:10 (1)
	16:56	51	16:13 (1)	17:53			18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43	47	15:47 (1)	16:23	37	15:47 (1)
18	08:41		15:22 (1)	07:51			06:48	06:36	05:38	05:14	05:35	06:24	07:16	08:08	08:05		14:59 (1)	08:45		15:10 (1)
	16:57	52	16:14 (1)	17:55			18:47	20:41	21:32	22:05	21:53	21:00	19:48	18:39	16:42	49	15:48 (1)	16:24	37	15:47 (1)
19	08:39		15:23 (1)	07:49			06:45	06:33	05:37	05:14	05:37	06:25	07:18	08:10	08:06		14:59 (1)	08:46		15:11 (1)
	16:59	51	16:14 (1)	17:57			18:48	20:43	21:34	22:05	21:51	20:58	19:46	18:36	16:40	50	15:49 (1)	16:24	37	15:48 (1)
20	08:38		15:23 (1)	07:46			06:43	06:31	05:35	05:14	05:38	06:27	07:19	08:11	08:08		14:59 (1)	08:47		15:11 (1)
	17:01	50	16:13 (1)	17:59			18:50	20:45	21:35	22:06	21:50	20:55	19:44	18:34	16:39	50	15:49 (1)	16:24	37	15:48 (1)
21	08:37		15:24 (1)	07:44			06:41	06:29	05:34	05:14	05:39	06:29	07:21	08:13	08:10		14:59 (1)	08:47		15:12 (1)
	17:02	50	16:14 (1)	18:01			18:52	20:47	21:37	22:06	21:49	20:53	19:41	18:32	16:38	50	15:49 (1)	16:25	36	15:48 (1)
22	08:36		15:24 (1)	07:42			06:38	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:12		14:59 (1)	08:48		15:12 (1)
	17:04	50	16:14 (1)	18:03			18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:37	50	15:49 (1)	16:25	36	15:48 (1)
23	08:35		15:24 (1)	07:40			06:36	06:25	05:31	05:14	05:42	06:32	07:24	08:17	08:13		14:59 (1)	08:48		15:13 (1)
	17:06	50	16:14 (1)	18:04			18:55	20:50	21:40	22:06	21:46	20:49	19:37	18:28	16:35	51	15:50 (1)	16:26	37	15:50 (1)
24	08:34		15:26 (1)	07:38			06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15		14:59 (1)	08:49		15:13 (1)
	17:08	48	16:14 (1)	18:06			18:57	20:52	21:41	22:06	21:45	20:47	19:34	18:26	16:34	52	15:51 (1)	16:26	37	15:50 (1)
25	08:32		15:26 (1)	07:36			06:31	06:20	05:29	05:15	05:45	06:36	07:28	07:21	08:17		15:00 (1)	08:49		15:14 (1)
	17:09	47	16:13 (1)	18:08			18:59	20:54	21:42	22:06	21:43	20:44	19:32	17:24	16:33	51	15:51 (1)	16:27	37	15:51 (1)
26	08:31		15:27 (1)	07:34			06:29	06:18	05:28	05:15	05:47	06:37	07:29	07:22	08:18		15:00 (1)	08:49		15:14 (1)
	17:11	47	16:14 (1)	18:10			19:01	20:55	21:44	22:06	21:42	20:42	19:29	17:22	16:32	52	15:52 (1)	16:28	38	15:52 (1)
27	08:29		15:27 (1)	07:31			06:26	06:16	05:26	05:16	05:48	06:39	07:31	07:24	08:20		15:00 (1)	08:50		15:15 (1)
	17:13	46	16:13 (1)	18:12			19:03	20:57	21:45	22:06	21:40	20:40	19:27	17:20	16:31	51	15:51 (1)	16:28	37	15:52 (1)
28	08:28		15:29 (1)	07:29			06:24	06:14	05:25	05:16	05:50	06:41	07:33	07:26	08:21		15:00 (1)	08:50		15:15 (1)
	17:15	44	16:13 (1)	18:14			19:04	20:59	21:46	22:06	21:39	20:38	19:25	17:18	16:30	52	15:52 (1)	16:29	38	15:53 (1)
29	08:27		15:29 (1)				07:22	06:12	05:24	05:17	05:51	06:42	07:35	07:28	08:23		15:01 (1)	08:50		15:15 (1)
	17:17	43	16:12 (1)				20:06	21:01	21:48	22:06	21:37	20:35	19:22	17:16	16:29	52	15:53 (1)	16:30	39	15:54 (1)
30	08:25		15:30 (1)				07:19	06:10	05:23	05:17	05:53	06:44	07:36	07:30	08:24		15:01 (1)	08:50		15:16 (1)
	17:19	42	16:12 (1)				20:08	21:02	21:49	22:06	21:36	20:33	19:20	17:14	16:29	51	15:52 (1)	16:31	39	15:55 (1)
31	08:24		15:32 (1)				07:17		05:22		05:54	06:46		07:32				08:50		15:16 (1)
	17:21	40	16:12 (1)				20:10		21:50		21:34	20:31		17:12				16:32	40	15:56 (1)
Potential sun hours	256			276			367	418	489	503	506	456	381	330	263			240		
Total, worst case		1472			191											1161			1261	
Sun reduction		0.16			0.21											0.19			0.14	
Oper. time red.		1.00			1.00											1.00			1.00	
Wind dir. red.		0.62			0.62											0.62			0.62	
Total reduction		0.10			0.13											0.12			0.08	
Total, real		143			24											134			106	

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)

Licensed user:
Jennings O'Donovan
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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: E - H5

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January	February	March	April	May	June		July		August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:08	05:21		05:18		05:50 (3)	05:56	06:47	07:38	07:33	08:26
	16:33	17:23	18:16	20:11	21:04	21:51		22:06	9	05:59 (3)	21:32	20:29	19:18	17:10	16:28
2	08:50	08:20	07:25	07:12	06:06	05:21		05:19		05:50 (3)	05:58	06:49	07:40	07:35	08:27
	16:35	17:24	18:18	20:13	21:06	21:52		22:05	8	05:58 (3)	21:31	20:26	19:15	17:08	16:27
3	08:50	08:19	07:23	07:10	06:04	05:20		05:20		05:51 (3)	05:59	06:51	07:41	07:37	08:29
	16:36	17:26	18:19	20:15	21:07	21:54		22:05	7	05:58 (3)	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:02	05:19	05:49 (3)	05:20		05:52 (3)	06:01	06:52	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09	21:55	1 05:50 (3)	22:04	6	05:58 (3)	21:27	20:22	19:10	17:04	16:26
5	08:49	08:15	07:18	07:05	06:01	05:18	05:48 (3)	05:21		05:53 (3)	06:02	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:18	21:11	21:56	2 05:50 (3)	22:04	5	05:58 (3)	21:25	20:19	19:08	17:02	16:25
6	08:49	08:14	07:16	07:03	05:59	05:18	05:48 (3)	05:22		05:54 (3)	06:04	06:56	07:47	07:43	08:33
	16:39	17:32	18:25	20:20	21:13	21:57	3 05:51 (3)	22:03	4	05:58 (3)	21:24	20:17	19:06	17:01	16:25
7	08:49	08:12	07:13	07:01	05:57	05:17	05:47 (3)	05:23		05:54 (3)	06:06	06:57	07:48	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	5 05:52 (3)	22:03	3	05:57 (3)	21:22	20:15	19:03	16:59	16:25
8	08:48	08:10	07:11	06:58	05:55	05:16	05:47 (3)	05:24		05:55 (3)	06:07	06:59	07:50	07:46	08:35
	16:42	17:36	18:29	20:24	21:16	21:59	6 05:53 (3)	22:02	1	05:56 (3)	21:20	20:12	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	05:53	05:16	05:46 (3)	05:25			06:09	07:01	07:52	07:48	08:37
	16:43	17:38	18:30	20:25	21:18	21:59	7 05:53 (3)	22:01			21:18	20:10	18:59	16:55	16:24
10	08:47	08:06	07:07	06:54	05:51	05:15	05:46 (3)	05:26			06:11	07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	8 05:54 (3)	22:01			21:16	20:08	18:57	16:54	16:24
11	08:46	08:04	07:04	06:51	05:50	05:15	05:46 (3)	05:27			06:12	07:04	07:55	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01	8 05:54 (3)	22:00			21:14	20:05	18:54	16:52	16:23
12	08:46	08:03	07:02	06:49	05:48	05:15	05:45 (3)	05:28			06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	22:02	9 05:54 (3)	21:59			21:12	20:03	18:52	16:50	16:23
13	08:45	08:01	07:00	06:47	05:46	05:14	05:45 (3)	05:29			06:16	07:08	07:59	07:56	08:41
	16:49	17:45	18:38	20:33	21:24	22:02	10 05:55 (3)	21:58			21:10	20:00	18:50	16:49	16:23
14	08:44	07:59	06:57	06:45	05:45	05:14	05:45 (3)	05:31			06:17	07:09	08:01	07:57	08:42
	16:51	17:47	18:39	20:34	21:26	22:03	10 05:55 (3)	21:57			21:08	19:58	18:47	16:47	16:23
15	08:43	07:57	06:55	06:42	05:43	05:14	05:45 (3)	05:32			06:19	07:11	08:02	07:59	08:43
	16:52	17:49	18:41	20:36	21:27	22:04	11 05:56 (3)	21:56			21:06	19:56	18:45	16:46	16:23
16	08:42	07:55	06:53	06:40	05:41	05:14	05:45 (3)	05:33			06:21	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	11 05:56 (3)	21:55			21:04	19:53	18:43	16:44	16:23
17	08:41	07:53	06:50	06:38	05:40	05:14	05:45 (3)	05:34			06:22	07:14	08:06	08:03	08:45
	16:56	17:53	18:45	20:40	21:31	22:05	12 05:57 (3)	21:54			21:02	19:51	18:41	16:43	16:24
18	08:40	07:51	06:48	06:36	05:38	05:14	05:45 (3)	05:36			06:24	07:16	08:08	08:05	08:45
	16:57	17:55	18:47	20:41	21:32	22:05	12 05:57 (3)	21:53			21:00	19:49	18:39	16:42	16:24
19	08:39	07:49	06:45	06:33	05:37	05:14	05:45 (3)	05:37			06:26	07:18	08:10	08:06	08:46
	16:59	17:57	18:48	20:43	21:34	22:05	12 05:57 (3)	21:51			20:58	19:46	18:36	16:40	16:24
20	08:38	07:46	06:43	06:31	05:35	05:14	05:45 (3)	05:38			06:27	07:19	08:11	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	12 05:57 (3)	21:50			20:55	19:44	18:34	16:39	16:24
21	08:37	07:44	06:41	06:29	05:34	05:14	05:45 (3)	05:40			06:29	07:21	08:13	08:10	08:47
	17:02	18:01	18:52	20:47	21:37	22:06	12 05:57 (3)	21:49			20:53	19:41	18:32	16:38	16:25
22	08:36	07:42	06:38	06:27	05:33	05:14	05:46 (3)	05:41			06:31	07:23	08:15	08:12	08:48
	17:04	18:03	18:54	20:48	21:38	22:06	12 05:58 (3)	21:48			20:51	19:39	18:30	16:37	16:25
23	08:35	07:40	06:36	06:25	05:31	05:14	05:46 (3)	05:42			06:32	07:24	08:17	08:13	08:48
	17:06	18:04	18:56	20:50	21:40	22:06	12 05:58 (3)	21:46			20:49	19:37	18:28	16:35	16:26
24	08:34	07:38	06:34	06:23	05:30	05:15	05:46 (3)	05:44			06:34	07:26	08:19	08:15	08:49
	17:08	18:06	18:57	20:52	21:41	22:06	12 05:58 (3)	21:45			20:47	19:34	18:26	16:34	16:26
25	08:32	07:36	06:31	06:21	05:29	05:15	05:47 (3)	05:45			06:36	07:28	07:21	08:17	08:49
	17:10	18:08	18:59	20:54	21:42	22:06	12 05:59 (3)	21:43			20:44	19:32	17:24	16:33	16:27
26	08:31	07:34	06:29	06:18	05:28	05:15	05:47 (3)	05:47			06:37	07:29	07:22	08:18	08:49
	17:11	18:10	19:01	20:55	21:44	22:06	11 05:58 (3)	21:42			20:42	19:29	17:22	16:32	16:28
27	08:29	07:31	06:27	06:16	05:27	05:16	05:47 (3)	05:48			06:39	07:31	07:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	22:06	11 05:58 (3)	21:40			20:40	19:27	17:20	16:31	16:29
28	08:28	07:29	06:24	06:14	05:25	05:16	05:48 (3)	05:50			06:41	07:33	07:26	08:21	08:50
	17:15	18:14	19:04	20:59	21:46	22:06	11 05:59 (3)	21:39			20:38	19:25	17:18	16:30	16:29
29	08:27		07:22	06:12	05:24	05:17	05:49 (3)	05:51			06:42	07:35	07:28	08:23	08:50
	17:17		20:06	21:01	21:48	22:06	10 05:59 (3)	21:37			20:35	19:22	17:16	16:30	16:30
30	08:25		07:19	06:10	05:23	05:18	05:49 (3)	05:53			06:44	07:36	07:30	08:24	08:50
	17:19		20:08	21:02	21:49	22:06	9 05:58 (3)	21:36			20:33	19:20	17:14	16:29	16:31
31	08:24		07:17		05:22			05:54			06:46		07:32		08:50
	17:21		20:10		21:50			21:34			20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503		506		456	381	330	263	240	
Total, worst case						251			43						
Sun reduction						0.30			0.26						
Oper. time red.						1.00			1.00						
Wind dir. red.						0.63			0.63						
Total reduction						0.19			0.17						
Total, real						47			7						

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)

Licensed user:
Jennings O'Donovan
Finisklin Business Park
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+353719161416
abyrne / abyrne@jodireland.com

Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: F - H6

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January		February		March		April		May	June
1	08:50		08:22		08:49 (4)	07:27		07:15	19:35 (8)	06:08	05:21
	16:33	13	09:36 (3)	17:23	52	09:41 (1)	18:16		20:11	10	19:45 (8)	21:04	21:51
2	08:50		09:22 (3)	08:20		08:47 (4)	07:25		07:12		19:35 (8)	06:06	05:21
	16:34	13	09:35 (3)	17:24	54	09:41 (1)	18:18		20:13	9	19:44 (8)	21:06	21:53
3	08:50		09:22 (3)	08:19		08:45 (4)	07:23		07:10		19:36 (8)	06:04	05:20
	16:36	14	09:36 (3)	17:26	56	09:41 (1)	18:19		20:15	7	19:43 (8)	21:07	21:54
4	08:50		09:22 (3)	08:17		08:44 (4)	07:20		07:08			06:02	05:19
	16:37	15	09:37 (3)	17:28	57	09:41 (1)	18:21		20:17			21:09	21:55
5	08:49		09:21 (3)	08:15		08:42 (4)	07:18		07:05			06:01	05:18
	16:38	16	09:37 (3)	17:30	59	09:41 (1)	18:23		20:18			21:11	21:56
6	08:49		09:21 (1)	08:14		08:40 (4)	07:16		07:03			05:59	05:18
	16:39	17	09:38 (3)	17:32	60	09:40 (1)	18:25		20:20			21:13	21:57
7	08:49		09:20 (1)	08:12		08:38 (4)	07:13		07:01			05:57	05:17
	16:41	18	09:38 (3)	17:34	62	09:40 (1)	18:27		20:22			21:14	21:58
8	08:48		09:19 (1)	08:10		08:36 (4)	07:11		06:58			05:55	05:16
	16:42	19	09:38 (3)	17:36	63	09:39 (1)	18:29		20:24			21:16	21:59
9	08:48		09:19 (1)	08:08		08:34 (4)	07:09	18:03 (6)	06:56			05:53	05:16
	16:43	20	09:39 (3)	17:38	64	09:38 (1)	18:30	1	18:04 (6)	20:26		21:18	21:59
10	08:47		09:18 (1)	08:06		08:32 (4)	07:07		18:02 (6)	06:54		05:51	05:15
	16:45	21	09:39 (3)	17:40	64	09:37 (1)	18:32	4	18:06 (6)	20:27		21:19	22:00
11	08:46		09:17 (1)	08:05		08:30 (4)	07:04		18:02 (6)	06:51		05:50	05:15
	16:46	22	09:39 (3)	17:42	64	09:36 (1)	18:34	6	18:08 (6)	20:29		21:21	22:01
12	08:46		09:16 (1)	08:03		08:29 (4)	07:02		18:01 (6)	06:49		05:48	05:15
	16:48	23	09:39 (3)	17:44	63	09:35 (1)	18:36	9	18:10 (6)	20:31		21:23	22:02
13	08:45		09:15 (1)	08:01		08:30 (4)	07:00		18:02 (6)	06:47		05:46	05:14
	16:49	23	09:38 (3)	17:45	59	09:34 (1)	18:38	8	18:10 (6)	20:33		21:24	22:02
14	08:44		09:14 (1)	07:59		08:31 (4)	06:57		18:04 (6)	06:45		05:45	05:14
	16:51	24	09:38 (3)	17:47	53	09:32 (1)	18:39	5	18:09 (6)	20:34		21:26	22:03
15	08:43		09:13 (1)	07:57		08:32 (4)	06:55			06:42		05:43	05:14
	16:52	25	09:38 (3)	17:49	47	09:30 (1)	18:41			20:36		21:27	22:04
16	08:43		09:12 (1)	07:55		08:33 (4)	06:53			06:40		05:41	05:14
	16:54	26	09:38 (3)	17:51	39	09:27 (1)	18:43			20:38		21:29	22:04
17	08:42		09:11 (1)	07:53		08:35 (4)	06:50			06:38		05:40	05:14
	16:56	27	09:38 (3)	17:53	23	09:21 (1)	18:45			20:40		21:31	22:05
18	08:41		09:10 (1)	07:51		08:37 (4)	06:48			06:36		05:38	05:14
	16:57	27	09:37 (3)	17:55	13	08:50 (4)	18:47			20:41		21:32	22:05
19	08:40		09:09 (1)	07:49			06:45			06:33		05:37	05:14
	16:59	28	09:37 (3)	17:57			18:48			20:43		21:34	22:05
20	08:38		09:07 (1)	07:47			06:43			06:31		05:35	05:14
	17:01	29	09:36 (1)	17:59			18:50			20:45		21:35	22:06
21	08:37		09:06 (1)	07:44			06:41			06:29		05:34	05:14
	17:02	31	09:37 (1)	18:01			18:52			20:47		21:37	22:06
22	08:36		09:05 (1)	07:42			06:38			06:27		05:33	05:14
	17:04	33	09:38 (1)	18:03			18:54			20:48		21:38	22:06
23	08:35		09:03 (1)	07:40			06:36			06:25		05:31	05:14
	17:06	35	09:38 (1)	18:04			18:56			20:50		21:40	22:06
24	08:34		09:02 (1)	07:38			06:34	18:26 (7)	06:23			05:30	05:15
	17:08	37	09:39 (1)	18:06			18:57	6	18:32 (7)	20:52		21:41	22:06
25	08:32		09:00 (1)	07:36			06:31		18:24 (7)	06:21		05:29	05:15
	17:10	39	09:39 (1)	18:08			18:59	9	18:33 (7)	20:54		21:42	22:07
26	08:31		08:59 (1)	07:34			06:29		18:23 (7)	06:18		05:28	05:15
	17:11	41	09:40 (1)	18:10			19:01	12	18:35 (7)	20:55		21:44	22:07
27	08:30		08:57 (1)	07:31			06:27		18:23 (7)	06:16		05:27	05:16
	17:13	43	09:40 (1)	18:12			19:03	14	18:37 (7)	20:57		21:45	22:06
28	08:28		08:56 (1)	07:29			06:24		18:22 (7)	06:14		05:25	05:16
	17:15	45	09:41 (1)	18:14			19:04	14	18:36 (7)	20:59		21:46	22:06
29	08:27		08:54 (1)				07:22		19:23 (7)	06:12		05:24	05:17
	17:17	47	09:41 (1)				20:06	15	19:40 (8)	21:01		21:48	22:06
30	08:25		08:53 (1)				07:19		19:23 (7)	06:10		05:23	05:18
	17:19	48	09:41 (1)				20:08	16	19:41 (8)	21:02		21:49	22:06
31	08:24		08:51 (4)				07:17		19:24 (7)			05:22	
	17:21	50	09:41 (1)				20:10	16	19:43 (8)			21:50	
Potential sun hours	256			276			367			418		489	503
Total, worst case		869			952			135			26		
Sun reduction		0.16			0.21			0.24			0.35		
Oper. time red.		1.00			1.00			1.00			1.00		
Wind dir. red.		0.65			0.66			0.69			0.69		
Total reduction		0.10			0.14			0.17			0.24		
Total, real		89			130			23			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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abyrne / abyrne@jodireland.com

Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: F - H6

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	July		August		September			October			November			December		
1	05:18		05:56		06:47			07:38		18:41 (6)	07:34		08:02 (4)	08:26		08:59 (1)
	22:06		21:32		20:29			19:18	9	18:50 (6)	17:10	65	09:07 (1)	16:28	22	09:21 (3)
2	05:19		05:58		06:49			07:40		18:40 (6)	07:35		08:04 (4)	08:27		09:01 (1)
	22:05		21:31		20:26			19:15	7	18:47 (6)	17:08	64	09:08 (1)	16:27	21	09:22 (3)
3	05:20		05:59		06:51			07:41		18:40 (6)	07:37		08:06 (4)	08:29		09:02 (1)
	22:05		21:29		20:24			19:13	5	18:45 (6)	17:06	63	09:09 (1)	16:27	20	09:22 (3)
4	05:20		06:01		06:52			07:43		18:40 (6)	07:39		08:08 (4)	08:30		09:04 (1)
	22:04		21:27		20:22			19:10	3	18:43 (6)	17:04	62	09:10 (1)	16:26	19	09:23 (3)
5	05:21		06:02		06:54			07:45			07:41		08:10 (4)	08:32		09:05 (1)
	22:04		21:25		20:19			19:08			17:02	60	09:10 (1)	16:25	18	09:23 (3)
6	05:22		06:04		06:56			07:47			07:43		08:12 (4)	08:33		09:07 (1)
	22:03		21:24		20:17			19:06			17:01	59	09:11 (1)	16:25	17	09:24 (3)
7	05:23		06:06		06:57			07:48			07:45		08:14 (4)	08:34		09:08 (3)
	22:03		21:22		20:15			19:03			16:59	57	09:11 (1)	16:25	16	09:24 (3)
8	05:24		06:07		06:59			07:50			07:46		08:16 (4)	08:36		09:09 (3)
	22:02		21:20		20:12			19:01			16:57	56	09:12 (1)	16:24	15	09:24 (3)
9	05:25		06:09		07:01		19:31 (8)	07:52			07:48		08:18 (4)	08:37		09:10 (3)
	22:01		21:18		20:10	6	19:37 (8)	18:59			16:55	54	09:12 (1)	16:24	14	09:24 (3)
10	05:26		06:11		07:03		19:28 (8)	07:54			07:50		08:20 (4)	08:38		09:12 (3)
	22:01		21:16		20:08	9	19:37 (8)	18:57			16:54	52	09:12 (1)	16:24	13	09:25 (3)
11	05:27		06:12		07:04		19:27 (8)	07:55			07:52		08:22 (4)	08:39		09:13 (3)
	22:00		21:14		20:05	11	19:38 (8)	18:54			16:52	50	09:12 (1)	16:23	13	09:26 (3)
12	05:28		06:14		07:06		19:17 (7)	07:57			07:54		08:24 (1)	08:40		09:14 (3)
	21:59		21:12		20:03	16	19:36 (8)	18:52			16:50	48	09:12 (1)	16:23	12	09:26 (3)
13	05:29		06:16		07:08		19:14 (7)	07:59			07:56		08:26 (1)	08:41		09:15 (3)
	21:58		21:10		20:00	17	19:33 (8)	18:50			16:49	47	09:13 (1)	16:23	17	10:11 (2)
14	05:30		06:17		07:09		19:13 (7)	08:01			07:57		08:28 (1)	08:42		09:16 (3)
	21:57		21:08		19:58	16	19:31 (8)	18:47			16:47	45	09:13 (1)	16:23	19	10:12 (2)
15	05:32		06:19		07:11		19:13 (7)	08:03			07:59		08:30 (1)	08:43		09:17 (3)
	21:56		21:06		19:56	13	19:26 (7)	18:45			16:46	43	09:13 (1)	16:23	20	10:14 (2)
16	05:33		06:21		07:13		19:11 (7)	08:04			08:01		08:32 (1)	08:44		09:18 (3)
	21:55		21:04		19:53	14	19:25 (7)	18:43			16:44	41	09:13 (1)	16:23	22	10:15 (2)
17	05:34		06:22		07:14		19:12 (7)	08:06			08:03		08:34 (1)	08:45		09:19 (3)
	21:54		21:02		19:51	12	19:24 (7)	18:41			16:43	39	09:13 (1)	16:24	21	10:16 (2)
18	05:35		06:24		07:16		19:12 (7)	08:08			08:05		08:36 (1)	08:45		09:19 (3)
	21:53		21:00		19:49	10	19:22 (7)	18:39			16:42	37	09:13 (1)	16:24	22	10:16 (2)
19	05:37		06:26		07:18		19:13 (7)	08:10			08:06		08:38 (1)	08:46		09:20 (3)
	21:52		20:58		19:46	6	19:19 (7)	18:36			16:40	35	09:13 (1)	16:24	22	10:17 (2)
20	05:38		06:27		07:19		19:15 (7)	08:12			08:08		08:40 (1)	08:47		09:21 (3)
	21:50		20:55		19:44	2	19:17 (7)	18:34			16:39	33	09:13 (1)	16:24	23	10:18 (2)
21	05:40		06:29		07:21			08:13			08:10		08:42 (1)	08:47		09:21 (3)
	21:49		20:53		19:41			18:32			16:38	31	09:13 (1)	16:25	23	10:18 (2)
22	05:41		06:31		07:23			08:15			08:12		08:43 (1)	08:48		09:22 (3)
	21:48		20:51		19:39			18:30			16:37	29	09:12 (1)	16:25	23	10:19 (2)
23	05:42		06:32		07:24			08:17		09:10 (4)	08:13		08:45 (1)	08:48		09:22 (3)
	21:46		20:49		19:37			18:28	6	09:16 (4)	16:35	28	09:13 (3)	16:26	23	10:19 (2)
24	05:44		06:34		07:26			08:19		09:06 (4)	08:15		08:47 (1)	08:49		09:22 (3)
	21:45		20:47		19:34			18:26	14	09:20 (4)	16:34	27	09:14 (3)	16:26	23	10:19 (2)
25	05:45		06:36		07:28			07:21		08:04 (4)	08:17		08:49 (1)	08:49		09:23 (3)
	21:44		20:45		19:32			17:24	29	08:53 (1)	16:33	27	09:16 (3)	16:27	22	10:20 (2)
26	05:47		06:37		07:29			07:22		08:02 (4)	08:18		08:51 (1)	08:50		09:23 (3)
	21:42		20:42		19:29			17:22	41	08:57 (1)	16:32	26	09:17 (3)	16:28	22	10:20 (2)
27	05:48		06:39		07:31			07:24		08:01 (4)	08:20		08:52 (1)	08:50		09:23 (3)
	21:41		20:40		19:27			17:20	49	09:00 (1)	16:31	25	09:17 (3)	16:28	22	10:20 (2)
28	05:50		06:41		07:33			07:26		08:00 (4)	08:21		08:54 (1)	08:50		09:23 (3)
	21:39		20:38		19:25			17:18	55	09:02 (1)	16:30	24	09:18 (3)	16:29	21	10:20 (2)
29	05:51		06:42		07:35		18:45 (6)	07:28		07:59 (4)	08:23		08:56 (1)	08:50		09:23 (3)
	21:37		20:36		19:22	2	18:47 (6)	17:16	60	09:04 (1)	16:30	24	09:20 (3)	16:30	21	10:20 (2)
30	05:53		06:44		07:36		18:42 (6)	07:30		07:59 (4)	08:25		08:57 (1)	08:50		09:23 (3)
	21:36		20:33		19:20	8	18:50 (6)	17:14	63	09:05 (1)	16:29	23	09:20 (3)	16:31	18	10:19 (2)
31	05:54		06:46					07:32		08:00 (4)				08:50		09:23 (3)
	21:34		20:31					17:12	65	09:06 (1)				16:32	14	10:17 (2)
Potential sun hours	506		456		381			330			263			240		
Total, worst case						142			406			1274			598	
Sun reduction						0.28			0.24			0.19			0.14	
Oper. time red.						1.00			1.00			1.00			1.00	
Wind dir. red.						0.69			0.66			0.66			0.64	
Total reduction						0.20			0.16			0.12			0.09	
Total, real						28			64			156			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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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: G - H7

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January		February		March		April		May	June
1	08:50	09:45 (2)	08:22	08:49 (1)	07:27	08:51 (1)	07:15	19:34 (7)	06:08	05:21
	16:33 33	10:18 (2)	17:23 24	09:13 (1)	18:16 3	08:54 (1)	20:11 11	19:45 (7)	21:04	21:51
2	08:50	09:45 (2)	08:20	08:47 (1)	07:25		07:12	19:33 (7)	06:06	05:21
	16:34 32	10:17 (2)	17:24 27	09:14 (1)	18:18		20:13 13	19:46 (7)	21:06	21:53
3	08:50	09:46 (2)	08:19	08:45 (1)	07:23		07:10	19:32 (7)	06:04	05:20
	16:36 32	10:18 (2)	17:26 30	09:15 (1)	18:19		20:15 17	19:49 (8)	21:07	21:54
4	08:50	09:48 (2)	08:17	08:44 (1)	07:20		07:08	19:33 (7)	06:02	05:19
	16:37 30	10:18 (2)	17:28 32	09:16 (1)	18:21		20:17 18	19:51 (8)	21:09	21:55
5	08:49	09:21 (3)	08:15	08:42 (1)	07:18		07:05	19:32 (7)	06:01	05:18
	16:38 32	10:18 (2)	17:30 35	09:17 (1)	18:23		20:18 20	19:52 (8)	21:11	21:56
6	08:49	09:21 (3)	08:14	08:40 (1)	07:16		07:03	19:33 (7)	05:59	05:18
	16:39 32	10:18 (2)	17:32 37	09:17 (1)	18:25		20:20 21	19:54 (8)	21:13	21:57
7	08:49	09:20 (3)	08:12	08:38 (1)	07:13		07:01	19:35 (7)	05:57	05:17
	16:41 32	10:18 (2)	17:34 40	09:18 (1)	18:27		20:22 18	19:54 (8)	21:14	21:58
8	08:48	09:19 (3)	08:10	08:36 (1)	07:11		06:58	19:44 (8)	05:55	05:16
	16:42 33	10:17 (2)	17:36 42	09:18 (1)	18:29		20:24 9	19:53 (8)	21:16	21:59
9	08:48	09:19 (3)	08:08	08:34 (1)	07:09		06:56	19:45 (8)	05:53	05:16
	16:43 33	10:18 (2)	17:38 45	09:19 (1)	18:30		20:26 5	19:50 (8)	21:18	21:59
10	08:47	09:18 (3)	08:06	08:32 (1)	07:07		06:54		05:51	05:15
	16:45 32	10:17 (2)	17:40 47	09:19 (1)	18:32		20:27		21:19	22:00
11	08:46	09:17 (3)	08:05	08:30 (1)	07:04		06:51		05:50	05:15
	16:46 33	10:17 (2)	17:42 49	09:19 (1)	18:34		20:29		21:21	22:01
12	08:46	09:16 (3)	08:03	08:28 (4)	07:02		06:49		05:48	05:15
	16:48 32	10:16 (2)	17:44 51	09:19 (1)	18:36		20:31		21:23	22:02
13	08:45	09:15 (3)	08:01	08:26 (4)	07:00		06:47		05:46	05:14
	16:49 32	10:15 (2)	17:45 53	09:19 (1)	18:38		20:33		21:24	22:02
14	08:44	09:14 (3)	07:59	08:24 (4)	06:57	18:11 (6)	06:45		05:45	05:14
	16:51 30	10:14 (2)	17:47 55	09:19 (1)	18:39 3	18:14 (6)	20:34		21:26	22:03
15	08:43	09:13 (3)	07:57	08:22 (4)	06:55	18:09 (6)	06:42		05:43	05:14
	16:52 28	10:12 (2)	17:49 57	09:19 (1)	18:41 6	18:15 (6)	20:36		21:27	22:04
16	08:42	09:12 (3)	07:55	08:20 (4)	06:53	18:09 (6)	06:40		05:41	05:14
	16:54 22	10:09 (2)	17:51 59	09:19 (1)	18:43 8	18:17 (6)	20:38		21:29	22:04
17	08:42	09:11 (3)	07:53	08:18 (4)	06:50	18:08 (6)	06:38		05:40	05:14
	16:56 18	09:29 (3)	17:53 60	09:18 (1)	18:45 11	18:19 (6)	20:40		21:31	22:05
18	08:41	09:10 (3)	07:51	08:16 (4)	06:48	18:09 (6)	06:36		05:38	05:14
	16:57 20	09:30 (3)	17:55 62	09:18 (1)	18:47 9	18:18 (6)	20:41		21:32	22:05
19	08:40	09:09 (3)	07:49	08:13 (4)	06:45	18:11 (6)	06:33		05:37	05:14
	16:59 21	09:30 (3)	17:57 64	09:17 (1)	18:48 5	18:16 (6)	20:43		21:34	22:05
20	08:38	09:07 (3)	07:47	08:13 (4)	06:43		06:31		05:35	05:14
	17:01 23	09:30 (3)	17:59 63	09:16 (1)	18:50		20:45		21:35	22:06
21	08:37	09:06 (3)	07:44	08:14 (4)	06:41		06:29		05:34	05:14
	17:02 24	09:30 (3)	18:01 61	09:15 (1)	18:52		20:47		21:37	22:06
22	08:36	09:07 (3)	07:42	08:15 (4)	06:38		06:27		05:33	05:14
	17:04 23	09:30 (3)	18:03 59	09:14 (1)	18:54		20:48		21:38	22:06
23	08:35	09:07 (3)	07:40	08:16 (4)	06:36		06:25		05:31	05:14
	17:06 22	09:29 (3)	18:04 57	09:13 (1)	18:56		20:50		21:40	22:06
24	08:34	09:08 (3)	07:38	08:16 (4)	06:34		06:23		05:30	05:15
	17:08 21	09:29 (3)	18:06 55	09:11 (1)	18:57		20:52		21:41	22:06
25	08:32	09:00 (1)	07:36	08:18 (4)	06:31		06:21		05:29	05:15
	17:10 21	09:28 (3)	18:08 49	09:09 (1)	18:59		20:54		21:42	22:07
26	08:31	08:59 (1)	07:34	08:21 (4)	06:29		06:18		05:28	05:15
	17:11 23	09:28 (3)	18:10 39	09:07 (1)	19:01		20:55		21:44	22:07
27	08:30	08:57 (1)	07:31	08:41 (1)	06:27		06:16		05:27	05:16
	17:13 23	09:26 (3)	18:12 24	09:05 (1)	19:03		20:57		21:45	22:06
28	08:28	08:56 (1)	07:29	08:44 (1)	06:24		06:14		05:25	05:16
	17:15 24	09:25 (3)	18:14 17	09:01 (1)	19:04		20:59		21:46	22:06
29	08:27	08:54 (1)			07:22		06:12		05:24	05:17
	17:17 17	09:20 (3)			20:06		21:01		21:48	22:06
30	08:25	08:52 (1)			07:19	19:38 (7)	06:10		05:23	05:18
	17:19 19	09:11 (1)			20:08 3	19:41 (7)	21:02		21:49	22:06
31	08:24	08:51 (1)			07:17	19:36 (7)			05:22	
	17:21 22	09:13 (1)			20:10 7	19:43 (7)			21:50	
Potential sun hours	256		276		367		418		489	503
Total, worst case	819		1293		55		132			
Sun reduction	0.16		0.21		0.24		0.35			
Oper. time red.	1.00		1.00		1.00		1.00			
Wind dir. red.	0.64		0.67		0.69		0.69			
Total reduction	0.10		0.14		0.17		0.24			
Total, real	82		177		9		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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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: G - H7

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	July		August		September			October			November			December		
1	05:18		05:56		06:47			07:38			07:34		08:02 (1)	08:26		08:59 (3)
	22:06		21:32		20:29			19:18			17:10	46	08:48 (1)	16:28	33	09:59 (2)
2	05:19		05:58		06:49			07:40			07:35		08:04 (1)	08:27		09:01 (3)
	22:05		21:31		20:26			19:15			17:08	44	08:48 (1)	16:27	32	10:00 (2)
3	05:20		05:59		06:51		19:43 (8)	07:41			07:37		08:06 (1)	08:29		09:02 (3)
	22:05		21:29		20:24	5	19:48 (8)	19:13			17:06	42	08:48 (1)	16:27	33	10:01 (2)
4	05:20		06:01		06:52		19:41 (8)	07:43			07:39		08:08 (1)	08:30		09:04 (3)
	22:04		21:27		20:22	9	19:50 (8)	19:10			17:04	39	08:47 (1)	16:26	33	10:02 (2)
5	05:21		06:02		06:54		19:31 (7)	07:45			07:41		08:10 (1)	08:32		09:05 (3)
	22:04		21:25		20:19	17	19:50 (8)	19:08			17:02	37	08:47 (1)	16:25	32	10:03 (2)
6	05:22		06:04		06:56		19:29 (7)	07:47			07:43		08:12 (1)	08:33		09:07 (3)
	22:03		21:24		20:17	21	19:50 (8)	19:06			17:01	35	08:47 (1)	16:25	32	10:04 (2)
7	05:23		06:06		06:57		19:28 (7)	07:48			07:45		08:14 (1)	08:34		09:08 (3)
	22:03		21:22		20:15	20	19:48 (8)	19:04			16:59	32	08:46 (1)	16:25	32	10:05 (2)
8	05:24		06:07		06:59		19:27 (7)	07:50			07:46		08:16 (1)	08:36		09:09 (3)
	22:02		21:20		20:12	18	19:45 (8)	19:01			16:57	29	08:45 (1)	16:24	31	10:05 (2)
9	05:25		06:09		07:01		19:27 (7)	07:52			07:48		08:18 (1)	08:37		09:35 (2)
	22:01		21:18		20:10	16	19:43 (8)	18:59			16:55	27	08:45 (1)	16:24	31	10:06 (2)
10	05:26		06:11		07:03		19:26 (7)	07:54			07:50		08:20 (1)	08:38		09:35 (2)
	22:01		21:16		20:08	13	19:39 (7)	18:57			16:54	24	08:44 (1)	16:24	32	10:07 (2)
11	05:27		06:12		07:04		19:26 (7)	07:55			07:52		08:22 (1)	08:39		09:36 (2)
	22:00		21:14		20:05	12	19:38 (7)	18:54			16:52	21	08:43 (1)	16:23	32	10:08 (2)
12	05:28		06:14		07:06		19:28 (7)	07:57			07:54		08:24 (1)	08:40		09:36 (2)
	21:59		21:12		20:03	8	19:36 (7)	18:52			16:50	18	08:42 (1)	16:23	32	10:08 (2)
13	05:29		06:16		07:08		19:29 (7)	07:59		09:20 (1)	07:56		08:26 (1)	08:41		09:36 (2)
	21:58		21:10		20:00	4	19:33 (7)	18:50	11	09:31 (1)	16:49	18	08:53 (3)	16:23	33	10:09 (2)
14	05:30		06:17		07:09			08:01		09:15 (1)	07:57		08:28 (1)	08:42		09:36 (2)
	21:57		21:08		19:58			18:48	21	09:36 (1)	16:47	23	08:57 (3)	16:23	33	10:09 (2)
15	05:32		06:19		07:11			08:03		08:57 (4)	07:59		08:30 (1)	08:43		09:37 (2)
	21:56		21:06		19:56			18:45	29	09:38 (1)	16:46	23	08:59 (3)	16:23	33	10:10 (2)
16	05:33		06:21		07:13			08:04		08:52 (4)	08:01		08:32 (1)	08:44		09:37 (2)
	21:55		21:04		19:53			18:43	44	09:40 (1)	16:44	24	09:01 (3)	16:23	34	10:11 (2)
17	05:34		06:22		07:14			08:06		08:50 (4)	08:03		08:34 (1)	08:45		09:38 (2)
	21:54		21:02		19:51			18:41	51	09:42 (1)	16:43	21	09:02 (3)	16:24	34	10:12 (2)
18	05:35		06:24		07:16			08:08		08:47 (4)	08:05		08:42 (3)	08:45		09:37 (2)
	21:53		21:00		19:49			18:39	56	09:43 (1)	16:42	21	09:03 (3)	16:24	34	10:11 (2)
19	05:37		06:26		07:18			08:10		08:46 (4)	08:06		08:42 (3)	08:46		09:38 (2)
	21:52		20:58		19:46			18:36	58	09:44 (1)	16:40	22	09:04 (3)	16:24	34	10:12 (2)
20	05:38		06:27		07:19			08:12		08:45 (4)	08:08		08:42 (3)	08:47		09:39 (2)
	21:50		20:55		19:44			18:34	60	09:45 (1)	16:39	23	09:05 (3)	16:24	34	10:13 (2)
21	05:40		06:29		07:21			08:13		08:44 (4)	08:10		08:42 (3)	08:47		09:39 (2)
	21:49		20:53		19:41			18:32	62	09:46 (1)	16:38	24	09:06 (3)	16:25	34	10:13 (2)
22	05:41		06:31		07:23			08:15		08:43 (4)	08:12		08:43 (3)	08:48		09:40 (2)
	21:48		20:51		19:39			18:30	64	09:47 (1)	16:37	23	09:06 (3)	16:25	34	10:14 (2)
23	05:42		06:32		07:24			08:17		08:44 (4)	08:13		08:45 (3)	08:48		09:40 (2)
	21:46		20:49		19:37			18:28	63	09:47 (1)	16:35	21	09:06 (3)	16:26	34	10:14 (2)
24	05:44		06:34		07:26		18:56 (6)	08:19		08:46 (4)	08:15		08:47 (3)	08:49		09:40 (2)
	21:45		20:47		19:34	3	18:59 (6)	18:26	62	09:48 (1)	16:34	20	09:07 (3)	16:26	34	10:14 (2)
25	05:45		06:36		07:28		18:52 (6)	07:21		07:48 (4)	08:17		08:49 (3)	08:49		09:41 (2)
	21:44		20:45		19:32	8	19:00 (6)	17:24	60	08:48 (1)	16:33	18	09:07 (3)	16:27	34	10:15 (2)
26	05:47		06:37		07:29		18:51 (6)	07:22		07:50 (4)	08:18		08:51 (3)	08:50		09:42 (2)
	21:42		20:42		19:29	10	19:01 (6)	17:22	58	08:48 (1)	16:32	21	09:48 (2)	16:28	33	10:15 (2)
27	05:48		06:39		07:31		18:51 (6)	07:24		07:52 (4)	08:20		08:52 (3)	08:50		09:42 (2)
	21:41		20:40		19:27	9	19:00 (6)	17:20	56	08:48 (1)	16:31	27	09:51 (2)	16:28	34	10:16 (2)
28	05:50		06:41		07:33		18:50 (6)	07:26		07:54 (4)	08:21		08:54 (3)	08:50		09:42 (2)
	21:39		20:38		19:25	7	18:57 (6)	17:18	55	08:49 (1)	16:30	30	09:54 (2)	16:29	34	10:16 (2)
29	05:51		06:42		07:35		18:50 (6)	07:28		07:56 (4)	08:23		08:56 (3)	08:50		09:43 (2)
	21:37		20:36		19:22	5	18:55 (6)	17:16	53	08:49 (1)	16:30	32	09:56 (2)	16:30	33	10:16 (2)
30	05:53		06:44		07:36			07:30		07:58 (4)	08:25		08:57 (3)	08:50		09:44 (2)
	21:36		20:33		19:20			17:14	51	08:49 (1)	16:29	32	09:57 (2)	16:31	33	10:17 (2)
31	05:54		06:46					07:32		08:00 (1)				08:50		09:44 (2)
	21:34		20:31					17:12	49	08:49 (1)				16:32	33	10:17 (2)
Potential sun hours	506		456		381			330			263			240		
Total, worst case						185			963			817			1024	
Sun reduction						0.28			0.24			0.19			0.14	
Oper. time red.						1.00			1.00			1.00			1.00	
Wind dir. red.						0.69			0.67			0.66			0.62	
Total reduction						0.19			0.16			0.12			0.08	
Total, real						36			152			99			86	

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)

Licensed user:
Jennings O'Donovan
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
abyrne / abyrne@jodireland.com

Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: H - H8

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January		February		March		April		May	June
1	08:50		08:22		16:43 (3)	07:27	17:44 (2)	07:15	19:07 (4)	06:08	05:21
	16:33		17:22	9	16:52 (3)	18:16	5	17:49 (2)	20:11	38	19:45 (1)	21:04	21:51
2	08:50		08:20		16:42 (3)	07:25	17:43 (2)	07:12	19:06 (4)	06:06	05:21
	16:34		17:24	12	16:54 (3)	18:17	8	17:51 (2)	20:13	40	19:46 (1)	21:06	21:52
3	08:50		08:19		16:41 (3)	07:22	17:42 (2)	07:10	19:06 (4)	06:04	05:20
	16:36		17:26	14	16:55 (3)	18:19	10	17:52 (2)	20:15	43	19:49 (1)	21:07	21:54
4	08:50		08:17		16:40 (3)	07:20	17:41 (2)	07:08	19:06 (4)	06:02	05:19
	16:37		17:28	17	16:57 (3)	18:21	14	17:55 (2)	20:17	45	19:51 (1)	21:09	21:55
5	08:49		08:15		16:40 (3)	07:18	17:41 (2)	07:05	19:05 (4)	06:00	05:18
	16:38		17:30	20	17:00 (3)	18:23	16	17:57 (2)	20:18	47	19:52 (1)	21:11	21:56
6	08:49		08:14		16:39 (3)	07:16	17:40 (2)	07:03	19:05 (4)	05:59	05:18
	16:39		17:32	23	17:02 (3)	18:25	18	17:58 (2)	20:20	49	19:54 (1)	21:13	21:57
7	08:49		08:12		16:39 (3)	07:13	17:40 (2)	07:01	19:05 (4)	05:57	05:17
	16:40		17:34	25	17:04 (3)	18:27	20	18:00 (2)	20:22	51	19:56 (1)	21:14	21:58
8	08:48		08:10		16:38 (3)	07:11	17:41 (2)	06:58	19:05 (4)	05:55	05:16
	16:42		17:36	28	17:06 (3)	18:29	22	18:03 (2)	20:24	52	19:57 (1)	21:16	21:58
9	08:48		08:08		16:38 (3)	07:09	17:40 (2)	06:56	19:05 (4)	05:53	05:16
	16:43		17:38	30	17:08 (3)	18:30	24	18:04 (2)	20:25	53	19:58 (1)	21:18	21:59
10	08:47		08:06		16:38 (3)	07:06	17:41 (2)	06:54	19:06 (4)	05:51	05:15
	16:45		17:40	32	17:10 (3)	18:32	25	18:06 (2)	20:27	54	20:00 (1)	21:19	22:00
11	08:46		08:04		16:37 (3)	07:04	17:42 (2)	06:51	19:07 (4)	05:50	05:15
	16:46		17:42	36	17:13 (3)	18:34	24	18:06 (2)	20:29	55	20:02 (1)	21:21	22:01
12	08:46		08:02		16:37 (3)	07:02	17:42 (2)	06:49	19:07 (4)	05:48	05:15
	16:48		17:43	38	17:15 (3)	18:36	22	18:04 (2)	20:31	56	20:03 (1)	21:23	22:02
13	08:45		08:01		16:37 (3)	06:59	17:43 (2)	06:47	19:08 (4)	05:46	05:14
	16:49		17:45	40	17:17 (3)	18:38	20	18:03 (2)	20:32	54	20:02 (1)	21:24	22:02
14	08:44		07:59		16:38 (3)	06:57	17:45 (2)	06:45	19:09 (4)	05:45	05:14
	16:51		17:47	41	17:19 (3)	18:39	15	18:00 (2)	20:34	52	20:01 (1)	21:26	22:03
15	08:43		07:57		16:38 (3)	06:55	17:48 (2)	06:42	19:11 (4)	05:43	05:14
	16:52		17:49	42	17:20 (3)	18:41	9	17:57 (2)	20:36	49	20:00 (1)	21:27	22:04
16	08:42		07:55		16:38 (3)	06:52			06:40		19:13 (4)	05:41	05:14
	16:54		17:51	42	17:20 (3)	18:43			20:38	43	19:58 (1)	21:29	22:04
17	08:41		07:53		16:39 (3)	06:50			06:38		19:14 (4)	05:40	05:14
	16:56		17:53	40	17:19 (3)	18:45			20:39	32	19:54 (1)	21:31	22:05
18	08:40		07:51		16:38 (3)	06:48			06:36		19:17 (4)	05:38	05:14
	16:57		17:55	40	17:18 (3)	18:47			20:41	15	19:32 (4)	21:32	22:05
19	08:39		07:49		16:39 (3)	06:45			06:33			05:37	05:14
	16:59		17:57	38	17:17 (3)	18:48			20:43			21:34	22:05
20	08:38		07:46		16:40 (3)	06:43			06:31			05:35	05:14
	17:01		17:59	37	17:17 (3)	18:50			20:45			21:35	22:06
21	08:37		07:44		16:41 (3)	06:41	18:23 (4)	06:29			05:34	05:14
	17:02		18:01	35	17:16 (3)	18:52	3	18:26 (4)	20:46			21:37	22:06
22	08:36		07:42		16:42 (3)	06:38		18:19 (4)	06:27			05:33	05:14
	17:04		18:03	33	17:15 (3)	18:54	8	18:27 (4)	20:48			21:38	22:06
23	08:35		07:40		16:43 (3)	06:36		18:17 (4)	06:25			05:31	05:14
	17:06		18:04	30	17:13 (3)	18:55	13	18:30 (4)	20:50			21:40	22:06
24	08:33		07:38		16:44 (3)	06:34		18:16 (4)	06:23			05:30	05:15
	17:08		18:06	27	17:11 (3)	18:57	16	18:32 (4)	20:52			21:41	22:06
25	08:32		07:36		16:47 (3)	06:31		18:13 (4)	06:20			05:29	05:15
	17:09		18:08	23	17:10 (3)	18:59	20	18:33 (4)	20:53			21:42	22:06
26	08:31		07:34		16:50 (3)	06:29		18:12 (4)	06:18			05:28	05:15
	17:11		18:10	17	17:07 (3)	19:01	23	18:35 (4)	20:55			21:44	22:06
27	08:29		07:31		16:53 (3)	06:26		18:10 (4)	06:16			05:26	05:16
	17:13		18:12	9	17:02 (3)	19:03	26	18:36 (4)	20:57			21:45	22:06
28	08:28		07:29		17:45 (2)	06:24		18:09 (4)	06:14			05:25	05:16
	17:15		18:14	2	17:47 (2)	19:04	29	18:38 (4)	20:59			21:46	22:06
29	08:27					07:22		19:09 (4)	06:12			05:24	05:17
	17:17					20:06	31	19:40 (4)	21:00			21:48	22:06
30	08:25	16:45 (3)				07:19		19:07 (4)	06:10			05:23	05:17
	17:19	2 16:47 (3)				20:08	34	19:41 (4)	21:02			21:49	22:06
31	08:23	16:44 (3)				07:17		19:07 (4)				05:22	
	17:21	6 16:50 (3)				20:10	36	19:43 (4)				21:50	
Potential sun hours	256		276			367			418			489	503
Total, worst case	8		780			491			828				
Sun reduction	0.16		0.21			0.24			0.35				
Oper. time red.	1.00		1.00			1.00			1.00				
Wind dir. red.	0.65		0.65			0.68			0.69				
Total reduction	0.10		0.13			0.17			0.24				
Total, real	1		104			82			202				

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)

Licensed user:
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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: H - H8

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	July		August			September			October			November			December	
1	05:18		05:56			06:47		19:06 (4)	07:38		18:21 (2)	07:33		16:07 (3)	08:26	
	22:05		21:32			20:29	55	20:01 (1)	19:17	21	18:42 (2)	17:10	33	16:40 (3)	16:28	
2	05:19		05:57			06:49		19:04 (4)	07:40		18:20 (2)	07:35		16:08 (3)	08:27	
	22:05		21:31			20:26	54	19:58 (1)	19:15	24	18:44 (2)	17:08	30	16:38 (3)	16:27	
3	05:20		05:59			06:51		19:03 (4)	07:41		18:19 (2)	07:37		16:08 (3)	08:29	
	22:05		21:29			20:24	53	19:56 (1)	19:13	25	18:44 (2)	17:06	28	16:36 (3)	16:27	
4	05:20		06:01			06:52		19:03 (4)	07:43		18:18 (2)	07:39		16:09 (3)	08:30	
	22:04		21:27			20:22	52	19:55 (1)	19:10	25	18:43 (2)	17:04	25	16:34 (3)	16:26	
5	05:21		06:02			06:54		19:01 (4)	07:45		18:17 (2)	07:41		16:09 (3)	08:32	
	22:04		21:25			20:19	51	19:52 (1)	19:08	23	18:40 (2)	17:02	23	16:32 (3)	16:25	
6	05:22		06:04			06:56		19:01 (4)	07:47		18:16 (2)	07:43		16:10 (3)	08:33	
	22:03		21:23			20:17	49	19:50 (1)	19:06	21	18:37 (2)	17:00	20	16:30 (3)	16:25	
7	05:23		06:06			06:57		19:00 (4)	07:48		18:16 (2)	07:45		16:11 (3)	08:34	
	22:03		21:22			20:15	47	19:47 (1)	19:03	19	18:35 (2)	16:59	17	16:28 (3)	16:24	
8	05:24		06:07			06:59		19:00 (4)	07:50		18:16 (2)	07:46		16:12 (3)	08:35	
	22:02		21:20			20:12	45	19:45 (1)	19:01	17	18:33 (2)	16:57	14	16:26 (3)	16:24	
9	05:25		06:09			07:01		19:00 (4)	07:52		18:16 (2)	07:48		16:13 (3)	08:37	
	22:01		21:18			20:10	43	19:43 (1)	18:59	15	18:31 (2)	16:55	11	16:24 (3)	16:24	
10	05:26		06:10			07:02		18:59 (4)	07:54		18:16 (2)	07:50		16:14 (3)	08:38	
	22:00		21:16			20:08	41	19:40 (1)	18:56	12	18:28 (2)	16:54	8	16:22 (3)	16:24	
11	05:27		06:12			07:04		18:59 (4)	07:55		18:16 (2)	07:52		16:15 (3)	08:39	
	22:00		21:14			20:05	39	19:38 (1)	18:54	10	18:26 (2)	16:52	6	16:21 (3)	16:23	
12	05:28		06:14			07:06		18:59 (4)	07:57		18:17 (2)	07:54		16:17 (3)	08:40	
	21:59		21:12			20:03	37	19:36 (4)	18:52	6	18:23 (2)	16:50	2	16:19 (3)	16:23	
13	05:29		06:15			07:07		18:59 (4)	07:59		18:18 (2)	07:56			08:41	
	21:58		21:10			20:00	34	19:33 (4)	18:50	3	18:21 (2)	16:49			16:23	
14	05:30		06:17			07:09		18:59 (4)	08:01			07:57			08:42	
	21:57		21:08			19:58	32	19:31 (4)	18:47			16:47			16:23	
15	05:32		06:19			07:11		19:00 (4)	08:02		17:24 (3)	07:59			08:43	
	21:56		21:06			19:56	29	19:29 (4)	18:45	13	17:37 (3)	16:46			16:23	
16	05:33		06:20			07:13		18:59 (4)	08:04		17:21 (3)	08:01			08:44	
	21:55		21:04			19:53	27	19:26 (4)	18:43	19	17:40 (3)	16:44			16:23	
17	05:34		06:22			07:14		19:00 (4)	08:06		17:17 (3)	08:03			08:45	
	21:54		21:02			19:51	24	19:24 (4)	18:41	25	17:42 (3)	16:43			16:23	
18	05:35		06:24			07:16		19:00 (4)	08:08		17:15 (3)	08:05			08:45	
	21:53		21:00			19:48	21	19:21 (4)	18:39	28	17:43 (3)	16:42			16:24	
19	05:37		06:25			07:18		19:02 (4)	08:10		17:13 (3)	08:06			08:46	
	21:51		20:57			19:46	17	19:19 (4)	18:36	32	17:45 (3)	16:40			16:24	
20	05:38		06:27			07:19		19:03 (4)	08:11		17:12 (3)	08:08			08:47	
	21:50		20:55			19:44	14	19:17 (4)	18:34	34	17:46 (3)	16:39			16:24	
21	05:39		06:29			07:21		19:04 (4)	08:13		17:11 (3)	08:10			08:47	
	21:49		20:53			19:41	9	19:13 (4)	18:32	36	17:47 (3)	16:38			16:25	
22	05:41		06:30			07:23		19:06 (4)	08:15		17:10 (3)	08:11			08:48	
	21:48		20:51			19:39	5	19:11 (4)	18:30	37	17:47 (3)	16:36			16:25	
23	05:42		06:32			07:24			08:17		17:09 (3)	08:13			08:48	
	21:46		20:49			19:36			18:28	39	17:48 (3)	16:35			16:26	
24	05:44		06:34			07:26			08:19		17:09 (3)	08:15			08:49	
	21:45		20:47			19:34			18:26	39	17:48 (3)	16:34			16:26	
25	05:45		06:36		19:21 (4)	07:28			07:21		16:08 (3)	08:16			08:49	
	21:43		20:44	15	19:36 (4)	19:32			17:24	41	16:49 (3)	16:33			16:27	
26	05:47		06:37		19:17 (4)	07:29			07:22		16:08 (3)	08:18			08:49	
	21:42		20:42	33	19:57 (1)	19:29			17:22	41	16:49 (3)	16:32			16:28	
27	05:48		06:39		19:15 (4)	07:31			07:24		16:07 (3)	08:20			08:50	
	21:40		20:40	43	20:00 (1)	19:27			17:20	42	16:49 (3)	16:31			16:28	
28	05:50		06:41		19:12 (4)	07:33		18:31 (2)	07:26		16:07 (3)	08:21			08:50	
	21:39		20:38	49	20:01 (1)	19:25	4	18:35 (2)	17:17	41	16:48 (3)	16:30			16:29	
29	05:51		06:42		19:10 (4)	07:35		18:26 (2)	07:28		16:07 (3)	08:23			08:50	
	21:37		20:35	52	20:02 (1)	19:22	14	18:40 (2)	17:16	39	16:46 (3)	16:29			16:30	
30	05:53		06:44		19:09 (4)	07:36		18:24 (2)	07:30		16:07 (3)	08:24			08:50	
	21:36		20:33	54	20:03 (1)	19:20	18	18:42 (2)	17:14	37	16:44 (3)	16:29			16:31	
31	05:54		06:46		19:07 (4)				07:32		16:07 (3)				08:50	
	21:34		20:31	56	20:03 (1)				17:12	35	16:42 (3)				16:32	
Potential sun hours	506		456			381			330			263			240	
Total, worst case				302			814			799			217			
Sun reduction				0.30			0.28			0.24			0.19			
Oper. time red.				1.00			1.00			1.00			1.00			
Wind dir. red.				0.69			0.69			0.65			0.65			
Total reduction				0.20			0.20			0.16			0.12			
Total, real				62			159			124			26			

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)

Licensed user:
Jennings O'Donovan
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
abyrne / abyrne@jodireland.com

Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: I - H9

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50 16:33	08:22 17:22	07:27 18:16	07:15 20:11	06:08 21:04 44	19:51 (3) 05:21 20:35 (3) 21:51 7	21:11 (1) 05:18 21:18 (1) 22:05 15	21:17 (1) 05:56 21:32 (1) 21:32 48	20:03 (3) 06:47 20:51 (3) 20:29	07:38 19:17	07:33 17:10	08:26 16:28
2	08:50 16:34	08:20 17:24	07:25 18:17	07:12 20:13	06:06 21:06 45	19:51 (3) 05:21 20:36 (3) 21:52 8	21:11 (1) 05:19 21:19 (1) 22:05 14	21:17 (1) 05:57 21:31 (1) 21:31 49	20:03 (3) 06:49 20:52 (3) 20:26	07:40 19:15	07:35 17:08	08:27 16:27
3	08:50 16:36	08:19 17:26	07:22 18:19	07:10 20:15	06:04 21:07 47	19:51 (3) 05:20 20:38 (3) 21:54 9	21:11 (1) 05:20 21:20 (1) 22:05 14	21:17 (1) 05:59 21:31 (1) 21:29 50	20:02 (3) 06:51 20:52 (3) 20:24	07:41 19:13	07:37 17:06	08:29 16:27
4	08:50 16:37	08:17 17:28	07:20 18:21	07:08 20:17	06:02 21:09 49	19:51 (3) 05:19 20:40 (3) 21:55 9	21:12 (1) 05:20 21:21 (1) 22:04 13	21:17 (1) 06:01 21:30 (1) 21:27 51	20:02 (3) 06:52 20:53 (3) 20:22	07:43 19:10	07:39 17:04	08:30 16:26
5	08:49 16:38	08:15 17:30	07:18 18:23	07:05 20:18	06:00 21:11 50	19:51 (3) 05:18 20:41 (3) 21:56 11	21:11 (1) 05:21 21:22 (1) 22:04 12	21:18 (1) 06:02 21:30 (1) 21:25 51	20:01 (3) 06:54 20:52 (3) 20:19	07:45 19:08	07:41 17:02	08:32 16:25
6	08:49 16:39	08:14 17:32	07:16 18:25	07:03 20:20	05:59 21:12 52	19:51 (3) 05:18 20:43 (3) 21:57 11	21:12 (1) 05:22 21:23 (1) 22:03 12	21:17 (1) 06:04 21:29 (1) 21:23 52	20:01 (3) 06:56 20:53 (3) 20:17	07:47 19:06	07:43 17:00	08:33 16:25
7	08:49 16:41	08:12 17:34	07:13 18:27	07:01 20:22	05:57 21:14 51	19:51 (3) 05:17 20:42 (3) 21:58 12	21:12 (1) 05:23 21:24 (1) 22:03 10	21:18 (1) 06:06 21:28 (1) 21:22 52	20:00 (3) 06:57 20:52 (3) 20:15	07:48 19:03	07:45 16:59	08:34 16:25
8	08:48 16:42	08:10 17:36	07:11 18:29	06:58 20:24	05:55 21:16 51	19:52 (3) 05:16 20:43 (3) 21:58 13	21:12 (1) 05:24 21:25 (1) 22:02 10	21:18 (1) 06:07 21:28 (1) 21:20 49	20:01 (3) 06:59 20:50 (3) 20:12	07:50 19:01	07:46 16:57	08:35 16:24
9	08:48 16:43	08:08 17:38	07:09 18:30	06:56 20:25	05:53 21:18 50	19:52 (3) 05:16 20:42 (3) 21:59 13	21:12 (1) 05:25 21:25 (1) 22:01 9	21:18 (1) 06:09 21:27 (1) 21:18 48	20:00 (3) 07:01 20:48 (3) 20:10	07:52 18:59	07:48 16:55	08:37 16:24
10	08:47 16:45	08:06 17:40	07:06 18:32	06:54 20:27	05:51 21:19 49	19:52 (3) 05:15 20:41 (3) 22:00 14	21:12 (1) 05:26 21:26 (1) 22:00 8	21:19 (1) 06:10 21:27 (1) 21:16 47	20:00 (3) 07:02 20:47 (3) 20:07	07:54 18:57	07:50 16:54	08:38 16:24
11	08:46 16:46	08:04 17:42	07:04 18:34	06:51 20:29	05:50 21:21 49	19:52 (3) 05:15 20:41 (3) 22:01 14	21:13 (1) 05:27 21:27 (1) 22:00 7	21:19 (1) 06:12 21:26 (1) 21:14 45	19:59 (3) 07:04 20:44 (3) 20:05	07:55 18:54	07:52 16:52	08:39 16:23
12	08:46 16:48	08:02 17:44	07:02 18:36	06:49 20:31	05:48 21:23 49	19:52 (3) 05:15 20:41 (3) 22:02 15	21:12 (1) 05:28 21:27 (1) 21:59 6	21:19 (1) 06:14 21:25 (1) 21:12 43	20:00 (3) 07:06 20:43 (3) 20:03	07:57 18:52	07:54 16:50	08:40 16:23
13	08:45 16:49	08:01 17:45	06:59 18:38	06:47 20:32	05:46 21:24 48	19:53 (3) 05:14 20:41 (3) 22:02 15	21:13 (1) 05:29 21:28 (1) 21:58 12	20:23 (3) 06:15 21:24 (1) 21:10 41	20:00 (3) 07:07 20:41 (2) 20:00	07:59 18:50	07:56 16:49	08:41 16:23
14	08:44 16:51	07:59 17:47	06:57 18:39	06:45 20:34	05:45 21:26 46	19:54 (3) 05:14 20:40 (3) 22:03 16	21:13 (1) 05:30 21:29 (1) 21:57 16	20:20 (3) 06:17 21:23 (1) 21:08 39	20:00 (3) 07:09 20:39 (2) 19:58	08:01 18:47	07:57 16:47	08:42 16:23
15	08:43 16:52	07:57 17:49	06:55 18:41	06:42 20:36	05:43 21:27 44	19:55 (3) 05:14 20:39 (3) 22:04 16	21:13 (1) 05:32 21:29 (1) 21:56 19	20:19 (3) 06:19 21:23 (1) 21:06 37	20:00 (3) 07:11 20:37 (2) 19:56	08:02 18:45	07:59 16:46	08:43 16:23
16	08:42 16:54	07:55 17:51	06:52 18:43	06:40 20:38 3	20:08 (3) 05:41 20:11 (3) 21:29 43	19:55 (3) 05:14 20:38 (3) 22:04 16	21:14 (1) 05:33 21:30 (1) 21:55 22	20:17 (3) 06:20 21:22 (1) 21:04 35	20:00 (3) 07:13 20:35 (2) 19:53	08:04 18:43	08:01 16:44	08:44 16:23
17	08:41 16:56	07:53 17:53	06:50 18:45	06:38 20:39 7	20:05 (3) 05:40 20:12 (2) 21:30 42	19:56 (3) 05:14 20:38 (3) 22:05 16	21:14 (1) 05:34 21:30 (1) 21:54 24	20:15 (3) 06:22 20:39 (3) 21:02 32	20:01 (3) 07:14 20:33 (2) 19:51	08:06 18:41	08:03 16:43	08:45 16:23
18	08:40 16:57	07:51 17:55	06:48 18:47	06:36 20:41 10	20:03 (3) 05:38 20:13 (2) 21:32 41	19:57 (3) 05:14 20:38 (3) 22:05 17	21:14 (1) 05:35 21:31 (1) 21:53 26	20:14 (3) 06:24 20:40 (3) 21:00 31	20:00 (3) 07:16 20:31 (2) 19:48	08:08 18:39	08:04 16:42	08:45 16:24
19	08:39 16:59	07:48 17:57	06:45 18:48	06:33 20:43 14	20:01 (3) 05:37 20:15 (2) 21:34 39	19:57 (3) 05:14 20:36 (3) 22:05 17	21:14 (1) 05:37 21:31 (1) 21:51 28	20:13 (3) 06:25 20:41 (3) 20:57 28	20:01 (3) 07:18 20:29 (2) 19:46	08:10 18:36	08:06 16:40	08:46 16:24
20	08:38 17:01	07:46 17:59	06:43 18:50	06:31 20:45 17	20:00 (3) 05:35 20:17 (2) 21:35 38	19:58 (3) 05:14 20:36 (3) 22:06 17	21:14 (1) 05:38 21:31 (1) 21:50 31	20:12 (3) 06:27 20:43 (3) 20:55 25	20:02 (3) 07:19 20:27 (2) 19:44	08:11 18:34	08:08 16:39	08:47 16:24
21	08:37 17:02	07:44 18:01	06:41 18:52	06:29 20:46 20	19:59 (3) 05:34 20:19 (2) 21:37 35	20:00 (3) 05:14 20:35 (3) 22:06 17	21:14 (1) 05:39 21:31 (1) 21:49 33	20:11 (3) 06:29 20:44 (3) 20:53 23	20:02 (3) 07:21 20:25 (2) 19:41	08:13 18:32	08:10 16:38	08:47 16:25
22	08:36 17:04	07:42 18:03	06:38 18:54	06:27 20:48 23	19:57 (3) 05:33 20:20 (2) 21:38 34	20:01 (3) 05:14 20:35 (3) 22:06 17	21:15 (1) 05:41 21:32 (1) 21:48 35	20:10 (3) 06:31 20:45 (3) 20:51 19	20:04 (3) 07:23 20:23 (2) 19:39	08:15 18:30	08:11 16:37	08:48 16:25
23	08:35 17:06	07:40 18:04	06:36 18:55	06:25 20:50 26	19:56 (3) 05:31 20:22 (2) 21:39 32	20:01 (3) 05:14 20:33 (3) 22:06 17	21:15 (1) 05:42 21:32 (1) 21:46 37	20:09 (3) 06:32 20:46 (3) 20:49 16	20:04 (3) 07:24 20:20 (2) 19:36	08:17 18:28	08:13 16:35	08:48 16:26
24	08:33 17:08	07:38 18:06	06:34 18:57	06:23 20:52 28	19:56 (3) 05:30 20:24 (2) 21:41 30	20:02 (3) 05:15 20:32 (3) 22:06 17	21:15 (1) 05:44 21:32 (1) 21:45 39	20:08 (3) 06:34 20:47 (3) 20:47 14	20:05 (3) 07:26 20:19 (2) 19:34	08:19 18:26	08:15 16:34	08:49 16:26
25	08:32 17:09	07:36 18:08	06:31 18:59	06:20 20:53 30	19:55 (3) 05:29 20:25 (2) 21:42 27	20:04 (3) 05:15 20:31 (3) 22:06 16	21:16 (1) 05:45 21:32 (1) 21:43 40	20:07 (3) 06:36 20:47 (3) 20:44 10	20:07 (3) 07:28 20:17 (2) 19:32	08:21 17:24	08:16 16:33	08:49 16:27
26	08:31 17:11	07:34 18:10	06:29 19:01	06:18 20:55 33	19:54 (3) 05:28 20:27 (2) 21:44 25	20:05 (3) 05:15 20:30 (3) 22:06 16	21:16 (1) 05:47 21:32 (1) 21:42 41	20:07 (3) 06:37 20:48 (3) 20:42 6	20:08 (3) 07:29 20:14 (3) 19:29	08:22 17:22	08:18 16:32	08:49 16:28
27	08:29 17:13	07:31 18:12	06:26 19:03	06:16 20:57 36	19:53 (3) 05:26 20:29 (2) 21:45 22	20:07 (3) 05:16 20:29 (3) 22:06 15	21:16 (1) 05:48 21:31 (1) 21:40 43	20:06 (3) 06:39 20:49 (3) 20:40 2	20:10 (3) 07:31 20:12 (3) 19:27	08:24 17:20	08:20 16:31	08:50 16:28
28	08:28 17:15	07:29 18:14	06:24 19:04	06:14 20:59 37	19:53 (3) 05:25 20:30 (2) 21:46 20	20:08 (3) 05:16 21:13 (1) 22:06 16	21:16 (1) 05:50 21:32 (1) 21:39 44	20:05 (3) 06:41 20:49 (3) 20:38	07:33 19:25	07:26 17:18	08:21 16:30	08:50 16:29
29	08:27 17:17		07:22 20:06	06:12 21:00 40	19:52 (3) 05:24 20:32 (2) 21:48 19	20:10 (3) 05:17 21:14 (1) 22:06 15	21:16 (1) 05:51 21:31 (1) 21:37 45	20:05 (3) 06:42 20:50 (3) 20:35	07:35 19:22	07:28 17:16	08:23 16:29	08:50 16:30
30	08:25 17:19		07:19 20:08	06:10 21:02 41	19:52 (3) 05:23 20:33 (2) 21:49 14	20:13 (3) 05:17 21:15 (1) 22:06 15	21:16 (1) 05:53 21:36 46	20:04 (3) 06:44 20:50 (3) 20:33	07:36 19:20	07:30 17:14	08:24 16:29	08:50 16:31
31	08:23 17:21		07:17 20:10		05:22 21:50 5	21:12 (1) 21:17 (1)	05:54 21:34 47	20:04 (3) 06:46 20:51 (3) 20:31		07:32 17:12		08:50 16:32
Potential sun hours	256	276	367	418	489	503	506	456	381	330	263	240
Total, worst case				365	1190	427	758	943				
Sun reduction				0.35	0.37	0.30	0.26	0.30				
Oper. time red.				1.00	1.00	1.00	1.00	1.00				
Wind dir. red.				0.69	0.69	0.66	0.68	0.69				
Total reduction				0.24	0.25	0.20	0.18	0.20				
Total, real				89	300	84	137	192				

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)

Licensed user:
Jennings O'Donovan
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
abyrne / abyrne@jodireland.com

Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: J - H10

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January			February			March	April	May	June	July	August	September	October	November			December		
1	08:50		15:26 (1)	08:22		15:47 (1)	07:27	07:15	06:08	05:21	05:18	05:56	06:47	07:38	07:33			08:26		15:11 (1)
	16:33	32	15:58 (1)	17:22	20	16:07 (1)	18:16	20:11	21:04	21:51	22:06	21:32	20:29	19:17	17:10			16:28	42	15:53 (1)
2	08:50		15:26 (1)	08:20		15:50 (1)	07:25	07:12	06:06	05:21	05:19	05:57	06:49	07:40	07:35			08:27		15:12 (1)
	16:34	32	15:58 (1)	17:24	15	16:05 (1)	18:18	20:13	21:06	21:52	22:05	21:31	20:26	19:15	17:08			16:27	41	15:53 (1)
3	08:50		15:26 (1)	08:19		15:57 (1)	07:23	07:10	06:04	05:20	05:20	05:59	06:51	07:41	07:37			08:29		15:12 (1)
	16:36	34	16:00 (1)	17:26	1	15:58 (1)	18:19	20:15	21:07	21:54	22:05	21:29	20:24	19:13	17:06			16:27	40	15:52 (1)
4	08:50		15:27 (1)	08:17			07:20	07:08	06:02	05:19	05:20	06:01	06:52	07:43	07:39			08:30		15:13 (1)
	16:37	34	16:01 (1)	17:28			18:21	20:17	21:09	21:55	22:04	21:27	20:22	19:10	17:04			16:26	39	15:52 (1)
5	08:49		15:27 (1)	08:15			07:18	07:05	06:00	05:18	05:21	06:02	06:54	07:45	07:41			08:32		15:13 (1)
	16:38	35	16:02 (1)	17:30			18:23	20:18	21:11	21:56	22:04	21:25	20:19	19:08	17:02			16:25	37	15:50 (1)
6	08:49		15:28 (1)	08:14			07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43			08:33		15:13 (1)
	16:39	36	16:04 (1)	17:32			18:25	20:20	21:13	21:57	22:03	21:24	20:17	19:06	17:00			16:25	36	15:49 (1)
7	08:49		15:28 (1)	08:12			07:13	07:01	05:57	05:17	05:23	06:06	06:57	07:48	07:45			08:34		15:14 (1)
	16:40	37	16:05 (1)	17:34			18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:03	16:59			16:24	35	15:49 (1)
8	08:48		15:28 (1)	08:10			07:11	06:58	05:55	05:16	05:24	06:07	06:59	07:50	07:46		15:26 (1)	08:35		15:14 (1)
	16:42	38	16:06 (1)	17:36			18:29	20:24	21:16	21:59	22:02	21:20	20:12	19:01	16:57	5	15:31 (1)	16:24	35	15:49 (1)
9	08:48		15:29 (1)	08:08			07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48		15:21 (1)	08:37		15:15 (1)
	16:43	40	16:09 (1)	17:38			18:30	20:25	21:18	21:59	22:01	21:18	20:10	18:59	16:55	15	15:36 (1)	16:24	33	15:48 (1)
10	08:47		15:29 (1)	08:06			07:07	06:54	05:51	05:15	05:26	06:10	07:02	07:54	07:50		15:18 (1)	08:38		15:16 (1)
	16:45	41	16:10 (1)	17:40			18:32	20:27	21:19	22:00	22:01	21:16	20:08	18:57	16:54	20	15:38 (1)	16:24	32	15:48 (1)
11	08:46		15:29 (1)	08:04			07:04	06:51	05:50	05:15	05:27	06:12	07:04	07:55	07:52		15:16 (1)	08:39		15:16 (1)
	16:46	42	16:11 (1)	17:42			18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:54	16:52	24	15:40 (1)	16:23	32	15:48 (1)
12	08:46		15:29 (1)	08:03			07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54		15:15 (1)	08:40		15:17 (1)
	16:48	44	16:13 (1)	17:43			18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:50	27	15:42 (1)	16:23	31	15:48 (1)
13	08:45		15:30 (1)	08:01			07:00	06:47	05:46	05:14	05:29	06:15	07:07	07:59	07:56		15:13 (1)	08:41		15:17 (1)
	16:49	43	16:13 (1)	17:45			18:38	20:32	21:24	22:02	21:58	21:10	20:00	18:50	16:49	30	15:43 (1)	16:23	30	15:47 (1)
14	08:44		15:30 (1)	07:59			06:57	06:45	05:45	05:14	05:30	06:17	07:09	08:01	07:57		15:12 (1)	08:42		15:18 (1)
	16:51	43	16:13 (1)	17:47			18:39	20:34	21:26	22:03	21:57	21:08	19:58	18:47	16:47	33	15:45 (1)	16:23	29	15:47 (1)
15	08:43		15:30 (1)	07:57			06:55	06:42	05:43	05:14	05:32	06:19	07:11	08:02	07:59		15:12 (1)	08:43		15:18 (1)
	16:52	44	16:14 (1)	17:49			18:41	20:36	21:27	22:04	21:56	21:06	19:56	18:45	16:46	34	15:46 (1)	16:23	29	15:47 (1)
16	08:42		15:31 (1)	07:55			06:52	06:40	05:41	05:14	05:33	06:20	07:13	08:04	08:01		15:11 (1)	08:44		15:19 (1)
	16:54	43	16:14 (1)	17:51			18:43	20:38	21:29	22:04	21:55	21:04	19:53	18:43	16:44	36	15:47 (1)	16:23	29	15:48 (1)
17	08:41		15:32 (1)	07:53			06:50	06:38	05:40	05:14	05:34	06:22	07:14	08:06	08:03		15:11 (1)	08:45		15:19 (1)
	16:56	42	16:14 (1)	17:53			18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43	37	15:48 (1)	16:23	28	15:47 (1)
18	08:41		15:32 (1)	07:51			06:48	06:36	05:38	05:14	05:35	06:24	07:16	08:08	08:05		15:10 (1)	08:45		15:19 (1)
	16:57	43	16:15 (1)	17:55			18:47	20:41	21:32	22:05	21:53	21:00	19:48	18:39	16:42	38	15:48 (1)	16:24	28	15:47 (1)
19	08:39		15:33 (1)	07:49			06:45	06:33	05:37	05:14	05:37	06:25	07:18	08:10	08:06		15:10 (1)	08:46		15:20 (1)
	16:59	42	16:15 (1)	17:57			18:48	20:43	21:34	22:05	21:51	20:58	19:46	18:36	16:40	39	15:49 (1)	16:24	28	15:48 (1)
20	08:38		15:33 (1)	07:46			06:43	06:31	05:35	05:14	05:38	06:27	07:19	08:11	08:08		15:10 (1)	08:47		15:20 (1)
	17:01	41	16:14 (1)	17:59			18:50	20:45	21:35	22:06	21:50	20:55	19:44	18:34	16:39	40	15:50 (1)	16:24	28	15:48 (1)
21	08:37		15:34 (1)	07:44			06:41	06:29	05:34	05:14	05:39	06:29	07:21	08:13	08:10		15:09 (1)	08:47		15:21 (1)
	17:02	41	16:15 (1)	18:01			18:52	20:47	21:37	22:06	21:49	20:53	19:41	18:32	16:38	41	15:50 (1)	16:25	27	15:48 (1)
22	08:36		15:35 (1)	07:42			06:38	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:12		15:09 (1)	08:48		15:21 (1)
	17:04	40	16:15 (1)	18:03			18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:37	41	15:50 (1)	16:25	27	15:48 (1)
23	08:35		15:35 (1)	07:40			06:36	06:25	05:31	05:14	05:42	06:32	07:24	08:17	08:13		15:09 (1)	08:48		15:22 (1)
	17:06	39	16:14 (1)	18:04			18:55	20:50	21:40	22:06	21:46	20:49	19:37	18:28	16:35	42	15:51 (1)	16:26	28	15:50 (1)
24	08:34		15:36 (1)	07:38			06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15		15:09 (1)	08:49		15:22 (1)
	17:08	38	16:14 (1)	18:06			18:57	20:52	21:41	22:06	21:45	20:47	19:34	18:26	16:34	43	15:52 (1)	16:26	28	15:50 (1)
25	08:32		15:37 (1)	07:36			06:31	06:20	05:29	05:15	05:45	06:36	07:28	07:21	08:17		15:10 (1)	08:49		15:23 (1)
	17:09	37	16:14 (1)	18:08			18:59	20:54	21:42	22:06	21:43	20:44	19:32	17:24	16:33	42	15:52 (1)	16:27	28	15:51 (1)
26	08:31		15:38 (1)	07:34			06:29	06:18	05:28	05:15	05:47	06:37	07:29	07:22	08:18		15:10 (1)	08:49		15:24 (1)
	17:11	36	16:14 (1)	18:10			19:01	20:55	21:44	22:06	21:42	20:42	19:29	17:22	16:32	43	15:53 (1)	16:28	28	15:52 (1)
27	08:29		15:39 (1)	07:31			06:26	06:16	05:26	05:16	05:48	06:39	07:31	07:24	08:20		15:10 (1)	08:50		15:24 (1)
	17:13	34	16:13 (1)	18:12			19:03	20:57	21:45	22:06	21:40	20:40	19:27	17:20	16:31	43	15:53 (1)	16:28	28	15:52 (1)
28	08:28		15:41 (1)	07:29			06:24	06:14	05:25	05:16	05:50	06:41	07:33	07:26	08:21		15:10 (1)	08:50		15:24 (1)
	17:15	32	16:13 (1)	18:14			19:04	20:59	21:46	22:06	21:39	20:38	19:25	17:18	16:30	44	15:54 (1)	16:29	29	15:53 (1)
29	08:27		15:42 (1)				07:22	06:12	05:24	05:17	05:51	06:42	07:35	07:28	08:23		15:11 (1)	08:50		15:25 (1)
	17:17	29	16:11 (1)				20:06	21:01	21:48	22:06	21:37	20:35	19:22	17:16	16:29	43	15:54 (1)	16:30	29	15:54 (1)
30	08:25		15:43 (1)				07:19	06:10	05:23	05:17	05:53	06:44	07:36	07:30	08:24		15:10 (1)	08:50		15:25 (1)
	17:19	27	16:10 (1)				20:08	21:02	21:49	22:06	21:36	20:33	19:20	17:14	16:29	44	15:54 (1)	16:31	30	15:55 (1)
31	08:24		15:45 (1)				07:17		05:22		05:54	06:46		07:32				08:50		15:25 (1)
	17:21	24	16:09 (1)				20:10		21:50		21:34	20:31		17:12				16:32	31	15:56 (1)
Potential sun hours	255			276			367	418	489	503	506	456	381	330	263			240		
Total, worst case		1163			36											804			975	
Sun reduction		0.16			0.21											0.19			0.14	
Oper. time red.		1.00			1.00											1.00			1.00	
Wind dir. red.		0.62			0.62											0.62			0.62	
Total reduction		0.10			0.13											0.12			0.08	
Total, real		113			5											93			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)

Licensed user:
Jennings O'Donovan
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
abyrne / abyrne@jodireland.com

Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: K - H11

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:08	06:49 (3) 05:22	05:51 (2) 05:18	05:50 (2) 05:56	06:47	07:38	07:34	08:26
	16:33	17:23	18:16	20:11	21:04	18 07:07 (3) 21:51	33 06:24 (2) 22:06	42 06:32 (2) 21:32	20:29	19:18	17:10	16:28
2	08:50	08:20	07:25	07:12	06:06	06:50 (3) 05:21	05:50 (2) 05:19	05:50 (2) 05:58	06:49	07:40	07:35	08:27
	16:35	17:24	18:18	20:13	21:06	15 07:05 (3) 21:52	34 06:24 (2) 22:05	41 06:31 (2) 21:31	20:26	19:15	17:08	16:27
3	08:50	08:19	07:23	07:10	06:04	06:54 (3) 05:20	05:49 (2) 05:20	05:51 (2) 05:59	06:51	07:41	07:37	08:29
	16:36	17:26	18:19	20:15	21:07	8 07:02 (3) 21:54	35 06:24 (2) 22:05	41 06:32 (2) 21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:02	05:19	05:49 (2) 05:20	05:52 (2) 06:01	06:52	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09	21:55	36 06:25 (2) 22:04	40 06:32 (2) 21:27	20:22	19:11	17:04	16:26
5	08:49	08:15	07:18	07:05	06:01	05:18	05:48 (2) 05:21	05:53 (2) 06:02	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:18	21:11	21:56	37 06:25 (2) 22:04	39 06:32 (2) 21:25	20:19	19:08	17:02	16:26
6	08:49	08:14	07:16	07:03	05:59	05:18	05:48 (2) 05:22	05:54 (2) 06:04	06:56	07:47	07:43	08:33
	16:39	17:32	18:25	20:20	21:13	21:57	38 06:26 (2) 22:03	38 06:32 (2) 21:24	20:17	19:06	17:01	16:25
7	08:49	08:12	07:13	07:01	05:57	05:17	05:47 (2) 05:23	05:54 (2) 06:06	06:58	07:48	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	39 06:26 (2) 22:03	38 06:32 (2) 21:22	20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:58	05:55	05:16	05:47 (2) 05:24	05:55 (2) 06:07	06:59	07:50	07:46	08:35
	16:42	17:36	18:29	20:24	21:16	21:59	40 06:27 (2) 22:02	37 06:32 (2) 21:20	20:12	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	05:53	05:16	05:46 (2) 05:25	05:56 (2) 06:09	07:01	07:52	07:48	08:37
	16:43	17:38	18:30	20:25	21:18	21:59	40 06:26 (2) 22:01	36 06:32 (2) 21:18	20:10	18:59	16:55	16:24
10	08:47	08:06	07:07	06:54	05:51	05:16	05:46 (2) 05:26	05:57 (2) 06:11	07:01 (3)	07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	41 06:27 (2) 22:01	35 06:32 (2) 21:16	11 07:12 (3)	20:08	18:57	16:54	16:24
11	08:46	08:04	07:04	06:51	05:50	05:15	05:46 (2) 05:27	05:58 (2) 06:12	06:59 (3)	07:04	07:55	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01	42 06:28 (2) 22:00	34 06:32 (2) 21:14	16 07:15 (3)	20:05	18:54	16:52	16:23
12	08:46	08:03	07:02	06:49	05:48	05:15	05:45 (2) 05:28	05:59 (2) 06:14	06:57 (3)	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	22:02	42 06:27 (2) 21:59	32 06:31 (2) 21:12	19 07:16 (3)	20:03	18:52	16:50	16:23
13	08:45	08:01	07:00	06:47	07:10 (3) 05:46	05:14	05:45 (2) 05:29	06:00 (2) 06:16	06:56 (3)	07:08	07:59	07:56	08:41
	16:49	17:46	18:38	20:33	1 07:11 (3) 21:24	22:02	43 06:28 (2) 21:58	31 06:31 (2) 21:10	22 07:18 (3)	20:00	18:50	16:49	16:23
14	08:44	07:59	06:57	06:45	07:08 (3) 05:45	05:14	05:45 (2) 05:31	06:02 (2) 06:17	06:54 (3)	07:09	08:01	07:57	08:42
	16:51	17:47	18:39	20:34	5 07:13 (3) 21:26	22:03	43 06:28 (2) 21:57	30 06:32 (2) 21:08	24 07:18 (3)	19:58	18:48	16:47	16:23
15	08:43	07:57	06:55	06:42	07:06 (3) 05:43	05:14	05:45 (2) 05:32	06:03 (2) 06:19	06:53 (3)	07:11	08:03	07:59	08:43
	16:52	17:49	18:41	20:36	8 07:14 (3) 21:27	22:04	43 06:28 (2) 21:56	28 06:31 (2) 21:06	26 07:19 (3)	19:56	18:45	16:46	16:23
16	08:42	07:55	06:53	06:40	07:04 (3) 05:41	06:08 (2) 05:14	05:45 (2) 05:33	06:04 (2) 06:21	06:52 (3)	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	11 07:15 (3) 21:29	1 06:09 (2) 22:04	44 06:29 (2) 21:55	27 06:31 (2) 21:04	27 07:19 (3)	19:53	18:43	16:44	16:23
17	08:42	07:53	06:50	06:38	07:02 (3) 05:40	06:07 (2) 05:14	05:45 (2) 05:34	06:05 (2) 06:22	06:51 (3)	07:14	08:06	08:03	08:45
	16:56	17:53	18:45	20:40	13 07:15 (3) 21:31	4 06:11 (2) 22:05	44 06:29 (2) 21:54	25 06:30 (2) 21:02	29 07:20 (3)	19:51	18:41	16:43	16:24
18	08:41	07:51	06:48	06:36	06:59 (3) 05:38	06:06 (2) 05:14	05:45 (2) 05:36	06:06 (2) 06:24	06:52 (3)	07:16	08:08	08:05	08:45
	16:57	17:55	18:47	20:41	16 07:15 (3) 21:32	7 06:13 (2) 22:05	44 06:29 (2) 21:53	24 06:30 (2) 21:00	29 07:21 (3)	19:49	18:39	16:42	16:24
19	08:39	07:49	06:45	06:33	06:57 (3) 05:37	06:04 (2) 05:14	05:45 (2) 05:37	06:07 (2) 06:26	06:53 (3)	07:18	08:10	08:06	08:46
	16:59	17:57	18:48	20:43	18 07:15 (3) 21:34	10 06:14 (2) 22:05	44 06:29 (2) 21:51	22 06:29 (2) 20:58	27 07:20 (3)	19:46	18:36	16:40	16:24
20	08:38	07:47	06:43	06:31	06:55 (3) 05:36	06:03 (2) 05:14	05:45 (2) 05:38	06:09 (2) 06:27	06:55 (3)	07:19	08:11	08:08	08:47
	17:01	17:59	18:50	20:45	20 07:15 (3) 21:35	13 06:16 (2) 22:06	44 06:29 (2) 21:50	20 06:29 (2) 20:55	26 07:21 (3)	19:44	18:34	16:39	16:24
21	08:37	07:44	06:41	06:29	06:53 (3) 05:34	06:02 (2) 05:14	05:45 (2) 05:40	06:10 (2) 06:29	06:56 (3)	07:21	08:13	08:10	08:47
	17:02	18:01	18:52	20:47	22 07:15 (3) 21:37	15 06:17 (2) 22:06	44 06:29 (2) 21:49	18 06:28 (2) 20:53	24 07:20 (3)	19:41	18:32	16:38	16:25
22	08:36	07:42	06:38	06:27	06:51 (3) 05:33	06:01 (2) 05:14	05:46 (2) 05:41	06:11 (2) 06:31	06:58 (3)	07:23	08:15	08:12	08:48
	17:04	18:03	18:54	20:48	24 07:15 (3) 21:38	17 06:18 (2) 22:06	44 06:30 (2) 21:48	16 06:27 (2) 20:51	22 07:20 (3)	19:39	18:30	16:37	16:25
23	08:35	07:40	06:36	06:25	06:49 (3) 05:31	05:59 (2) 05:14	05:46 (2) 05:42	06:13 (2) 06:32	07:00 (3)	07:24	08:17	08:13	08:48
	17:06	18:05	18:56	20:50	26 07:15 (3) 21:40	19 06:18 (2) 22:06	44 06:30 (2) 21:46	14 06:27 (2) 20:49	20 07:20 (3)	19:37	18:28	16:35	16:26
24	08:34	07:38	06:34	06:23	06:47 (3) 05:30	05:58 (2) 05:15	05:46 (2) 05:44	06:14 (2) 06:34	07:01 (3)	07:26	08:19	08:15	08:49
	17:08	18:06	18:57	20:52	28 07:15 (3) 21:41	21 06:19 (2) 22:06	44 06:30 (2) 21:45	11 06:25 (2) 20:47	18 07:19 (3)	19:34	18:26	16:34	16:26
25	08:32	07:36	06:31	06:21	06:45 (3) 05:29	05:57 (2) 05:15	05:47 (2) 05:45	06:15 (2) 06:36	07:03 (3)	07:28	07:21	08:17	08:49
	17:10	18:08	18:59	20:54	29 07:14 (3) 21:42	23 06:20 (2) 22:06	44 06:31 (2) 21:43	9 06:24 (2) 20:45	16 07:19 (3)	19:32	17:24	16:33	16:27
26	08:31	07:34	06:29	06:18	06:45 (3) 05:28	05:56 (2) 05:15	05:47 (2) 05:47	06:17 (2) 06:37	07:04 (3)	07:29	07:22	08:18	08:49
	17:11	18:10	19:01	20:55	28 07:13 (3) 21:44	25 06:21 (2) 22:06	44 06:31 (2) 21:42	6 06:23 (2) 20:42	13 07:17 (3)	19:29	17:22	16:32	16:28
27	08:30	07:31	06:27	06:16	06:45 (3) 05:27	05:55 (2) 05:16	05:47 (2) 05:48	06:18 (2) 06:39	07:06 (3)	07:31	07:24	08:20	08:50
	17:13	18:12	19:03	20:57	27 07:12 (3) 21:45	26 06:21 (2) 22:06	44 06:31 (2) 21:40	3 06:21 (2) 20:40	10 07:16 (3)	19:27	17:20	16:31	16:29
28	08:28	07:29	06:24	06:14	06:46 (3) 05:25	05:54 (2) 05:16	05:48 (2) 05:50	06:41	07:08 (3)	07:33	07:26	08:21	08:50
	17:15	18:14	19:04	20:59	25 07:11 (3) 21:46	28 06:22 (2) 22:06	43 06:31 (2) 21:39	20:38	8 07:16 (3)	19:25	17:18	16:30	16:29
29	08:27		07:22	06:12	06:46 (3) 05:24	05:53 (2) 05:17	05:49 (2) 05:51	06:42	07:09 (3)	07:35	07:28	08:23	08:50
	17:17		20:06	21:01	24 07:10 (3) 21:48	29 06:22 (2) 22:06	43 06:32 (2) 21:37	20:36	4 07:13 (3)	19:22	17:16	16:30	16:30
30	08:25		07:19	06:10	06:47 (3) 05:23	05:52 (2) 05:18	05:49 (2) 05:53	06:44	07:11 (3)	07:36	07:30	08:24	08:50
	17:19		20:08	21:02	22 07:09 (3) 21:49	31 06:23 (2) 22:06	42 06:31 (2) 21:36	20:33	1 07:12 (3)	19:20	17:14	16:29	16:31
31	08:24		07:17		05:22	05:52 (2)	05:54	06:46		07:32			08:50
	17:21		20:10		21:50	32 06:24 (2)	21:34	20:31		17:12			16:32
Potential sun hours	256	276	367	418	489	503	506	456	381	330	263	240
Total, worst case				347	342	1242	737	392				
Sun reduction				0.35	0.37	0.30	0.26	0.30				
Oper. time red.				1.00	1.00	1.00	1.00	1.00				
Wind dir. red.				0.68	0.64	0.64	0.64	0.68				
Total reduction				0.24	0.24	0.19	0.17	0.20				
Total, real				83	81	235	124	78				

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)

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: L - H12

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50 16:33	08:22 17:22	07:27 18:16	07:15 20:11	06:08 21:04 (33)	20:02 (3) 20:35 (2)	05:21 21:51 (26)	20:15 (3) 21:18 (1)	05:18 22:05 (11)	21:21 (1) 21:32 (1)	05:56 21:32 (49)	20:11 (3) 21:00 (3)	06:47 20:29	07:38 19:17	07:33 17:10	08:26 16:28
2	08:50 16:34	08:20 17:24	07:25 18:17	07:12 20:13	06:06 21:06 (35)	20:01 (3) 20:36 (2)	05:21 21:52 (26)	20:16 (3) 21:19 (1)	05:19 22:05 (11)	21:20 (1) 21:31 (1)	05:57 21:31 (49)	20:11 (3) 21:00 (3)	06:49 20:26	07:40 19:15	07:35 17:08	08:27 16:27
3	08:50 16:36	08:19 17:26	07:22 18:19	07:10 20:15	06:04 21:07 (38)	20:00 (3) 20:38 (3)	05:20 21:54 (25)	20:17 (3) 21:20 (1)	05:20 22:05 (10)	21:21 (1) 21:31 (1)	05:59 21:29 (48)	20:10 (3) 20:58 (3)	06:51 20:24	07:41 19:13	07:37 17:06	08:29 16:27
4	08:50 16:37	08:17 17:28	07:20 18:21	07:08 20:17	06:02 21:09 (39)	20:01 (3) 20:40 (3)	05:19 21:55 (23)	20:19 (3) 21:21 (1)	05:20 22:04 (9)	21:21 (1) 21:30 (1)	06:01 21:27 (47)	20:10 (3) 20:57 (3)	06:52 20:22	07:43 19:10	07:39 17:04	08:30 16:26
5	08:49 16:38	08:15 17:30	07:18 18:23	07:05 20:18	06:00 21:11 (40)	20:01 (3) 20:41 (3)	05:18 21:56 (22)	20:20 (3) 21:22 (1)	05:21 22:04 (10)	20:33 (3) 21:30 (1)	06:02 21:25 (45)	20:10 (3) 20:55 (3)	06:54 20:19	07:45 19:08	07:41 17:02	08:32 16:25
6	08:49 16:39	08:14 17:32	07:16 18:25	07:03 20:20	05:59 21:12 (43)	20:00 (3) 20:43 (3)	05:18 21:57 (18)	20:23 (3) 21:23 (1)	05:22 22:03 (17)	20:29 (3) 21:29 (1)	06:04 21:23 (44)	20:10 (3) 20:54 (3)	06:56 20:17	07:47 19:06	07:43 17:00	08:33 16:25
7	08:49 16:41	08:12 17:34	07:13 18:27	07:01 20:22	05:57 21:14 (44)	20:00 (3) 20:44 (3)	05:17 21:58 (15)	20:25 (3) 21:24 (1)	05:23 22:03 (20)	20:27 (3) 21:28 (1)	06:06 21:22 (42)	20:10 (3) 20:52 (3)	06:57 20:15	07:48 19:03	07:45 16:59	08:34 16:25
8	08:48 16:42	08:10 17:36	07:11 18:29	06:58 20:24	05:55 21:16 (46)	20:00 (3) 20:46 (3)	05:16 21:58 (9)	21:16 (1) 21:25 (1)	05:24 22:02 (22)	20:26 (3) 21:28 (1)	06:07 21:20 (40)	20:10 (3) 20:50 (3)	06:59 20:12	07:50 19:01	07:46 16:57	08:35 16:24
9	08:48 16:43	08:08 17:38	07:09 18:30	06:56 20:25	05:53 21:18 (47)	20:00 (3) 20:47 (3)	05:16 21:59 (10)	21:15 (1) 21:25 (1)	05:25 22:01 (24)	20:25 (3) 21:27 (1)	06:09 21:18 (38)	20:10 (3) 20:48 (3)	07:01 20:10	07:52 18:59	07:48 16:55	08:37 16:24
10	08:47 16:45	08:06 17:40	07:06 18:32	06:54 20:27	05:51 21:19 (49)	20:00 (3) 20:49 (3)	05:15 22:00 (10)	21:16 (1) 21:26 (1)	05:26 22:00 (26)	20:24 (3) 21:27 (1)	06:10 21:16 (37)	20:10 (3) 20:47 (3)	07:02 20:07	07:54 18:56	07:50 16:54	08:38 16:24
11	08:46 16:46	08:04 17:42	07:04 18:34	06:51 20:29	05:50 21:21 (50)	20:00 (3) 20:50 (3)	05:15 22:01 (11)	21:16 (1) 21:27 (1)	05:27 22:00 (26)	20:23 (3) 21:26 (1)	06:12 21:14 (34)	20:10 (3) 20:44 (2)	07:04 20:05	07:55 18:54	07:52 16:52	08:39 16:23
12	08:46 16:48	08:02 17:44	07:02 18:36	06:49 20:31	05:48 21:23 (50)	20:00 (3) 20:50 (3)	05:15 22:02 (11)	21:16 (1) 21:27 (1)	05:28 21:59 (27)	20:22 (3) 21:25 (1)	06:14 21:12 (33)	20:10 (3) 20:43 (2)	07:06 20:03	07:57 18:52	07:54 16:50	08:40 16:23
13	08:45 16:49	08:01 17:45	06:59 18:38	06:47 20:32	05:46 21:24 (49)	20:01 (3) 20:50 (3)	05:14 22:02 (12)	21:16 (1) 21:28 (1)	05:29 21:58 (27)	20:21 (3) 20:48 (3)	06:15 21:10 (30)	20:11 (3) 20:41 (2)	07:07 20:00	07:59 18:50	07:56 16:49	08:41 16:23
14	08:44 16:51	07:59 17:47	06:57 18:39	06:45 20:34	05:45 21:26 (48)	20:01 (3) 20:49 (3)	05:14 22:03 (12)	21:17 (1) 21:29 (1)	05:30 21:57 (29)	20:20 (3) 20:49 (3)	06:17 21:08 (28)	20:11 (3) 20:39 (2)	07:09 19:58	08:01 18:47	07:57 16:47	08:42 16:23
15	08:43 16:52	07:57 17:49	06:55 18:41	06:42 20:36	05:43 21:27 (47)	20:02 (3) 20:49 (3)	05:14 22:04 (12)	21:17 (1) 21:29 (1)	05:32 21:56 (31)	20:20 (3) 20:51 (3)	06:19 21:06 (25)	20:12 (3) 20:37 (2)	07:11 19:56	08:02 18:45	07:59 16:46	08:43 16:23
16	08:42 16:54	07:55 17:51	06:52 18:43	06:40 20:38	05:41 21:29 (47)	20:01 (3) 20:48 (3)	05:14 22:04 (13)	21:17 (1) 21:30 (1)	05:33 21:55 (33)	20:19 (3) 20:52 (3)	06:20 21:04 (23)	20:12 (3) 20:35 (2)	07:13 19:53	08:04 18:43	08:01 16:44	08:44 16:23
17	08:41 16:56	07:53 17:53	06:50 18:45	06:38 20:39	05:40 21:30 (46)	20:02 (3) 20:48 (3)	05:14 22:04 (13)	21:17 (1) 21:30 (1)	05:34 21:54 (35)	20:18 (3) 20:53 (3)	06:22 21:02 (20)	20:13 (3) 20:33 (2)	07:14 19:51	08:06 18:41	08:03 16:43	08:45 16:23
18	08:40 16:57	07:51 17:55	06:48 18:47	06:36 20:41	05:38 21:32 (45)	20:03 (3) 20:48 (3)	05:14 22:05 (14)	21:17 (1) 21:31 (1)	05:35 21:53 (36)	20:17 (3) 20:53 (3)	06:24 21:00 (18)	20:13 (3) 20:31 (2)	07:16 19:48	08:08 18:39	08:04 16:42	08:45 16:24
19	08:39 16:59	07:48 17:57	06:45 18:48	06:33 20:43	05:37 21:34 (44)	20:03 (3) 20:47 (3)	05:14 22:05 (13)	21:18 (1) 21:31 (1)	05:37 21:51 (37)	20:17 (3) 20:54 (3)	06:25 20:57 (15)	20:14 (3) 20:29 (2)	07:18 19:46	08:10 18:36	08:06 16:40	08:46 16:24
20	08:38 17:01	07:46 17:59	06:43 18:50	06:31 20:45 (2)	20:15 (2) 20:17 (2)	05:35 21:35 (43)	20:04 (3) 20:47 (3)	05:14 22:06 (13)	21:18 (1) 21:31 (1)	05:38 21:50 (38)	20:17 (3) 20:55 (3)	06:27 20:55 (11)	07:19 20:27 (2)	08:11 19:44	08:08 18:34	08:47 16:39	08:47 16:24
21	08:37 17:02	07:44 18:01	06:41 18:52	06:29 20:46 (6)	20:13 (3) 20:19 (2)	05:34 21:37 (42)	20:05 (3) 20:47 (3)	05:14 22:06 (13)	21:18 (1) 21:31 (1)	05:39 21:49 (40)	20:16 (3) 20:56 (3)	06:29 20:53 (9)	07:21 20:25 (2)	08:13 19:41	08:10 18:32	08:47 16:38	08:47 16:25
22	08:36 17:04	07:42 18:03	06:38 18:54	06:27 20:48 (9)	20:11 (3) 20:20 (2)	05:33 21:38 (40)	20:06 (3) 20:46 (3)	05:14 22:06 (13)	21:19 (1) 21:32 (1)	05:41 21:48 (41)	20:15 (3) 20:56 (3)	06:31 20:51 (5)	07:23 20:23 (2)	08:15 19:39	08:11 18:30	08:48 16:37	08:48 16:25
23	08:35 17:06	07:40 18:04	06:36 18:55	06:25 20:50 (12)	20:10 (3) 20:22 (2)	05:31 21:39 (39)	20:06 (3) 20:45 (3)	05:14 22:06 (13)	21:19 (1) 21:32 (1)	05:42 21:46 (42)	20:15 (3) 20:57 (3)	06:32 20:49 (1)	07:24 20:20 (2)	08:17 19:36	08:13 18:28	08:48 16:35	08:48 16:26
24	08:33 17:08	07:38 18:06	06:34 18:57	06:23 20:52 (16)	20:08 (3) 20:24 (2)	05:30 21:41 (37)	20:07 (3) 20:44 (3)	05:15 22:06 (13)	21:19 (1) 21:32 (1)	05:44 21:45 (43)	20:14 (3) 20:57 (3)	06:34 20:47		07:26 19:34	08:19 18:26	08:15 16:34	08:49 16:26
25	08:32 17:09	07:36 18:08	06:31 18:59	06:20 20:53 (18)	20:07 (3) 20:25 (2)	05:29 21:42 (37)	20:07 (3) 20:44 (3)	05:15 22:06 (13)	21:19 (1) 21:32 (1)	05:45 21:43 (45)	20:13 (3) 20:58 (3)	06:36 20:44		07:28 19:32	08:21 17:24	08:16 16:33	08:49 16:27
26	08:31 17:11	07:34 18:10	06:29 19:01	06:18 20:55 (21)	20:06 (3) 20:27 (2)	05:28 21:44 (35)	20:08 (3) 20:43 (3)	05:15 22:06 (13)	21:19 (1) 21:32 (1)	05:47 21:42 (46)	20:13 (3) 20:59 (3)	06:37 20:42		07:29 19:29	08:22 17:22	08:18 16:32	08:49 16:28
27	08:29 17:13	07:31 18:12	06:26 19:03	06:16 20:57 (24)	20:05 (3) 20:29 (2)	05:26 21:45 (34)	20:09 (3) 20:43 (3)	05:16 22:06 (12)	21:19 (1) 21:31 (1)	05:48 21:40 (46)	20:13 (3) 20:59 (3)	06:39 20:40		07:31 19:27	08:24 17:20	08:20 16:31	08:50 16:28
28	08:28 17:15	07:29 18:14	06:24 19:04	06:14 20:59 (26)	20:04 (3) 20:30 (2)	05:25 21:46 (32)	20:10 (3) 20:42 (3)	05:16 22:06 (12)	21:20 (1) 21:32 (1)	05:50 21:39 (47)	20:12 (3) 20:59 (3)	06:41 20:38		07:33 19:25	08:26 17:18	08:21 16:30	08:50 16:29
29	08:27 17:17		07:22 20:06	06:12 21:00 (29)	20:03 (3) 20:32 (2)	05:24 21:48 (30)	20:11 (3) 20:41 (3)	05:17 22:06 (12)	21:19 (1) 21:31 (1)	05:51 21:37 (48)	20:12 (3) 21:00 (3)	06:42 20:35		07:35 19:22	08:28 17:16	08:23 16:29	08:50 16:30
30	08:25 17:19		07:19 20:08	06:10 21:02 (31)	20:02 (3) 20:33 (2)	05:23 21:49 (28)	20:12 (3) 20:40 (3)	05:17 22:06 (11)	21:20 (1) 21:31 (1)	05:53 21:36 (49)	20:11 (3) 21:00 (3)	06:44 20:33		07:36 19:20	07:30 17:14	08:24 16:29	08:50 16:31
31	08:23 17:21		07:17 20:10			05:22 21:50 (27)	20:14 (3) 21:17 (1)			05:54 21:34 (49)	20:11 (3) 21:00 (3)	06:46 20:31			07:32 17:12		08:50 16:32
Potential sun hours	256	276	367	418	489	503	506	456	381	330	263	240
Total, worst case				194	1264	433	975	691				
Sun reduction				0.35	0.37	0.30	0.26	0.30				
Oper. time red.				1.00	1.00	1.00	1.00	1.00				
Wind dir. red.				0.69	0.69	0.67	0.68	0.69				
Total reduction				0.24	0.25	0.20	0.18	0.20				
Total, real				47	319	86	177	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)

Licensed user:
Jennings O'Donovan
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
abyrne / abyrne@jodireland.com

Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: M - H13

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January		February		March	April	May	June	July	August	September	October	November	December
1	08:50	14:21 (4)	08:22	16:17 (1)	07:27	07:15	06:08	05:21	05:18	05:56	06:47	07:38	07:33	15:51 (1) / 08:26 / 14:18 (4)
	16:33 55	15:41 (2)	17:22 35	16:52 (1)	18:16	20:11	21:04	21:51	22:06	21:32	20:29	19:17	17:10 31	16:22 (1) / 16:28 10 / 14:28 (4)
2	08:50	14:21 (4)	08:20	16:17 (1)	07:25	07:12	06:06	05:21	05:19	05:57	06:49	07:40	07:35	15:51 (1) / 08:27 / 14:16 (4)
	16:34 53	15:40 (2)	17:24 37	16:54 (1)	18:17	20:13	21:06	21:52	22:05	21:31	20:26	19:15	17:08 32	16:23 (1) / 16:27 22 / 15:20 (2)
3	08:50	14:22 (4)	08:19	16:17 (1)	07:22	07:10	06:04	05:20	05:20	05:59	06:51	07:41	07:37	15:50 (1) / 08:29 / 14:14 (4)
	16:36 51	15:41 (2)	17:26 38	16:55 (1)	18:19	20:15	21:07	21:54	22:05	21:29	20:24	19:13	17:06 33	16:23 (1) / 16:27 30 / 15:22 (2)
4	08:50	14:24 (4)	08:17	16:17 (1)	07:20	07:08	06:02	05:19	05:20	06:01	06:52	07:43	07:39	15:49 (1) / 08:30 / 14:14 (4)
	16:37 49	15:41 (2)	17:28 37	16:54 (1)	18:21	20:17	21:09	21:55	22:04	21:27	20:22	19:10	17:04 35	16:24 (1) / 16:26 35 / 15:24 (2)
5	08:49	14:24 (4)	08:15	16:19 (1)	07:18	07:05	06:00	05:18	05:21	06:02	06:54	07:45	07:41	15:49 (1) / 08:32 / 14:12 (4)
	16:38 47	15:40 (2)	17:30 36	16:55 (1)	18:23	20:18	21:11	21:56	22:04	21:25	20:19	19:08	17:02 36	16:25 (1) / 16:25 40 / 15:25 (2)
6	08:49	14:26 (4)	08:14	16:19 (1)	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	15:48 (1) / 08:33 / 14:11 (4)
	16:39 44	15:41 (2)	17:32 36	16:55 (1)	18:25	20:20	21:13	21:57	22:03	21:24	20:17	19:06	17:00 37	16:25 (1) / 16:25 44 / 15:26 (2)
7	08:49	14:27 (4)	08:12	16:20 (1)	07:13	07:01	05:57	05:17	05:23	06:06	06:57	07:48	07:45	15:48 (1) / 08:34 / 14:12 (4)
	16:40 40	15:40 (2)	17:34 34	16:54 (1)	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:03	16:59 37	16:25 (1) / 16:24 45 / 15:27 (2)
8	08:48	14:28 (4)	08:10	16:20 (1)	07:11	06:58	05:55	05:16	05:24	06:07	06:59	07:50	07:46	15:48 (1) / 08:35 / 14:11 (4)
	16:42 36	15:39 (2)	17:36 34	16:54 (1)	18:29	20:24	21:16	21:59	22:02	21:20	20:12	19:01	16:57 38	16:26 (1) / 16:24 49 / 15:28 (2)
9	08:48	14:31 (4)	08:08	16:21 (1)	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48	15:48 (1) / 08:37 / 14:10 (4)
	16:43 31	15:39 (2)	17:38 32	16:53 (1)	18:30	20:25	21:18	21:59	22:01	21:18	20:10	18:59	16:55 36	16:24 (1) / 16:24 51 / 15:29 (2)
10	08:47	14:33 (4)	08:06	16:22 (1)	07:06	06:54	05:51	05:15	05:26	06:10	07:02	07:54	07:50	15:48 (1) / 08:38 / 14:11 (4)
	16:45 23	15:37 (2)	17:40 30	16:52 (1)	18:32	20:27	21:19	22:00	22:01	21:16	20:08	18:57	16:54 34	16:22 (1) / 16:24 52 / 15:30 (2)
11	08:46	14:36 (4)	08:04	16:23 (1)	07:04	06:51	05:50	05:15	05:27	06:12	07:04	07:55	07:52	15:48 (1) / 08:39 / 14:11 (4)
	16:46 10	14:46 (4)	17:42 28	16:51 (1)	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:54	16:52 33	16:21 (1) / 16:23 55 / 15:31 (2)
12	08:46		08:03	16:25 (1)	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54	15:48 (1) / 08:40 / 14:11 (4)
	16:48		17:43 25	16:50 (1)	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:50 31	16:19 (1) / 16:23 56 / 15:32 (2)
13	08:45		08:01	16:27 (1)	07:00	06:47	05:46	05:14	05:29	06:15	07:07	07:59	07:56	15:49 (1) / 08:41 / 14:11 (4)
	16:49		17:45 21	16:48 (1)	18:38	20:32	21:24	22:02	21:58	21:10	20:00	18:50	16:49 28	16:17 (1) / 16:23 56 / 15:32 (2)
14	08:44		07:59	16:29 (1)	06:57	06:45	05:45	05:14	05:30	06:17	07:09	08:01	07:57	15:49 (1) / 08:42 / 14:11 (4)
	16:51		17:47 17	16:46 (1)	18:39	20:34	21:26	22:03	21:57	21:08	19:58	18:47	16:47 27	16:16 (1) / 16:23 58 / 15:33 (2)
15	08:43		07:57	16:33 (1)	06:55	06:42	05:43	05:14	05:32	06:19	07:11	08:02	07:59	15:50 (1) / 08:43 / 14:11 (4)
	16:52		17:49 9	16:42 (1)	18:41	20:36	21:27	22:04	21:56	21:06	19:56	18:45	16:46 24	16:14 (1) / 16:23 60 / 15:34 (2)
16	08:42		07:55		06:52	06:40	05:41	05:14	05:33	06:20	07:13	08:04	08:01	15:50 (1) / 08:44 / 14:12 (4)
	16:54		17:51		18:43	20:38	21:29	22:04	21:55	21:04	19:53	18:43	16:44 22	16:12 (1) / 16:23 59 / 15:34 (2)
17	08:41	16:21 (1)	07:53		06:50	06:38	05:40	05:14	05:34	06:22	07:14	08:06	08:03	15:51 (1) / 08:45 / 14:11 (4)
	16:56 1	16:22 (1)	17:53		18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43 20	16:11 (1) / 16:23 61 / 15:34 (2)
18	08:40	16:20 (1)	07:51		06:48	06:36	05:38	05:14	05:35	06:24	07:16	08:08	08:05	15:52 (1) / 08:45 / 14:12 (4)
	16:57 4	16:24 (1)	17:55		18:47	20:41	21:32	22:05	21:53	21:00	19:48	18:39	16:42 17	16:09 (1) / 16:24 60 / 15:35 (2)
19	08:39	16:20 (1)	07:49		06:45	06:33	05:37	05:14	05:37	06:25	07:18	08:10	08:06	15:53 (1) / 08:46 / 14:12 (4)
	16:59 6	16:26 (1)	17:57		18:48	20:43	21:34	22:05	21:51	20:58	19:46	18:36	16:40 15	16:08 (1) / 16:24 61 / 15:36 (2)
20	08:38	16:19 (1)	07:46		06:43	06:31	05:35	05:14	05:38	06:27	07:19	08:11	08:08	15:53 (1) / 08:47 / 14:12 (4)
	17:01 8	16:27 (1)	17:59		18:50	20:45	21:35	22:06	21:50	20:55	19:44	18:34	16:39 14	16:07 (1) / 16:24 62 / 15:36 (2)
21	08:37	16:18 (1)	07:44		06:41	06:29	05:34	05:14	05:39	06:29	07:21	08:13	08:10	15:54 (1) / 08:47 / 14:13 (4)
	17:02 11	16:29 (1)	18:01		18:52	20:47	21:37	22:06	21:49	20:53	19:41	18:32	16:38 10	16:04 (1) / 16:25 62 / 15:37 (2)
22	08:36	16:18 (1)	07:42		06:38	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:12	15:55 (1) / 08:48 / 14:13 (4)
	17:04 14	16:32 (1)	18:03		18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:36 8	16:03 (1) / 16:25 62 / 15:37 (2)
23	08:35	16:18 (1)	07:40		06:36	06:25	05:31	05:14	05:42	06:32	07:24	08:17	08:13	15:56 (1) / 08:48 / 14:14 (4)
	17:06 15	16:33 (1)	18:04		18:55	20:50	21:40	22:06	21:46	20:49	19:37	18:28	16:35 6	16:02 (1) / 16:26 62 / 15:38 (2)
24	08:34	16:18 (1)	07:38		06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	15:57 (1) / 08:49 / 14:14 (4)
	17:08 17	16:35 (1)	18:06		18:57	20:52	21:41	22:06	21:45	20:47	19:34	18:26	16:34 4	16:01 (1) / 16:26 62 / 15:38 (2)
25	08:32	16:17 (1)	07:36		06:31	06:20	05:29	05:15	05:45	06:36	07:28	07:21	08:17	15:59 (1) / 08:49 / 14:15 (4)
	17:09 20	16:37 (1)	18:08		18:59	20:54	21:42	22:06	21:43	20:44	19:32	17:24	16:33 1	16:00 (1) / 16:27 61 / 15:39 (2)
26	08:31	16:17 (1)	07:34		06:29	06:18	05:28	05:15	05:47	06:37	07:29	07:22	08:18	08:49 / 14:16 (4)
	17:11 22	16:39 (1)	18:10		19:01	20:55	21:44	22:06	21:42	20:42	19:29	17:22	16:32	16:28 61 / 15:39 (2)
27	08:29	16:17 (1)	07:31		06:26	06:16	05:26	05:16	05:48	06:39	07:31	07:24	16:02 (1) 08:20	08:50 / 14:16 (4)
	17:13 24	16:41 (1)	18:12		19:03	20:57	21:45	22:06	21:40	20:40	19:27	17:20 11	16:13 (1) 16:31	16:28 60 / 15:39 (2)
28	08:28	16:17 (1)	07:29		06:24	06:14	05:25	05:16	05:50	06:41	07:33	07:26	15:58 (1) 08:21	08:50 / 14:17 (4)
	17:15 27	16:44 (1)	18:14		19:04	20:59	21:46	22:06	21:39	20:38	19:25	17:18 18	16:16 (1) 16:30	16:29 59 / 15:39 (2)
29	08:27	16:17 (1)			07:22	06:12	05:24	05:17	05:51	06:42	07:35	07:28	15:56 (1) 08:23	08:50 / 14:18 (4)
	17:17 28	16:45 (1)			20:06	21:01	21:48	22:06	21:37	20:35	19:22	17:16 22	16:18 (1) 16:29	16:30 58 / 15:40 (2)
30	08:25	16:16 (1)			07:19	06:10	05:23	05:17	05:53	06:44	07:36	07:30	15:54 (1) 08:24	08:50 / 14:18 (4)
	17:19 31	16:47 (1)			20:08	21:02	21:49	22:06	21:36	20:33	19:20	17:14 25	16:19 (1) 16:29	16:31 58 / 15:40 (2)
31	08:24	16:17 (1)			07:17		05:22		05:54	06:46		07:32	15:53 (1)	08:50 / 14:19 (4)
	17:21 33	16:50 (1)			20:10		21:50		21:34	20:31		17:12 28	16:21 (1)	16:32 57 / 15:40 (2)
Potential sun hours	255		276		367	418	489	503	506	456	381	330	263	240
Total, worst case	700		449									104	609	1628
Sun reduction	0.16		0.21									0.24	0.19	0.14
Oper. time red.	1.00		1.00									1.00	1.00	1.00
Wind dir. red.	0.61		0.63									0.63	0.63	0.60
Total reduction	0.10		0.13									0.15	0.12	0.08
Total, real	67		58									16	72	133

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)

Licensed user:
Jennings O'Donovan
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IE-F91 RHH9 Sligo
+353719161416
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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: N - H14

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January	February	March	April		May		June	
1	08:50	08:22	07:27	07:15		06:08		19:38 (3)	05:21		21:03 (1)
	16:33	17:22	18:16	20:11		21:04	50	20:28 (3)	21:51	15	21:18 (1)
2	08:50	08:20	07:25	07:12		06:06		19:38 (3)	05:21		21:03 (1)
	16:34	17:24	18:17	20:13		21:06	49	20:27 (3)	21:52	16	21:19 (1)
3	08:50	08:19	07:22	07:10		06:04		19:38 (3)	05:20		21:03 (1)
	16:36	17:26	18:19	20:15		21:07	48	20:26 (3)	21:54	17	21:20 (1)
4	08:50	08:17	07:20	07:08		06:02		19:40 (3)	05:19		21:04 (1)
	16:37	17:28	18:21	20:17		21:09	46	20:26 (3)	21:55	17	21:21 (1)
5	08:49	08:15	07:18	07:05		06:00		19:40 (3)	05:18		21:04 (1)
	16:38	17:30	18:23	20:18		21:11	45	20:25 (3)	21:56	18	21:22 (1)
6	08:49	08:14	07:16	07:03		05:59		19:41 (3)	05:18		21:05 (1)
	16:39	17:32	18:25	20:20		21:12	43	20:24 (3)	21:57	18	21:23 (1)
7	08:49	08:12	07:13	07:01		05:57		19:41 (3)	05:17		21:04 (1)
	16:41	17:34	18:27	20:22		21:14	42	20:23 (3)	21:58	20	21:24 (1)
8	08:48	08:10	07:11	06:58		05:55		19:43 (3)	05:16		21:05 (1)
	16:42	17:36	18:29	20:24		21:16	40	20:23 (3)	21:58	20	21:25 (1)
9	08:48	08:08	07:09	06:56		05:53		19:43 (3)	05:16		21:05 (1)
	16:43	17:38	18:30	20:25	4	21:18	39	20:22 (3)	21:59	20	21:25 (1)
10	08:47	08:06	07:06	06:54		05:51		19:44 (3)	05:15		21:06 (1)
	16:45	17:40	18:32	20:27	8	21:19	36	20:20 (3)	22:00	20	21:26 (1)
11	08:46	08:04	07:04	06:51		05:50		19:46 (3)	05:15		21:06 (1)
	16:46	17:42	18:34	20:29	12	21:21	34	20:20 (3)	22:01	21	21:27 (1)
12	08:46	08:02	07:02	06:49		05:48		19:47 (3)	05:15		21:06 (1)
	16:48	17:43	18:36	20:31	16	21:23	31	20:18 (3)	22:02	21	21:27 (1)
13	08:45	08:01	06:59	06:47		05:46		19:49 (3)	05:14		21:06 (1)
	16:49	17:45	18:38	20:32	19	21:24	28	20:17 (3)	22:02	22	21:28 (1)
14	08:44	07:59	06:57	06:45		05:45		19:50 (3)	05:14		21:07 (1)
	16:51	17:47	18:39	20:34	22	21:26	25	20:15 (3)	22:03	22	21:29 (1)
15	08:43	07:57	06:55	06:42		05:43		19:52 (3)	05:14		21:07 (1)
	16:52	17:49	18:41	20:36	25	21:27	21	20:13 (3)	22:04	22	21:29 (1)
16	08:42	07:55	06:52	06:40		05:41		19:55 (3)	05:14		21:08 (1)
	16:54	17:51	18:43	20:38	28	21:29	15	20:10 (3)	22:04	22	21:30 (1)
17	08:41	07:53	06:50	06:38		05:40		19:59 (3)	05:14		21:08 (1)
	16:56	17:53	18:45	20:39	31	21:30	7	20:06 (3)	22:05	22	21:30 (1)
18	08:40	07:51	06:48	06:36		05:38			05:14		21:08 (1)
	16:57	17:55	18:47	20:41	33	21:32			22:05	23	21:31 (1)
19	08:39	07:48	06:45	06:33		05:37			05:14		21:08 (1)
	16:59	17:57	18:48	20:43	35	21:34			22:05	23	21:31 (1)
20	08:38	07:46	06:43	06:31		05:35			05:14		21:08 (1)
	17:01	17:59	18:50	20:45	38	21:35			22:06	23	21:31 (1)
21	08:37	07:44	06:41	06:29		05:34			05:14		21:08 (1)
	17:02	18:01	18:52	20:46	40	21:37			22:06	23	21:31 (1)
22	08:36	07:42	06:38	06:27		05:33		21:04 (1)	05:14		21:09 (1)
	17:04	18:03	18:54	20:48	41	21:38	3	21:07 (1)	22:06	23	21:32 (1)
23	08:35	07:40	06:36	06:25		05:31		21:03 (1)	05:14		21:09 (1)
	17:06	18:04	18:55	20:50	44	21:39	4	21:07 (1)	22:06	23	21:32 (1)
24	08:33	07:38	06:34	06:23		05:30		21:03 (1)	05:15		21:09 (1)
	17:08	18:06	18:57	20:52	46	21:41	5	21:08 (1)	22:06	23	21:32 (1)
25	08:32	07:36	06:31	06:20		05:29		21:03 (1)	05:15		21:10 (1)
	17:09	18:08	18:59	20:53	47	21:42	7	21:10 (1)	22:06	22	21:32 (1)
26	08:31	07:34	06:29	06:18		05:28		21:03 (1)	05:15		21:10 (1)
	17:11	18:10	19:01	20:55	49	21:44	8	21:11 (1)	22:06	22	21:32 (1)
27	08:29	07:31	06:26	06:16		05:26		21:03 (1)	05:16		21:09 (1)
	17:13	18:12	19:03	20:57	51	21:45	9	21:12 (1)	22:06	22	21:31 (1)
28	08:28	07:29	06:24	06:14		05:25		21:03 (1)	05:16		21:10 (1)
	17:15	18:14	19:04	20:59	51	21:46	10	21:13 (1)	22:06	22	21:32 (1)
29	08:27		07:22	06:12		05:24		21:03 (1)	05:17		21:10 (1)
	17:17		20:06	21:00	51	21:48	11	21:14 (1)	22:06	21	21:31 (1)
30	08:25		07:19	06:10		05:23		21:03 (1)	05:17		21:10 (1)
	17:19		20:08	21:02	50	21:49	12	21:15 (1)	22:06	21	21:31 (1)
31	08:23		07:17			05:22		21:03 (1)			
	17:21		20:10			21:50	14	21:17 (1)			
Potential sun hours	256	276	367	418		489			503		
Total, worst case					741		682			624	
Sun reduction					0.35		0.37			0.30	
Oper. time red.					1.00		1.00			1.00	
Wind dir. red.					0.69		0.68			0.66	
Total reduction					0.24		0.25			0.20	
Total, real					180		171			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)

Licensed user:
Jennings O'Donovan
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abyrne / abyrne@jodireland.com

Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: N - H14

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	July			August			September			October	November	December
1	05:18		21:10 (1)	05:56		19:57 (3)	06:47		19:49 (3)	07:38	07:33	08:26
	22:05	22	21:32 (1)	21:32	32	20:29 (3)	20:29	12	20:01 (3)	19:17	17:10	16:28
2	05:19		21:10 (1)	05:57		19:56 (3)	06:49		19:50 (3)	07:40	07:35	08:27
	22:05	21	21:31 (1)	21:31	34	20:30 (3)	20:26	8	19:58 (3)	19:15	17:08	16:27
3	05:20		21:10 (1)	05:59		19:54 (3)	06:51		19:52 (3)	07:41	07:37	08:29
	22:05	21	21:31 (1)	21:29	37	20:31 (3)	20:24	4	19:56 (3)	19:13	17:06	16:27
4	05:20		21:11 (1)	06:01		19:53 (3)	06:52			07:43	07:39	08:30
	22:04	19	21:30 (1)	21:27	39	20:32 (3)	20:22			19:10	17:04	16:26
5	05:21		21:11 (1)	06:02		19:52 (3)	06:54			07:45	07:41	08:32
	22:04	19	21:30 (1)	21:25	41	20:33 (3)	20:19			19:08	17:02	16:25
6	05:22		21:10 (1)	06:04		19:51 (3)	06:56			07:47	07:43	08:33
	22:03	19	21:29 (1)	21:23	43	20:34 (3)	20:17			19:06	17:00	16:25
7	05:23		21:10 (1)	06:06		19:50 (3)	06:57			07:48	07:45	08:34
	22:03	18	21:28 (1)	21:22	44	20:34 (3)	20:15			19:03	16:59	16:25
8	05:24		21:10 (1)	06:07		19:49 (3)	06:59			07:50	07:46	08:35
	22:02	18	21:28 (1)	21:20	46	20:35 (3)	20:12			19:01	16:57	16:24
9	05:25		21:11 (1)	06:09		19:48 (3)	07:01			07:52	07:48	08:37
	22:01	16	21:27 (1)	21:18	47	20:35 (3)	20:10			18:59	16:55	16:24
10	05:26		21:11 (1)	06:10		19:48 (3)	07:02			07:54	07:50	08:38
	22:00	16	21:27 (1)	21:16	48	20:36 (3)	20:08			18:56	16:54	16:24
11	05:27		21:11 (1)	06:12		19:47 (3)	07:04			07:55	07:52	08:39
	22:00	15	21:26 (1)	21:14	49	20:36 (3)	20:05			18:54	16:52	16:23
12	05:28		21:11 (1)	06:14		19:46 (3)	07:06			07:57	07:54	08:40
	21:59	14	21:25 (1)	21:12	50	20:36 (3)	20:03			18:52	16:50	16:23
13	05:29		21:11 (1)	06:15		19:46 (3)	07:07			07:59	07:56	08:41
	21:58	13	21:24 (1)	21:10	51	20:37 (3)	20:00			18:50	16:49	16:23
14	05:30		21:11 (1)	06:17		19:45 (3)	07:09			08:01	07:57	08:42
	21:57	12	21:23 (1)	21:08	52	20:37 (3)	19:58			18:47	16:47	16:23
15	05:32		21:12 (1)	06:19		19:45 (3)	07:11			08:02	07:59	08:43
	21:56	11	21:23 (1)	21:06	52	20:37 (3)	19:56			18:45	16:46	16:23
16	05:33		21:12 (1)	06:20		19:44 (3)	07:13			08:04	08:01	08:44
	21:55	10	21:22 (1)	21:04	51	20:35 (3)	19:53			18:43	16:44	16:23
17	05:34		21:12 (1)	06:22		19:44 (3)	07:14			08:06	08:03	08:45
	21:54	9	21:21 (1)	21:02	49	20:33 (3)	19:51			18:41	16:43	16:23
18	05:35		21:12 (1)	06:24		19:43 (3)	07:16			08:08	08:04	08:45
	21:53	8	21:20 (1)	21:00	48	20:31 (2)	19:48			18:39	16:42	16:24
19	05:37		21:12 (1)	06:25		19:44 (3)	07:18			08:10	08:06	08:46
	21:51	7	21:19 (1)	20:57	45	20:29 (2)	19:46			18:36	16:40	16:24
20	05:38		21:14 (1)	06:27		19:44 (3)	07:19			08:11	08:08	08:47
	21:50	4	21:18 (1)	20:55	43	20:27 (2)	19:44			18:34	16:39	16:24
21	05:39		21:14 (1)	06:29		19:43 (3)	07:21			08:13	08:10	08:47
	21:49	3	21:17 (1)	20:53	42	20:25 (2)	19:41			18:32	16:38	16:25
22	05:41		21:14 (1)	06:31		19:44 (3)	07:23			08:15	08:11	08:48
	21:48	1	21:15 (1)	20:51	39	20:23 (2)	19:39			18:30	16:37	16:25
23	05:42			06:32		19:43 (3)	07:24			08:17	08:13	08:48
	21:46			20:49	37	20:20 (2)	19:36			18:28	16:35	16:26
24	05:44			06:34		19:44 (3)	07:26			08:19	08:15	08:49
	21:45			20:47	35	20:19 (2)	19:34			18:26	16:34	16:26
25	05:45			06:36		19:44 (3)	07:28			07:21	08:16	08:49
	21:43			20:44	33	20:17 (2)	19:32			17:24	16:33	16:27
26	05:47			06:37		19:44 (3)	07:29			07:22	08:18	08:49
	21:42			20:42	30	20:14 (2)	19:29			17:22	16:32	16:28
27	05:48		20:07 (3)	06:39		19:45 (3)	07:31			07:24	08:20	08:50
	21:40	12	20:19 (3)	20:40	27	20:12 (2)	19:27			17:20	16:31	16:28
28	05:50		20:04 (3)	06:41		19:45 (3)	07:33			07:26	08:21	08:50
	21:39	18	20:22 (3)	20:38	25	20:10 (2)	19:25			17:18	16:30	16:29
29	05:51		20:02 (3)	06:42		19:46 (3)	07:35			07:28	08:23	08:50
	21:37	22	20:24 (3)	20:35	22	20:08 (2)	19:22			17:16	16:29	16:30
30	05:53		20:00 (3)	06:44		19:47 (3)	07:36			07:30	08:24	08:50
	21:36	26	20:26 (3)	20:33	19	20:06 (2)	19:20			17:14	16:29	16:31
31	05:54		19:59 (3)	06:46		19:47 (3)				07:32		08:50
	21:34	29	20:28 (3)	20:31	16	20:03 (3)				17:12		16:32
Potential sun hours	506			456			381			330	263	240
Total, worst case		403			1226			24				
Sun reduction		0.26			0.30			0.28				
Oper. time red.		1.00			1.00			1.00				
Wind dir. red.		0.67			0.69			0.69				
Total reduction		0.18			0.20			0.19				
Total, real		71			249			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)

Licensed user:
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abyrne / abyrne@jodireland.com

Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: O - H15

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January		February		March		April		May		June	
1	08:50		09:23 (3)	08:22		08:49 (1)	07:27		07:15		19:33 (8)	06:08	05:21
	16:33	21	10:11 (2)	17:23	38	09:27 (1)	18:16		20:11	10	19:43 (8)	21:04	21:51
2	08:50		09:22 (3)	08:20		08:47 (1)	07:25		07:12		19:33 (8)	06:06	05:21
	16:34	21	10:10 (2)	17:24	39	09:26 (1)	18:18		20:13	8	19:41 (8)	21:06	21:53
3	08:50		09:22 (3)	08:19		08:45 (1)	07:23		07:10		19:36 (8)	06:04	05:20
	16:36	20	10:10 (2)	17:26	41	09:26 (1)	18:19		20:15	3	19:39 (8)	21:07	21:54
4	08:50		09:22 (3)	08:17		08:44 (4)	07:20		07:08			06:02	05:19
	16:37	20	10:10 (2)	17:28	43	09:27 (1)	18:21		20:17			21:09	21:55
5	08:49		09:21 (3)	08:15		08:42 (4)	07:18		07:05			06:01	05:18
	16:38	18	10:09 (2)	17:30	45	09:27 (1)	18:23		20:18			21:11	21:56
6	08:49		09:21 (3)	08:14		08:40 (4)	07:16		07:03			05:59	05:18
	16:39	16	10:08 (2)	17:32	47	09:27 (1)	18:25		20:20			21:13	21:57
7	08:49		09:20 (3)	08:12		08:38 (4)	07:13		17:59 (6)	07:01		05:57	05:17
	16:41	10	10:05 (2)	17:34	48	09:26 (1)	18:27	1	18:00 (6)	20:22		21:14	21:58
8	08:48		09:19 (3)	08:10		08:36 (4)	07:11		17:58 (6)	06:58		05:55	05:16
	16:42	10	09:29 (3)	17:36	50	09:26 (1)	18:29	5	18:03 (6)	20:24		21:16	21:59
9	08:48		09:19 (3)	08:08		08:34 (4)	07:09		17:56 (6)	06:56		05:53	05:16
	16:43	11	09:30 (3)	17:38	51	09:25 (1)	18:30	8	18:04 (6)	20:26		21:18	21:59
10	08:47		09:18 (3)	08:06		08:32 (4)	07:07		17:57 (6)	06:54		05:51	05:15
	16:45	13	09:31 (3)	17:40	53	09:25 (1)	18:32	9	18:06 (6)	20:27		21:19	22:00
11	08:46		09:17 (3)	08:05		08:30 (4)	07:04		17:57 (6)	06:51		05:50	05:15
	16:46	14	09:31 (3)	17:42	54	09:24 (1)	18:34	10	18:07 (6)	20:29		21:21	22:01
12	08:46		09:16 (3)	08:03		08:28 (4)	07:02		17:58 (6)	06:49		05:48	05:15
	16:48	15	09:31 (3)	17:44	55	09:23 (1)	18:36	7	18:05 (6)	20:31		21:23	22:02
13	08:45		09:15 (3)	08:01		08:26 (4)	07:00			06:47		05:46	05:14
	16:49	16	09:31 (3)	17:45	56	09:22 (1)	18:38			20:33		21:24	22:02
14	08:44		09:14 (3)	07:59		08:25 (4)	06:57			06:45		05:45	05:14
	16:51	17	09:31 (3)	17:47	53	09:20 (1)	18:39			20:34		21:26	22:03
15	08:43		09:13 (3)	07:57		08:26 (4)	06:55			06:42		05:43	05:14
	16:52	18	09:31 (3)	17:49	48	09:18 (1)	18:41			20:36		21:27	22:04
16	08:43		09:12 (1)	07:55		08:27 (4)	06:53			06:40		05:41	05:14
	16:54	19	09:31 (3)	17:51	42	09:16 (1)	18:43			20:38		21:29	22:04
17	08:42		09:11 (1)	07:53		08:29 (4)	06:50			06:38		05:40	05:14
	16:56	20	09:31 (3)	17:53	32	09:13 (1)	18:45			20:40		21:31	22:05
18	08:41		09:10 (1)	07:51		08:31 (4)	06:48			06:36		05:38	05:14
	16:57	21	09:31 (3)	17:55	14	08:45 (4)	18:47			20:41		21:32	22:05
19	08:40		09:09 (1)	07:49		08:34 (4)	06:45			06:33		05:37	05:14
	16:59	22	09:31 (3)	17:57	7	08:41 (4)	18:48			20:43		21:34	22:05
20	08:38		09:07 (1)	07:47			06:43			06:31		05:35	05:14
	17:01	23	09:30 (3)	17:59			18:50			20:45		21:35	22:06
21	08:37		09:06 (1)	07:44			06:41			06:29		05:34	05:14
	17:02	23	09:29 (3)	18:01			18:52			20:47		21:37	22:06
22	08:36		09:05 (1)	07:42			06:38		18:23 (7)	06:27		05:33	05:14
	17:04	24	09:29 (3)	18:03			18:54	4	18:27 (7)	20:48		21:38	22:06
23	08:35		09:03 (1)	07:40			06:36		18:21 (7)	06:25		05:31	05:14
	17:06	23	09:26 (3)	18:05			18:56	9	18:30 (7)	20:50		21:40	22:06
24	08:34		09:02 (1)	07:38			06:34		18:20 (7)	06:23		05:30	05:15
	17:08	20	09:22 (1)	18:06			18:57	12	18:32 (7)	20:52		21:41	22:06
25	08:32		09:00 (1)	07:36			06:31		18:18 (7)	06:21		05:29	05:15
	17:10	23	09:23 (1)	18:08			18:59	15	18:33 (7)	20:54		21:42	22:07
26	08:31		08:59 (1)	07:34			06:29		18:18 (7)	06:18		05:28	05:15
	17:11	25	09:24 (1)	18:10			19:01	15	18:33 (7)	20:55		21:44	22:07
27	08:30		08:57 (1)	07:31			06:27		18:18 (7)	06:16		05:27	05:16
	17:13	27	09:24 (1)	18:12			19:03	15	18:33 (7)	20:57		21:45	22:06
28	08:28		08:56 (1)	07:29			06:24		18:18 (7)	06:14		05:25	05:16
	17:15	29	09:25 (1)	18:14			19:04	17	18:38 (8)	20:59		21:46	22:06
29	08:27		08:54 (1)				07:22		19:19 (7)	06:12		05:24	05:17
	17:17	31	09:25 (1)				20:06	18	19:40 (8)	21:01		21:48	22:06
30	08:25		08:52 (1)				07:19		19:21 (7)	06:10		05:23	05:18
	17:19	33	09:25 (1)				20:08	17	19:42 (8)	21:02		21:49	22:06
31	08:24		08:51 (1)				07:17		19:32 (8)			05:22	
	17:21	36	09:27 (1)				20:10	11	19:43 (8)			21:50	
Potential sun hours	256			276			367			418		489	503
Total, worst case		639			816			173			21		
Sun reduction		0.16			0.21			0.24			0.35		
Oper. time red.		1.00			1.00			1.00			1.00		
Wind dir. red.		0.65			0.66			0.69			0.69		
Total reduction		0.10			0.14			0.17			0.24		
Total, real		65			111			29			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)

Licensed user:
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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: O - H15

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	July		August		September			October			November			December		
1	05:18		05:56		06:47			07:38		18:39 (6)	07:34		08:02 (4)	08:26		08:59 (3)
	22:06		21:32		20:29			19:18	5	18:44 (6)	17:10	52	08:54 (1)	16:28	14	09:13 (3)
2	05:19		05:58		06:49			07:40		18:36 (6)	07:35		08:04 (4)	08:27		09:01 (3)
	22:05		21:31		20:26			19:15	8	18:44 (6)	17:08	51	08:55 (1)	16:27	13	09:14 (3)
3	05:20		05:59		06:51			07:41		18:35 (6)	07:37		08:06 (4)	08:29		09:02 (3)
	22:05		21:29		20:24			19:13	10	18:45 (6)	17:06	50	08:56 (1)	16:27	11	09:13 (3)
4	05:20		06:01		06:52			07:43		18:34 (6)	07:39		08:08 (4)	08:30		09:04 (3)
	22:04		21:27		20:22			19:11	9	18:43 (6)	17:04	48	08:56 (1)	16:26	10	09:14 (3)
5	05:21		06:02		06:54			07:45		18:35 (6)	07:41		08:10 (4)	08:32		09:05 (3)
	22:04		21:25		20:19			19:08	6	18:41 (6)	17:02	46	08:56 (1)	16:25	9	09:14 (3)
6	05:22		06:04		06:56			07:47		18:34 (6)	07:43		08:12 (4)	08:33		09:07 (3)
	22:03		21:24		20:17			19:06	3	18:37 (6)	17:01	45	08:57 (1)	16:25	16	09:54 (2)
7	05:23		06:06		06:57			07:48			07:45		08:14 (1)	08:34		09:08 (3)
	22:03		21:22		20:15			19:04			16:59	43	08:57 (1)	16:25	18	09:56 (2)
8	05:24		06:07		06:59			07:50			07:47		08:16 (1)	08:36		09:09 (3)
	22:02		21:20		20:12			19:01			16:57	41	08:57 (1)	16:24	19	09:57 (2)
9	05:25		06:09		07:01		19:30 (8)	07:52			07:48		08:18 (1)	08:37		09:10 (3)
	22:01		21:18		20:10	2	19:32 (8)	18:59			16:55	39	08:57 (1)	16:24	20	09:58 (2)
10	05:26		06:11		07:03		19:26 (8)	07:54			07:50		08:20 (1)	08:38		09:12 (3)
	22:01		21:16		20:08	8	19:34 (8)	18:57			16:54	37	08:57 (1)	16:24	21	10:00 (2)
11	05:27		06:12		07:04		19:25 (8)	07:55			07:52		08:22 (1)	08:39		09:13 (3)
	22:00		21:14		20:05	10	19:35 (8)	18:54			16:52	35	08:57 (1)	16:23	21	10:01 (2)
12	05:28		06:14		07:06		19:24 (8)	07:57			07:54		08:24 (1)	08:40		09:14 (3)
	21:59		21:12		20:03	12	19:36 (8)	18:52			16:50	33	08:57 (1)	16:23	22	10:02 (2)
13	05:29		06:16		07:08		19:11 (7)	07:59			07:56		08:26 (1)	08:41		09:15 (3)
	21:58		21:10		20:00	18	19:33 (8)	18:50			16:49	31	08:57 (1)	16:23	22	10:03 (2)
14	05:30		06:17		07:09		19:10 (7)	08:01			07:57		08:28 (1)	08:42		09:16 (3)
	21:57		21:08		19:58	18	19:31 (8)	18:48			16:47	29	08:57 (1)	16:23	22	10:04 (2)
15	05:32		06:19		07:11		19:09 (7)	08:03			07:59		08:30 (1)	08:43		09:17 (3)
	21:56		21:06		19:56	17	19:29 (8)	18:45			16:46	27	08:57 (1)	16:23	23	10:05 (2)
16	05:33		06:21		07:13		19:07 (7)	08:04			08:01		08:32 (1)	08:44		09:44 (2)
	21:55		21:04		19:53	15	19:26 (8)	18:43			16:44	25	08:57 (1)	16:23	22	10:06 (2)
17	05:34		06:22		07:14		19:07 (7)	08:06			08:03		08:34 (1)	08:45		09:44 (2)
	21:54		21:02		19:51	14	19:21 (7)	18:41			16:43	23	08:57 (1)	16:24	22	10:06 (2)
18	05:35		06:24		07:16		19:07 (7)	08:08			08:05		08:36 (1)	08:45		09:44 (2)
	21:53		21:00		19:49	14	19:21 (7)	18:39			16:42	20	08:56 (1)	16:24	22	10:06 (2)
19	05:37		06:26		07:18		19:06 (7)	08:10			08:06		08:38 (1)	08:46		09:44 (2)
	21:52		20:58		19:46	13	19:19 (7)	18:36			16:40	23	09:01 (3)	16:24	23	10:07 (2)
20	05:38		06:27		07:19		19:07 (7)	08:12			08:08		08:40 (1)	08:47		09:45 (2)
	21:50		20:55		19:44	10	19:17 (7)	18:34			16:39	24	09:04 (3)	16:24	23	10:08 (2)
21	05:40		06:29		07:21		19:09 (7)	08:13			08:10		08:42 (1)	08:47		09:45 (2)
	21:49		20:53		19:41	5	19:14 (7)	18:32			16:38	23	09:05 (3)	16:25	23	10:08 (2)
22	05:41		06:31		07:23			08:15			08:12		08:43 (1)	08:48		09:46 (2)
	21:48		20:51		19:39			18:30			16:37	23	09:06 (3)	16:25	23	10:09 (2)
23	05:42		06:32		07:24			08:17		09:03 (4)	08:13		08:45 (1)	08:48		09:46 (2)
	21:46		20:49		19:37			18:28	10	09:13 (4)	16:35	22	09:07 (3)	16:26	23	10:09 (2)
24	05:44		06:34		07:26			08:19		09:00 (4)	08:15		08:47 (1)	08:49		09:46 (2)
	21:45		20:47		19:34			18:26	20	09:38 (1)	16:34	21	09:08 (3)	16:26	23	10:09 (2)
25	05:45		06:36		07:28			07:21		07:58 (4)	08:17		08:49 (1)	08:49		09:48 (2)
	21:44		20:45		19:32			17:24	34	08:43 (1)	16:33	20	09:09 (3)	16:27	22	10:10 (2)
26	05:47		06:37		07:29			07:22		07:57 (4)	08:18		08:51 (1)	08:50		09:48 (2)
	21:42		20:42		19:29			17:22	42	08:46 (1)	16:32	19	09:10 (3)	16:28	22	10:10 (2)
27	05:48		06:39		07:31			07:24		07:56 (4)	08:20		08:52 (3)	08:50		09:48 (2)
	21:41		20:40		19:27			17:20	48	08:48 (1)	16:31	18	09:10 (3)	16:28	23	10:11 (2)
28	05:50		06:41		07:33			07:26		07:55 (4)	08:21		08:54 (3)	08:50		09:23 (3)
	21:39		20:38		19:25			17:18	54	08:50 (1)	16:30	17	09:11 (3)	16:29	23	10:11 (2)
29	05:51		06:42		07:35			07:28		07:56 (4)	08:23		08:56 (3)	08:50		09:23 (3)
	21:37		20:36		19:22			17:16	55	08:51 (1)	16:30	16	09:12 (3)	16:30	22	10:11 (2)
30	05:53		06:44		07:36			07:30		07:58 (4)	08:25		08:57 (3)	08:50		09:23 (3)
	21:36		20:33		19:20			17:14	55	08:53 (1)	16:29	15	09:12 (3)	16:31	22	10:11 (2)
31	05:54		06:46					07:32		08:00 (4)				08:50		09:23 (3)
	21:34		20:31					17:12	54	08:54 (1)				16:32	21	10:11 (2)
Potential sun hours	506		456		381			330			263			240		
Total, worst case						156			413			916			620	
Sun reduction						0.28			0.24			0.19			0.14	
Oper. time red.						1.00			1.00			1.00			1.00	
Wind dir. red.						0.69			0.67			0.66			0.62	
Total reduction						0.20			0.16			0.12			0.08	
Total, real						30			65			112			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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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: P - H16

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January			February	March	April	May	June	July	August	September	October	November			December		
1	08:50		15:00 (1)	08:22	07:27	07:15	06:08	05:21	05:18	05:56	06:47	07:38	07:33			08:26		14:48 (1)
	16:33	43	15:43 (1)	17:22	18:16	20:11	21:04	21:51	22:06	21:32	20:29	19:17	17:10			16:28	39	15:27 (1)
2	08:50		14:59 (1)	08:20	07:25	07:12	06:06	05:21	05:19	05:57	06:49	07:40	07:35			08:27		14:48 (1)
	16:34	43	15:42 (1)	17:24	18:18	20:13	21:06	21:52	22:05	21:31	20:26	19:15	17:08			16:27	40	15:28 (1)
3	08:50		15:00 (1)	08:19	07:23	07:10	06:04	05:20	05:20	05:59	06:51	07:41	07:37			08:29		14:48 (1)
	16:36	43	15:43 (1)	17:26	18:19	20:15	21:07	21:54	22:05	21:29	20:24	19:13	17:06			16:27	40	15:28 (1)
4	08:50		15:01 (1)	08:17	07:20	07:08	06:02	05:19	05:20	06:01	06:52	07:43	07:39			08:30		14:48 (1)
	16:37	43	15:44 (1)	17:28	18:21	20:17	21:09	21:55	22:04	21:27	20:22	19:10	17:04			16:26	41	15:29 (1)
5	08:49		15:01 (1)	08:15	07:18	07:05	06:00	05:18	05:21	06:02	06:54	07:45	07:41			08:32		14:48 (1)
	16:38	43	15:44 (1)	17:30	18:23	20:18	21:11	21:56	22:04	21:25	20:19	19:08	17:02			16:25	41	15:29 (1)
6	08:49		15:03 (1)	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43			08:33		14:48 (1)
	16:39	41	15:44 (1)	17:32	18:25	20:20	21:13	21:57	22:03	21:24	20:17	19:06	17:00			16:25	41	15:29 (1)
7	08:49		15:03 (1)	08:12	07:13	07:01	05:57	05:17	05:23	06:06	06:57	07:48	07:45			08:34		14:49 (1)
	16:40	41	15:44 (1)	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:03	16:59			16:24	42	15:31 (1)
8	08:48		15:03 (1)	08:10	07:11	06:58	05:55	05:16	05:24	06:07	06:59	07:50	07:46			08:35		14:48 (1)
	16:42	41	15:44 (1)	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:12	19:01	16:57			16:24	43	15:31 (1)
9	08:48		15:04 (1)	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48			08:37		14:48 (1)
	16:43	41	15:45 (1)	17:38	18:30	20:25	21:18	21:59	22:01	21:18	20:10	18:59	16:55			16:24	43	15:31 (1)
10	08:47		15:05 (1)	08:06	07:07	06:54	05:51	05:15	05:26	06:10	07:02	07:54	07:50			08:38		14:50 (1)
	16:45	40	15:45 (1)	17:40	18:32	20:27	21:19	22:00	22:01	21:16	20:08	18:57	16:54			16:24	43	15:33 (1)
11	08:46		15:05 (1)	08:04	07:04	06:51	05:50	05:15	05:27	06:12	07:04	07:55	07:52			08:39		14:50 (1)
	16:46	40	15:45 (1)	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:54	16:52			16:23	43	15:33 (1)
12	08:46		15:06 (1)	08:03	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54			08:40		14:50 (1)
	16:48	38	15:44 (1)	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:50			16:23	43	15:33 (1)
13	08:45		15:07 (1)	08:01	07:00	06:47	05:46	05:14	05:29	06:15	07:07	07:59	07:56			08:41		14:50 (1)
	16:49	37	15:44 (1)	17:45	18:38	20:32	21:24	22:02	21:58	21:10	20:00	18:50	16:49			16:23	44	15:34 (1)
14	08:44		15:08 (1)	07:59	06:57	06:45	05:45	05:14	05:30	06:17	07:09	08:01	07:57			08:42		14:51 (1)
	16:51	36	15:44 (1)	17:47	18:39	20:34	21:26	22:03	21:57	21:08	19:58	18:47	16:47			16:23	43	15:34 (1)
15	08:43		15:09 (1)	07:57	06:55	06:42	05:43	05:14	05:32	06:19	07:11	08:02	07:59			08:43		14:51 (1)
	16:52	35	15:44 (1)	17:49	18:41	20:36	21:27	22:04	21:56	21:06	19:56	18:45	16:46			16:23	44	15:35 (1)
16	08:42		15:10 (1)	07:55	06:52	06:40	05:41	05:14	05:33	06:20	07:13	08:04	08:01			08:44		14:52 (1)
	16:54	34	15:44 (1)	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:53	18:43	16:44			16:23	44	15:36 (1)
17	08:42		15:11 (1)	07:53	06:50	06:38	05:40	05:14	05:34	06:22	07:14	08:06	08:03			08:45		14:51 (1)
	16:56	33	15:44 (1)	17:53	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43			16:23	44	15:35 (1)
18	08:41		15:13 (1)	07:51	06:48	06:36	05:38	05:14	05:35	06:24	07:16	08:08	08:05		15:00 (1)	08:45		14:52 (1)
	16:57	30	15:43 (1)	17:55	18:47	20:41	21:32	22:05	21:53	21:00	19:48	18:39	16:42	8	15:08 (1)	16:24	44	15:36 (1)
19	08:39		15:14 (1)	07:49	06:45	06:33	05:37	05:14	05:37	06:25	07:18	08:10	08:06		14:57 (1)	08:46		14:53 (1)
	16:59	29	15:43 (1)	17:57	18:48	20:43	21:34	22:05	21:51	20:58	19:46	18:36	16:40	15	15:12 (1)	16:24	44	15:37 (1)
20	08:38		15:15 (1)	07:46	06:43	06:31	05:35	05:14	05:38	06:27	07:19	08:11	08:08		14:55 (1)	08:47		14:53 (1)
	17:01	26	15:41 (1)	17:59	18:50	20:45	21:35	22:06	21:50	20:55	19:44	18:34	16:39	20	15:15 (1)	16:24	44	15:37 (1)
21	08:37		15:17 (1)	07:44	06:41	06:29	05:34	05:14	05:39	06:29	07:21	08:13	08:10		14:52 (1)	08:47		14:54 (1)
	17:02	24	15:41 (1)	18:01	18:52	20:47	21:37	22:06	21:49	20:53	19:41	18:32	16:38	24	15:16 (1)	16:25	44	15:38 (1)
22	08:36		15:19 (1)	07:42	06:38	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:12		14:51 (1)	08:48		14:55 (1)
	17:04	21	15:40 (1)	18:03	18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:37	26	15:17 (1)	16:25	44	15:39 (1)
23	08:35		15:22 (1)	07:40	06:36	06:25	05:31	05:14	05:42	06:32	07:24	08:17	08:13		14:50 (1)	08:48		14:55 (1)
	17:06	15	15:37 (1)	18:04	18:55	20:50	21:40	22:06	21:46	20:49	19:37	18:28	16:35	29	15:19 (1)	16:26	44	15:39 (1)
24	08:34		15:26 (1)	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15		14:50 (1)	08:49		14:55 (1)
	17:08	8	15:34 (1)	18:06	18:57	20:52	21:41	22:06	21:45	20:47	19:34	18:26	16:34	30	15:20 (1)	16:26	44	15:39 (1)
25	08:32			07:36	06:31	06:20	05:29	05:15	05:45	06:36	07:28	07:21	08:17		14:49 (1)	08:49		14:56 (1)
	17:09			18:08	18:59	20:54	21:42	22:06	21:43	20:44	19:32	17:24	16:33	33	15:22 (1)	16:27	44	15:40 (1)
26	08:31			07:34	06:29	06:18	05:28	05:15	05:47	06:37	07:29	07:22	08:18		14:49 (1)	08:49		14:56 (1)
	17:11			18:10	19:01	20:55	21:44	22:06	21:42	20:42	19:29	17:22	16:32	34	15:23 (1)	16:28	44	15:40 (1)
27	08:30			07:31	06:26	06:16	05:26	05:16	05:48	06:39	07:31	07:24	08:20		14:48 (1)	08:50		14:57 (1)
	17:13			18:12	19:03	20:57	21:45	22:06	21:40	20:40	19:27	17:20	16:31	35	15:23 (1)	16:28	43	15:40 (1)
28	08:28			07:29	06:24	06:14	05:25	05:16	05:50	06:41	07:33	07:26	08:21		14:48 (1)	08:50		14:57 (1)
	17:15			18:14	19:04	20:59	21:46	22:06	21:39	20:38	19:25	17:18	16:30	36	15:24 (1)	16:29	44	15:41 (1)
29	08:27				07:22	06:12	05:24	05:17	05:51	06:42	07:35	07:28	08:23		14:48 (1)	08:50		14:58 (1)
	17:17				20:06	21:01	21:48	22:06	21:37	20:35	19:22	17:16	16:29	37	15:25 (1)	16:30	43	15:41 (1)
30	08:25				07:19	06:10	05:23	05:17	05:53	06:44	07:36	07:30	08:24		14:47 (1)	08:50		14:58 (1)
	17:19				20:08	21:02	21:49	22:06	21:36	20:33	19:20	17:14	16:29	39	15:26 (1)	16:31	44	15:42 (1)
31	08:24				07:17		05:22		05:54	06:46		07:32				08:50		14:59 (1)
	17:21				20:10		21:50		21:34	20:31		17:12				16:32	43	15:42 (1)
Potential sun hours	255			276	367	418	489	503	506	456	381	330	263			240		
Total, worst case		825												366			1331	
Sun reduction		0.16												0.19			0.14	
Oper. time red.		1.00												1.00			1.00	
Wind dir. red.		0.60												0.60			0.60	
Total reduction		0.09												0.11			0.08	
Total, real		78												41			109	

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)

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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: Q - H17

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January			February			March			April			May		June
1	08:50		09:23 (3)	08:22		08:49 (4)	07:27			07:15		19:33 (8)	06:08		05:21
	16:33	11	09:34 (3)	17:23	50	09:39 (1)	18:16			20:11	8	19:41 (8)	21:04		21:51
2	08:50		09:22 (3)	08:20		08:47 (4)	07:25			07:12		19:34 (8)	06:06		05:21
	16:34	12	09:34 (3)	17:24	51	09:38 (1)	18:18			20:13	4	19:38 (8)	21:06		21:53
3	08:50		09:22 (3)	08:19		08:45 (4)	07:23			07:10			06:04		05:20
	16:36	13	09:35 (3)	17:26	53	09:38 (1)	18:19			20:15			21:07		21:54
4	08:50		09:22 (3)	08:17		08:44 (4)	07:20			07:08			06:02		05:19
	16:37	14	09:36 (3)	17:28	55	09:39 (1)	18:21			20:17			21:09		21:55
5	08:49		09:21 (3)	08:15		08:42 (4)	07:18			07:05			06:01		05:18
	16:38	14	09:35 (3)	17:30	56	09:38 (1)	18:23			20:18			21:11		21:56
6	08:49		09:21 (1)	08:14		08:40 (4)	07:16			07:03			05:59		05:18
	16:39	15	09:36 (3)	17:32	57	09:37 (1)	18:25			20:20			21:13		21:57
7	08:49		09:20 (1)	08:12		08:38 (4)	07:13			07:01			05:57		05:17
	16:41	16	09:36 (3)	17:34	59	09:37 (1)	18:27			20:22			21:14		21:58
8	08:48		09:19 (1)	08:10		08:36 (4)	07:11		17:59 (6)	06:58			05:55		05:16
	16:42	17	09:36 (3)	17:36	59	09:36 (1)	18:29	4	18:03 (6)	20:24			21:16		21:59
9	08:48		09:19 (1)	08:08		08:34 (4)	07:09		17:58 (6)	06:56			05:53		05:16
	16:43	18	09:37 (3)	17:38	59	09:35 (1)	18:30	6	18:04 (6)	20:26			21:18		21:59
10	08:47		09:18 (1)	08:06		08:32 (4)	07:07		17:58 (6)	06:54			05:51		05:15
	16:45	19	09:37 (3)	17:40	58	09:33 (1)	18:32	8	18:06 (6)	20:27			21:19		22:00
11	08:46		09:17 (1)	08:05		08:30 (4)	07:04		17:59 (6)	06:51			05:50		05:15
	16:46	20	09:37 (3)	17:42	57	09:32 (1)	18:34	9	18:08 (6)	20:29			21:21		22:01
12	08:46		09:16 (1)	08:03		08:31 (4)	07:02		17:59 (6)	06:49			05:48		05:15
	16:48	21	09:37 (3)	17:44	52	09:30 (1)	18:36	6	18:05 (6)	20:31			21:23		22:02
13	08:45		09:15 (1)	08:01		08:32 (4)	07:00			06:47			05:46		05:14
	16:49	22	09:37 (3)	17:45	46	09:28 (1)	18:38			20:33			21:24		22:02
14	08:44		09:14 (1)	07:59		08:33 (4)	06:57			06:45			05:45		05:14
	16:51	23	09:37 (3)	17:47	38	09:25 (1)	18:39			20:34			21:26		22:03
15	08:43		09:13 (1)	07:57		08:35 (4)	06:55			06:42			05:43		05:14
	16:52	24	09:37 (3)	17:49	19	08:54 (4)	18:41			20:36			21:27		22:04
16	08:43		09:12 (1)	07:55		08:37 (4)	06:53			06:40			05:41		05:14
	16:54	24	09:36 (3)	17:51	15	08:52 (4)	18:43			20:38			21:29		22:04
17	08:42		09:11 (1)	07:53		08:40 (4)	06:50			06:38			05:40		05:14
	16:56	25	09:36 (3)	17:53	8	08:48 (4)	18:45			20:40			21:31		22:05
18	08:41		09:10 (1)	07:51			06:48			06:36			05:38		05:14
	16:57	25	09:35 (3)	17:55			18:47			20:41			21:32		22:05
19	08:40		09:09 (1)	07:49			06:45			06:33			05:37		05:14
	16:59	25	09:34 (1)	17:57			18:48			20:43			21:34		22:05
20	08:38		09:07 (1)	07:47			06:43			06:31			05:35		05:14
	17:01	27	09:34 (1)	17:59			18:50			20:45			21:35		22:06
21	08:37		09:06 (1)	07:44			06:41			06:29			05:34		05:14
	17:02	29	09:35 (1)	18:01			18:52			20:47			21:37		22:06
22	08:36		09:05 (1)	07:42			06:38		18:22 (7)	06:27			05:33		05:14
	17:04	31	09:36 (1)	18:03			18:54	5	18:27 (7)	20:48			21:38		22:06
23	08:35		09:03 (1)	07:40			06:36		18:20 (7)	06:25			05:31		05:14
	17:06	33	09:36 (1)	18:04			18:56	10	18:30 (7)	20:50			21:40		22:06
24	08:34		09:02 (1)	07:38			06:34		18:20 (7)	06:23			05:30		05:15
	17:08	35	09:37 (1)	18:06			18:57	12	18:32 (7)	20:52			21:41		22:06
25	08:32		09:00 (1)	07:36			06:31		18:18 (7)	06:21			05:29		05:15
	17:10	37	09:37 (1)	18:08			18:59	14	18:32 (7)	20:54			21:42		22:07
26	08:31		08:59 (1)	07:34			06:29		18:19 (7)	06:18			05:28		05:15
	17:11	39	09:38 (1)	18:10			19:01	13	18:32 (7)	20:55			21:44		22:07
27	08:30		08:57 (1)	07:31			06:27		18:19 (7)	06:16			05:27		05:16
	17:13	41	09:38 (1)	18:12			19:03	15	18:37 (8)	20:57			21:45		22:06
28	08:28		08:56 (1)	07:29			06:24		18:19 (7)	06:14			05:25		05:16
	17:15	43	09:39 (1)	18:14			19:04	16	18:38 (8)	20:59			21:46		22:06
29	08:27		08:54 (1)				07:22		19:21 (7)	06:12			05:24		05:17
	17:17	45	09:39 (1)				20:06	15	19:40 (8)	21:01			21:48		22:06
30	08:25		08:52 (4)				07:19		19:32 (8)	06:10			05:23		05:18
	17:19	46	09:38 (1)				20:08	9	19:41 (8)	21:02			21:49		22:06
31	08:24		08:51 (4)				07:17		19:32 (8)				05:22		
	17:21	48	09:39 (1)				20:10	10	19:42 (8)				21:50		
Potential sun hours	256			276			367			418			489		503
Total, worst case		812			792			152			12				
Sun reduction		0.16			0.21			0.24			0.35				
Oper. time red.		1.00			1.00			1.00			1.00				
Wind dir. red.		0.65			0.66			0.69			0.69				
Total reduction		0.10			0.14			0.17			0.24				
Total, real		84			108			25			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)

Licensed user:
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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: Q - H17

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	July		August		September			October			November			December		
1	05:18		05:56		06:47			07:38		18:40 (6)	07:34		08:02 (4)	08:26		08:59 (1)
	22:06		21:32		20:29			19:18	4	18:44 (6)	17:10	59	09:03 (1)	16:28	20	09:19 (3)
2	05:19		05:58		06:49			07:40		18:37 (6)	07:35		08:04 (4)	08:27		09:01 (1)
	22:05		21:31		20:26			19:15	8	18:45 (6)	17:08	59	09:04 (1)	16:27	19	09:20 (3)
3	05:20		05:59		06:51			07:41		18:36 (6)	07:37		08:06 (4)	08:29		09:02 (1)
	22:05		21:29		20:24			19:13	9	18:45 (6)	17:06	59	09:05 (1)	16:27	18	09:20 (3)
4	05:20		06:01		06:52			07:43		18:35 (6)	07:39		08:08 (4)	08:30		09:04 (1)
	22:04		21:27		20:22			19:10	8	18:43 (6)	17:04	58	09:06 (1)	16:26	17	09:21 (3)
5	05:21		06:02		06:54			07:45		18:36 (6)	07:41		08:10 (4)	08:32		09:05 (1)
	22:04		21:25		20:19			19:08	5	18:41 (6)	17:02	57	09:07 (1)	16:25	16	09:21 (3)
6	05:22		06:04		06:56			07:47		18:35 (6)	07:43		08:12 (4)	08:33		09:07 (1)
	22:03		21:24		20:17			19:06	2	18:37 (6)	17:01	56	09:08 (1)	16:25	15	09:22 (3)
7	05:23		06:06		06:57			07:48			07:45		08:14 (4)	08:34		09:08 (3)
	22:03		21:22		20:15			19:04			16:59	54	09:08 (1)	16:25	15	09:23 (3)
8	05:24		06:07		06:59			07:50			07:47		08:16 (4)	08:36		09:09 (3)
	22:02		21:20		20:12			19:01			16:57	53	09:09 (1)	16:24	14	09:23 (3)
9	05:25		06:09		07:01			07:52			07:48		08:18 (4)	08:37		09:10 (3)
	22:01		21:18		20:10			18:59			16:55	51	09:09 (1)	16:24	13	09:23 (3)
10	05:26		06:11		07:03		19:28 (8)	07:54			07:50		08:20 (4)	08:38		09:12 (3)
	22:01		21:16		20:08	3	19:31 (8)	18:57			16:54	50	09:10 (1)	16:24	12	09:24 (3)
11	05:27		06:12		07:04		19:26 (8)	07:55			07:52		08:22 (4)	08:39		09:13 (3)
	22:00		21:14		20:05	7	19:33 (8)	18:54			16:52	48	09:10 (1)	16:23	11	09:24 (3)
12	05:28		06:14		07:06		19:24 (8)	07:57			07:54		08:24 (4)	08:40		09:14 (3)
	21:59		21:12		20:03	11	19:35 (8)	18:52			16:50	46	09:10 (1)	16:23	11	09:25 (3)
13	05:29		06:16		07:08		19:23 (8)	07:59			07:56		08:26 (1)	08:41		09:15 (3)
	21:58		21:10		20:00	10	19:33 (8)	18:50			16:49	44	09:10 (1)	16:23	10	09:25 (3)
14	05:30		06:17		07:09		19:11 (7)	08:01			07:57		08:28 (1)	08:42		09:16 (3)
	21:57		21:08		19:58	16	19:31 (8)	18:47			16:47	43	09:11 (1)	16:23	9	09:25 (3)
15	05:32		06:19		07:11		19:10 (7)	08:03			07:59		08:30 (1)	08:43		09:17 (3)
	21:56		21:06		19:56	16	19:29 (8)	18:45			16:46	41	09:11 (1)	16:23	14	10:08 (2)
16	05:33		06:21		07:13		19:08 (7)	08:04			08:01		08:32 (1)	08:44		09:18 (3)
	21:55		21:04		19:53	15	19:26 (8)	18:43			16:44	39	09:11 (1)	16:23	16	10:09 (2)
17	05:34		06:22		07:14		19:07 (7)	08:06			08:03		08:34 (1)	08:45		09:19 (3)
	21:54		21:02		19:51	14	19:21 (7)	18:41			16:43	37	09:11 (1)	16:24	17	10:11 (2)
18	05:35		06:24		07:16		19:07 (7)	08:08			08:05		08:36 (1)	08:45		09:19 (3)
	21:53		21:00		19:49	14	19:21 (7)	18:39			16:42	35	09:11 (1)	16:24	18	10:11 (2)
19	05:37		06:26		07:18		19:06 (7)	08:10			08:06		08:38 (1)	08:46		09:20 (3)
	21:52		20:58		19:46	13	19:19 (7)	18:36			16:40	33	09:11 (1)	16:24	18	10:12 (2)
20	05:38		06:27		07:19		19:07 (7)	08:12			08:08		08:40 (1)	08:47		09:21 (3)
	21:50		20:55		19:44	10	19:17 (7)	18:34			16:39	31	09:11 (1)	16:24	18	10:13 (2)
21	05:40		06:29		07:21		19:08 (7)	08:13			08:10		08:42 (1)	08:47		09:21 (3)
	21:49		20:53		19:41	6	19:14 (7)	18:32			16:38	29	09:11 (1)	16:25	18	10:13 (2)
22	05:41		06:31		07:23		19:09 (7)	08:15			08:12		08:43 (1)	08:48		09:22 (3)
	21:48		20:51		19:39	2	19:11 (7)	18:30			16:37	27	09:10 (1)	16:25	18	10:14 (2)
23	05:42		06:32		07:24			08:17			08:13		08:45 (1)	08:48		09:22 (3)
	21:46		20:49		19:37			18:28			16:35	25	09:10 (1)	16:26	18	10:14 (2)
24	05:44		06:34		07:26			08:19			08:15		08:47 (1)	08:49		09:22 (3)
	21:45		20:47		19:34			18:26			16:34	25	09:12 (3)	16:26	18	10:14 (2)
25	05:45		06:36		07:28			07:21		08:08 (4)	08:17		08:49 (1)	08:49		09:23 (3)
	21:44		20:45		19:32			17:24	11	08:19 (4)	16:33	25	09:14 (3)	16:27	18	10:15 (2)
26	05:47		06:37		07:29			07:22		08:06 (4)	08:18		08:51 (1)	08:50		09:23 (3)
	21:42		20:42		19:29			17:22	16	08:22 (4)	16:32	24	09:15 (3)	16:28	17	10:15 (2)
27	05:48		06:39		07:31			07:24		08:04 (4)	08:20		08:52 (1)	08:50		09:23 (3)
	21:41		20:40		19:27			17:20	26	08:50 (1)	16:31	24	09:16 (3)	16:28	16	10:15 (2)
28	05:50		06:41		07:33			07:26		08:02 (4)	08:21		08:54 (1)	08:50		09:23 (3)
	21:39		20:38		19:25			17:18	40	08:55 (1)	16:30	23	09:17 (3)	16:29	15	10:14 (2)
29	05:51		06:42		07:35			07:28		08:01 (4)	08:23		08:56 (1)	08:50		09:23 (3)
	21:37		20:36		19:22			17:16	48	08:58 (1)	16:30	22	09:18 (3)	16:30	12	10:13 (2)
30	05:53		06:44		07:36			07:30		08:01 (4)	08:25		08:57 (1)	08:50		09:23 (3)
	21:36		20:33		19:20			17:14	53	09:00 (1)	16:29	21	09:18 (3)	16:31	10	09:33 (3)
31	05:54		06:46					07:32		08:00 (4)				08:50		09:23 (3)
	21:34		20:31					17:12	57	09:02 (1)				16:32	10	09:33 (3)
Potential sun hours	506		456		381			330			263			240		
Total, worst case						137			287			1198			471	
Sun reduction						0.28			0.24			0.19			0.14	
Oper. time red.						1.00			1.00			1.00			1.00	
Wind dir. red.						0.69			0.66			0.66			0.64	
Total reduction						0.20			0.16			0.12			0.09	
Total, real						27			45			147			41	

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)

Licensed user:
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+353719161416
abyrne / abyrne@jodireland.com

Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: R - H18

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January			February			March			April			May			June		
1	08:50		09:23 (1)	08:22		08:49 (4)	07:27			07:15			06:08			05:21		
	16:33	19	09:42 (3)	17:23	57	09:51 (1)	18:16			20:11			21:04			21:51		
2	08:50		09:22 (1)	08:20		08:47 (4)	07:25			07:12			06:06			05:21		
	16:34	20	09:42 (3)	17:24	57	09:50 (1)	18:18			20:13			21:06			21:53		
3	08:50		09:22 (1)	08:19		08:45 (4)	07:23			07:10			06:04			05:20		
	16:36	20	09:42 (1)	17:26	57	09:49 (1)	18:19			20:15			21:07			21:54		
4	08:50		09:22 (1)	08:17		08:44 (4)	07:20			07:08			06:02			05:19		
	16:37	21	09:43 (1)	17:28	57	09:49 (1)	18:21			20:17			21:09			21:55		
5	08:49		09:21 (1)	08:15		08:42 (4)	07:18			07:05			06:01			05:18		
	16:38	22	09:43 (1)	17:30	56	09:47 (1)	18:23			20:18			21:11			21:56		
6	08:49		09:21 (1)	08:14		08:40 (4)	07:16		17:56 (6)	07:03			05:59			05:18		
	16:39	23	09:44 (1)	17:32	54	09:46 (1)	18:25	2	17:58 (6)	20:20			21:13			21:57		
7	08:49		09:20 (1)	08:12		08:40 (4)	07:13		17:55 (6)	07:01			05:57			05:17		
	16:41	24	09:44 (1)	17:34	51	09:44 (1)	18:27	5	18:00 (6)	20:22			21:14			21:58		
8	08:48		09:19 (1)	08:10		08:40 (4)	07:11		17:55 (6)	06:58			05:55			05:16		
	16:42	26	09:45 (1)	17:36	44	09:41 (1)	18:29	8	18:03 (6)	20:24			21:16			21:59		
9	08:48		09:19 (1)	08:08		08:41 (4)	07:09		17:55 (6)	06:56			05:53			05:16		21:24 (12)
	16:43	27	09:46 (1)	17:38	34	09:37 (1)	18:30	9	18:04 (6)	20:26			21:18			21:59	1	21:25 (12)
10	08:47		09:18 (1)	08:06		08:42 (4)	07:07		17:56 (6)	06:54			05:51			05:15		21:24 (12)
	16:45	29	09:47 (1)	17:40	22	09:04 (4)	18:32	7	18:03 (6)	20:27			21:19			22:00	2	21:26 (12)
11	08:46		09:17 (1)	08:05		08:43 (4)	07:04			06:51			05:50			05:15		21:24 (12)
	16:46	30	09:47 (1)	17:42	20	09:03 (4)	18:34			20:29			21:21			22:01	3	21:27 (12)
12	08:46		09:16 (1)	08:03		08:45 (4)	07:02			06:49			05:48			05:15		21:23 (12)
	16:48	32	09:48 (1)	17:44	16	09:01 (4)	18:36			20:31			21:23			22:02	4	21:27 (12)
13	08:45		09:15 (1)	08:01		08:48 (4)	07:00			06:47			05:46			05:14		21:23 (12)
	16:49	33	09:48 (1)	17:45	10	08:58 (4)	18:38			20:33			21:24			22:02	5	21:28 (12)
14	08:44		09:14 (1)	07:59			06:57			06:45			05:45			05:14		21:23 (12)
	16:51	35	09:49 (1)	17:47			18:39			20:34			21:26			22:03	6	21:29 (12)
15	08:43		09:13 (1)	07:57			06:55			06:42			05:43			05:14		21:23 (12)
	16:52	36	09:49 (1)	17:49			18:41			20:36			21:27			22:04	6	21:29 (12)
16	08:43		09:12 (1)	07:55			06:53			06:40			05:41			05:14		21:23 (12)
	16:54	38	09:50 (1)	17:51			18:43			20:38			21:29			22:04	7	21:30 (12)
17	08:42		09:11 (1)	07:53			06:50			06:38			05:40			05:14		21:23 (12)
	16:56	39	09:50 (1)	17:53			18:45			20:40			21:31			22:05	7	21:30 (12)
18	08:41		09:10 (1)	07:51			06:48			06:36			05:38			05:14		21:24 (12)
	16:57	41	09:51 (1)	17:55			18:47			20:41			21:32			22:05	7	21:31 (12)
19	08:40		09:09 (1)	07:49			06:45		18:20 (7)	06:33			05:37			05:14		21:24 (12)
	16:59	43	09:52 (1)	17:57			18:48	3	18:23 (7)	20:43			21:34			22:05	7	21:31 (12)
20	08:38		09:07 (1)	07:47			06:43		18:17 (7)	06:31			05:35			05:14		21:24 (12)
	17:01	44	09:51 (1)	17:59			18:50	7	18:24 (7)	20:45			21:35			22:06	7	21:31 (12)
21	08:37		09:06 (1)	07:44			06:41		18:16 (7)	06:29			05:34			05:14		21:24 (12)
	17:02	46	09:52 (1)	18:01			18:52	10	18:26 (7)	20:47			21:37			22:06	7	21:31 (12)
22	08:36		09:07 (1)	07:42			06:38		18:15 (7)	06:27			05:33			05:14		21:25 (12)
	17:04	46	09:53 (1)	18:03			18:54	12	18:27 (7)	20:48			21:38			22:06	7	21:32 (12)
23	08:35		09:06 (1)	07:40			06:36		18:15 (7)	06:25			05:31			05:14		21:25 (12)
	17:06	46	09:52 (1)	18:04			18:56	13	18:28 (7)	20:50			21:40			22:06	7	21:32 (12)
24	08:34		09:07 (1)	07:38			06:34		18:15 (7)	06:23			05:30			05:15		21:25 (12)
	17:08	46	09:53 (1)	18:06			18:57	13	18:28 (7)	20:52			21:41			22:06	7	21:32 (12)
25	08:32		09:00 (4)	07:36			06:31		18:15 (7)	06:21			05:29			05:15		21:26 (12)
	17:10	47	09:52 (1)	18:08			18:59	13	18:33 (8)	20:54			21:42			22:07	6	21:32 (12)
26	08:31		08:59 (4)	07:34			06:29		18:16 (7)	06:18			05:28			05:15		21:25 (12)
	17:11	50	09:53 (1)	18:10			19:01	14	18:35 (8)	20:55			21:44			22:07	7	21:32 (12)
27	08:30		08:57 (4)	07:31			06:27		18:29 (8)	06:16			05:27			05:16		21:25 (12)
	17:13	51	09:52 (1)	18:12			19:03	8	18:37 (8)	20:57			21:45			22:06	7	21:32 (12)
28	08:28		08:56 (4)	07:29			06:24		18:28 (8)	06:14			05:25			05:16		21:26 (12)
	17:15	53	09:53 (1)	18:14			19:04	10	18:38 (8)	20:59			21:46			22:06	6	21:32 (12)
29	08:27		08:54 (4)				07:22		19:29 (8)	06:12			05:24			05:17		21:26 (12)
	17:17	54	09:52 (1)				20:06	10	19:39 (8)	21:01			21:48			22:06	5	21:31 (12)
30	08:25		08:52 (4)				07:19		19:29 (8)	06:10			05:23			05:17		21:27 (12)
	17:19	56	09:52 (1)				20:08	7	19:36 (8)	21:02			21:49			22:06	4	21:31 (12)
31	08:24		08:51 (4)				07:17						05:22					
	17:21	56	09:52 (1)				20:10						21:50					
Potential sun hours	255			276			367			418			489			503		
Total, worst case		1153			535			151									125	
Sun reduction		0.16			0.21			0.24									0.30	
Oper. time red.		1.00			1.00			1.00									1.00	
Wind dir. red.		0.65			0.66			0.69									0.66	
Total reduction		0.10			0.14			0.17									0.20	
Total, real		118			72			25									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)

Licensed user:
Jennings O'Donovan
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: R - H18

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	July			August	September			October			November			December		
1	05:18		21:28 (12)	05:56	06:47			07:38			07:34		08:12 (4)	08:26		08:59 (1)
	22:06	4	21:32 (12)	21:32	20:29			19:18			17:10	22	08:34 (4)	16:28	30	09:29 (1)
2	05:19		21:28 (12)	05:58	06:49			07:40			07:35		08:11 (4)	08:27		09:01 (1)
	22:05	3	21:31 (12)	21:31	20:26			19:15			17:08	35	09:07 (1)	16:27	29	09:30 (1)
3	05:20		21:29 (12)	05:59	06:51			07:41		18:35 (6)	07:37		08:10 (4)	08:29		09:02 (1)
	22:05	2	21:31 (12)	21:29	20:24			19:13	5	18:40 (6)	17:06	45	09:11 (1)	16:27	27	09:29 (1)
4	05:20			06:01	06:52			07:43		18:33 (6)	07:39		08:09 (4)	08:30		09:04 (1)
	22:04			21:27	20:22			19:10	9	18:42 (6)	17:04	52	09:14 (1)	16:26	26	09:30 (1)
5	05:21			06:02	06:54			07:45		18:33 (6)	07:41		08:10 (4)	08:32		09:05 (1)
	22:04			21:25	20:19			19:08	8	18:41 (6)	17:02	55	09:16 (1)	16:25	25	09:30 (1)
6	05:22			06:04	06:56			07:47		18:31 (6)	07:43		08:12 (4)	08:33		09:07 (1)
	22:03			21:24	20:17			19:06	6	18:37 (6)	17:01	56	09:17 (1)	16:25	23	09:30 (1)
7	05:23			06:06	06:57			07:48		18:31 (6)	07:45		08:14 (4)	08:34		09:08 (1)
	22:03			21:22	20:15			19:03	4	18:35 (6)	16:59	58	09:19 (1)	16:25	22	09:30 (1)
8	05:24			06:07	06:59			07:50		18:32 (6)	07:47		08:16 (4)	08:36		09:09 (1)
	22:02			21:20	20:12			19:01	1	18:33 (6)	16:57	58	09:20 (1)	16:24	21	09:30 (1)
9	05:25			06:09	07:01			07:52			07:48		08:18 (4)	08:37		09:10 (1)
	22:01			21:18	20:10			18:59			16:55	57	09:21 (1)	16:24	20	09:30 (1)
10	05:26			06:11	07:03			07:54			07:50		08:20 (4)	08:38		09:12 (1)
	22:01			21:16	20:08			18:57			16:54	57	09:22 (1)	16:24	20	09:32 (3)
11	05:27			06:12	07:04			07:55			07:52		08:22 (4)	08:39		09:13 (1)
	22:00			21:14	20:05			18:54			16:52	57	09:23 (1)	16:23	19	09:32 (3)
12	05:28			06:14	07:06			07:57			07:54		08:24 (4)	08:40		09:14 (1)
	21:59			21:12	20:03			18:52			16:50	55	09:23 (1)	16:23	19	09:33 (3)
13	05:29			06:16	07:08		19:21 (8)	07:59			07:56		08:26 (4)	08:41		09:15 (1)
	21:58			21:10	20:00	6	19:27 (8)	18:50			16:49	54	09:24 (1)	16:23	18	09:33 (3)
14	05:30			06:17	07:09		19:20 (8)	08:01			07:57		08:28 (4)	08:42		09:16 (1)
	21:57			21:08	19:58	9	19:29 (8)	18:47			16:47	53	09:25 (1)	16:23	18	09:34 (3)
15	05:32			06:19	07:11		19:19 (8)	08:03			07:59		08:30 (4)	08:43		09:17 (1)
	21:56			21:06	19:56	10	19:29 (8)	18:45			16:46	51	09:25 (1)	16:23	17	09:34 (3)
16	05:33			06:21	07:13		19:18 (8)	08:04			08:01		08:32 (4)	08:44		09:18 (1)
	21:55			21:04	19:53	8	19:26 (8)	18:43			16:44	50	09:26 (1)	16:23	17	09:35 (3)
17	05:34			06:22	07:14		19:05 (7)	08:06			08:03		08:34 (4)	08:45		09:19 (1)
	21:54			21:02	19:51	14	19:24 (8)	18:41			16:43	47	09:26 (1)	16:24	17	09:36 (3)
18	05:35			06:24	07:16		19:03 (7)	08:08			08:05		08:41 (1)	08:45		09:19 (1)
	21:53			21:00	19:49	14	19:22 (8)	18:39			16:42	46	09:27 (1)	16:24	16	09:35 (3)
19	05:37			06:26	07:18		19:02 (7)	08:10			08:06		08:41 (1)	08:46		09:20 (1)
	21:52			20:58	19:46	12	19:14 (7)	18:36			16:40	46	09:27 (1)	16:24	16	09:36 (3)
20	05:38			06:27	07:19		19:01 (7)	08:12			08:08		08:42 (1)	08:47		09:21 (1)
	21:50			20:55	19:44	13	19:14 (7)	18:34			16:39	46	09:28 (1)	16:24	16	09:37 (3)
21	05:40			06:29	07:21		19:01 (7)	08:13			08:10		08:42 (1)	08:47		09:21 (1)
	21:49			20:53	19:41	13	19:14 (7)	18:32			16:38	46	09:28 (1)	16:25	16	09:37 (3)
22	05:41			06:31	07:23		19:00 (7)	08:15			08:12		08:43 (1)	08:48		09:22 (1)
	21:48			20:51	19:39	11	19:11 (7)	18:30			16:37	44	09:27 (1)	16:25	16	09:38 (3)
23	05:42			06:32	07:24		19:01 (7)	08:17			08:13		08:45 (1)	08:48		09:22 (1)
	21:46			20:49	19:37	8	19:09 (7)	18:28			16:35	43	09:28 (1)	16:26	16	09:38 (3)
24	05:44			06:34	07:26		19:03 (7)	08:19			08:15		08:47 (1)	08:49		09:22 (1)
	21:45			20:47	19:34	4	19:07 (7)	18:26			16:34	41	09:28 (1)	16:26	16	09:38 (3)
25	05:45			06:36	07:28			07:21			08:17		08:49 (1)	08:49		09:23 (1)
	21:44			20:45	19:32			17:24			16:33	40	09:29 (1)	16:27	16	09:39 (3)
26	05:47			06:37	07:29			07:22			08:18		08:51 (1)	08:50		09:23 (1)
	21:42			20:42	19:29			17:22			16:32	38	09:29 (1)	16:28	16	09:39 (3)
27	05:48			06:39	07:31			07:24			08:20		08:52 (1)	08:50		09:23 (1)
	21:41			20:40	19:27			17:20			16:31	36	09:28 (1)	16:28	17	09:40 (3)
28	05:50			06:41	07:33			07:26			08:21		08:54 (1)	08:50		09:23 (1)
	21:39			20:38	19:25			17:18			16:30	35	09:29 (1)	16:29	17	09:40 (3)
29	05:51			06:42	07:35			07:28		08:17 (4)	08:23		08:56 (1)	08:50		09:23 (1)
	21:37			20:36	19:22			17:16	12	08:29 (4)	16:29	33	09:29 (1)	16:30	17	09:40 (3)
30	05:53			06:44	07:36			07:30		08:14 (4)	08:25		08:57 (1)	08:50		09:23 (1)
	21:36			20:33	19:20			17:14	17	08:31 (4)	16:29	32	09:29 (1)	16:31	18	09:41 (3)
31	05:54			06:46				07:32		08:13 (4)				08:50		09:23 (1)
	21:34			20:31				17:12	20	08:33 (4)				16:32	18	09:41 (3)
Potential sun hours	506			456	381			330			263			240		
Total, worst case		9				122			82			1388			599	
Sun reduction		0.26				0.28			0.24			0.19			0.14	
Oper. time red.		1.00				1.00			1.00			1.00			1.00	
Wind dir. red.		0.66				0.69			0.67			0.65			0.65	
Total reduction		0.17				0.20			0.16			0.12			0.09	
Total, real		2				24			13			169			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)

Licensed user:
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abyrne / abyrne@jodireland.com

Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: S - H19

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January			February			March			April		May		June	
1	08:50		15:30 (3)	08:22			07:27			17:06 (4)		07:15		06:08		05:21	
	16:33	27	15:57 (3)	17:22			18:16	6		17:49 (1)		20:11		21:04		21:51	
2	08:50		15:30 (3)	08:20		16:52 (2)	07:25			17:47 (1)		07:12		06:06		05:20	
	16:34	28	15:58 (3)	17:24	2	16:54 (2)	18:17	4		17:51 (1)		20:13		21:06		21:52	
3	08:50		15:31 (3)	08:19		16:51 (2)	07:22			17:45 (1)		07:10		06:04		05:20	
	16:35	29	16:00 (3)	17:26	4	16:55 (2)	18:19	7		17:52 (1)		20:15		21:07		21:54	
4	08:50		15:31 (3)	08:17		16:51 (2)	07:20			17:45 (1)		07:08		06:02		05:19	
	16:37	30	16:01 (3)	17:28	6	16:57 (2)	18:21	10		17:55 (1)		20:17		21:09		21:55	
5	08:49		15:32 (3)	08:15		16:51 (2)	07:18			17:45 (1)		07:05		06:00		05:18	
	16:38	30	16:02 (3)	17:30	9	17:00 (2)	18:23	12		17:57 (1)		20:18		21:11		21:56	
6	08:49		15:32 (3)	08:14		16:51 (2)	07:16			17:44 (1)		07:03		05:59		05:18	
	16:39	31	16:03 (3)	17:32	11	17:02 (2)	18:25	14		17:58 (1)		20:20		21:13		21:57	
7	08:49		15:33 (3)	08:12		16:51 (2)	07:13			17:44 (1)		07:01		05:57		05:17	
	16:40	32	16:05 (3)	17:34	13	17:04 (2)	18:27	16		18:00 (1)		20:22		21:14		21:58	
8	08:48		15:34 (3)	08:10		16:51 (2)	07:11			17:44 (1)		06:58		05:55		05:16	
	16:42	31	16:05 (3)	17:36	15	17:06 (2)	18:29	19		18:03 (1)		20:24		21:16		21:59	
9	08:48		15:35 (3)	08:08		16:51 (2)	07:09			17:43 (1)		06:56		05:53		05:16	
	16:43	31	16:06 (3)	17:38	17	17:08 (2)	18:30	21		18:04 (1)		20:25		21:18		21:59	
10	08:47		15:35 (3)	08:06		16:51 (4)	07:06			17:44 (1)		06:54		05:51		05:15	
	16:45	31	16:06 (3)	17:40	19	17:10 (2)	18:32	22		18:06 (1)		20:27		21:19		22:00	
11	08:46		15:36 (3)	08:04		16:51 (4)	07:04			17:45 (1)		06:51		05:50		05:15	
	16:46	29	16:05 (3)	17:42	22	17:13 (2)	18:34	23		18:08 (1)		20:29		21:21		22:01	
12	08:46		15:37 (3)	08:02		16:50 (4)	07:02			17:45 (1)		06:49		05:48		05:15	
	16:48	28	16:05 (3)	17:43	25	17:15 (4)	18:36	22		18:07 (1)		20:31		21:23		22:02	
13	08:45		15:37 (3)	08:01		16:50 (4)	06:59			17:46 (1)		06:47		05:46		05:14	
	16:49	28	16:05 (3)	17:45	27	17:17 (4)	18:38	20		18:06 (1)		20:32		21:24		22:02	
14	08:44		15:38 (3)	07:59		16:50 (4)	06:57			17:47 (1)		06:45		05:45		05:14	
	16:51	27	16:05 (3)	17:47	29	17:19 (4)	18:39	16		18:03 (1)		20:34		21:26		22:03	
15	08:43		15:39 (3)	07:57		16:50 (4)	06:55			17:50 (1)		06:42		05:43		05:14	
	16:52	26	16:05 (3)	17:49	31	17:21 (4)	18:41	11		18:01 (1)		20:36		21:27		22:04	
16	08:42		15:40 (3)	07:55		16:50 (4)	06:52					06:40		05:41		05:14	
	16:54	25	16:05 (3)	17:51	33	17:23 (4)	18:43					20:38		21:29		22:04	
17	08:41		15:42 (3)	07:53		16:50 (4)	06:50					06:38		05:40		05:14	
	16:55	22	16:04 (3)	17:53	35	17:25 (4)	18:45					20:39		21:31		22:05	
18	08:40		15:43 (3)	07:51		16:49 (4)	06:48					06:36		05:38		05:14	
	16:57	21	16:04 (3)	17:55	38	17:27 (4)	18:47					20:41		21:32		22:05	
19	08:39		15:45 (3)	07:49		16:50 (4)	06:45					06:33		05:37		05:14	
	16:59	18	16:03 (3)	17:57	38	17:28 (4)	18:48					20:43		21:34		22:05	
20	08:38		15:46 (3)	07:46		16:50 (4)	06:43					06:31		05:35		05:14	
	17:01	16	16:02 (3)	17:59	38	17:28 (4)	18:50					20:45		21:35		22:06	
21	08:37		15:49 (3)	07:44		16:51 (4)	06:41					06:29		05:34		05:14	
	17:02	11	16:00 (3)	18:01	36	17:27 (4)	18:52					20:46		21:37		22:06	
22	08:36		15:53 (3)	07:42		16:52 (4)	06:38					06:27		05:33		05:14	
	17:04	4	15:57 (3)	18:03	35	17:27 (4)	18:54					20:48		21:38		22:06	
23	08:35			07:40		16:52 (4)	06:36					06:25		05:31		05:14	
	17:06			18:04	33	17:25 (4)	18:55					20:50		21:40		22:06	
24	08:34			07:38		16:53 (4)	06:34					06:23		05:30		05:15	
	17:08			18:06	31	17:24 (4)	18:57					20:52		21:41		22:06	
25	08:32			07:36		16:54 (4)	06:31					06:20		05:29		05:15	
	17:09			18:08	29	17:23 (4)	18:59					20:53		21:42		22:06	
26	08:31			07:34		16:56 (4)	06:29					06:18		05:28		05:15	
	17:11			18:10	26	17:22 (4)	19:01					20:55		21:44		22:06	
27	08:29			07:31		16:57 (4)	06:26					06:16		05:26		05:16	
	17:13			18:12	22	17:19 (4)	19:03					20:57		21:45		22:06	
28	08:28			07:29		17:00 (4)	06:24					06:14		05:25		05:16	
	17:15			18:14	16	17:16 (4)	19:04					20:59		21:46		22:06	
29	08:27						07:22					06:12		05:24		05:17	
	17:17						20:06					21:00		21:48		22:06	
30	08:25						07:19					06:10		05:23		05:17	
	17:19						20:08					21:02		21:49		22:06	
31	08:24						07:17							05:22			
	17:21						20:10							21:50			
Potential sun hours	256			276			367			418		489		503	
Total, worst case		555			640			223							
Sun reduction		0.16			0.21			0.24							
Oper. time red.		1.00			1.00			1.00							
Wind dir. red.		0.62			0.65			0.68							
Total reduction		0.10			0.13			0.16							
Total, real		54			86			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)

Licensed user:
Jennings O'Donovan
Finisklin Business Park
IE-F91 RHH9 Sligo
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abyrne / abyrne@jodireland.com

Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: S - H19

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	July		August		September			October			November			December		
1	05:18		05:56		06:47			07:38		18:24 (1)	07:33		16:21 (2)	08:26		15:18 (3)
	22:06		21:32		20:29			19:17	22	18:46 (1)	17:10	19	16:40 (2)	16:28	29	15:47 (3)
2	05:19		05:57		06:49			07:40		18:23 (1)	07:35		16:21 (2)	08:27		15:19 (3)
	22:05		21:31		20:26			19:15	24	18:47 (1)	17:08	17	16:38 (2)	16:27	30	15:49 (3)
3	05:20		05:59		06:51			07:41		18:22 (1)	07:37		16:21 (2)	08:29		15:18 (3)
	22:05		21:29		20:24			19:13	23	18:45 (1)	17:06	15	16:36 (2)	16:26	31	15:49 (3)
4	05:20		06:01		06:52			07:43		18:21 (1)	07:39		16:21 (2)	08:30		15:19 (3)
	22:04		21:27		20:22			19:10	22	18:43 (1)	17:04	13	16:34 (2)	16:26	31	15:50 (3)
5	05:21		06:02		06:54			07:45		18:20 (1)	07:41		16:21 (2)	08:32		15:19 (3)
	22:04		21:25		20:19			19:08	20	18:40 (1)	17:02	11	16:32 (2)	16:25	31	15:50 (3)
6	05:22		06:04		06:56			07:47		18:20 (1)	07:43		16:21 (2)	08:33		15:18 (3)
	22:03		21:23		20:17			19:06	17	18:37 (1)	17:00	9	16:30 (2)	16:25	31	15:49 (3)
7	05:23		06:06		06:57			07:48		18:20 (1)	07:45		16:21 (2)	08:34		15:19 (3)
	22:03		21:22		20:15			19:03	15	18:35 (1)	16:59	7	16:28 (2)	16:24	30	15:49 (3)
8	05:24		06:07		06:59			07:50		18:20 (1)	07:46		16:22 (2)	08:35		15:19 (3)
	22:02		21:20		20:12			19:01	13	18:33 (1)	16:57	4	16:26 (2)	16:24	30	15:49 (3)
9	05:25		06:09		07:01			07:52		18:20 (1)	07:48		16:23 (2)	08:37		15:19 (3)
	22:01		21:18		20:10			18:59	11	18:31 (1)	16:55	1	16:24 (2)	16:24	29	15:48 (3)
10	05:26		06:10		07:02			07:54		18:19 (1)	07:50			08:38		15:21 (3)
	22:01		21:16		20:08			18:56	9	18:28 (1)	16:54			16:24	27	15:48 (3)
11	05:27		06:12		07:04			07:55		18:20 (1)	07:52			08:39		15:21 (3)
	22:00		21:14		20:05			18:54	6	18:26 (1)	16:52			16:23	27	15:48 (3)
12	05:28		06:14		07:06			07:57		18:21 (1)	07:54			08:40		15:21 (3)
	21:59		21:12		20:03			18:52	2	18:23 (1)	16:50			16:23	27	15:48 (3)
13	05:29		06:15		07:07			07:59		17:36 (4)	07:56			08:41		15:21 (3)
	21:58		21:10		20:00			18:50	11	17:47 (4)	16:49			16:23	26	15:47 (3)
14	05:30		06:17		07:09			08:01		17:32 (4)	07:57			08:42		15:22 (3)
	21:57		21:08		19:58			18:47	19	17:51 (4)	16:47			16:23	25	15:47 (3)
15	05:32		06:19		07:11			08:02		17:30 (4)	07:59			08:43		15:22 (3)
	21:56		21:06		19:56			18:45	23	17:53 (4)	16:46			16:23	25	15:47 (3)
16	05:33		06:20		07:12			08:04		17:28 (4)	08:01			08:44		15:23 (3)
	21:55		21:04		19:53			18:43	26	17:54 (4)	16:44			16:23	25	15:48 (3)
17	05:34		06:22		07:14			08:06		17:25 (4)	08:03			08:45		15:23 (3)
	21:54		21:02		19:51			18:41	30	17:55 (4)	16:43			16:23	24	15:47 (3)
18	05:35		06:24		07:16			08:08		17:24 (4)	08:05			08:45		15:23 (3)
	21:53		21:00		19:48			18:39	32	17:56 (4)	16:42			16:24	24	15:47 (3)
19	05:37		06:25		07:18			08:10		17:23 (4)	08:06			08:46		15:24 (3)
	21:51		20:57		19:46			18:36	34	17:57 (4)	16:40			16:24	24	15:48 (3)
20	05:38		06:27		07:19			08:11		17:22 (4)	08:08		15:28 (3)	08:47		15:24 (3)
	21:50		20:55		19:44			18:34	35	17:57 (4)	16:39	4	15:32 (3)	16:24	24	15:48 (3)
21	05:39		06:29		07:21			08:13		17:21 (4)	08:10		15:24 (3)	08:47		15:25 (3)
	21:49		20:53		19:41			18:32	37	17:58 (4)	16:38	11	15:35 (3)	16:25	24	15:49 (3)
22	05:41		06:30		07:23			08:15		17:21 (4)	08:11		15:22 (3)	08:48		15:25 (3)
	21:48		20:51		19:39			18:30	37	17:58 (4)	16:36	16	15:38 (3)	16:25	23	15:48 (3)
23	05:42		06:32		07:24			08:17		17:20 (4)	08:13		15:21 (3)	08:48		15:26 (3)
	21:46		20:49		19:36			18:28	39	17:59 (4)	16:35	18	15:39 (3)	16:26	24	15:50 (3)
24	05:44		06:34		07:26			08:19		17:20 (4)	08:15		15:20 (3)	08:49		15:26 (3)
	21:45		20:47		19:34			18:26	36	17:56 (4)	16:34	21	15:41 (3)	16:26	24	15:50 (3)
25	05:45		06:36		07:28			07:21		16:20 (4)	08:17		15:20 (3)	08:49		15:26 (3)
	21:43		20:44		19:32			17:24	34	16:54 (4)	16:33	22	15:42 (3)	16:27	24	15:50 (3)
26	05:47		06:37		07:29			07:22		16:19 (4)	08:18		15:19 (3)	08:49		15:27 (3)
	21:42		20:42		19:29			17:22	33	16:52 (4)	16:32	25	15:44 (3)	16:28	25	15:52 (3)
27	05:48		06:39		07:31			07:24		16:19 (4)	08:20		15:18 (3)	08:50		15:28 (3)
	21:40		20:40		19:27			17:20	31	16:50 (4)	16:31	26	15:44 (3)	16:28	24	15:52 (3)
28	05:50		06:41		07:33		18:33 (1)	07:26		16:19 (4)	08:21		15:18 (3)	08:50		15:28 (3)
	21:39		20:38		19:25	6	18:39 (1)	17:17	29	16:48 (4)	16:30	27	15:45 (3)	16:29	25	15:53 (3)
29	05:51		06:42		07:35		18:29 (1)	07:28		16:20 (4)	08:23		15:18 (3)	08:50		15:29 (3)
	21:37		20:35		19:22	14	18:43 (1)	17:15	26	16:46 (4)	16:29	28	15:46 (3)	16:30	25	15:54 (3)
30	05:53		06:44		07:36		18:27 (1)	07:30		16:20 (4)	08:24		15:18 (3)	08:50		15:29 (3)
	21:36		20:33		19:20	18	18:45 (1)	17:14	24	16:44 (2)	16:29	28	15:46 (3)	16:31	26	15:55 (3)
31	05:54		06:46					07:32		16:20 (4)				08:50		15:30 (3)
	21:34		20:31					17:12	22	16:42 (2)				16:32	26	15:56 (3)
Potential sun hours	506		456		381			330			263			240		
Total, worst case						38			742			322			820	
Sun reduction						0.28			0.24			0.19			0.14	
Oper. time red.						1.00			1.00			1.00			1.00	
Wind dir. red.						0.68			0.66			0.63			0.62	
Total reduction						0.19			0.16			0.12			0.08	
Total, real						7			116			37			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)

Licensed user:
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abyrne / abyrne@jodireland.com

Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: T - H20

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January		February		March	April	May	June	July	August	September	October		November		December	
1	08:50		14:48 (4)	08:22		16:31 (1)	07:27	07:15	06:08	05:21	05:18	05:56	06:47	07:38		07:33		16:03 (1)	08:26		14:39 (4)
	16:33	63	15:57 (2)	17:22	21	16:52 (1)	18:16	20:11	21:04	21:51	22:06	21:32	20:29	19:17		17:10	29	16:32 (1)	16:28	44	15:39 (2)
2	08:50		14:48 (4)	08:20		16:31 (1)	07:25	07:12	06:06	05:20	05:19	05:57	06:49	07:40		07:35		16:02 (1)	08:27		14:39 (4)
	16:34	61	15:56 (2)	17:24	23	16:54 (1)	18:17	20:13	21:06	21:52	22:05	21:31	20:26	19:15		17:08	31	16:33 (1)	16:27	47	15:40 (2)
3	08:50		14:49 (4)	08:19		16:30 (1)	07:22	07:10	06:04	05:20	05:20	05:59	06:51	07:41		07:37		16:02 (1)	08:29		14:38 (4)
	16:36	60	15:57 (2)	17:26	25	16:55 (1)	18:19	20:15	21:07	21:54	22:05	21:29	20:24	19:13		17:06	31	16:33 (1)	16:26	51	15:41 (2)
4	08:50		14:51 (4)	08:17		16:30 (1)	07:20	07:08	06:02	05:19	05:20	06:01	06:52	07:43		07:39		16:02 (1)	08:30		14:39 (4)
	16:37	58	15:57 (2)	17:28	27	16:57 (1)	18:21	20:17	21:09	21:55	22:04	21:27	20:22	19:10		17:04	32	16:34 (1)	16:26	51	15:42 (2)
5	08:49		14:51 (4)	08:15		16:31 (1)	07:18	07:05	06:00	05:18	05:21	06:02	06:54	07:45		07:41		16:01 (1)	08:32		14:38 (4)
	16:38	58	15:57 (2)	17:30	29	17:00 (1)	18:23	20:18	21:11	21:56	22:04	21:25	20:19	19:08		17:02	31	16:32 (1)	16:25	54	15:42 (2)
6	08:49		14:52 (4)	08:14		16:32 (1)	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47		07:43		16:01 (1)	08:33		14:37 (4)
	16:39	56	15:58 (2)	17:32	30	17:02 (1)	18:25	20:20	21:13	21:57	22:03	21:24	20:17	19:06		17:00	29	16:30 (1)	16:25	56	15:43 (2)
7	08:49		14:53 (4)	08:12		16:32 (1)	07:13	07:01	05:57	05:17	05:23	06:06	06:57	07:48		07:45		16:01 (1)	08:34		14:38 (4)
	16:40	54	15:57 (2)	17:34	32	17:04 (1)	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:03		16:59	27	16:28 (1)	16:24	58	15:44 (2)
8	08:48		14:53 (4)	08:10		16:32 (1)	07:11	06:58	05:55	05:16	05:24	06:07	06:59	07:50		07:46		16:01 (1)	08:35		14:38 (4)
	16:42	53	15:57 (2)	17:36	32	17:04 (1)	18:29	20:24	21:16	21:59	22:02	21:20	20:12	19:01		16:57	25	16:26 (1)	16:24	58	15:44 (2)
9	08:48		14:55 (4)	08:08		16:33 (1)	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52		07:48		16:01 (1)	08:37		14:37 (4)
	16:43	51	15:58 (2)	17:38	30	17:03 (1)	18:30	20:25	21:18	21:59	22:01	21:18	20:10	18:59		16:55	23	16:24 (1)	16:24	61	15:45 (2)
10	08:47		14:56 (4)	08:06		16:34 (1)	07:06	06:54	05:51	05:15	05:26	06:10	07:02	07:54		07:50		16:02 (1)	08:38		14:38 (4)
	16:45	47	15:57 (2)	17:40	28	17:02 (1)	18:32	20:27	21:19	22:00	22:01	21:16	20:08	18:56		16:54	20	16:22 (1)	16:24	61	15:46 (2)
11	08:46		14:57 (4)	08:04		16:35 (1)	07:04	06:51	05:50	05:15	05:27	06:12	07:04	07:55		07:52		16:02 (1)	08:39		14:38 (4)
	16:46	44	15:57 (2)	17:42	27	17:02 (1)	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:54		16:52	19	16:21 (1)	16:23	63	15:47 (2)
12	08:46		14:59 (4)	08:03		16:36 (1)	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57		07:54		16:03 (1)	08:40		14:38 (4)
	16:48	40	15:56 (2)	17:43	25	17:01 (1)	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52		16:50	16	16:19 (1)	16:23	62	15:47 (2)
13	08:45		15:00 (4)	08:01		16:37 (1)	07:00	06:47	05:46	05:14	05:29	06:15	07:07	07:59		07:56		16:03 (1)	08:41		14:39 (4)
	16:49	36	15:55 (2)	17:45	22	16:59 (1)	18:38	20:32	21:24	22:02	21:58	21:10	20:00	18:50		16:49	14	16:17 (1)	16:23	62	15:47 (2)
14	08:44		15:02 (4)	07:59		16:39 (1)	06:57	06:45	05:45	05:14	05:30	06:17	07:09	08:01		07:57		16:04 (1)	08:42		14:39 (4)
	16:51	30	15:54 (2)	17:47	19	16:58 (1)	18:39	20:34	21:26	22:03	21:57	21:08	19:58	18:47		16:47	12	16:16 (1)	16:23	62	15:47 (2)
15	08:43		15:04 (4)	07:57		16:42 (1)	06:55	06:42	05:43	05:14	05:32	06:19	07:11	08:02		07:59		16:05 (1)	08:43		14:39 (4)
	16:52	22	15:53 (2)	17:49	13	16:55 (1)	18:41	20:36	21:27	22:04	21:56	21:06	19:56	18:45		16:46	9	16:14 (1)	16:23	62	15:47 (2)
16	08:42		15:07 (4)	07:55		16:47 (1)	06:52	06:40	05:41	05:14	05:33	06:20	07:13	08:04		08:01		16:06 (1)	08:44		14:40 (4)
	16:54	10	15:17 (4)	17:51	3	16:50 (1)	18:43	20:38	21:29	22:04	21:55	21:04	19:53	18:43		16:44	6	16:12 (1)	16:23	63	15:48 (2)
17	08:41			07:53			06:50	06:38	05:40	05:14	05:34	06:22	07:14	08:06		08:03		16:07 (1)	08:45		14:39 (4)
	16:55			17:53			18:45	20:39	21:31	22:05	21:54	21:02	19:51	18:41		16:43	4	16:11 (1)	16:23	63	15:47 (2)
18	08:40			07:51			06:48	06:36	05:38	05:14	05:35	06:24	07:16	08:08		08:05		16:08 (1)	08:45		14:40 (4)
	16:57			17:55			18:47	20:41	21:32	22:05	21:53	21:00	19:48	18:39		16:42	1	16:09 (1)	16:24	62	15:47 (2)
19	08:39			07:49			06:45	06:33	05:37	05:14	05:37	06:25	07:18	08:10		08:06			08:46		14:41 (4)
	16:59			17:57			18:48	20:43	21:34	22:05	21:51	20:58	19:46	18:36		16:40			16:24	62	15:48 (2)
20	08:38			07:46			06:43	06:31	05:35	05:14	05:38	06:27	07:19	08:11		08:08			08:47		14:40 (4)
	17:01			17:59			18:50	20:45	21:35	22:06	21:50	20:55	19:44	18:34		16:39			16:24	63	15:48 (2)
21	08:37			07:44			06:41	06:29	05:34	05:14	05:39	06:29	07:21	08:13		08:10			08:47		14:41 (4)
	17:02			18:01			18:52	20:47	21:37	22:06	21:49	20:53	19:41	18:32		16:38			16:25	62	15:48 (2)
22	08:36			07:42			06:38	06:27	05:33	05:14	05:41	06:30	07:23	08:15		08:12			08:48		14:41 (4)
	17:04			18:03			18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30		16:36			16:25	62	15:48 (2)
23	08:35			07:40			06:36	06:25	05:31	05:14	05:42	06:32	07:24	08:17		08:13			08:48		14:42 (4)
	17:06			18:04			18:55	20:50	21:40	22:06	21:46	20:49	19:36	18:28		16:35			16:26	63	15:50 (2)
24	08:34		16:34 (1)	07:38			06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19		08:15			08:49		14:43 (4)
	17:08	1	16:35 (1)	18:06			18:57	20:52	21:41	22:06	21:45	20:47	19:34	18:26		16:34			16:26	62	15:50 (2)
25	08:32		16:33 (1)	07:36			06:31	06:20	05:29	05:15	05:45	06:36	07:28	07:21		08:17			08:49		14:44 (4)
	17:09	4	16:37 (1)	18:08			18:59	20:54	21:42	22:06	21:43	20:44	19:32	17:24		16:33			16:27	62	15:51 (2)
26	08:31		16:33 (1)	07:34			06:29	06:18	05:28	05:15	05:47	06:37	07:29	07:22	16:14 (1)	08:18		14:47 (4)	08:49		14:44 (4)
	17:11	6	16:39 (1)	18:10			19:01	20:55	21:44	22:06	21:42	20:42	19:29	17:22	8 16:22 (1)	16:32	9	14:56 (4)	16:28	62	15:52 (2)
27	08:29		16:32 (1)	07:31			06:26	06:16	05:26	05:16	05:48	06:39	07:31	07:24	16:11 (1)	08:20		14:43 (4)	08:50		14:45 (4)
	17:13	9	16:41 (1)	18:12			19:03	20:57	21:45	22:06	21:40	20:40	19:27	17:20	15 16:26 (1)	16:31	22	15:32 (2)	16:28	62	15:52 (2)
28	08:28		16:32 (1)	07:29			06:24	06:14	05:25	05:16	05:50	06:41	07:33	07:26	16:08 (1)	08:21		14:42 (4)	08:50		14:45 (4)
	17:15	12	16:44 (1)	18:14			19:04	20:59	21:46	22:06	21:39	20:38	19:25	17:17	20 16:28 (1)	16:30	30	15:34 (2)	16:29	63	15:53 (2)
29	08:27		16:31 (1)				07:22	06:12	05:24	05:17	05:51	06:42	07:35	07:28	16:06 (1)	08:23		14:41 (4)	08:50		14:46 (4)
	17:17	14	16:45 (1)				20:06	21:00	21:48	22:06	21:37	20:35	19:22	17:16	23 16:29 (1)	16:29	35	15:36 (2)	16:30	62	15:54 (2)
30	08:25		16:31 (1)				07:19	06:10	05:23	05:17	05:53	06:44	07:36	07:30	16:05 (1)	08:24		14:40 (4)	08:50		14:46 (4)
	17:19	16	16:47 (1)				20:08	21:02	21:49	22:06	21:36	20:33	19:20	17:14	25 16:30 (1)	16:29	40	15:37 (2)	16:31	63	15:55 (2)
31	08:24		16:31 (1)				07:17		05:22		05:54	06:46		07:32	16:04 (1)				08:50		14:47 (4)
	17:21	19	16:50 (1)				20:10		21:50		21:34	20:31		17:12	27 16:31 (1)				16:32	63	15:56 (2)
Potential sun hours	255			276		367	418	489	503	506	456	381		330		263			240		
Total, worst case		824			386										118		495			1851	
Sun reduction		0.16			0.21										0.24		0.19			0.14	
Oper. time red.		1.00			1.00										1.00		1.00			1.00	
Wind dir. red.		0.60			0.63										0.63		0.62			0.60	
Total reduction		0.09			0.13										0.15		0.12			0.08	
Total, real		78			50										18		57			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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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: U - H21

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January		February		March	April	May	June	July	August	September	October	November		December		
1	08:50		14:42 (4)	08:22		16:24 (1)	07:27	07:15	06:08	05:21	05:18	05:56	06:47	07:38	07:33		15:59 (1)	08:26		14:37 (4)
	16:33	52	15:49 (2)	17:22	28	16:52 (1)	18:16	20:11	21:04	21:51	22:06	21:32	20:29	19:17	17:10	24	16:23 (1)	16:28	21	15:29 (2)
2	08:50		14:42 (4)	08:20		16:24 (1)	07:25	07:12	06:06	05:20	05:19	05:57	06:49	07:40	07:35		15:58 (1)	08:27		14:36 (4)
	16:34	51	15:49 (2)	17:24	30	16:54 (1)	18:17	20:13	21:06	21:52	22:05	21:31	20:26	19:15	17:08	26	16:24 (1)	16:27	27	15:31 (2)
3	08:50		14:43 (4)	08:19		16:24 (1)	07:22	07:10	06:04	05:20	05:20	05:59	06:51	07:41	07:37		15:57 (1)	08:29		14:34 (4)
	16:36	50	15:49 (2)	17:26	31	16:55 (1)	18:19	20:15	21:07	21:54	22:05	21:29	20:24	19:13	17:06	28	16:25 (1)	16:26	34	15:32 (2)
4	08:50		14:44 (4)	08:17		16:24 (1)	07:20	07:08	06:02	05:19	05:20	06:01	06:52	07:43	07:39		15:56 (1)	08:30		14:34 (4)
	16:37	49	15:50 (2)	17:28	33	16:57 (1)	18:21	20:17	21:09	21:55	22:04	21:27	20:22	19:10	17:04	30	16:26 (1)	16:26	38	15:34 (2)
5	08:49		14:45 (4)	08:15		16:25 (1)	07:18	07:05	06:00	05:18	05:21	06:02	06:54	07:45	07:41		15:55 (1)	08:32		14:33 (4)
	16:38	46	15:49 (2)	17:30	32	16:57 (1)	18:23	20:18	21:11	21:56	22:04	21:25	20:19	19:08	17:02	32	16:27 (1)	16:25	40	15:34 (2)
6	08:49		14:47 (4)	08:14		16:26 (1)	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43		15:55 (1)	08:33		14:32 (4)
	16:39	44	15:50 (2)	17:32	31	16:57 (1)	18:25	20:20	21:13	21:57	22:03	21:24	20:17	19:06	17:00	32	16:27 (1)	16:25	44	15:35 (2)
7	08:49		14:48 (4)	08:12		16:26 (1)	07:13	07:01	05:57	05:17	05:23	06:06	06:57	07:48	07:45		15:55 (1)	08:34		14:32 (4)
	16:40	41	15:49 (2)	17:34	30	16:56 (1)	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:03	16:59	33	16:28 (1)	16:24	46	15:36 (2)
8	08:48		14:49 (4)	08:10		16:27 (1)	07:11	06:58	05:55	05:16	05:24	06:07	06:59	07:50	07:46		15:55 (1)	08:35		14:32 (4)
	16:42	38	15:49 (2)	17:36	28	16:55 (1)	18:29	20:24	21:16	21:59	22:02	21:20	20:12	19:01	16:57	31	16:26 (1)	16:24	48	15:37 (2)
9	08:48		14:51 (4)	08:08		16:28 (1)	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48		15:54 (1)	08:37		14:31 (4)
	16:43	34	15:49 (2)	17:38	27	16:55 (1)	18:30	20:25	21:18	21:59	22:01	21:18	20:10	18:59	16:55	30	16:24 (1)	16:24	50	15:37 (2)
10	08:47		14:53 (4)	08:06		16:30 (1)	07:06	06:54	05:51	05:15	05:26	06:10	07:02	07:54	07:50		15:54 (1)	08:38		14:32 (4)
	16:45	27	15:48 (2)	17:40	23	16:53 (1)	18:32	20:27	21:19	22:00	22:01	21:16	20:08	18:57	16:54	28	16:22 (1)	16:24	51	15:39 (2)
11	08:46		14:55 (4)	08:04		16:31 (1)	07:04	06:51	05:50	05:15	05:27	06:12	07:04	07:55	07:52		15:55 (1)	08:39		14:32 (4)
	16:46	22	15:47 (2)	17:42	21	16:52 (1)	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:54	16:52	26	16:21 (1)	16:23	52	15:39 (2)
12	08:46		14:59 (4)	08:03		16:33 (1)	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54		15:55 (1)	08:40		14:32 (4)
	16:48	7	15:44 (2)	17:43	17	16:50 (1)	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:50	24	16:19 (1)	16:23	54	15:40 (2)
13	08:45			08:01		16:37 (1)	07:00	06:47	05:46	05:14	05:29	06:15	07:07	07:59	07:56		15:55 (1)	08:41		14:32 (4)
	16:49			17:45	10	16:47 (1)	18:38	20:32	21:24	22:02	21:58	21:10	20:00	18:50	16:49	22	16:17 (1)	16:23	55	15:41 (2)
14	08:44			07:59			06:57	06:45	05:45	05:14	05:30	06:17	07:09	08:01	07:57		15:56 (1)	08:42		14:32 (4)
	16:51			17:47			18:39	20:34	21:26	22:03	21:57	21:08	19:58	18:47	16:47	20	16:16 (1)	16:23	56	15:41 (2)
15	08:43			07:57			06:55	06:42	05:43	05:14	05:32	06:19	07:11	08:02	07:59		15:56 (1)	08:43		14:32 (4)
	16:52			17:49			18:41	20:36	21:27	22:04	21:56	21:06	19:56	18:45	16:46	18	16:14 (1)	16:23	57	15:42 (2)
16	08:42			07:55			06:52	06:40	05:41	05:14	05:33	06:20	07:13	08:04	08:01		15:57 (1)	08:44		14:33 (4)
	16:54			17:51			18:43	20:38	21:29	22:04	21:55	21:04	19:53	18:43	16:44	15	16:12 (1)	16:23	58	15:43 (2)
17	08:41			07:53			06:50	06:38	05:40	05:14	05:34	06:22	07:14	08:06	08:03		15:57 (1)	08:45		14:32 (4)
	16:55			17:53			18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43	14	16:11 (1)	16:23	57	15:42 (2)
18	08:40			07:51			06:48	06:36	05:38	05:14	05:35	06:24	07:16	08:08	08:05		15:58 (1)	08:45		14:33 (4)
	16:57			17:55			18:47	20:41	21:32	22:05	21:53	21:00	19:48	18:39	16:42	11	16:09 (1)	16:24	57	15:43 (2)
19	08:39			07:49			06:45	06:33	05:37	05:14	05:37	06:25	07:18	08:10	08:06		15:59 (1)	08:46		14:33 (4)
	16:59			17:57			18:48	20:43	21:34	22:05	21:51	20:58	19:46	18:36	16:40	9	16:08 (1)	16:24	59	15:44 (2)
20	08:38		16:26 (1)	07:46			06:43	06:31	05:35	05:14	05:38	06:27	07:19	08:11	08:08		16:00 (1)	08:47		14:33 (4)
	17:01	1	16:27 (1)	17:59			18:50	20:45	21:35	22:06	21:50	20:55	19:44	18:34	16:39	7	16:07 (1)	16:24	59	15:44 (2)
21	08:37		16:25 (1)	07:44			06:41	06:29	05:34	05:14	05:39	06:29	07:21	08:13	08:10		16:00 (1)	08:47		14:34 (4)
	17:02	4	16:29 (1)	18:01			18:52	20:47	21:37	22:06	21:49	20:53	19:41	18:32	16:38	4	16:04 (1)	16:25	59	15:45 (2)
22	08:36		16:25 (1)	07:42			06:38	06:27	05:33	05:14	05:41	06:30	07:23	08:15	08:12		16:02 (1)	08:48		14:34 (4)
	17:04	7	16:32 (1)	18:03			18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:36	1	16:03 (1)	16:25	59	15:45 (2)
23	08:35		16:24 (1)	07:40			06:36	06:25	05:31	05:14	05:42	06:32	07:24	08:17	08:13			08:48		14:35 (4)
	17:06	9	16:33 (1)	18:04			18:55	20:50	21:40	22:06	21:46	20:49	19:37	18:28	16:35			16:26	59	15:46 (2)
24	08:34		16:24 (1)	07:38			06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15			08:49		14:35 (4)
	17:08	11	16:35 (1)	18:06			18:57	20:52	21:41	22:06	21:45	20:47	19:34	18:26	16:34			16:26	59	15:46 (2)
25	08:32		16:23 (1)	07:36			06:31	06:20	05:29	05:15	05:45	06:36	07:28	07:21	08:17			08:49		14:37 (4)
	17:09	14	16:37 (1)	18:08			18:59	20:54	21:42	22:06	21:43	20:44	19:32	17:24	16:33			16:27	58	15:47 (2)
26	08:31		16:24 (1)	07:34			06:29	06:18	05:28	05:15	05:47	06:37	07:29	07:22	08:18			08:49		14:37 (4)
	17:11	15	16:39 (1)	18:10			19:01	20:55	21:44	22:06	21:42	20:42	19:29	17:22	16:32			16:28	57	15:47 (2)
27	08:29		16:23 (1)	07:31			06:26	06:16	05:26	05:16	05:48	06:39	07:31	07:24	08:20			08:50		14:37 (4)
	17:13	18	16:41 (1)	18:12			19:03	20:57	21:45	22:06	21:40	20:40	19:27	17:20	16:31			16:28	58	15:47 (2)
28	08:28		16:24 (1)	07:29			06:24	06:14	05:25	05:16	05:50	06:41	07:33	07:26	08:21			08:50		14:38 (4)
	17:15	20	16:44 (1)	18:14			19:04	20:59	21:46	22:06	21:39	20:38	19:25	17:17	16:30			16:29	57	15:48 (2)
29	08:27		16:23 (1)				07:22	06:12	05:24	05:17	05:51	06:42	07:35	07:28	16:05 (1)	08:23		08:50		14:39 (4)
	17:17	22	16:45 (1)				20:06	21:00	21:48	22:06	21:37	20:35	19:22	17:16	12	16:17 (1)	16:29		16:30	56	15:48 (2)
30	08:25		16:23 (1)				07:19	06:10	05:23	05:17	05:53	06:44	07:36	07:30	16:02 (1)	08:24		14:41 (4)	08:50		14:40 (4)
	17:19	24	16:47 (1)				20:08	21:02	21:49	22:06	21:36	20:33	19:20	17:14	18	16:20 (1)	16:29	6	15:25 (2)	16:31	54	15:48 (2)
31	08:24		16:24 (1)				07:17		05:22		05:54	06:46		07:32		16:00 (1)				08:50		14:40 (4)
	17:21	26	16:50 (1)				20:10		21:50		21:34	20:31		17:12	22	16:22 (1)				16:32	55	15:49 (2)
Potential sun hours	255			276		367	418	489	503	506	456	381	330		263			240			
Total, worst case		632			341									52		471			1594		
Sun reduction		0.16			0.21									0.24		0.19			0.14		
Oper. time red.		1.00			1.00									1.00		1.00			1.00		
Wind dir. red.		0.61			0.63									0.63		0.63			0.60		
Total reduction		0.10			0.13									0.15		0.12			0.08		
Total, real		60			44									8		55			131		

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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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: V - H22

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January		February		March	April	May	June	July	August	September	October	November		December		
1	08:50		08:22		16:08 (1)	07:27	07:15	06:08	05:21	05:18	05:56	06:47	07:38	07:33		08:26		15:42 (1)
	16:33		17:22	26	16:34 (1)	18:16	20:11	21:04	21:51	22:06	21:32	20:29	19:17	17:10		16:28	11	15:53 (1)
2	08:50		08:20		16:10 (1)	07:25	07:12	06:06	05:20	05:19	05:57	06:49	07:40	07:35		08:27		15:43 (1)
	16:34		17:24	23	16:33 (1)	18:17	20:13	21:06	21:52	22:05	21:31	20:26	19:15	17:08		16:27	10	15:53 (1)
3	08:50		08:19		16:11 (1)	07:22	07:10	06:04	05:20	05:20	05:59	06:51	07:41	07:37		08:29		15:43 (1)
	16:36		17:26	20	16:31 (1)	18:19	20:15	21:07	21:54	22:05	21:29	20:24	19:13	17:06		16:26	9	15:52 (1)
4	08:50	16:00 (1)	08:17		16:13 (1)	07:20	07:08	06:02	05:19	05:20	06:01	06:52	07:43	07:39		08:30		15:44 (1)
	16:37	16:01 (1)	17:28	16	16:29 (1)	18:21	20:17	21:09	21:55	22:04	21:27	20:22	19:10	17:04		16:26	7	15:51 (1)
5	08:49	16:00 (1)	08:15		16:17 (1)	07:18	07:05	06:00	05:18	05:21	06:02	06:54	07:45	07:41		08:32		15:45 (1)
	16:38	16:02 (1)	17:30	10	16:27 (1)	18:23	20:18	21:11	21:56	22:04	21:25	20:19	19:08	17:02		16:25	5	15:50 (1)
6	08:49	16:00 (1)	08:14			07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	15:47 (1)	08:33		15:45 (1)
	16:39	16:04 (1)	17:32			18:25	20:20	21:13	21:57	22:03	21:24	20:17	19:06	17:00	15:57 (1)	16:25	4	15:49 (1)
7	08:49	16:00 (1)	08:12			07:13	07:01	05:57	05:17	05:23	06:06	06:57	07:48	07:45	15:44 (1)	08:34		15:47 (1)
	16:40	16:05 (1)	17:34			18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:03	16:59	16:00 (1)	16:24	2	15:49 (1)
8	08:48	15:59 (1)	08:10			07:11	06:58	05:55	05:16	05:24	06:07	06:59	07:50	07:46	15:42 (1)	08:35		15:47 (1)
	16:42	16:06 (1)	17:36			18:29	20:24	21:16	21:59	22:02	21:20	20:12	19:01	16:57	16:02 (1)	16:24	2	15:49 (1)
9	08:48	16:00 (1)	08:08			07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48	15:40 (1)	08:37		
	16:43	16:09 (1)	17:38			18:30	20:25	21:18	21:59	22:01	21:18	20:10	18:59	16:55	16:04 (1)	16:24		
10	08:47	16:00 (1)	08:06			07:06	06:54	05:51	05:15	05:26	06:10	07:02	07:54	07:50	15:39 (1)	08:38		
	16:45	16:10 (1)	17:40			18:32	20:27	21:19	22:00	22:01	21:16	20:08	18:57	16:54	16:05 (1)	16:24		
11	08:46	16:00 (1)	08:04			07:04	06:51	05:50	05:15	05:27	06:12	07:04	07:55	07:52	15:38 (1)	08:39		
	16:46	16:11 (1)	17:42			18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:54	16:52	16:06 (1)	16:23		
12	08:46	16:00 (1)	08:03			07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54	15:38 (1)	08:40		
	16:48	16:13 (1)	17:43			18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:50	16:07 (1)	16:23		
13	08:45	16:00 (1)	08:01			07:00	06:47	05:46	05:14	05:29	06:15	07:07	07:59	07:56	15:37 (1)	08:41		
	16:49	16:14 (1)	17:45			18:38	20:32	21:24	22:02	21:58	21:10	20:00	18:50	16:49	16:08 (1)	16:23		
14	08:44	16:00 (1)	07:59			06:57	06:45	05:45	05:14	05:30	06:17	07:09	08:01	07:57	15:37 (1)	08:42		
	16:51	16:16 (1)	17:47			18:39	20:34	21:26	22:03	21:57	21:08	19:58	18:47	16:47	16:08 (1)	16:23		
15	08:43	16:00 (1)	07:57			06:55	06:42	05:43	05:14	05:32	06:19	07:11	08:02	07:59	15:36 (1)	08:43		
	16:52	16:18 (1)	17:49			18:41	20:36	21:27	22:04	21:56	21:06	19:56	18:45	16:46	16:09 (1)	16:23		
16	08:42	16:00 (1)	07:55			06:52	06:40	05:41	05:14	05:33	06:20	07:13	08:04	08:01	15:36 (1)	08:44		
	16:54	16:20 (1)	17:51			18:43	20:38	21:29	22:04	21:55	21:04	19:53	18:43	16:44	16:10 (1)	16:23		
17	08:41	16:00 (1)	07:53			06:50	06:38	05:40	05:14	05:34	06:22	07:14	08:06	08:03	15:36 (1)	08:45		
	16:56	16:22 (1)	17:53			18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43	16:10 (1)	16:23		
18	08:40	16:01 (1)	07:51			06:48	06:36	05:38	05:14	05:35	06:24	07:16	08:08	08:05	15:36 (1)	08:45		15:13 (2)
	16:57	16:24 (1)	17:55			18:47	20:41	21:32	22:05	21:53	21:00	19:48	18:39	16:42	16:09 (1)	16:24	3	15:16 (2)
19	08:39	16:01 (1)	07:49			06:45	06:33	05:37	05:14	05:37	06:25	07:18	08:10	08:06	15:37 (1)	08:46		15:13 (2)
	16:59	16:26 (1)	17:57			18:48	20:43	21:34	22:05	21:51	20:58	19:46	18:36	16:40	16:08 (1)	16:24	5	15:18 (2)
20	08:38	16:00 (1)	07:46			06:43	06:31	05:35	05:14	05:38	06:27	07:19	08:11	08:08	15:37 (1)	08:47		15:13 (2)
	17:01	16:27 (1)	17:59			18:50	20:45	21:35	22:06	21:50	20:55	19:44	18:34	16:39	16:07 (1)	16:24	5	15:18 (2)
21	08:37	16:01 (1)	07:44			06:41	06:29	05:34	05:14	05:39	06:29	07:21	08:13	08:10	15:36 (1)	08:47		15:13 (2)
	17:02	16:29 (1)	18:01			18:52	20:47	21:37	22:06	21:49	20:53	19:41	18:32	16:38	16:04 (1)	16:25	6	15:19 (2)
22	08:36	16:02 (1)	07:42			06:38	06:27	05:33	05:14	05:41	06:30	07:23	08:15	08:12	15:37 (1)	08:48		15:13 (2)
	17:04	16:32 (1)	18:03			18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:36	16:03 (1)	16:25	6	15:19 (2)
23	08:35	16:02 (1)	07:40			06:36	06:25	05:31	05:14	05:42	06:32	07:24	08:17	08:13	15:37 (1)	08:48		15:15 (2)
	17:06	16:33 (1)	18:04			18:55	20:50	21:40	22:06	21:46	20:49	19:37	18:28	16:35	16:02 (1)	16:26	5	15:20 (2)
24	08:34	16:02 (1)	07:38			06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	15:38 (1)	08:49		15:15 (2)
	17:08	16:35 (1)	18:06			18:57	20:52	21:41	22:06	21:45	20:47	19:34	18:26	16:34	16:01 (1)	16:26	5	15:20 (2)
25	08:32	16:02 (1)	07:36			06:31	06:20	05:29	05:15	05:45	06:36	07:28	07:21	08:17	15:38 (1)	08:49		15:17 (2)
	17:09	16:36 (1)	18:08			18:59	20:54	21:42	22:06	21:43	20:44	19:32	17:24	16:33	16:00 (1)	16:27	3	15:20 (2)
26	08:31	16:03 (1)	07:34			06:29	06:18	05:28	05:15	05:47	06:37	07:29	07:22	08:18	15:39 (1)	08:49		
	17:11	16:37 (1)	18:10			19:01	20:55	21:44	22:06	21:42	20:42	19:29	17:22	16:32	15:59 (1)	16:28		
27	08:29	16:04 (1)	07:31			06:26	06:16	05:26	05:16	05:48	06:39	07:31	07:24	08:20	15:39 (1)	08:50		
	17:13	16:36 (1)	18:12			19:03	20:57	21:45	22:06	21:40	20:40	19:27	17:20	16:31	15:57 (1)	16:28		
28	08:28	16:05 (1)	07:29			06:24	06:14	05:25	05:16	05:50	06:41	07:33	07:26	08:21	15:40 (1)	08:50		
	17:15	16:36 (1)	18:14			19:04	20:59	21:46	22:06	21:39	20:38	19:25	17:18	16:30	15:56 (1)	16:29		
29	08:27	16:05 (1)				07:22	06:12	05:24	05:17	05:51	06:42	07:35	07:28	08:23	15:41 (1)	08:50		
	17:17	31	16:36 (1)			20:06	21:01	21:48	22:06	21:37	20:35	19:22	17:16	16:29	15:56 (1)	16:30		
30	08:25		16:06 (1)			07:19	06:10	05:23	05:17	05:53	06:44	07:36	07:30	08:24	15:41 (1)	08:50		
	17:19	29	16:35 (1)			20:08	21:02	21:49	22:06	21:36	20:33	19:20	17:14	16:29	15:54 (1)	16:31		
31	08:24		16:08 (1)			07:17		05:22		05:54	06:46		07:32			08:50		
	17:21	27	16:35 (1)			20:10		21:50		21:34	20:31		17:12			16:32		
Potential sun hours	255		276		367	418	489	503	506	456	381	330	263		240		
Total, worst case	567		95										616		88		
Sun reduction	0.16		0.21										0.19		0.14		
Oper. time red.	1.00		1.00										1.00		1.00		
Wind dir. red.	0.63		0.63										0.63		0.61		
Total reduction	0.10		0.13										0.12		0.08		
Total, real	56		12										72		7		

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)

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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: W - H23

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January			February			March			April		May		June	
1	08:50		15:19 (3)	08:22		16:32 (4)	07:27		17:32 (1)	07:15		06:08		05:21	
	16:33	26	15:45 (3)	17:22	20	16:52 (2)	18:16	17	17:49 (1)	20:11		21:04		21:51	
2	08:50		15:20 (3)	08:20		16:31 (4)	07:25		17:32 (1)	07:12		06:06		05:20	
	16:34	26	15:46 (3)	17:24	23	16:54 (2)	18:17	19	17:51 (1)	20:13		21:06		21:52	
3	08:50		15:21 (3)	08:19		16:31 (4)	07:22		17:31 (1)	07:10		06:04		05:20	
	16:35	25	15:46 (3)	17:26	24	16:55 (2)	18:19	21	17:52 (1)	20:15		21:07		21:54	
4	08:50		15:21 (3)	08:17		16:31 (4)	07:20		17:32 (1)	07:08		06:02		05:19	
	16:37	25	15:46 (3)	17:28	26	16:57 (2)	18:21	23	17:55 (1)	20:17		21:09		21:55	
5	08:49		15:23 (3)	08:15		16:31 (4)	07:18		17:33 (1)	07:05		06:00		05:18	
	16:38	23	15:46 (3)	17:30	29	17:00 (2)	18:23	24	17:57 (1)	20:18		21:11		21:56	
6	08:49		15:23 (3)	08:14		16:31 (4)	07:16		17:33 (1)	07:03		05:59		05:18	
	16:39	23	15:46 (3)	17:32	31	17:02 (2)	18:25	23	17:56 (1)	20:20		21:13		21:57	
7	08:49		15:25 (3)	08:12		16:31 (4)	07:13		17:34 (1)	07:01		05:57		05:17	
	16:40	21	15:46 (3)	17:34	33	17:04 (4)	18:27	20	17:54 (1)	20:22		21:14		21:58	
8	08:48		15:25 (3)	08:10		16:31 (4)	07:11		17:36 (1)	06:58		05:55		05:16	
	16:42	20	15:45 (3)	17:36	35	17:06 (4)	18:29	17	17:53 (1)	20:24		21:16		21:59	
9	08:48		15:27 (3)	08:08		16:32 (4)	07:09		17:38 (1)	06:56		05:53		05:16	
	16:43	19	15:46 (3)	17:38	36	17:08 (4)	18:30	11	17:49 (1)	20:25		21:18		21:59	
10	08:47		15:29 (3)	08:06		16:32 (4)	07:06			06:54		05:51		05:15	
	16:45	16	15:45 (3)	17:40	38	17:10 (4)	18:32			20:27		21:19		22:00	
11	08:46		15:30 (3)	08:04		16:32 (4)	07:04			06:51		05:50		05:15	
	16:46	14	15:44 (3)	17:42	38	17:10 (4)	18:34			20:29		21:21		22:01	
12	08:46		15:32 (3)	08:03		16:33 (4)	07:02			06:49		05:48		05:15	
	16:48	11	15:43 (3)	17:43	36	17:09 (4)	18:36			20:31		21:23		22:02	
13	08:45		15:35 (3)	08:01		16:33 (4)	06:59			06:47		05:46		05:14	
	16:49	5	15:40 (3)	17:45	36	17:09 (4)	18:38			20:32		21:24		22:02	
14	08:44			07:59		16:34 (4)	06:57			06:45		05:45		05:14	
	16:51			17:47	34	17:08 (4)	18:39			20:34		21:26		22:03	
15	08:43			07:57		16:35 (4)	06:55			06:42		05:43		05:14	
	16:52			17:49	32	17:07 (4)	18:41			20:36		21:27		22:04	
16	08:42			07:55		16:36 (4)	06:52			06:40		05:41		05:14	
	16:54			17:51	30	17:06 (4)	18:43			20:38		21:29		22:04	
17	08:41			07:53		16:38 (4)	06:50			06:38		05:40		05:14	
	16:55			17:53	27	17:05 (4)	18:45			20:39		21:31		22:05	
18	08:40			07:51		16:39 (4)	06:48			06:36		05:38		05:14	
	16:57			17:55	24	17:03 (4)	18:47			20:41		21:32		22:05	
19	08:39			07:49		16:41 (4)	06:45			06:33		05:37		05:14	
	16:59			17:57	20	17:01 (4)	18:48			20:43		21:34		22:05	
20	08:38			07:46		16:44 (4)	06:43			06:31		05:35		05:14	
	17:01			17:59	14	16:58 (4)	18:50			20:45		21:35		22:06	
21	08:37			07:44			06:41			06:29		05:34		05:14	
	17:02			18:01			18:52			20:46		21:37		22:06	
22	08:36			07:42			06:38			06:27		05:33		05:14	
	17:04			18:03			18:54			20:48		21:38		22:06	
23	08:35			07:40		17:35 (1)	06:36			06:25		05:31		05:14	
	17:06			18:04	2	17:37 (1)	18:55			20:50		21:40		22:06	
24	08:34			07:38		17:34 (1)	06:34			06:23		05:30		05:15	
	17:08			18:06	5	17:39 (1)	18:57			20:52		21:41		22:06	
25	08:32		16:36 (4)	07:36		17:33 (1)	06:31			06:20		05:29		05:15	
	17:09	1	16:37 (4)	18:08	8	17:41 (1)	18:59			20:54		21:42		22:06	
26	08:31		16:36 (4)	07:34		17:33 (1)	06:29			06:18		05:28		05:15	
	17:11	3	16:39 (4)	18:10	10	17:43 (1)	19:01			20:55		21:44		22:06	
27	08:29		16:34 (4)	07:31		17:32 (1)	06:26			06:16		05:26		05:16	
	17:13	7	16:41 (2)	18:12	13	17:45 (1)	19:03			20:57		21:45		22:06	
28	08:28		16:34 (4)	07:29		17:32 (1)	06:24			06:14		05:25		05:16	
	17:15	10	16:44 (2)	18:14	15	17:47 (1)	19:04			20:59		21:46		22:06	
29	08:27		16:33 (4)				07:22			06:12		05:24		05:17	
	17:17	12	16:45 (2)				20:06			21:00		21:48		22:06	
30	08:25		16:32 (4)				07:19			06:10		05:23		05:17	
	17:19	15	16:47 (2)				20:08			21:02		21:49		22:06	
31	08:24		16:33 (4)				07:17					05:22			
	17:21	17	16:50 (2)				20:10					21:50			
Potential sun hours	256			276			367			418		489		503	
Total, worst case		319			639			175							
Sun reduction		0.16			0.21			0.24							
Oper. time red.		1.00			1.00			1.00							
Wind dir. red.		0.61			0.64			0.67							
Total reduction		0.10			0.13			0.16							
Total, real		31			84			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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abyrne / abyrne@jodireland.com

Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: W - H23

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	July		August		September		October			November			December		
1	05:18		05:56		06:47		07:38			07:33		16:01 (4)	08:26		15:12 (3)
	22:06		21:32		20:29		19:17			17:10	39	16:40 (4)	16:28	14	15:26 (3)
2	05:19		05:57		06:49		07:40			07:35		16:01 (4)	08:27		15:12 (3)
	22:05		21:31		20:26		19:15			17:08	37	16:38 (4)	16:27	16	15:28 (3)
3	05:19		05:59		06:51		07:41			07:37		16:01 (4)	08:29		15:11 (3)
	22:05		21:29		20:24		19:13			17:06	35	16:36 (4)	16:26	18	15:29 (3)
4	05:20		06:01		06:52		07:43		18:18 (1)	07:39		16:01 (4)	08:30		15:11 (3)
	22:04		21:27		20:22		19:10	7	18:25 (1)	17:04	33	16:34 (4)	16:26	20	15:31 (3)
5	05:21		06:02		06:54		07:45		18:14 (1)	07:41		16:01 (4)	08:32		15:10 (3)
	22:04		21:25		20:19		19:08	14	18:28 (1)	17:02	31	16:32 (2)	16:25	21	15:31 (3)
6	05:22		06:04		06:56		07:47		18:11 (1)	07:43		16:01 (4)	08:33		15:09 (3)
	22:03		21:23		20:17		19:06	19	18:30 (1)	17:00	29	16:30 (2)	16:25	23	15:32 (3)
7	05:23		06:06		06:57		07:48		18:10 (1)	07:45		16:02 (4)	08:34		15:10 (3)
	22:03		21:22		20:15		19:03	21	18:31 (1)	16:59	26	16:28 (2)	16:24	23	15:33 (3)
8	05:24		06:07		06:59		07:50		18:08 (1)	07:46		16:02 (4)	08:35		15:09 (3)
	22:02		21:20		20:12		19:01	24	18:32 (1)	16:57	24	16:26 (2)	16:24	25	15:34 (3)
9	05:25		06:09		07:01		07:52		18:07 (1)	07:48		16:02 (4)	08:37		15:09 (3)
	22:01		21:18		20:10		18:59	24	18:31 (1)	16:55	22	16:24 (2)	16:24	25	15:34 (3)
10	05:26		06:10		07:02		07:54		18:06 (1)	07:50		16:03 (4)	08:38		15:10 (3)
	22:01		21:16		20:08		18:56	22	18:28 (1)	16:54	19	16:22 (2)	16:24	26	15:36 (3)
11	05:27		06:12		07:04		07:55		18:05 (1)	07:52		16:04 (4)	08:39		15:10 (3)
	22:00		21:14		20:05		18:54	21	18:26 (1)	16:52	17	16:21 (2)	16:23	26	15:36 (3)
12	05:28		06:14		07:06		07:57		18:05 (1)	07:54		16:04 (4)	08:40		15:10 (3)
	21:59		21:12		20:03		18:52	18	18:23 (1)	16:50	15	16:19 (2)	16:23	27	15:37 (3)
13	05:29		06:15		07:07		07:59		18:05 (1)	07:56		16:05 (4)	08:41		15:10 (3)
	21:58		21:10		20:00		18:50	16	18:21 (1)	16:49	12	16:17 (2)	16:23	27	15:37 (3)
14	05:30		06:17		07:09		08:01		18:05 (1)	07:57		16:06 (4)	08:42		15:11 (3)
	21:57		21:08		19:58		18:47	14	18:19 (1)	16:47	10	16:16 (2)	16:23	27	15:38 (3)
15	05:32		06:19		07:11		08:02		18:05 (1)	07:59		16:07 (4)	08:43		15:11 (3)
	21:56		21:06		19:56		18:45	12	18:17 (1)	16:46	7	16:14 (2)	16:23	28	15:39 (3)
16	05:33		06:20		07:12		08:04		18:05 (1)	08:01		16:09 (4)	08:44		15:12 (3)
	21:55		21:04		19:53		18:43	10	18:15 (1)	16:44	3	16:12 (4)	16:23	27	15:39 (3)
17	05:34		06:22		07:14		08:06		18:05 (1)	08:03		16:10 (4)	08:45		15:11 (3)
	21:54		21:02		19:51		18:41	7	18:12 (1)	16:43	1	16:11 (4)	16:23	28	15:39 (3)
18	05:35		06:24		07:16		08:08		18:06 (1)	08:05			08:45		15:12 (3)
	21:53		21:00		19:48		18:39	3	18:09 (1)	16:42			16:24	28	15:40 (3)
19	05:37		06:25		07:18		08:10			08:06			08:46		15:13 (3)
	21:51		20:58		19:46		18:36			16:40			16:24	28	15:41 (3)
20	05:38		06:27		07:19		08:11			08:08			08:47		15:12 (3)
	21:50		20:55		19:44		18:34			16:39			16:24	29	15:41 (3)
21	05:39		06:29		07:21		08:13		17:18 (4)	08:10			08:47		15:13 (3)
	21:49		20:53		19:41		18:32	7	17:25 (4)	16:38			16:25	29	15:42 (3)
22	05:41		06:30		07:23		08:15		17:13 (4)	08:11			08:48		15:13 (3)
	21:48		20:51		19:39		18:30	16	17:29 (4)	16:36			16:25	29	15:42 (3)
23	05:42		06:32		07:24		08:17		17:11 (4)	08:13			08:48		15:14 (3)
	21:46		20:49		19:36		18:28	21	17:32 (4)	16:35			16:26	29	15:43 (3)
24	05:44		06:34		07:26		08:19		17:08 (4)	08:15			08:49		15:14 (3)
	21:45		20:47		19:34		18:26	26	17:34 (4)	16:34			16:26	29	15:43 (3)
25	05:45		06:36		07:28		07:21		16:07 (4)	08:17			08:49		15:15 (3)
	21:43		20:44		19:32		17:24	28	16:35 (4)	16:33			16:27	28	15:43 (3)
26	05:47		06:37		07:29		07:22		16:06 (4)	08:18			08:49		15:16 (3)
	21:42		20:42		19:29		17:22	30	16:36 (4)	16:32			16:28	28	15:44 (3)
27	05:48		06:39		07:31		07:24		16:04 (4)	08:20			08:50		15:16 (3)
	21:40		20:40		19:27		17:20	33	16:37 (4)	16:31			16:28	28	15:44 (3)
28	05:50		06:41		07:33		07:26		16:04 (4)	08:21			08:50		15:17 (3)
	21:39		20:38		19:25		17:17	34	16:38 (4)	16:30			16:29	28	15:45 (3)
29	05:51		06:42		07:35		07:28		16:03 (4)	08:23		15:16 (3)	08:50		15:17 (3)
	21:37		20:35		19:22		17:15	35	16:38 (4)	16:29	5	15:21 (3)	16:30	28	15:45 (3)
30	05:53		06:44		07:36		07:30		16:02 (4)	08:24		15:13 (3)	08:50		15:18 (3)
	21:36		20:33		19:20		17:14	37	16:39 (4)	16:29	11	15:24 (3)	16:31	27	15:45 (3)
31	05:54		06:46				07:32		16:02 (4)				08:50		15:19 (3)
	21:34		20:31				17:12	37	16:39 (4)				16:32	27	15:46 (3)
Potential sun hours	506		456		381		330			263			240		
Total, worst case								536			376			796	
Sun reduction								0.24			0.19			0.14	
Oper. time red.								1.00			1.00			1.00	
Wind dir. red.								0.65			0.63			0.61	
Total reduction								0.15			0.12			0.08	
Total, real								83			44			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)

Licensed user:
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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: X - H24

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January		February	March	April	May	June	July	August	September	October	November		December		
1	08:50	15:36 (1)	08:22	07:27	07:15	06:08	05:21	05:18	05:56	06:47	07:38	07:33		08:26		15:21 (1)
	16:33	22 15:58 (1)	17:22	18:16	20:11	21:04	21:51	22:06	21:32	20:29	19:17	17:10		16:28	32	15:53 (1)
2	08:50	15:35 (1)	08:20	07:25	07:12	06:06	05:20	05:19	05:57	06:49	07:40	07:35		08:27		15:22 (1)
	16:34	23 15:58 (1)	17:24	18:17	20:13	21:06	21:52	22:05	21:31	20:26	19:15	17:08		16:27	31	15:53 (1)
3	08:50	15:36 (1)	08:19	07:23	07:10	06:04	05:20	05:20	05:59	06:51	07:41	07:37		08:29		15:22 (1)
	16:36	24 16:00 (1)	17:26	18:19	20:15	21:07	21:54	22:05	21:29	20:24	19:13	17:06		16:27	30	15:52 (1)
4	08:50	15:37 (1)	08:17	07:20	07:08	06:02	05:19	05:20	06:01	06:52	07:43	07:39		08:30		15:23 (1)
	16:37	24 16:01 (1)	17:28	18:21	20:17	21:09	21:55	22:04	21:27	20:22	19:10	17:04		16:26	28	15:51 (1)
5	08:49	15:37 (1)	08:15	07:18	07:05	06:00	05:18	05:21	06:02	06:54	07:45	07:41		08:32		15:23 (1)
	16:38	25 16:02 (1)	17:30	18:23	20:18	21:11	21:56	22:04	21:25	20:19	19:08	17:02		16:25	27	15:50 (1)
6	08:49	15:38 (1)	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43		08:33		15:23 (1)
	16:39	26 16:04 (1)	17:32	18:25	20:20	21:13	21:57	22:03	21:24	20:17	19:06	17:00		16:25	26	15:49 (1)
7	08:49	15:38 (1)	08:12	07:13	07:01	05:57	05:17	05:23	06:06	06:57	07:48	07:45		08:34		15:24 (1)
	16:40	27 16:05 (1)	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:03	16:59		16:24	25	15:49 (1)
8	08:48	15:38 (1)	08:10	07:11	06:58	05:55	05:16	05:24	06:07	06:59	07:50	07:46		08:35		15:24 (1)
	16:42	28 16:06 (1)	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:12	19:01	16:57		16:24	25	15:49 (1)
9	08:48	15:39 (1)	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48		08:37		15:24 (1)
	16:43	30 16:09 (1)	17:38	18:30	20:25	21:18	21:59	22:01	21:18	20:10	18:59	16:55		16:24	24	15:48 (1)
10	08:47	15:39 (1)	08:06	07:06	06:54	05:51	05:15	05:26	06:10	07:02	07:54	07:50		08:38		15:26 (1)
	16:45	31 16:10 (1)	17:40	18:32	20:27	21:19	22:00	22:01	21:16	20:08	18:57	16:54		16:24	22	15:48 (1)
11	08:46	15:39 (1)	08:04	07:04	06:51	05:50	05:15	05:27	06:12	07:04	07:55	07:52		08:39		15:26 (1)
	16:46	32 16:11 (1)	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:54	16:52		16:23	22	15:48 (1)
12	08:46	15:39 (1)	08:03	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54		08:40		15:26 (1)
	16:48	34 16:13 (1)	17:43	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:50		16:23	22	15:48 (1)
13	08:45	15:40 (1)	08:01	07:00	06:47	05:46	05:14	05:29	06:15	07:07	07:59	07:56		08:41		15:27 (1)
	16:49	34 16:14 (1)	17:45	18:38	20:32	21:24	22:02	21:58	21:10	20:00	18:50	16:49		16:23	20	15:47 (1)
14	08:44	15:40 (1)	07:59	06:57	06:45	05:45	05:14	05:30	06:17	07:09	08:01	07:57	15:29 (1)	08:42		15:27 (1)
	16:51	35 16:15 (1)	17:47	18:39	20:34	21:26	22:03	21:57	21:08	19:58	18:47	16:47	11 15:40 (1)	16:23	20	15:47 (1)
15	08:43	15:41 (1)	07:57	06:55	06:42	05:43	05:14	05:32	06:19	07:11	08:02	07:59	15:27 (1)	08:43		15:28 (1)
	16:52	34 16:15 (1)	17:49	18:41	20:36	21:27	22:04	21:56	21:06	19:56	18:45	16:46	16 15:43 (1)	16:23	19	15:47 (1)
16	08:42	15:42 (1)	07:55	06:52	06:40	05:41	05:14	05:33	06:20	07:13	08:04	08:01	15:25 (1)	08:44		15:29 (1)
	16:54	33 16:15 (1)	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:53	18:43	16:44	20 15:45 (1)	16:23	19	15:48 (1)
17	08:41	15:42 (1)	07:53	06:50	06:38	05:40	05:14	05:34	06:22	07:14	08:06	08:03	15:24 (1)	08:45		15:28 (1)
	16:56	33 16:15 (1)	17:53	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43	22 15:46 (1)	16:23	19	15:47 (1)
18	08:41	15:43 (1)	07:51	06:48	06:36	05:38	05:14	05:35	06:24	07:16	08:08	08:05	15:23 (1)	08:45		15:29 (1)
	16:57	33 16:16 (1)	17:55	18:47	20:41	21:32	22:05	21:53	21:00	19:48	18:39	16:42	25 15:48 (1)	16:24	18	15:47 (1)
19	08:39	15:44 (1)	07:49	06:45	06:33	05:37	05:14	05:37	06:25	07:18	08:10	08:06	15:22 (1)	08:46		15:30 (1)
	16:59	32 16:16 (1)	17:57	18:48	20:43	21:34	22:05	21:51	20:58	19:46	18:36	16:40	27 15:49 (1)	16:24	18	15:48 (1)
20	08:38	15:44 (1)	07:46	06:43	06:31	05:35	05:14	05:38	06:27	07:19	08:11	08:08	15:22 (1)	08:47		15:30 (1)
	17:01	31 16:15 (1)	17:59	18:50	20:45	21:35	22:06	21:50	20:55	19:44	18:34	16:39	28 15:50 (1)	16:24	18	15:48 (1)
21	08:37	15:46 (1)	07:44	06:41	06:29	05:34	05:14	05:39	06:29	07:21	08:13	08:10	15:21 (1)	08:47		15:31 (1)
	17:02	29 16:15 (1)	18:01	18:52	20:47	21:37	22:06	21:49	20:53	19:41	18:32	16:38	29 15:50 (1)	16:25	17	15:48 (1)
22	08:36	15:47 (1)	07:42	06:38	06:27	05:33	05:14	05:41	06:30	07:23	08:15	08:12	15:20 (1)	08:48		15:31 (1)
	17:04	28 16:15 (1)	18:03	18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:36	31 15:51 (1)	16:25	17	15:48 (1)
23	08:35	15:47 (1)	07:40	06:36	06:25	05:31	05:14	05:42	06:32	07:24	08:17	08:13	15:20 (1)	08:48		15:32 (1)
	17:06	27 16:14 (1)	18:04	18:55	20:50	21:40	22:06	21:46	20:49	19:37	18:28	16:35	32 15:52 (1)	16:26	18	15:50 (1)
24	08:34	15:49 (1)	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	15:20 (1)	08:49		15:32 (1)
	17:08	25 16:14 (1)	18:06	18:57	20:52	21:41	22:06	21:45	20:47	19:34	18:26	16:34	33 15:53 (1)	16:26	18	15:50 (1)
25	08:32	15:50 (1)	07:36	06:31	06:20	05:29	05:15	05:45	06:36	07:28	07:21	08:17	15:20 (1)	08:49		15:33 (1)
	17:09	22 16:12 (1)	18:08	18:59	20:54	21:42	22:06	21:43	20:44	19:32	17:24	16:33	33 15:53 (1)	16:27	18	15:51 (1)
26	08:31	15:52 (1)	07:34	06:29	06:18	05:28	05:15	05:47	06:37	07:29	07:22	08:18	15:21 (1)	08:49		15:33 (1)
	17:11	20 16:12 (1)	18:10	19:01	20:55	21:44	22:06	21:42	20:42	19:29	17:22	16:32	33 15:54 (1)	16:28	19	15:52 (1)
27	08:29	15:54 (1)	07:31	06:26	06:16	05:26	05:16	05:48	06:39	07:31	07:24	08:20	15:20 (1)	08:50		15:33 (1)
	17:13	16 16:10 (1)	18:12	19:03	20:57	21:45	22:06	21:40	20:40	19:27	17:20	16:31	34 15:54 (1)	16:28	19	15:52 (1)
28	08:28	15:58 (1)	07:29	06:24	06:14	05:25	05:16	05:50	06:41	07:33	07:26	08:21	15:20 (1)	08:50		15:34 (1)
	17:15	10 16:08 (1)	18:14	19:04	20:59	21:46	22:06	21:39	20:38	19:25	17:18	16:30	35 15:55 (1)	16:29	19	15:53 (1)
29	08:27			07:22	06:12	05:24	05:17	05:51	06:42	07:35	07:28	08:23	15:21 (1)	08:50		15:34 (1)
	17:17			20:06	21:01	21:48	22:06	21:37	20:35	19:22	17:16	16:29	35 15:56 (1)	16:30	20	15:54 (1)
30	08:25			07:19	06:10	05:23	05:17	05:53	06:44	07:36	07:30	08:24	15:21 (1)	08:50		15:35 (1)
	17:19			20:08	21:02	21:49	22:06	21:36	20:33	19:20	17:14	16:29	33 15:54 (1)	16:31	20	15:55 (1)
31	08:24			07:17		05:22		05:54	06:46		07:32			08:50		15:35 (1)
	17:21			20:10		21:50		21:34	20:31		17:12			16:32	21	15:56 (1)
Potential sun hours	255		276	367	418	489	503	506	456	381	330	263		240		
Total, worst case		768											477		671	
Sun reduction		0.16											0.19		0.14	
Oper. time red.		1.00											1.00		1.00	
Wind dir. red.		0.62											0.62		0.62	
Total reduction		0.10											0.12		0.09	
Total, real		75											55		57	

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)

Licensed user:
Jennings O'Donovan
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abyrne / abyrne@jodireland.com

Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: Y - H25

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January	February	March			April		May			June		
1	08:50	08:22	07:27			07:15		07:38 (4)	06:08		07:05 (1)	05:22		21:01 (8)
	16:33	17:23	18:16			20:11	13	07:51 (4)	21:04	5	07:10 (1)	21:51	13	21:14 (8)
2	08:50	08:20	07:25		07:49 (2)	07:12		07:35 (4)	06:06			05:21		21:01 (8)
	16:35	17:24	18:18	4	07:53 (2)	20:13	15	07:50 (4)	21:06			21:53	13	21:14 (8)
3	08:50	08:19	07:23		07:46 (2)	07:10		07:33 (4)	06:04			05:20		21:01 (8)
	16:36	17:26	18:19	8	07:54 (2)	20:15	17	07:50 (4)	21:07			21:54	13	21:14 (8)
4	08:50	08:17	07:20		07:44 (2)	07:08		07:31 (4)	06:02			05:19		21:02 (8)
	16:37	17:28	18:21	11	07:55 (2)	20:17	19	07:50 (4)	21:09			21:55	13	21:15 (8)
5	08:49	08:15	07:18		07:42 (2)	07:05		07:29 (4)	06:01			05:18		21:02 (8)
	16:38	17:30	18:23	15	07:57 (2)	20:18	20	07:49 (4)	21:11			21:56	12	21:14 (8)
6	08:49	08:14	07:16		07:39 (2)	07:03		07:27 (4)	05:59			05:18		21:03 (8)
	16:39	17:32	18:25	18	07:57 (2)	20:20	21	07:48 (4)	21:13			21:57	12	21:15 (8)
7	08:49	08:12	07:13		07:37 (2)	07:01		07:28 (4)	05:57			05:17		21:03 (8)
	16:41	17:34	18:27	20	07:57 (2)	20:22	18	07:46 (4)	21:14			21:58	11	21:14 (8)
8	08:48	08:10	07:11		07:35 (2)	06:58		07:30 (4)	05:55			05:16		21:04 (8)
	16:42	17:36	18:29	23	07:58 (2)	20:24	15	07:45 (4)	21:16			21:59	10	21:14 (8)
9	08:48	08:08	07:09		07:32 (2)	06:56		07:19 (1)	05:53			05:16		21:04 (8)
	16:43	17:38	18:30	26	07:58 (2)	20:26	14	07:41 (4)	21:18			21:59	10	21:14 (8)
10	08:47	08:06	07:07		07:30 (2)	06:54		07:17 (1)	05:51			05:15		21:05 (8)
	16:45	17:40	18:32	28	07:58 (2)	20:27	7	07:24 (1)	21:19			22:00	9	21:14 (8)
11	08:46	08:05	07:04		07:28 (2)	06:51		07:15 (1)	05:50			05:15		21:05 (8)
	16:46	17:42	18:34	30	07:58 (2)	20:29	11	07:26 (1)	21:21			22:01	9	21:14 (8)
12	08:46	08:03	07:02		07:25 (2)	06:49		07:13 (1)	05:48			05:15		21:05 (8)
	16:48	17:44	18:36	32	07:57 (2)	20:31	14	07:27 (1)	21:23			22:02	8	21:13 (8)
13	08:45	08:01	07:00		07:24 (2)	06:47		07:10 (1)	05:46			05:14		21:06 (8)
	16:49	17:46	18:38	33	07:57 (2)	20:33	17	07:27 (1)	21:24			22:02	7	21:13 (8)
14	08:44	07:59	06:57		07:24 (2)	06:45		07:08 (1)	05:45			05:14		21:07 (8)
	16:51	17:47	18:40	33	07:57 (2)	20:34	19	07:27 (1)	21:26			22:03	9	21:25 (7)
15	08:43	07:57	06:55		07:24 (2)	06:42		07:06 (1)	05:43			05:14		21:08 (8)
	16:52	17:49	18:41	31	07:55 (2)	20:36	22	07:28 (1)	21:27			22:04	10	21:26 (7)
16	08:42	07:55	06:53		07:25 (2)	06:40		07:04 (1)	05:41			05:14		21:08 (8)
	16:54	17:51	18:43	29	07:54 (2)	20:38	24	07:28 (1)	21:29			22:04	11	21:27 (7)
17	08:42	07:53	06:50		07:25 (2)	06:38		07:02 (1)	05:40			05:14		21:09 (8)
	16:56	17:53	18:45	27	07:52 (2)	20:40	26	07:28 (1)	21:31			22:05	11	21:28 (7)
18	08:41	07:51	06:48		07:26 (2)	06:36		06:59 (1)	05:38			05:14		21:10 (8)
	16:57	17:55	18:47	25	07:51 (2)	20:41	28	07:27 (1)	21:32			22:05	9	21:28 (7)
19	08:40	07:49	06:45		07:28 (2)	06:34		06:57 (1)	05:37			05:14		21:10 (8)
	16:59	17:57	18:48	21	07:49 (2)	20:43	30	07:27 (1)	21:34			22:05	9	21:28 (7)
20	08:38	07:47	06:43		07:29 (2)	06:31		06:55 (1)	05:35			05:14		21:11 (8)
	17:01	17:59	18:50	17	07:46 (2)	20:45	32	07:27 (1)	21:35			22:06	9	21:29 (7)
21	08:37	07:44	06:41		07:32 (2)	06:29		06:53 (1)	05:34			05:14		21:21 (7)
	17:02	18:01	18:52	11	07:43 (2)	20:47	38	20:19 (6)	21:37			22:06	8	21:29 (7)
22	08:36	07:42	06:38			06:27		06:53 (1)	05:33		21:05 (8)	05:14		21:22 (7)
	17:04	18:03	18:54			20:48	41	20:20 (6)	21:38	2	21:07 (8)	22:06	8	21:30 (7)
23	08:35	07:40	06:36			06:25		06:53 (1)	05:31		21:02 (8)	05:14		21:11 (8)
	17:06	18:05	18:56			20:50	43	20:22 (6)	21:40	5	21:07 (8)	22:06	9	21:29 (7)
24	08:34	07:38	06:34			06:23		06:54 (1)	05:30		21:02 (8)	05:15		21:11 (8)
	17:08	18:06	18:57			20:52	43	20:23 (6)	21:41	7	21:09 (8)	22:06	9	21:29 (7)
25	08:32	07:36	06:31			06:21		06:55 (1)	05:29		21:01 (8)	05:15		21:11 (8)
	17:10	18:08	18:59			20:54	42	20:23 (6)	21:42	9	21:10 (8)	22:07	10	21:30 (7)
26	08:31	07:34	06:29			06:18		06:55 (1)	05:28		21:01 (8)	05:15		21:11 (8)
	17:11	18:10	19:01			20:55	41	20:23 (6)	21:44	10	21:11 (8)	22:06	10	21:29 (7)
27	08:30	07:31	06:27			06:16		06:56 (1)	05:27		21:01 (8)	05:16		21:10 (8)
	17:13	18:12	19:03			20:57	39	20:23 (6)	21:45	11	21:12 (8)	22:06	11	21:29 (7)
28	08:28	07:29	06:24		06:47 (4)	06:14		06:57 (1)	05:25		21:00 (8)	05:16		21:10 (8)
	17:15	18:14	19:04	3	06:50 (4)	20:59	34	20:22 (6)	21:46	13	21:13 (8)	22:06	11	21:29 (7)
29	08:27		07:22		07:45 (4)	06:12		06:59 (1)	05:24		21:00 (8)	05:17		21:10 (8)
	17:17		20:06	6	07:51 (4)	21:01	29	20:21 (6)	21:48	13	21:13 (8)	22:06	9	21:28 (7)
30	08:25		07:19		07:43 (4)	06:10		07:01 (1)	05:23		21:00 (8)	05:18		21:10 (8)
	17:19		20:08	9	07:52 (4)	21:02	20	20:19 (6)	21:49	14	21:14 (8)	22:06	7	21:17 (8)
31	08:24		07:17		07:40 (4)				05:22		21:01 (8)			
	17:21		20:10	11	07:51 (4)				21:50	14	21:15 (8)			
Potential sun hours	256	276	367			418		489				503		
Total, worst case				471			752			103			300	
Sun reduction				0.24			0.35			0.37			0.30	
Oper. time red.				1.00			1.00			1.00			1.00	
Wind dir. red.				0.69			0.68			0.67			0.67	
Total reduction				0.17			0.24			0.25			0.20	
Total, real				79			181			25			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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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: Y - H25

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	July		August		September		October		November	December
1	05:18		21:10 (8)	05:56		06:47	07:14 (1)	07:38	08:04 (2)	07:34	08:26
	22:06	8	21:18 (8)	21:32		20:29	11 07:25 (1)	19:18	33 08:37 (2)	17:10	16:28
2	05:19		21:09 (8)	05:58		06:49	07:16 (1)	07:40	08:05 (2)	07:35	08:27
	22:05	9	21:18 (8)	21:31		20:26	7 07:23 (1)	19:15	31 08:36 (2)	17:08	16:27
3	05:20		21:09 (8)	05:59		06:51	07:17 (1)	07:42	08:07 (2)	07:37	08:29
	22:05	10	21:19 (8)	21:29		20:24	14 07:39 (4)	19:13	29 08:36 (2)	17:06	16:27
4	05:20		21:09 (8)	06:01		06:52	07:27 (4)	07:43	08:09 (2)	07:39	08:30
	22:04	10	21:19 (8)	21:27		20:22	15 07:42 (4)	19:11	27 08:36 (2)	17:04	16:26
5	05:21		21:09 (8)	06:02		06:54	07:25 (4)	07:45	08:11 (2)	07:41	08:32
	22:04	11	21:20 (8)	21:25		20:19	17 07:42 (4)	19:08	24 08:35 (2)	17:02	16:26
6	05:22		21:09 (8)	06:04		06:56	07:23 (4)	07:47	08:12 (2)	07:43	08:33
	22:03	12	21:21 (8)	21:24		20:17	21 07:44 (4)	19:06	22 08:34 (2)	17:01	16:25
7	05:23		21:08 (8)	06:06		06:58	07:24 (4)	07:48	08:14 (2)	07:45	08:34
	22:03	12	21:20 (8)	21:22		20:15	20 07:44 (4)	19:04	19 08:33 (2)	16:59	16:25
8	05:24		21:08 (8)	06:07		06:59	07:25 (4)	07:50	08:16 (2)	07:47	08:36
	22:02	13	21:21 (8)	21:20		20:12	19 07:44 (4)	19:01	16 08:32 (2)	16:57	16:24
9	05:25		21:08 (8)	06:09		07:01	07:27 (4)	07:52	08:18 (2)	07:48	08:37
	22:01	13	21:21 (8)	21:18		20:10	17 07:44 (4)	18:59	13 08:31 (2)	16:55	16:24
10	05:26		21:08 (8)	06:11		07:03	07:28 (4)	07:54	08:20 (2)	07:50	08:38
	22:01	14	21:22 (8)	21:16		20:08	16 07:44 (4)	18:57	10 08:30 (2)	16:54	16:24
11	05:27		21:08 (8)	06:12		07:04	07:30 (4)	07:55	08:21 (2)	07:52	08:39
	22:00	14	21:22 (8)	21:14		20:05	14 07:44 (4)	18:54	6 08:27 (2)	16:52	16:23
12	05:28		21:08 (8)	06:14	07:12 (1)	07:06	07:32 (4)	07:57	08:23 (2)	07:54	08:40
	21:59	14	21:22 (8)	21:12	12 20:26 (6)	20:03	11 07:43 (4)	18:52	2 08:25 (2)	16:50	16:23
13	05:29		21:09 (8)	06:16	07:09 (1)	07:08	07:33 (4)	07:59		07:56	08:41
	21:58	13	21:22 (8)	21:10	23 20:28 (6)	20:00	9 07:42 (4)	18:50		16:49	16:23
14	05:31		21:10 (8)	06:17	07:06 (1)	07:09	07:35 (4)	08:01		07:57	08:42
	21:57	13	21:23 (8)	21:08	30 20:29 (6)	19:58	6 07:41 (4)	18:48		16:47	16:23
15	05:32		21:10 (8)	06:19	07:05 (1)	07:11	07:37 (4)	08:03		07:59	08:43
	21:56	13	21:23 (8)	21:06	35 20:30 (6)	19:56	3 07:40 (4)	18:45		16:46	16:23
16	05:33		21:10 (8)	06:21	07:03 (1)	07:13		08:04		08:01	08:44
	21:55	12	21:22 (8)	21:04	38 20:29 (6)	19:53		18:43		16:44	16:23
17	05:34		21:10 (8)	06:22	07:02 (1)	07:14		08:06		08:03	08:45
	21:54	11	21:21 (8)	21:02	41 20:30 (6)	19:51		18:41		16:43	16:24
18	05:36		21:10 (8)	06:24	07:01 (1)	07:16		08:08		08:05	08:45
	21:53	10	21:20 (8)	21:00	43 20:30 (6)	19:49		18:39		16:42	16:24
19	05:37		21:11 (8)	06:26	06:59 (1)	07:18		08:10		08:06	08:46
	21:52	8	21:19 (8)	20:58	44 20:29 (6)	19:46		18:36		16:40	16:24
20	05:38		21:12 (8)	06:27	06:59 (1)	07:19		08:12		08:08	08:47
	21:50	6	21:18 (8)	20:55	42 20:27 (6)	19:44		18:34		16:39	16:24
21	05:40		21:13 (8)	06:29	06:58 (1)	07:21		08:13		08:10	08:47
	21:49	4	21:17 (8)	20:53	40 20:25 (6)	19:41		18:32		16:38	16:25
22	05:41			06:31	06:58 (1)	07:23	08:19 (2)	08:15		08:12	08:48
	21:48			20:51	37 20:23 (6)	19:39	7 08:26 (2)	18:30		16:37	16:25
23	05:42			06:32	07:00 (1)	07:24	08:14 (2)	08:17		08:13	08:48
	21:46			20:49	31 07:31 (1)	19:37	16 08:30 (2)	18:28		16:35	16:26
24	05:44			06:34	07:01 (1)	07:26	08:12 (2)	08:19		08:15	08:49
	21:45			20:47	30 07:31 (1)	19:34	20 08:32 (2)	18:26		16:34	16:26
25	05:45			06:36	07:03 (1)	07:28	08:09 (2)	07:21		08:17	08:49
	21:44			20:45	28 07:31 (1)	19:32	24 08:33 (2)	17:24		16:33	16:27
26	05:47			06:37	07:04 (1)	07:30	08:08 (2)	07:22		08:18	08:50
	21:42			20:42	26 07:30 (1)	19:29	27 08:35 (2)	17:22		16:32	16:28
27	05:48			06:39	07:06 (1)	07:31	08:07 (2)	07:24		08:20	08:50
	21:41			20:40	24 07:30 (1)	19:27	29 08:36 (2)	17:20		16:31	16:29
28	05:50			06:41	07:08 (1)	07:33	08:05 (2)	07:26		08:21	08:50
	21:39			20:38	21 07:29 (1)	19:25	30 08:35 (2)	17:18		16:30	16:29
29	05:51			06:42	07:09 (1)	07:35	08:04 (2)	07:28		08:23	08:50
	21:37			20:36	19 07:28 (1)	19:22	32 08:36 (2)	17:16		16:30	16:30
30	05:53			06:44	07:11 (1)	07:36	08:04 (2)	07:30		08:25	08:50
	21:36			20:33	16 07:27 (1)	19:20	33 08:37 (2)	17:14		16:29	16:31
31	05:54			06:46	07:12 (1)			07:32			08:50
	21:34			20:31	14 07:26 (1)			17:12			16:32
Potential sun hours	506			456		381		330		263	240
Total, worst case		230			594		418		232		
Sun reduction		0.26			0.30		0.28		0.24		
Oper. time red.		1.00			1.00		1.00		1.00		
Wind dir. red.		0.67			0.68		0.69		0.69		
Total reduction		0.18			0.20		0.19		0.16		
Total, real		41			119		81		38		

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)

Licensed user:
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abyrne / abyrne@jodireland.com

Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: Z - H26

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January		February		March		April	May	June
1	08:50		09:23 (3)	08:22		08:49 (4)	07:27	17:40 (6)	07:15	06:08	05:21
	16:33	7	09:30 (3)	17:23	42	09:31 (1)	18:16	9	17:49 (6)	20:11	21:04	21:51
2	08:50		09:22 (3)	08:20		08:47 (4)	07:25	17:40 (6)	07:12	06:06	05:21
	16:34	7	09:29 (3)	17:24	43	09:30 (1)	18:18	11	17:51 (6)	20:13	21:06	21:53
3	08:50		09:22 (3)	08:19		08:45 (4)	07:23	17:39 (6)	07:10	06:04	05:20
	16:36	8	09:30 (3)	17:26	44	09:29 (1)	18:19	11	17:50 (6)	20:15	21:08	21:54
4	08:50		09:22 (3)	08:17		08:44 (4)	07:20	17:41 (6)	07:08	06:02	05:19
	16:37	9	09:31 (3)	17:28	44	09:29 (1)	18:21	8	17:49 (6)	20:17	21:09	21:55
5	08:49		09:21 (3)	08:15		08:42 (4)	07:18	17:44 (6)	07:05	06:01	05:18
	16:38	10	09:31 (3)	17:30	44	09:28 (1)	18:23	2	17:46 (6)	20:18	21:11	21:56
6	08:49		09:21 (3)	08:14		08:40 (4)	07:16			07:03	05:59	05:18
	16:39	11	09:32 (3)	17:32	43	09:27 (1)	18:25			20:20	21:13	21:57
7	08:49		09:20 (3)	08:12		08:38 (4)	07:13			07:01	05:57	05:17
	16:41	12	09:32 (3)	17:34	41	09:25 (1)	18:27			20:22	21:14	21:58
8	08:48		09:19 (3)	08:10		08:36 (4)	07:11			06:58	05:55	05:16
	16:42	13	09:32 (3)	17:36	38	09:23 (1)	18:29			20:24	21:16	21:59
9	08:48		09:19 (3)	08:08		08:36 (4)	07:09			06:56	05:53	05:16
	16:43	14	09:33 (3)	17:38	32	09:20 (1)	18:30			20:26	21:18	21:59
10	08:47		09:18 (1)	08:06		08:37 (4)	07:07			06:54	05:51	05:15
	16:45	15	09:33 (3)	17:40	20	08:57 (4)	18:32			20:27	21:19	22:00
11	08:46		09:17 (1)	08:05		08:39 (4)	07:04			06:51	05:50	05:15
	16:46	16	09:33 (3)	17:42	16	08:55 (4)	18:34			20:29	21:21	22:01
12	08:46		09:16 (1)	08:03		08:41 (4)	07:02	18:03 (7)	06:49	05:48	05:15
	16:48	17	09:33 (3)	17:44	12	08:53 (4)	18:36	6	18:09 (7)	20:31	21:23	22:02
13	08:45		09:15 (1)	08:01		08:44 (4)	07:00	18:01 (7)	06:47	05:46	05:14
	16:49	17	09:32 (3)	17:45	6	08:50 (4)	18:38	10	18:11 (7)	20:33	21:24	22:02
14	08:44		09:14 (1)	07:59			06:57	18:00 (7)	06:45	05:45	05:14
	16:51	18	09:32 (3)	17:47			18:39	13	18:13 (7)	20:34	21:26	22:03
15	08:43		09:13 (1)	07:57			06:55	17:58 (7)	06:42	05:43	05:14
	16:52	19	09:32 (3)	17:49			18:41	15	18:13 (7)	20:36	21:27	22:04
16	08:43		09:12 (1)	07:55			06:53	17:58 (7)	06:40	05:41	05:14
	16:54	20	09:32 (3)	17:51			18:43	15	18:13 (7)	20:38	21:29	22:04
17	08:42		09:11 (1)	07:53			06:50	17:57 (7)	06:38	05:40	05:14
	16:56	20	09:31 (3)	17:53			18:45	15	18:12 (7)	20:40	21:31	22:05
18	08:41		09:10 (1)	07:51			06:48	17:57 (7)	06:36	05:38	05:14
	16:57	20	09:30 (3)	17:55			18:47	15	18:12 (7)	20:41	21:32	22:05
19	08:40		09:09 (1)	07:49			06:45	17:58 (7)	06:33	05:37	05:14
	16:59	20	09:29 (3)	17:57			18:48	14	18:12 (7)	20:43	21:34	22:05
20	08:38		09:07 (1)	07:47			06:43	17:58 (7)	06:31	05:35	05:14
	17:01	21	09:28 (1)	17:59			18:50	16	18:24 (8)	20:45	21:35	22:06
21	08:37		09:06 (1)	07:44			06:41	18:01 (7)	06:29	05:34	05:14
	17:02	23	09:29 (1)	18:01			18:52	14	18:26 (8)	20:47	21:37	22:06
22	08:36		09:05 (1)	07:42			06:38	18:17 (8)	06:27	05:33	05:14
	17:04	25	09:30 (1)	18:03			18:54	10	18:27 (8)	20:48	21:38	22:06
23	08:35		09:03 (1)	07:40			06:36	18:17 (8)	06:25	05:31	05:14
	17:06	27	09:30 (1)	18:05			18:56	12	18:29 (8)	20:50	21:40	22:06
24	08:34		09:02 (1)	07:38			06:34	18:17 (8)	06:23	05:30	05:15
	17:08	29	09:31 (1)	18:06			18:57	12	18:29 (8)	20:52	21:41	22:06
25	08:32		09:00 (1)	07:36			06:31	18:17 (8)	06:21	05:29	05:15
	17:10	31	09:31 (1)	18:08			18:59	10	18:27 (8)	20:54	21:42	22:07
26	08:31		08:59 (1)	07:34			06:29	18:18 (8)	06:18	05:28	05:15
	17:11	32	09:31 (1)	18:10			19:01	8	18:26 (8)	20:55	21:44	22:07
27	08:30		08:57 (1)	07:31		17:42 (6)	06:27	18:22 (8)	06:16	05:27	05:16
	17:13	34	09:31 (1)	18:12	4	17:46 (6)	19:03	1	18:23 (8)	20:57	21:45	22:06
28	08:28		08:56 (1)	07:29		17:40 (6)	06:24			06:14	05:25	05:16
	17:15	36	09:32 (1)	18:14	7	17:47 (6)	19:04			20:59	21:46	22:06
29	08:27		08:54 (4)				07:22			06:12	05:24	05:17
	17:17	37	09:31 (1)				20:06			21:01	21:48	22:06
30	08:25		08:52 (4)				07:19			06:10	05:23	05:18
	17:19	39	09:31 (1)				20:08			21:02	21:49	22:06
31	08:24		08:51 (4)				07:17				05:22	
	17:21	41	09:32 (1)				20:10				21:50	
Potential sun hours	255			276			367			418	489	503
Total, worst case		648			436			227				
Sun reduction		0.16			0.21			0.24				
Oper. time red.		1.00			1.00			1.00				
Wind dir. red.		0.65			0.66			0.68				
Total reduction		0.10			0.14			0.17				
Total, real		67			59			38				

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)

Licensed user:
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abyrne / abyrne@jodireland.com

Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: Z - H26

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	July		August		September		October		November		December	
1	05:18		05:56		06:47		07:38		18:42 (7)		07:34	
	22:06		21:32		20:29		19:18	8	18:50 (7)		17:10	20
2	05:19		05:58		06:49		07:40				07:35	
	22:05		21:31		20:26		19:15				17:08	32
3	05:20		05:59		06:51		07:41				07:37	
	22:05		21:29		20:24		19:13				17:06	39
4	05:20		06:01		06:52		07:43				07:39	
	22:04		21:27		20:22		19:11				17:04	42
5	05:21		06:02		06:54		07:45				07:41	
	22:04		21:25		20:19		19:08				17:02	43
6	05:22		06:04		06:56		07:47				07:43	
	22:03		21:24		20:17		19:06				17:01	44
7	05:23		06:06		06:58		07:48				07:45	
	22:03		21:22		20:15		19:04				16:59	43
8	05:24		06:07		06:59		07:50				07:47	
	22:02		21:20		20:12		19:01				16:57	44
9	05:25		06:09		07:01		07:52		18:17 (6)		07:48	
	22:01		21:18		20:10		18:59	6	18:23 (6)		16:55	43
10	05:26		06:11		07:03		07:54		18:15 (6)		07:50	
	22:01		21:16		20:08		18:57	9	18:24 (6)		16:54	42
11	05:27		06:12		07:04		07:55		18:13 (6)		07:52	
	22:00		21:14		20:05		18:54	11	18:24 (6)		16:52	40
12	05:28		06:14		07:06		07:57		18:13 (6)		07:54	
	21:59		21:12		20:03		18:52	10	18:23 (6)		16:50	39
13	05:29		06:16		07:08		07:59		18:13 (6)		07:56	
	21:58		21:10		20:00		18:50	8	18:21 (6)		16:49	37
14	05:30		06:17		07:09		08:01		18:13 (6)		07:57	
	21:57		21:08		19:58		18:48	6	18:19 (6)		16:47	36
15	05:32		06:19		07:11		08:03		18:14 (6)		07:59	
	21:56		21:06		19:56		18:45	3	18:17 (6)		16:46	34
16	05:33		06:21		07:13		08:04				08:01	
	21:55		21:04		19:53		18:43				16:44	32
17	05:34		06:22		07:14		08:06				08:03	
	21:54		21:02		19:51	7	19:14 (8)		18:41		16:43	31
18	05:35		06:24		07:16		19:05 (8)		08:08		08:05	
	21:53		21:00		19:49	11	19:16 (8)		18:39		16:42	29
19	05:37		06:26		07:18		19:04 (8)		08:10		08:06	
	21:52		20:58		19:46	11	19:15 (8)		18:36		16:40	27
20	05:38		06:27		07:19		19:03 (8)		08:12		08:08	
	21:50		20:55		19:44	13	19:16 (8)		18:34		16:39	25
21	05:40		06:29		07:21		19:03 (8)		08:13		08:10	
	21:49		20:53		19:41	11	19:14 (8)		18:32		16:38	23
22	05:41		06:31		07:23		18:46 (7)		08:15		08:12	
	21:48		20:51		19:39	13	19:11 (8)		18:30		16:37	21
23	05:42		06:32		07:24		18:44 (7)		08:17		08:13	
	21:46		20:49		19:37	15	19:09 (8)		18:28		16:35	20
24	05:44		06:34		07:26		18:42 (7)		08:19		08:15	
	21:45		20:47		19:34	13	18:55 (7)		18:26		16:34	20
25	05:45		06:36		07:28		18:40 (7)		07:21		08:17	
	21:44		20:45		19:32	15	18:55 (7)		17:24		16:33	20
26	05:47		06:37		07:29		18:40 (7)		07:22		08:18	
	21:42		20:42		19:29	15	18:55 (7)		17:22		16:32	20
27	05:48		06:39		07:31		18:40 (7)		07:24		08:20	
	21:41		20:40		19:27	15	18:55 (7)		17:20		16:31	19
28	05:50		06:41		07:33		18:39 (7)		07:26		08:21	
	21:39		20:38		19:25	15	18:54 (7)		17:18		16:30	18
29	05:51		06:42		07:35		18:39 (7)		07:28		08:23	
	21:37		20:36		19:22	14	18:53 (7)		17:16	8	08:21 (4)	
30	05:53		06:44		07:36		18:40 (7)		07:30		08:10 (4)	
	21:36		20:33		19:20	12	18:52 (7)		17:14	13	08:23 (4)	
31	05:54		06:46						07:32		08:08 (4)	
	21:34		20:31						17:12	17	08:25 (4)	
Potential sun hours	506		456		381		330				263	
Total, worst case						180		99				917
Sun reduction						0.28		0.24				0.19
Oper. time red.						1.00		1.00				1.00
Wind dir. red.						0.69		0.67				0.66
Total reduction						0.19		0.16				0.12
Total, real						35		16				112

	December	
1	08:26	08:59 (1)
	16:28	16
2	08:28	09:01 (1)
	16:27	15
3	08:29	09:02 (1)
	16:27	14
4	08:30	09:04 (3)
	16:26	13
5	08:32	09:05 (3)
	16:25	12
6	08:33	09:07 (3)
	16:25	11
7	08:34	09:08 (3)
	16:25	10
8	08:36	09:09 (3)
	16:24	9
9	08:37	09:10 (3)
	16:24	8
10	08:38	09:12 (3)
	16:24	7
11	08:39	09:13 (3)
	16:23	7
12	08:40	09:14 (3)
	16:23	6
13	08:41	09:15 (3)
	16:23	5
14	08:42	09:16 (3)
	16:23	10
15	08:43	09:17 (3)
	16:23	12
16	08:44	09:18 (3)
	16:23	13
17	08:45	09:19 (3)
	16:24	13
18	08:45	09:19 (3)
	16:24	13
19	08:46	09:20 (3)
	16:24	14
20	08:47	09:21 (3)
	16:24	14
21	08:47	09:21 (3)
	16:25	14
22	08:48	09:22 (3)
	16:25	14
23	08:48	09:22 (3)
	16:26	14
24	08:49	09:22 (3)
	16:26	14
25	08:49	09:23 (3)
	16:27	14
26	08:50	09:23 (3)
	16:28	13
27	08:50	09:23 (3)
	16:28	13
28	08:50	09:23 (3)
	16:29	12
29	08:50	09:23 (3)
	16:30	12
30	08:50	09:23 (3)
	16:31	9
31	08:50	09:23 (3)
	16:32	6
Total, worst case		357
Sun reduction		0.14
Oper. time red.		1.00
Wind dir. red.		0.63
Total reduction		0.09
Total, real		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)

Licensed user:
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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: AA - H27

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January	February	March		April		May		June		
1	08:50	08:22	07:27		07:15		07:38 (4)		06:08		06:42 (1)	05:22		
	16:33	17:23	18:16		20:11	1	07:39 (4)		21:04	42	20:33 (6)	21:51		
2	08:50	08:20	07:25		07:12		07:35 (4)		06:06		06:42 (1)	05:21		21:17 (8)
	16:35	17:24	18:18		20:13	4	07:39 (4)		21:06	41	20:33 (6)	21:53	2	21:19 (8)
3	08:50	08:19	07:23		07:10		07:33 (4)		06:04		06:44 (1)	05:20		21:15 (8)
	16:36	17:26	18:19		20:15	7	07:40 (4)		21:07	38	20:34 (6)	21:54	5	21:20 (8)
4	08:50	08:17	07:20		07:08		07:31 (4)		06:02		06:45 (1)	05:19		21:15 (8)
	16:37	17:28	18:21		20:17	10	07:41 (4)		21:09	35	20:33 (6)	21:55	6	21:21 (8)
5	08:49	08:15	07:18		07:05		07:29 (4)		06:01		06:46 (1)	05:18		21:14 (8)
	16:38	17:30	18:23		20:18	12	07:41 (4)		21:11	32	20:33 (6)	21:56	8	21:22 (8)
6	08:49	08:14	07:16		07:03		07:26 (4)		05:59		06:47 (1)	05:18		21:15 (8)
	16:39	17:32	18:25		20:20	14	07:40 (4)		21:13	27	20:31 (6)	21:57	8	21:23 (8)
7	08:49	08:12	07:13	07:37 (3)	07:01		07:24 (4)		05:57		06:50 (1)	05:17		21:14 (8)
	16:41	17:34	18:27	3 07:40 (3)	20:22	16	07:40 (4)		21:14	20	20:31 (6)	21:58	10	21:24 (8)
8	08:48	08:10	07:11	07:35 (3)	06:58		07:22 (4)		05:55		20:23 (6)	05:16		21:14 (8)
	16:42	17:36	18:29	6 07:41 (3)	20:24	18	07:40 (4)		21:16	6	20:29 (6)	21:59	11	21:25 (8)
9	08:48	08:08	07:09	07:32 (2)	06:56		07:19 (4)		05:53			05:16		21:14 (8)
	16:43	17:38	18:30	9 07:41 (3)	20:26	19	07:38 (4)		21:18			21:59	11	21:25 (8)
10	08:47	08:06	07:07	07:30 (2)	06:54		07:17 (4)		05:51			05:15		21:14 (8)
	16:45	17:40	18:32	11 07:41 (3)	20:27	21	07:38 (4)		21:19			22:00	12	21:26 (8)
11	08:46	08:05	07:04	07:28 (2)	06:51		07:18 (4)		05:50			05:15		21:15 (8)
	16:46	17:42	18:34	13 07:41 (3)	20:29	19	07:37 (4)		21:21			22:01	12	21:27 (8)
12	08:46	08:03	07:02	07:25 (2)	06:49		07:19 (4)		05:48			05:15		21:14 (8)
	16:48	17:44	18:36	15 07:40 (2)	20:31	16	07:35 (4)		21:23			22:02	13	21:27 (8)
13	08:45	08:01	07:00	07:23 (2)	06:47		07:20 (4)		05:46			05:14		21:14 (8)
	16:49	17:46	18:38	18 07:41 (2)	20:33	12	07:32 (4)		21:24			22:02	13	21:27 (8)
14	08:44	07:59	06:57	07:21 (2)	06:45		07:23 (4)		05:45			05:14		21:14 (8)
	16:51	17:47	18:40	21 07:42 (2)	20:34	6	07:29 (4)		21:26			22:03	14	21:28 (8)
15	08:43	07:57	06:55	07:18 (2)	06:42		07:06 (1)		05:43			05:14		21:15 (8)
	16:52	17:49	18:41	23 07:41 (2)	20:36	3	07:09 (1)		21:27			22:04	13	21:28 (8)
16	08:42	07:55	06:53	07:16 (2)	06:40		07:04 (1)		05:41			05:14		21:15 (8)
	16:54	17:51	18:43	26 07:42 (2)	20:38	6	07:10 (1)		21:29			22:04	13	21:28 (8)
17	08:42	07:53	06:50	07:13 (2)	06:38		07:02 (1)		05:40			05:14		21:15 (8)
	16:56	17:53	18:45	28 07:41 (2)	20:40	10	07:12 (1)		21:31			22:05	13	21:28 (8)
18	08:41	07:51	06:48	07:11 (2)	06:36		06:59 (1)		05:38			05:14		21:15 (8)
	16:57	17:55	18:47	30 07:41 (2)	20:41	13	07:12 (1)		21:32			22:05	14	21:29 (8)
19	08:40	07:49	06:45	07:09 (2)	06:34		06:57 (1)		05:37			05:14		21:15 (8)
	16:59	17:57	18:48	32 07:41 (2)	20:43	15	07:12 (1)		21:34			22:05	14	21:29 (8)
20	08:38	07:47	06:43	07:07 (2)	06:31		06:55 (1)		05:36			05:14		21:16 (8)
	17:01	17:59	18:50	33 07:40 (2)	20:45	18	07:13 (1)		21:35			22:06	13	21:29 (8)
21	08:37	07:44	06:41	07:08 (2)	06:29		06:53 (1)		05:34			05:14		21:16 (8)
	17:02	18:01	18:52	32 07:40 (2)	20:47	20	07:13 (1)		21:37			22:06	13	21:29 (8)
22	08:36	07:42	06:38	07:09 (2)	06:27		06:51 (1)		05:33			05:14		21:17 (8)
	17:04	18:03	18:54	30 07:39 (2)	20:48	23	07:14 (1)		21:38			22:06	13	21:30 (8)
23	08:35	07:40	06:36	07:08 (2)	06:25		06:49 (1)		05:31			05:14		21:16 (8)
	17:06	18:05	18:56	29 07:37 (2)	20:50	25	07:14 (1)		21:40			22:06	14	21:30 (8)
24	08:34	07:38	06:34	07:10 (2)	06:23		06:47 (1)		05:30			05:15		21:16 (8)
	17:08	18:06	18:57	26 07:36 (2)	20:52	27	07:14 (1)		21:41			22:06	14	21:30 (8)
25	08:32	07:36	06:31	07:10 (2)	06:21		06:45 (1)		05:29			05:15		21:17 (8)
	17:10	18:08	18:59	24 07:34 (2)	20:54	29	07:14 (1)		21:42			22:07	14	21:31 (8)
26	08:31	07:34	06:29	07:12 (2)	06:18		06:43 (1)		05:28			05:15		21:17 (8)
	17:11	18:10	19:01	20 07:32 (2)	20:55	30	07:13 (1)		21:44			22:06	13	21:30 (8)
27	08:30	07:31	06:27	07:14 (2)	06:16		06:41 (1)		05:27			05:16		21:17 (8)
	17:13	18:12	19:03	16 07:30 (2)	20:57	32	07:13 (1)		21:45			22:06	13	21:30 (8)
28	08:28	07:29	06:24	07:17 (2)	06:14		06:41 (1)		05:25			05:16		21:18 (8)
	17:15	18:14	19:04	8 07:25 (2)	20:59	38	20:30 (6)		21:46			22:06	13	21:31 (8)
29	08:27		07:22		06:12		06:41 (1)		05:24			05:17		21:18 (8)
	17:17		20:06		21:01	42	20:32 (6)		21:48			22:06	13	21:31 (8)
30	08:25		07:19		06:10		06:41 (1)		05:23			05:18		21:18 (8)
	17:19		20:08		21:02	43	20:33 (6)		21:49			22:06	13	21:31 (8)
31	08:24		07:17						05:22					
	17:21		20:10						21:50					
Potential sun hours	256	276	367		418		489		503		
Total, worst case			453		549		241		338		
Sun reduction			0.24		0.35		0.37		0.30		
Oper. time red.			1.00		1.00		1.00		1.00		
Wind dir. red.			0.69		0.68		0.68		0.66		
Total reduction			0.17		0.24		0.25		0.20		
Total, real			76		132		60		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)

Licensed user:
Jennings O'Donovan
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
abyrne / abyrne@jodireland.com

Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: AA - H27

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	July			August			September			October			November	December
1	05:18		21:19 (8)	05:56			06:47		07:17 (4)	07:38		08:04 (2)	07:34	08:26
	22:06	12	21:31 (8)	21:32			20:29	19	07:36 (4)	19:18	16	08:20 (2)	17:10	16:28
2	05:19		21:18 (8)	05:58			06:49		07:16 (4)	07:40		08:05 (2)	07:35	08:27
	22:05	13	21:31 (8)	21:31			20:26	21	07:37 (4)	19:15	14	08:19 (3)	17:08	16:27
3	05:20		21:19 (8)	05:59			06:51		07:17 (4)	07:42		08:07 (2)	07:37	08:29
	22:05	12	21:31 (8)	21:29			20:24	19	07:36 (4)	19:13	12	08:19 (3)	17:06	16:27
4	05:20		21:20 (8)	06:01			06:52		07:19 (4)	07:43		08:09 (2)	07:39	08:30
	22:04	10	21:30 (8)	21:27			20:22	18	07:37 (4)	19:11	10	08:19 (3)	17:04	16:26
5	05:21		21:20 (8)	06:02		07:02 (1)	06:54		07:20 (4)	07:45		08:11 (2)	07:41	08:32
	22:04	10	21:30 (8)	21:25	12	20:39 (6)	20:19	16	07:36 (4)	19:08	7	08:18 (3)	17:02	16:26
6	05:22		21:21 (8)	06:04		06:59 (1)	06:56		07:22 (4)	07:47		08:12 (3)	07:43	08:33
	22:03	9	21:30 (8)	21:24	22	20:41 (6)	20:17	14	07:36 (4)	19:06	4	08:16 (3)	17:01	16:25
7	05:23		21:21 (8)	06:06		06:56 (1)	06:58		07:24 (4)	07:48		08:14 (3)	07:45	08:34
	22:03	7	21:28 (8)	21:22	29	20:41 (6)	20:15	12	07:36 (4)	19:04	1	08:15 (3)	16:59	16:25
8	05:24		21:21 (8)	06:07		06:55 (1)	06:59		07:25 (4)	07:50			07:47	08:36
	22:02	7	21:28 (8)	21:20	33	20:42 (6)	20:12	10	07:35 (4)	19:01			16:57	16:24
9	05:25		21:22 (8)	06:09		06:53 (1)	07:01		07:27 (4)	07:52			07:48	08:37
	22:01	5	21:27 (8)	21:18	37	20:42 (6)	20:10	7	07:34 (4)	18:59			16:55	16:24
10	05:26		21:23 (8)	06:11		06:52 (1)	07:03		07:28 (4)	07:54			07:50	08:38
	22:01	4	21:27 (8)	21:16	39	20:42 (6)	20:08	4	07:32 (4)	18:57			16:54	16:24
11	05:27			06:12		06:51 (1)	07:04		07:30 (4)	07:55			07:52	08:39
	22:00			21:14	43	20:43 (6)	20:05	1	07:31 (4)	18:54			16:52	16:23
12	05:28			06:14		06:50 (1)	07:06			07:57			07:54	08:40
	21:59			21:12	43	20:42 (6)	20:03			18:52			16:50	16:23
13	05:29			06:16		06:50 (1)	07:08			07:59			07:56	08:41
	21:58			21:10	42	20:41 (6)	20:00			18:50			16:49	16:23
14	05:31			06:17		06:48 (1)	07:09			08:01			07:57	08:42
	21:57			21:08	41	20:39 (6)	19:58			18:48			16:47	16:23
15	05:32			06:19		06:48 (1)	07:11		08:09 (2)	08:03			07:59	08:43
	21:56			21:06	38	20:37 (6)	19:56	5	08:14 (2)	18:45			16:46	16:23
16	05:33			06:21		06:48 (1)	07:13		08:03 (2)	08:04			08:01	08:44
	21:55			21:04	31	07:19 (1)	19:53	15	08:18 (2)	18:43			16:44	16:23
17	05:34			06:22		06:50 (1)	07:14		08:01 (2)	08:06			08:03	08:45
	21:54			21:02	30	07:20 (1)	19:51	19	08:20 (2)	18:41			16:43	16:24
18	05:36			06:24		06:52 (1)	07:16		07:59 (2)	08:08			08:05	08:45
	21:53			21:00	28	07:20 (1)	19:49	23	08:22 (2)	18:39			16:42	16:24
19	05:37			06:26		06:53 (1)	07:18		07:56 (2)	08:10			08:06	08:46
	21:52			20:58	26	07:19 (1)	19:46	26	08:22 (2)	18:36			16:40	16:24
20	05:38			06:27		06:55 (1)	07:19		07:55 (2)	08:12			08:08	08:47
	21:50			20:55	24	07:19 (1)	19:44	29	08:24 (2)	18:34			16:39	16:24
21	05:40			06:29		06:56 (1)	07:21		07:54 (2)	08:13			08:10	08:47
	21:49			20:53	22	07:18 (1)	19:41	30	08:24 (2)	18:32			16:38	16:25
22	05:41			06:31		06:58 (1)	07:23		07:53 (2)	08:15			08:12	08:48
	21:48			20:51	20	07:18 (1)	19:39	31	08:24 (2)	18:30			16:37	16:25
23	05:42			06:32		07:00 (1)	07:24		07:52 (2)	08:17			08:13	08:48
	21:46			20:49	18	07:18 (1)	19:37	32	08:24 (2)	18:28			16:35	16:26
24	05:44			06:34		07:01 (1)	07:26		07:52 (2)	08:19			08:15	08:49
	21:45			20:47	15	07:16 (1)	19:34	33	08:25 (2)	18:26			16:34	16:26
25	05:45			06:36		07:03 (1)	07:28		07:53 (2)	07:21			08:17	08:49
	21:44			20:45	12	07:15 (1)	19:32	31	08:24 (2)	17:24			16:33	16:27
26	05:47			06:37		07:04 (1)	07:30		07:55 (2)	07:22			08:18	08:50
	21:42			20:42	9	07:13 (1)	19:29	29	08:24 (2)	17:22			16:32	16:28
27	05:48			06:39		07:06 (1)	07:31		07:57 (2)	07:24			08:20	08:50
	21:41			20:40	6	07:12 (1)	19:27	27	08:24 (2)	17:20			16:31	16:29
28	05:50			06:41		07:08 (1)	07:33		07:58 (2)	07:26			08:21	08:50
	21:39			20:38	2	07:10 (1)	19:25	24	08:22 (2)	17:18			16:30	16:29
29	05:51			06:42		07:23 (4)	07:35		08:00 (2)	07:28			08:23	08:50
	21:37			20:36	7	07:30 (4)	19:22	22	08:22 (2)	17:16			16:30	16:30
30	05:53			06:44		07:20 (4)	07:36		08:02 (2)	07:30			08:25	08:50
	21:36			20:33	13	07:33 (4)	19:20	19	08:21 (2)	17:14			16:29	16:31
31	05:54			06:46		07:18 (4)				07:32				08:50
	21:34			20:31	16	07:34 (4)				17:12				16:32
Potential sun hours	506			456			381			330			263	240
Total, worst case		89			658			536			64			
Sun reduction		0.26			0.30			0.28			0.24			
Oper. time red.		1.00			1.00			1.00			1.00			
Wind dir. red.		0.66			0.68			0.69			0.69			
Total reduction		0.17			0.20			0.19			0.16			
Total, real		16			132			104			10			

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)

Licensed user:
Jennings O'Donovan
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+353719161416
abyrne / abyrne@jodireland.com

Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: AB - H28

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:08	05:21	21:07 (2)	05:18	21:14 (2)	05:56	06:47	07:38	07:33	08:26
	16:33	17:22	18:16	20:11	21:04	21:51	11 21:18 (2)	22:05	17 21:31 (2)	21:32	20:29	19:17	17:10	16:28
2	08:50	08:20	07:25	07:12	06:06	05:21	21:07 (2)	05:19	21:14 (2)	05:57	06:49	07:40	07:35	08:27
	16:34	17:24	18:17	20:13	21:06	21:52	12 21:19 (2)	22:05	17 21:31 (2)	21:31	20:26	19:15	17:08	16:27
3	08:50	08:19	07:22	07:10	06:04	05:20	21:07 (2)	05:20	21:14 (2)	05:59	06:51	07:41	07:37	08:29
	16:36	17:26	18:19	20:15	21:07	21:53	13 21:20 (2)	22:05	16 21:30 (2)	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:02	05:19	21:08 (2)	05:20	21:14 (2)	06:01	06:52	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09	21:55	13 21:21 (2)	22:04	16 21:30 (2)	21:27	20:22	19:10	17:04	16:26
5	08:49	08:15	07:18	07:05	06:00	05:18	21:08 (2)	05:21	21:15 (2)	06:02	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:18	21:11	21:56	14 21:22 (2)	22:04	15 21:30 (2)	21:25	20:19	19:08	17:02	16:25
6	08:49	08:14	07:16	07:03	05:59	05:18	21:09 (2)	05:22	21:14 (2)	06:04	06:56	07:47	07:43	08:33
	16:39	17:32	18:25	20:20	21:12	21:57	14 21:23 (2)	22:03	15 21:29 (2)	21:23	20:17	19:06	17:00	16:25
7	08:48	08:12	07:13	07:01	05:57	05:17	21:08 (2)	05:23	21:14 (2)	06:06	06:57	07:48	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	16 21:24 (2)	22:03	14 21:28 (2)	21:22	20:15	19:03	16:59	16:25
8	08:48	08:10	07:11	06:58	05:55	05:16	21:09 (2)	05:24	21:14 (2)	06:07	06:59	07:50	07:46	08:35
	16:42	17:36	18:29	20:24	21:16	21:58	16 21:25 (2)	22:02	14 21:28 (2)	21:20	20:12	19:01	16:57	16:24
9	08:47	08:08	07:09	06:56	05:53	05:16	21:09 (2)	05:25	21:15 (2)	06:09	07:01	07:52	07:48	08:37
	16:43	17:38	18:30	20:25	21:18	21:59	16 21:25 (2)	22:01	12 21:27 (2)	21:18	20:10	18:59	16:55	16:24
10	08:47	08:06	07:06	06:54	05:51	05:15	21:09 (2)	05:26	21:15 (2)	06:10	07:02	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	17 21:26 (2)	22:00	12 21:27 (2)	21:16	20:07	18:57	16:54	16:24
11	08:46	08:04	07:04	06:51	05:50	05:15	21:10 (2)	05:27	21:15 (2)	06:12	07:04	07:55	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01	17 21:27 (2)	22:00	11 21:26 (2)	21:14	20:05	18:54	16:52	16:23
12	08:46	08:02	07:02	06:49	05:48	05:15	21:10 (2)	05:28	21:15 (2)	06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:22	22:02	17 21:27 (2)	21:59	10 21:25 (2)	21:12	20:03	18:52	16:50	16:23
13	08:45	08:01	06:59	06:47	05:46	05:14	21:10 (2)	05:29	21:15 (2)	06:15	07:07	07:59	07:56	08:41
	16:49	17:45	18:38	20:32	21:24	22:02	18 21:28 (2)	21:58	9 21:24 (2)	21:10	20:00	18:50	16:49	16:23
14	08:44	07:59	06:57	06:45	05:45	05:14	21:11 (2)	05:30	21:15 (2)	06:17	07:09	08:01	07:57	08:42
	16:51	17:47	18:39	20:34	21:26	22:03	18 21:29 (2)	21:57	8 21:23 (2)	21:08	19:58	18:47	16:47	16:23
15	08:43	07:57	06:55	06:42	05:43	05:14	21:11 (2)	05:32	21:16 (2)	06:19	07:11	08:02	07:59	08:43
	16:52	17:49	18:41	20:36	21:27	22:03	18 21:29 (2)	21:56	7 21:23 (2)	21:06	19:56	18:45	16:46	16:23
16	08:42	07:55	06:52	06:40	05:41	05:14	21:11 (2)	05:33	21:16 (2)	06:20	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	19 21:30 (2)	21:55	6 21:22 (2)	21:04	19:53	18:43	16:44	16:23
17	08:41	07:53	06:50	06:38	05:40	05:14	21:12 (2)	05:34	21:16 (2)	06:22	07:14	08:06	08:03	08:44
	16:56	17:53	18:45	20:39	21:30	22:04	18 21:30 (2)	21:54	5 21:21 (2)	21:02	19:51	18:41	16:43	16:24
18	08:40	07:51	06:48	06:36	05:38	05:14	21:12 (2)	05:35	21:17 (2)	06:24	07:16	08:08	08:04	08:45
	16:57	17:55	18:47	20:41	21:32	22:05	19 21:31 (2)	21:53	3 21:20 (2)	21:00	19:48	18:39	16:42	16:24
19	08:39	07:48	06:45	06:33	05:37	05:14	21:12 (2)	05:37	21:17 (2)	06:25	07:18	08:10	08:06	08:46
	16:59	17:57	18:48	20:43	21:34	22:05	19 21:31 (2)	21:51	2 21:19 (2)	20:57	19:46	18:36	16:40	16:24
20	08:38	07:46	06:43	06:31	05:35	05:14	21:12 (2)	05:38		06:27	07:19	08:11	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	19 21:31 (2)	21:50		20:55	19:44	18:34	16:39	16:24
21	08:37	07:44	06:41	06:29	05:34	05:14	21:12 (2)	05:39		06:29	07:21	08:13	08:10	08:47
	17:02	18:01	18:52	20:46	21:37	22:06	19 21:31 (2)	21:49		20:53	19:41	18:32	16:38	16:25
22	08:36	07:42	06:38	06:27	05:33	05:14	21:13 (2)	05:41		06:31	07:23	08:15	08:11	08:48
	17:04	18:03	18:54	20:48	21:38	22:06	19 21:32 (2)	21:48		20:51	19:39	18:30	16:37	16:25
23	08:35	07:40	06:36	06:25	05:31	05:14	21:13 (2)	05:42		06:32	07:24	08:17	08:13	08:48
	17:06	18:04	18:55	20:50	21:39	22:06	19 21:32 (2)	21:46		20:49	19:36	18:28	16:35	16:26
24	08:33	07:38	06:34	06:23	05:30	21:07 (2)	05:15	21:13 (2)	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:06	18:57	20:52	21:41	1 21:08 (2)	22:06	19 21:32 (2)	21:45	20:47	19:34	18:26	16:34	16:26
25	08:32	07:36	06:31	06:20	05:29	21:07 (2)	05:15	21:14 (2)	05:45	06:36	07:28	07:20	08:16	08:49
	17:09	18:08	18:59	20:53	21:42	3 21:10 (2)	22:06	18 21:32 (2)	21:43	20:44	19:32	17:24	16:33	16:27
26	08:31	07:34	06:29	06:18	05:28	21:07 (2)	05:15	21:13 (2)	05:47	06:37	07:29	07:22	08:18	08:49
	17:11	18:10	19:01	20:55	21:44	4 21:11 (2)	22:06	19 21:32 (2)	21:42	20:42	19:29	17:22	16:32	16:28
27	08:29	07:31	06:26	06:16	05:26	21:07 (2)	05:16	21:13 (2)	05:48	06:39	07:31	07:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	5 21:12 (2)	22:06	18 21:31 (2)	21:40	20:40	19:27	17:20	16:31	16:28
28	08:28	07:29	06:24	06:14	05:25	21:07 (2)	05:16	21:14 (2)	05:50	06:41	07:33	07:26	08:21	08:50
	17:15	18:14	19:04	20:59	21:46	6 21:13 (2)	22:06	18 21:32 (2)	21:39	20:38	19:25	17:18	16:30	16:29
29	08:27		07:22	06:12	05:24	21:07 (2)	05:17	21:13 (2)	05:51	06:42	07:35	07:28	08:23	08:50
	17:17		20:06	21:00	21:48	7 21:14 (2)	22:06	18 21:31 (2)	21:37	20:35	19:22	17:16	16:29	16:30
30	08:25		07:19	06:10	05:23	21:07 (2)	05:17	21:14 (2)	05:53	06:44	07:36	07:30	08:24	08:50
	17:19		20:08	21:02	21:49	8 21:15 (2)	22:06	17 21:31 (2)	21:36	20:33	19:20	17:14	16:29	16:31
31	08:23		07:17		05:22	21:08 (2)			05:54	06:46		07:32		08:50
	17:21		20:10		21:50	9 21:17 (2)			21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240
Total, worst case					43	508	209					
Sun reduction					0.37	0.30	0.26					
Oper. time red.					1.00	1.00	1.00					
Wind dir. red.					0.66	0.66	0.66					
Total reduction					0.24	0.20	0.17					
Total, real					10	100	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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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: AC - H29

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January	February	March	April		May	June	July	August		September	October	November	December
1	08:50	08:22	07:27	07:15		06:08	05:21	05:18	05:56		06:47	07:38	07:33	08:26
	16:33	17:22	18:16	20:11		21:04	21:51	22:06	21:32		20:29	19:18	17:10	16:28
2	08:50	08:20	07:25	07:12		06:06	05:21	05:19	05:57		06:49	07:40	07:35	08:27
	16:34	17:24	18:18	20:13		21:06	21:53	22:05	21:31		20:26	19:15	17:08	16:27
3	08:50	08:19	07:23	07:10		06:04	05:20	05:20	05:59		06:51	07:41	07:37	08:29
	16:36	17:26	18:19	20:15		21:07	21:54	22:05	21:29		20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08		06:02	05:19	05:20	06:01		06:52	07:43	07:39	08:30
	16:37	17:28	18:21	20:17		21:09	21:55	22:04	21:27		20:22	19:10	17:04	16:26
5	08:49	08:15	07:18	07:05		06:00	05:18	05:21	06:02		06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:18		21:11	21:56	22:04	21:25		20:19	19:08	17:02	16:25
6	08:49	08:14	07:16	07:03		05:59	05:18	05:22	06:04		06:56	07:47	07:43	08:33
	16:39	17:32	18:25	20:20		21:13	21:57	22:03	21:24		20:17	19:06	17:00	16:25
7	08:49	08:12	07:13	07:01		05:57	05:17	05:23	06:06		06:57	07:48	07:45	08:34
	16:40	17:34	18:27	20:22		21:14	21:58	22:03	21:22		20:15	19:03	16:59	16:24
8	08:48	08:10	07:11	06:58		05:55	05:16	05:24	06:07		06:59	07:50	07:46	08:35
	16:42	17:36	18:29	20:24		21:16	21:59	22:02	21:20		20:12	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56		05:53	05:16	05:25	06:09		07:01	07:52	07:48	08:37
	16:43	17:38	18:30	20:25		21:18	21:59	22:01	21:18		20:10	18:59	16:55	16:24
10	08:47	08:06	07:07	06:54		05:51	05:15	05:26	06:10		07:02	07:54	07:50	08:38
	16:45	17:40	18:32	20:27		21:19	22:00	22:01	21:16		20:08	18:57	16:54	16:24
11	08:46	08:04	07:04	06:51		05:50	05:15	05:27	06:12		07:04	07:55	07:52	08:39
	16:46	17:42	18:34	20:29		21:21	22:01	22:00	21:14		20:05	18:54	16:52	16:23
12	08:46	08:03	07:02	06:49		05:48	05:15	05:28	06:14		07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31		21:23	22:02	21:59	21:12		20:03	18:52	16:50	16:23
13	08:45	08:01	07:00	06:47		05:46	05:14	05:29	06:15		07:08	07:59	07:56	08:41
	16:49	17:45	18:38	20:33		21:24	22:02	21:58	21:10		20:00	18:50	16:49	16:23
14	08:44	07:59	06:57	06:45		05:45	05:14	05:30	06:17		07:09	08:01	07:57	08:42
	16:51	17:47	18:39	20:34		21:26	22:03	21:57	21:08		19:58	18:47	16:47	16:23
15	08:43	07:57	06:55	06:42		05:43	05:14	05:32	06:19		07:11	08:02	07:59	08:43
	16:52	17:49	18:41	20:36		21:27	22:04	21:56	21:06		19:56	18:45	16:46	16:23
16	08:42	07:55	06:53	06:40		20:09 (12)	05:41	05:14	05:33	06:20		07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	2	20:11 (12)	21:29	22:04	21:55	21:04		19:53	18:43	16:44	16:23
17	08:42	07:53	06:50	06:38		20:09 (12)	05:40	05:14	05:34	06:22		07:14	08:06	08:03	08:45
	16:56	17:53	18:45	20:40	4	20:13 (12)	21:31	22:05	21:54	21:02		19:51	18:41	16:43	16:23
18	08:41	07:51	06:48	06:36		20:09 (12)	05:38	05:14	05:35	06:24		07:16	08:08	08:05	08:45
	16:57	17:55	18:47	20:41	4	20:13 (12)	21:32	22:05	21:53	21:00		19:48	18:39	16:42	16:24
19	08:39	07:49	06:45	06:33		20:10 (12)	05:37	05:14	05:37	06:25		07:18	08:10	08:06	08:46
	16:59	17:57	18:48	20:43	5	20:15 (12)	21:34	22:05	21:52	20:58		19:46	18:36	16:40	16:24
20	08:38	07:46	06:43	06:31			05:35	05:14	05:38	06:27		07:19	08:11	08:08	08:47
	17:01	17:59	18:50	20:45			21:35	22:06	21:50	20:55		19:44	18:34	16:39	16:24
21	08:37	07:44	06:41	06:29			05:34	05:14	05:39	06:29		07:21	08:13	08:10	08:47
	17:02	18:01	18:52	20:47			21:37	22:06	21:49	20:53		19:41	18:32	16:38	16:25
22	08:36	07:42	06:38	06:27			05:33	05:14	05:41	06:31		07:23	08:15	08:12	08:48
	17:04	18:03	18:54	20:48			21:38	22:06	21:48	20:51		19:39	18:30	16:37	16:25
23	08:35	07:40	06:36	06:25			05:31	05:14	05:42	06:32		07:24	08:17	08:13	08:48
	17:06	18:04	18:55	20:50			21:40	22:06	21:46	20:49		19:37	18:28	16:35	16:26
24	08:34	07:38	06:34	06:23			05:30	05:15	05:44	06:34	20:13 (12)	07:26	08:19	08:15	08:49
	17:08	18:06	18:57	20:52			21:41	22:06	21:45	20:47	6 20:19 (12)	19:34	18:26	16:34	16:26
25	08:32	07:36	06:31	06:20			05:29	05:15	05:45	06:36	20:12 (12)	07:28	07:21	08:17	08:49
	17:09	18:08	18:59	20:54			21:42	22:06	21:43	20:44	5 20:17 (12)	19:32	17:24	16:33	16:27
26	08:31	07:34	06:29	06:18			05:28	05:15	05:47	06:37	20:11 (12)	07:29	07:22	08:18	08:50
	17:11	18:10	19:01	20:55			21:44	22:06	21:42	20:42	3 20:14 (12)	19:29	17:22	16:32	16:28
27	08:30	07:31	06:26	06:16			05:26	05:16	05:48	06:39	20:11 (12)	07:31	07:24	08:20	08:50
	17:13	18:12	19:03	20:57			21:45	22:06	21:40	20:40	1 20:12 (12)	19:27	17:20	16:31	16:28
28	08:28	07:29	06:24	06:14			05:25	05:16	05:50	06:41		07:33	07:26	08:21	08:50
	17:15	18:14	19:04	20:59			21:46	22:06	21:39	20:38		19:25	17:18	16:30	16:29
29	08:27		07:22	06:12			05:24	05:17	05:51	06:42		07:35	07:28	08:23	08:50
	17:17		20:06	21:01			21:48	22:06	21:37	20:35		19:22	17:16	16:29	16:30
30	08:25		07:19	06:10			05:23	05:17	05:53	06:44		07:36	07:30	08:24	08:50
	17:19		20:08	21:02			21:49	22:06	21:36	20:33		19:20	17:14	16:29	16:31
31	08:24		07:17				05:22		05:54	06:46			07:32		08:50
	17:21		20:10				21:50		21:34	20:31			17:12		16:32
Potential sun hours	255	276	367	418			489	503	506	456		381	330	263	240
Total, worst case					15						15				
Sun reduction					0.35						0.30				
Oper. time red.					1.00						1.00				
Wind dir. red.					0.69						0.69				
Total reduction					0.24						0.20				
Total, real					4						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)

Licensed user:
Jennings O'Donovan
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abyrne / abyrne@jodireland.com

Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: AD - H30

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January		February		March		April	May	June
1	08:50		08:22		07:27		07:15	06:08	05:21
	16:33	7	15:57 (3)	17:22		18:16		20:11	21:04	21:51
2	08:50		15:50 (3)	08:20		07:25		17:50 (1)	07:12	06:06	05:20
	16:34	8	15:58 (3)	17:24		18:17	1	17:51 (1)	20:13	21:06	21:52
3	08:50		15:51 (3)	08:19		07:22		17:48 (1)	07:10	06:04	05:20
	16:35	9	16:00 (3)	17:26		18:19	4	17:52 (1)	20:15	21:07	21:54
4	08:50		15:51 (3)	08:17		07:20		17:48 (1)	07:08	06:02	05:19
	16:37	10	16:01 (3)	17:28		18:21	7	17:55 (1)	20:17	21:09	21:55
5	08:49		15:52 (3)	08:15		07:18		17:48 (1)	07:05	06:00	05:18
	16:38	10	16:02 (3)	17:30		18:23	9	17:57 (1)	20:18	21:11	21:56
6	08:49		15:51 (3)	08:14	17:00 (2)	07:16		17:47 (1)	07:03	05:59	05:17
	16:39	12	16:03 (3)	17:32	2	17:02 (2)	18:25	11	17:58 (1)	20:20	21:13	21:57
7	08:49		15:52 (3)	08:12		17:00 (2)	07:13		17:47 (1)	07:01	05:57	05:17
	16:40	13	16:05 (3)	17:34	4	17:04 (2)	18:27	13	18:00 (1)	20:22	21:14	21:58
8	08:48		15:52 (3)	08:10		17:00 (2)	07:11		17:47 (1)	06:58	05:55	05:16
	16:42	14	16:06 (3)	17:36	6	17:06 (2)	18:29	16	18:03 (1)	20:24	21:16	21:58
9	08:48		15:53 (3)	08:08		17:00 (2)	07:09		17:47 (1)	06:56	05:53	05:16
	16:43	16	16:09 (3)	17:38	8	17:08 (2)	18:30	17	18:04 (1)	20:25	21:18	21:59
10	08:47		15:54 (3)	08:06		17:00 (2)	07:06		17:48 (1)	06:54	05:51	05:15
	16:45	16	16:10 (3)	17:40	10	17:10 (2)	18:32	18	18:06 (1)	20:27	21:19	22:00
11	08:46		15:54 (3)	08:04		17:00 (2)	07:04		17:49 (1)	06:51	05:50	05:15
	16:46	17	16:11 (3)	17:42	13	17:13 (2)	18:34	19	18:08 (1)	20:29	21:21	22:01
12	08:46		15:54 (3)	08:02		17:01 (2)	07:02		17:50 (1)	06:49	05:48	05:15
	16:48	19	16:13 (3)	17:43	14	17:15 (2)	18:36	15	18:05 (1)	20:31	21:23	22:02
13	08:45		15:55 (3)	08:01		17:01 (2)	06:59		17:53 (1)	06:47	05:46	05:14
	16:49	19	16:14 (3)	17:45	16	17:17 (2)	18:38	10	18:03 (1)	20:32	21:24	22:02
14	08:44		15:55 (3)	07:59		17:03 (2)	06:57			06:45	05:45	05:14
	16:51	21	16:16 (3)	17:47	16	17:19 (2)	18:39			20:34	21:26	22:03
15	08:43		15:56 (3)	07:57		17:03 (4)	06:55			06:42	05:43	05:14
	16:52	22	16:18 (3)	17:49	18	17:21 (4)	18:41			20:36	21:27	22:04
16	08:42		15:56 (3)	07:55		17:03 (4)	06:52			06:40	05:41	05:14
	16:54	24	16:20 (3)	17:51	20	17:23 (4)	18:43			20:38	21:29	22:04
17	08:41		15:57 (3)	07:53		17:03 (4)	06:50			06:38	05:40	05:14
	16:55	25	16:22 (3)	17:53	22	17:25 (4)	18:45			20:39	21:31	22:05
18	08:40		15:58 (3)	07:51		17:02 (4)	06:48			06:36	05:38	05:14
	16:57	26	16:24 (3)	17:55	25	17:27 (4)	18:47			20:41	21:32	22:05
19	08:39		15:59 (3)	07:48		17:02 (4)	06:45			06:33	05:37	05:14
	16:59	25	16:24 (3)	17:57	27	17:29 (4)	18:48			20:43	21:34	22:05
20	08:38		15:59 (3)	07:46		17:03 (4)	06:43			06:31	05:35	05:14
	17:01	24	16:23 (3)	17:59	28	17:31 (4)	18:50			20:45	21:35	22:06
21	08:37		16:00 (3)	07:44		17:03 (4)	06:41			06:29	05:34	05:14
	17:02	23	16:23 (3)	18:01	30	17:33 (4)	18:52			20:46	21:37	22:06
22	08:36		16:02 (3)	07:42		17:04 (4)	06:38			06:27	05:33	05:14
	17:04	21	16:23 (3)	18:03	31	17:35 (4)	18:54			20:48	21:38	22:06
23	08:35		16:03 (3)	07:40		17:04 (4)	06:36			06:25	05:31	05:14
	17:06	19	16:22 (3)	18:04	29	17:33 (4)	18:55			20:50	21:40	22:06
24	08:34		16:05 (3)	07:38		17:05 (4)	06:34			06:23	05:30	05:15
	17:08	16	16:21 (3)	18:06	27	17:32 (4)	18:57			20:52	21:41	22:06
25	08:32		16:06 (3)	07:36		17:06 (4)	06:31			06:20	05:29	05:15
	17:09	13	16:19 (3)	18:08	25	17:31 (4)	18:59			20:53	21:42	22:06
26	08:31		16:10 (3)	07:34		17:08 (4)	06:29			06:18	05:28	05:15
	17:11	7	16:17 (3)	18:10	22	17:30 (4)	19:01			20:55	21:44	22:06
27	08:29			07:31		17:09 (4)	06:26			06:16	05:26	05:16
	17:13			18:12	18	17:27 (4)	19:02			20:57	21:45	22:06
28	08:28			07:29		17:13 (4)	06:24			06:14	05:25	05:16
	17:15			18:14	11	17:24 (4)	19:04			20:59	21:46	22:06
29	08:27						07:22			06:12	05:24	05:17
	17:17						20:06			21:00	21:48	22:06
30	08:25						07:19			06:10	05:23	05:17
	17:19						20:08			21:02	21:49	22:06
31	08:23						07:17				05:22	
	17:21						20:10				21:50	
Potential sun hours	256		276		367		418	489	503
Total, worst case		436		422		140			
Sun reduction		0.16		0.21		0.24			
Oper. time red.		1.00		1.00		1.00			
Wind dir. red.		0.63		0.66		0.68			
Total reduction		0.10		0.14		0.16			
Total, real		43		57		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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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: AD - H30

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	July		August		September		October		November		December	
1	05:18		05:56		06:47		07:38		18:30 (1)		07:33	
	22:06		21:32		20:29		19:17	13	18:43 (1)		17:10	11
2	05:19		05:57		06:49		07:40		18:28 (1)		07:35	
	22:05		21:31		20:26		19:15	17	18:45 (1)		17:08	9
3	05:19		05:59		06:51		07:41		18:26 (1)		07:37	
	22:05		21:29		20:24		19:13	19	18:45 (1)		17:06	7
4	05:20		06:01		06:52		07:43		18:25 (1)		07:39	
	22:04		21:27		20:22		19:10	18	18:43 (1)		17:04	4
5	05:21		06:02		06:54		07:45		18:24 (1)		07:41	
	22:04		21:25		20:19		19:08	16	18:40 (1)		17:02	2
6	05:22		06:04		06:56		07:47		18:23 (1)		07:43	
	22:03		21:23		20:17		19:06	14	18:37 (1)		17:00	
7	05:23		06:05		06:57		07:48		18:23 (1)		07:45	
	22:03		21:22		20:15		19:03	12	18:35 (1)		16:59	
8	05:24		06:07		06:59		07:50		18:23 (1)		07:46	
	22:02		21:20		20:12		19:01	10	18:33 (1)		16:57	
9	05:25		06:09		07:01		07:52		18:23 (1)		07:48	
	22:01		21:18		20:10		18:59	8	18:31 (1)		16:55	
10	05:26		06:10		07:02		07:54		18:22 (1)		07:50	
	22:01		21:16		20:07		18:56	6	18:28 (1)		16:54	
11	05:27		06:12		07:04		07:55		18:22 (1)		07:52	
	22:00		21:14		20:05		18:54	4	18:26 (1)		16:52	
12	05:28		06:14		07:06		07:57				07:54	
	21:59		21:12		20:03		18:52				16:50	
13	05:29		06:15		07:07		07:59		17:51 (4)		07:56	
	21:58		21:10		20:00		18:50	1	17:52 (4)		16:49	
14	05:30		06:17		07:09		08:01		17:44 (4)		07:57	
	21:57		21:08		19:58		18:47	14	17:58 (4)		16:47	
15	05:32		06:19		07:11		08:02		17:42 (4)		07:59	
	21:56		21:06		19:56		18:45	19	18:01 (4)		16:46	
16	05:33		06:20		07:12		08:04		17:40 (4)		08:01	
	21:55		21:04		19:53		18:43	22	18:02 (4)		16:44	7
17	05:34		06:22		07:14		08:06		17:37 (4)		08:03	
	21:54		21:02		19:51		18:41	26	18:03 (4)		16:43	13
18	05:35		06:24		07:16		08:08		17:36 (4)		08:05	
	21:53		21:00		19:48		18:39	28	18:04 (4)		16:42	16
19	05:37		06:25		07:18		08:10		17:35 (4)		08:06	
	21:51		20:57		19:46		18:36	29	18:04 (4)		16:40	19
20	05:38		06:27		07:19		08:11		17:34 (4)		08:08	
	21:50		20:55		19:44		18:34	31	18:05 (4)		16:39	21
21	05:39		06:29		07:21		08:13		17:34 (4)		08:10	
	21:49		20:53		19:41		18:32	29	18:03 (4)		16:38	23
22	05:41		06:30		07:23		08:15		17:33 (4)		08:11	
	21:48		20:51		19:39		18:30	28	18:01 (4)		16:36	24
23	05:42		06:32		07:24		08:17		17:33 (4)		08:13	
	21:46		20:49		19:36		18:28	26	17:59 (4)		16:35	25
24	05:44		06:34		07:26		08:19		17:33 (4)		08:15	
	21:45		20:47		19:34		18:26	23	17:56 (4)		16:34	26
25	05:45		06:36		07:28		07:21		16:33 (4)		08:16	
	21:43		20:44		19:32		17:24	21	16:54 (4)		16:33	25
26	05:47		06:37		07:29		07:22		16:33 (4)		08:18	
	21:42		20:42		19:29		17:22	19	16:52 (4)		16:32	24
27	05:48		06:39		07:31		07:24		16:33 (2)		08:20	
	21:40		20:40		19:27		17:19	17	16:50 (4)		16:31	22
28	05:50		06:41		07:33		07:26		16:32 (2)		08:21	
	21:39		20:38		19:25		17:17	16	16:48 (2)		16:30	21
29	05:51		06:42		07:34		07:28		16:31 (2)		08:23	
	21:37		20:35		19:22		17:15	15	16:46 (2)		16:29	20
30	05:53		06:44		07:36		18:35 (1)		07:30		16:30 (2)	
	21:36		20:33		19:20	6	18:41 (1)		17:14	14	16:44 (2)	
31	05:54		06:46						07:32		16:30 (2)	
	21:34		20:31						17:12	12	16:42 (2)	
Potential sun hours	506		456		381				330			
Total, worst case						6				527		
Sun reduction						0.28				0.24		
Oper. time red.						1.00				1.00		
Wind dir. red.						0.68				0.66		
Total reduction						0.19				0.16		
Total, real						1				83		

263		338		240		211
		0.19				0.14
		1.00				1.00
		0.63				0.63
		0.12				0.09
		39				18

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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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: AE - H31

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January	February	March		April		May		June		
1	08:50	08:22	07:27		07:15		08:08 (2)		06:08		06:33 (1)		05:22		
	16:33	17:23	18:16		20:11	5	08:13 (2)		21:04	31	07:04 (1)		21:51		
2	08:50	08:20	07:25		07:12				06:06		06:33 (1)		05:21		
	16:35	17:24	18:18		20:13				21:06	34	20:36 (6)		21:53		
3	08:50	08:19	07:23		07:10				06:04		06:35 (1)		05:20		
	16:36	17:26	18:19		20:15				21:07	37	20:39 (6)		21:54		
4	08:50	08:17	07:20		07:08		07:31 (4)		06:02		06:35 (1)		05:19		
	16:37	17:28	18:21		20:17	1	07:32 (4)		21:09	38	20:40 (6)		21:55		
5	08:49	08:15	07:18		07:05		07:29 (4)		06:01		06:35 (1)		05:18		
	16:38	17:30	18:23		20:18	4	07:33 (4)		21:11	39	20:41 (6)		21:56		
6	08:49	08:14	07:16		07:03		07:26 (4)		05:59		06:36 (1)		05:18		
	16:39	17:32	18:25		20:20	7	07:33 (4)		21:13	38	20:41 (6)		21:57		
7	08:49	08:12	07:13		07:01		07:24 (4)		05:57		06:38 (1)		05:17		
	16:41	17:34	18:27		20:22	10	07:34 (4)		21:14	36	20:42 (6)		21:58		
8	08:48	08:10	07:11		06:58		07:22 (4)		05:55		06:39 (1)		05:16		
	16:42	17:36	18:29		20:24	12	07:34 (4)		21:16	33	20:41 (6)		21:59		
9	08:48	08:08	07:09		06:56		07:19 (4)		05:53		06:40 (1)		05:16		
	16:43	17:38	18:30		20:26	14	07:33 (4)		21:18	30	20:41 (6)		21:59		
10	08:47	08:06	07:07		07:30 (3)		06:54		07:17 (4)		05:51		06:43 (1)		05:16
	16:45	17:40	18:32	2	07:32 (3)		20:27	16	07:33 (4)		21:19	24	20:41 (6)		22:00
11	08:46	08:05	07:04		07:28 (3)		06:51		07:15 (4)		05:50		20:28 (6)		05:15
	16:46	17:42	18:34	5	07:33 (3)		20:29	17	07:32 (4)		21:21	12	20:40 (6)		22:01
12	08:46	08:03	07:02		07:25 (3)		06:49		07:13 (4)		05:48		20:28 (6)		05:15
	16:48	17:44	18:36	8	07:33 (3)		20:31	19	07:32 (4)		21:23	11	20:39 (6)		22:02
13	08:45	08:01	07:00		07:23 (2)		06:47		07:11 (4)		05:46		20:30 (6)		05:14
	16:49	17:46	18:38	11	07:34 (3)		20:33	19	07:30 (4)		21:24	8	20:38 (6)		22:02
14	08:44	07:59	06:57		07:21 (2)		06:45		07:12 (4)		05:45		20:32 (6)		05:14
	16:51	17:47	18:40	13	07:34 (3)		20:34	17	07:29 (4)		21:26	4	20:36 (6)		22:03
15	08:43	07:57	06:55		07:18 (2)		06:42		07:13 (4)		05:43				05:14		21:28 (8)
	16:52	17:49	18:41	15	07:33 (3)		20:36	14	07:27 (4)		21:27				22:04	1	21:29 (8)
16	08:42	07:55	06:53		07:16 (2)		06:40		07:15 (4)		05:41				05:14		21:28 (8)
	16:54	17:51	18:43	17	07:33 (3)		20:38	10	07:25 (4)		21:29				22:04	2	21:30 (8)
17	08:42	07:53	06:50		07:13 (2)		06:38				05:40				05:14		21:28 (8)
	16:56	17:53	18:45	18	07:31 (3)		20:40				21:31				22:05	2	21:30 (8)
18	08:41	07:51	06:48		07:11 (2)		06:36		06:59 (1)		05:38				05:14		21:28 (8)
	16:57	17:55	18:47	19	07:30 (2)		20:41	1	07:00 (1)		21:32				22:05	3	21:31 (8)
19	08:40	07:49	06:45		07:09 (2)		06:34		06:57 (1)		05:37				05:14		21:28 (8)
	16:59	17:57	18:48	22	07:31 (2)		20:43	4	07:01 (1)		21:34				22:05	3	21:31 (8)
20	08:38	07:47	06:43		07:06 (2)		06:31		06:55 (1)		05:36				05:14		21:28 (8)
	17:01	17:59	18:50	24	07:30 (2)		20:45	8	07:03 (1)		21:35				22:06	3	21:31 (8)
21	08:37	07:44	06:41		07:04 (2)		06:29		06:53 (1)		05:34				05:14		21:28 (8)
	17:02	18:01	18:52	26	07:30 (2)		20:47	11	07:04 (1)		21:37				22:06	3	21:31 (8)
22	08:36	07:42	06:38		07:02 (2)		06:27		06:51 (1)		05:33				05:14		21:29 (8)
	17:04	18:03	18:54	29	07:31 (2)		20:48	13	07:04 (1)		21:38				22:06	3	21:32 (8)
23	08:35	07:40	06:36		06:59 (2)		06:25		06:49 (1)		05:31				05:14		21:29 (8)
	17:06	18:05	18:56	30	07:29 (2)		20:50	16	07:05 (1)		21:40				22:06	3	21:32 (8)
24	08:34	07:38	06:34		06:57 (2)		06:23		06:47 (1)		05:30				05:15		21:29 (8)
	17:08	18:06	18:57	32	07:29 (2)		20:52	18	07:05 (1)		21:41				22:06	3	21:32 (8)
25	08:32	07:36	06:31		06:57 (2)		06:21		06:45 (1)		05:29				05:15		21:30 (8)
	17:10	18:08	18:59	31	07:28 (2)		20:54	20	07:05 (1)		21:42				22:07	2	21:32 (8)
26	08:31	07:34	06:29		06:58 (2)		06:18		06:43 (1)		05:28				05:15		21:30 (8)
	17:11	18:10	19:01	29	07:27 (2)		20:55	22	07:05 (1)		21:44				22:06	2	21:32 (8)
27	08:30	07:31	06:27		06:59 (2)		06:16		06:41 (1)		05:27				05:16		21:30 (8)
	17:13	18:12	19:03	27	07:26 (2)		20:57	24	07:05 (1)		21:45				22:06	1	21:31 (8)
28	08:28	07:29	06:24		06:59 (2)		06:14		06:39 (1)		05:25				05:16		
	17:15	18:14	19:04	25	07:24 (2)		20:59	26	07:05 (1)		21:46				22:06		
29	08:27		07:22		08:00 (2)		06:12		06:37 (1)		05:24				05:17		
	17:17		20:06	23	08:23 (2)		21:01	28	07:05 (1)		21:48				22:06		
30	08:25		07:19		08:02 (2)		06:10		06:35 (1)		05:23				05:18		
	17:19		20:08	19	08:21 (2)		21:02	29	07:04 (1)		21:49				22:06		
31	08:24		07:17		08:03 (2)						05:22						
	17:21		20:10	15	08:18 (2)						21:50						
Potential sun hours	256	276	367		418		489		503		
Total, worst case			440		385		375		31		
Sun reduction			0.24		0.35		0.37		0.30		
Oper. time red.			1.00		1.00		1.00		1.00		
Wind dir. red.			0.69		0.68		0.68		0.66		
Total reduction			0.17		0.24		0.25		0.20		
Total, real			74		92		94		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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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: AE - H31

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	July		August		September		October		November	December
1	05:18		05:56		20:38 (6)	06:47	07:14 (4)	07:38	08:04 (3)	07:34	08:26
	22:06		21:32	12	20:50 (6)	20:29	17	07:31 (4)	19:18	9	08:13 (3)	17:10	16:28
2	05:19		05:58		06:55 (1)	06:49		07:16 (4)	07:40		08:05 (3)	07:35	08:27
	22:05		21:31	20	20:51 (6)	20:26	16	07:32 (4)	19:15	7	08:12 (3)	17:08	16:27
3	05:20		05:59		06:51 (1)	06:51		07:17 (4)	07:42		08:07 (3)	07:37	08:29
	22:05		21:29	27	20:51 (6)	20:24	14	07:31 (4)	19:13	4	08:11 (3)	17:06	16:27
4	05:20		06:01		06:50 (1)	06:52		07:19 (4)	07:43		08:09 (3)	07:39	08:30
	22:04		21:27	31	20:51 (6)	20:22	12	07:31 (4)	19:11	1	08:10 (3)	17:04	16:26
5	05:21		06:02		06:48 (1)	06:54		07:20 (4)	07:45			07:41	08:32
	22:04		21:25	35	20:51 (6)	20:19	10	07:30 (4)	19:08			17:02	16:26
6	05:22		06:04		06:47 (1)	06:56		07:22 (4)	07:47			07:43	08:33
	22:03		21:24	36	20:51 (6)	20:17	7	07:29 (4)	19:06			17:01	16:25
7	05:23		06:06		06:45 (1)	06:58		07:24 (4)	07:48			07:45	08:34
	22:03		21:22	38	20:50 (6)	20:15	5	07:29 (4)	19:04			16:59	16:25
8	05:24		06:07		06:45 (1)	06:59		07:25 (4)	07:50			07:47	08:36
	22:02		21:20	38	20:50 (6)	20:12	2	07:27 (4)	19:01			16:57	16:24
9	05:25		06:09		06:43 (1)	07:01			07:52			07:48	08:37
	22:01		21:18	38	20:48 (6)	20:10			18:59			16:55	16:24
10	05:26		06:11		06:43 (1)	07:03			07:54			07:50	08:38
	22:01		21:16	37	20:47 (6)	20:08			18:57			16:54	16:24
11	05:27		06:12		06:43 (1)	07:04			07:55			07:52	08:39
	22:00		21:14	33	20:45 (6)	20:05			18:54			16:52	16:23
12	05:28		06:14		06:42 (1)	07:06		07:56 (2)	07:57			07:54	08:40
	21:59		21:12	30	07:12 (1)	20:03	14	08:10 (2)	18:52			16:50	16:23
13	05:29		06:16		06:44 (1)	07:08		07:52 (2)	07:59			07:56	08:41
	21:58		21:10	29	07:13 (1)	20:00	19	08:11 (2)	18:50			16:49	16:23
14	05:31		06:17		06:45 (1)	07:09		07:51 (2)	08:01			07:57	08:42
	21:57		21:08	27	07:12 (1)	19:58	22	08:13 (2)	18:48			16:47	16:23
15	05:32		06:19		06:47 (1)	07:11		07:49 (2)	08:03			07:59	08:43
	21:56		21:06	26	07:13 (1)	19:56	26	08:15 (2)	18:45			16:46	16:23
16	05:33		06:21		06:48 (1)	07:13		07:47 (2)	08:04			08:01	08:44
	21:55		21:04	24	07:12 (1)	19:53	28	08:15 (2)	18:43			16:44	16:23
17	05:34		06:22		06:50 (1)	07:14		07:46 (2)	08:06			08:03	08:45
	21:54		21:02	22	07:12 (1)	19:51	29	08:15 (2)	18:41			16:43	16:24
18	05:36		06:24		06:52 (1)	07:16		07:46 (2)	08:08			08:05	08:45
	21:53		21:00	20	07:12 (1)	19:49	30	08:16 (2)	18:39			16:42	16:24
19	05:37		06:26		06:53 (1)	07:18		07:44 (2)	08:10			08:06	08:46
	21:52		20:58	18	07:11 (1)	19:46	32	08:16 (2)	18:36			16:40	16:24
20	05:38		06:27		06:55 (1)	07:19		07:45 (2)	08:12			08:08	08:47
	21:50		20:55	15	07:10 (1)	19:44	31	08:16 (2)	18:34			16:39	16:24
21	05:40		06:29		06:56 (1)	07:21		07:47 (2)	08:13			08:10	08:47
	21:49		20:53	13	07:09 (1)	19:41	29	08:16 (2)	18:32			16:38	16:25
22	05:41		06:31		06:58 (1)	07:23		07:48 (2)	08:15			08:12	08:48
	21:48		20:51	10	07:08 (1)	19:39	27	08:15 (2)	18:30			16:37	16:25
23	05:42		06:32		07:00 (1)	07:24		07:50 (2)	08:17			08:13	08:48
	21:46		20:49	7	07:07 (1)	19:37	25	08:15 (2)	18:28			16:35	16:26
24	05:44		06:34		07:01 (1)	07:26		07:52 (2)	08:19			08:15	08:49
	21:45		20:47	4	07:05 (1)	19:34	22	08:14 (2)	18:26			16:34	16:26
25	05:45		06:36			07:28		07:53 (2)	07:21			08:17	08:49
	21:44		20:45			19:32	20	08:13 (2)	17:24			16:33	16:27
26	05:47		06:37			07:30		07:55 (2)	07:22			08:18	08:50
	21:42		20:42			19:29	19	08:14 (3)	17:22			16:32	16:28
27	05:48		06:39		07:17 (4)	07:31		07:57 (2)	07:24			08:20	08:50
	21:41		20:40	10	07:27 (4)	19:27	17	08:14 (3)	17:20			16:31	16:29
28	05:50		06:41		07:15 (4)	07:33		07:58 (2)	07:26			08:21	08:50
	21:39		20:38	14	07:29 (4)	19:25	16	08:14 (3)	17:18			16:30	16:29
29	05:51		06:42		07:12 (4)	07:35		08:00 (2)	07:28			08:23	08:50
	21:37		20:36	18	07:30 (4)	19:22	14	08:14 (3)	17:16			16:30	16:30
30	05:53		06:44		07:11 (4)	07:36		08:02 (2)	07:30			08:25	08:50
	21:36	6	20:47 (6)	20:33	20	07:31 (4)	19:20	12	08:14 (3)	17:14		16:29	16:31
31	05:54		06:46			07:12 (4)				07:32			08:50
	21:34	9	20:49 (6)	20:31	19	07:31 (4)				17:12			16:32
Potential sun hours	506		456			381			330			263	240
Total, worst case		15		671			515			21			
Sun reduction		0.26		0.30			0.28			0.24			
Oper. time red.		1.00		1.00			1.00			1.00			
Wind dir. red.		0.69		0.68			0.69			0.69			
Total reduction		0.18		0.20			0.20			0.16			
Total, real		3		135			101			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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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: AF - H32

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January	February	March		April		May		June
1	08:50	08:22	07:27		07:15		07:55 (2)	06:08	06:33 (1)	05:22
	16:33	17:23	18:16		20:11	20	08:15 (2)	21:04	27	07:00 (1)	21:51
2	08:50	08:20	07:25		07:12		07:56 (2)	06:06	06:31 (1)	05:21
	16:35	17:24	18:18		20:13	16	08:12 (2)	21:06	28	06:59 (1)	21:53
3	08:50	08:19	07:23		07:10		07:59 (2)	06:04	06:30 (1)	05:20
	16:36	17:26	18:19		20:15	10	08:09 (2)	21:07	30	07:00 (1)	21:54
4	08:50	08:17	07:20		07:08			06:02	06:29 (1)	05:19
	16:37	17:28	18:21		20:17			21:09	30	06:59 (1)	21:55
5	08:49	08:15	07:18		07:05			06:01	06:30 (1)	05:18
	16:38	17:30	18:23		20:18			21:11	33	20:41 (6)	21:56
6	08:49	08:14	07:16		07:03		07:26 (4)	05:59	06:30 (1)	05:18
	16:39	17:32	18:25		20:20	2	07:28 (4)	21:13	36	20:43 (6)	21:57
7	08:49	08:12	07:13		07:01		07:24 (4)	05:57	06:31 (1)	05:17
	16:41	17:34	18:27		20:22	5	07:29 (4)	21:14	37	20:45 (6)	21:58
8	08:48	08:10	07:11		06:58		07:22 (4)	05:55	06:32 (1)	05:16
	16:42	17:36	18:29		20:24	8	07:30 (4)	21:16	37	20:46 (6)	21:59
9	08:48	08:08	07:09		06:56		07:19 (4)	05:53	06:32 (1)	05:16
	16:43	17:38	18:30		20:26	10	07:29 (4)	21:18	36	20:46 (6)	21:59
10	08:47	08:06	07:07		06:54		07:17 (4)	05:51	06:34 (1)	05:16
	16:45	17:40	18:32		20:27	12	07:29 (4)	21:19	34	20:47 (6)	22:00
11	08:46	08:05	07:04		06:51		07:15 (4)	05:50	06:35 (1)	05:15
	16:46	17:42	18:34		20:29	14	07:29 (4)	21:21	31	20:46 (6)	22:01
12	08:46	08:03	07:02	07:25 (3)	06:49		07:13 (4)	05:48	06:37 (1)	05:15
	16:48	17:44	18:36	3	07:28 (3)	20:31	16	07:29 (4)	21:23	27	20:46 (6)	22:02
13	08:45	08:01	07:00	07:23 (3)	06:47		07:10 (4)	05:46	06:41 (1)	05:14
	16:49	17:46	18:38	6	07:29 (3)	20:33	17	07:27 (4)	21:24	19	20:46 (6)	22:02
14	08:44	07:59	06:57	07:21 (3)	06:45		07:08 (4)	05:45	20:32 (6)	05:14
	16:51	17:47	18:40	8	07:29 (3)	20:34	19	07:27 (4)	21:26	13	20:45 (6)	22:03
15	08:43	07:57	06:55	07:18 (3)	06:42		07:07 (4)	05:43	20:33 (6)	05:14
	16:52	17:49	18:41	11	07:29 (3)	20:36	19	07:26 (4)	21:27	12	20:45 (6)	22:04
16	08:42	07:55	06:53	07:16 (2)	06:40		07:08 (4)	05:41	20:34 (6)	05:14
	16:54	17:51	18:43	13	07:29 (3)	20:38	16	07:24 (4)	21:29	9	20:43 (6)	22:04
17	08:42	07:53	06:50	07:13 (2)	06:38		07:10 (4)	05:40	20:36 (6)	05:14
	16:56	17:53	18:45	15	07:28 (3)	20:40	12	07:22 (4)	21:31	6	20:42 (6)	22:05
18	08:41	07:51	06:48	07:11 (2)	06:36		07:12 (4)	05:38		05:14
	16:57	17:55	18:47	17	07:28 (3)	20:41	6	07:18 (4)	21:32			22:05
19	08:40	07:49	06:45	07:09 (2)	06:34			05:37		05:14
	16:59	17:57	18:48	18	07:27 (3)	20:43			21:34			22:05
20	08:38	07:47	06:43	07:06 (2)	06:31			05:36		05:14
	17:01	17:59	18:50	19	07:25 (3)	20:45			21:35			22:06
21	08:37	07:44	06:41	07:04 (2)	06:29		06:53 (1)	05:34		05:14
	17:02	18:01	18:52	20	07:24 (2)	20:47	3	06:56 (1)	21:37			22:06
22	08:36	07:42	06:38	07:02 (2)	06:27		06:51 (1)	05:33		05:14
	17:04	18:03	18:54	22	07:24 (2)	20:48	7	06:58 (1)	21:38			22:06
23	08:35	07:40	06:36	06:59 (2)	06:25		06:49 (1)	05:31		05:14
	17:06	18:05	18:56	25	07:24 (2)	20:50	9	06:58 (1)	21:40			22:06
24	08:34	07:38	06:34	06:57 (2)	06:23		06:47 (1)	05:30		05:15
	17:08	18:06	18:57	27	07:24 (2)	20:52	12	06:59 (1)	21:41			22:06
25	08:32	07:36	06:31	06:54 (2)	06:21		06:45 (1)	05:29		05:15
	17:10	18:08	18:59	29	07:23 (2)	20:54	15	07:00 (1)	21:42			22:07
26	08:31	07:34	06:29	06:52 (2)	06:18		06:43 (1)	05:28		05:15
	17:11	18:10	19:01	31	07:23 (2)	20:55	17	07:00 (1)	21:44			22:06
27	08:30	07:31	06:27	06:51 (2)	06:16		06:41 (1)	05:27		05:16
	17:13	18:12	19:03	31	07:22 (2)	20:57	19	07:00 (1)	21:45			22:06
28	08:28	07:29	06:24	06:51 (2)	06:14		06:39 (1)	05:25		05:16
	17:15	18:14	19:04	30	07:21 (2)	20:59	21	07:00 (1)	21:46			22:06
29	08:27		07:22		07:52 (2)	06:12		06:37 (1)	05:24			05:17
	17:17		20:06	28	08:20 (2)	21:01	23	07:00 (1)	21:48			22:06
30	08:25		07:19		07:53 (2)	06:10		06:35 (1)	05:23			05:18
	17:19		20:08	26	08:19 (2)	21:02	25	07:00 (1)	21:49			22:06
31	08:24		07:17		07:53 (2)				05:22			
	17:21		20:10	24	08:17 (2)				21:50			
Potential sun hours	256	276	367		418			489		503
Total, worst case				403			353			445		
Sun reduction				0.24			0.35			0.37		
Oper. time red.				1.00			1.00			1.00		
Wind dir. red.				0.69			0.68			0.68		
Total reduction				0.17			0.24			0.25		
Total, real				68			85			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)

Licensed user:
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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: AF - H32

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	July			August			September			October			November	December
1	05:18			05:56		06:46 (1)	06:47		07:14 (4)	07:38		08:04 (3)	07:34	08:26
	22:06			21:32	28	20:56 (6)	20:29	14	07:28 (4)	19:18	4	08:08 (3)	17:10	16:28
2	05:19			05:58		06:45 (1)	06:49		07:16 (4)	07:40		08:05 (3)	07:35	08:27
	22:05			21:31	33	20:57 (6)	20:26	12	07:28 (4)	19:15	1	08:06 (3)	17:08	16:27
3	05:20			05:59		06:43 (1)	06:51		07:17 (4)	07:42			07:37	08:29
	22:05			21:29	34	20:56 (6)	20:24	10	07:27 (4)	19:13			17:06	16:27
4	05:20			06:01		06:42 (1)	06:52		07:19 (4)	07:43			07:39	08:30
	22:04			21:27	37	20:56 (6)	20:22	8	07:27 (4)	19:11			17:04	16:26
5	05:21			06:02		06:41 (1)	06:54		07:20 (4)	07:45			07:41	08:32
	22:04			21:25	37	20:55 (6)	20:19	5	07:25 (4)	19:08			17:02	16:26
6	05:22			06:04		06:40 (1)	06:56		07:22 (4)	07:47			07:43	08:33
	22:03			21:24	38	20:54 (6)	20:17	2	07:24 (4)	19:06			17:01	16:25
7	05:23			06:06		06:39 (1)	06:58			07:48			07:45	08:34
	22:03			21:22	36	20:52 (6)	20:15			19:04			16:59	16:25
8	05:24			06:07		06:39 (1)	06:59			07:50			07:47	08:36
	22:02			21:20	33	20:50 (6)	20:12			19:01			16:57	16:24
9	05:25			06:09		06:38 (1)	07:01		07:54 (2)	07:52			07:48	08:37
	22:01			21:18	29	07:07 (1)	20:10	8	08:02 (2)	18:59			16:55	16:24
10	05:26			06:11		06:39 (1)	07:03		07:49 (2)	07:54			07:50	08:38
	22:01			21:16	29	07:08 (1)	20:08	16	08:05 (2)	18:57			16:54	16:24
11	05:27			06:12		06:41 (1)	07:04		07:47 (2)	07:55			07:52	08:39
	22:00			21:14	28	07:09 (1)	20:05	20	08:07 (2)	18:54			16:52	16:23
12	05:28			06:14		06:42 (1)	07:06		07:46 (2)	07:57			07:54	08:40
	21:59			21:12	26	07:08 (1)	20:03	23	08:09 (2)	18:52			16:50	16:23
13	05:29			06:16		06:44 (1)	07:08		07:43 (2)	07:59			07:56	08:41
	21:58			21:10	25	07:09 (1)	20:00	26	08:09 (2)	18:50			16:49	16:23
14	05:31			06:17		06:45 (1)	07:09		07:42 (2)	08:01			07:57	08:42
	21:57			21:08	23	07:08 (1)	19:58	28	08:10 (2)	18:48			16:47	16:23
15	05:32			06:19		06:47 (1)	07:11		07:42 (2)	08:03			07:59	08:43
	21:56			21:06	21	07:08 (1)	19:56	29	08:11 (2)	18:45			16:46	16:23
16	05:33			06:21		06:48 (1)	07:13		07:40 (2)	08:04			08:01	08:44
	21:55			21:04	19	07:07 (1)	19:53	31	08:11 (2)	18:43			16:44	16:23
17	05:34			06:22		06:50 (1)	07:14		07:40 (2)	08:06			08:03	08:45
	21:54			21:02	17	07:07 (1)	19:51	31	08:11 (2)	18:41			16:43	16:24
18	05:36			06:24		06:52 (1)	07:16		07:42 (2)	08:08			08:05	08:45
	21:53			21:00	14	07:06 (1)	19:49	29	08:11 (2)	18:39			16:42	16:24
19	05:37			06:26		06:53 (1)	07:18		07:43 (2)	08:10			08:06	08:46
	21:52			20:58	12	07:05 (1)	19:46	27	08:10 (2)	18:36			16:40	16:24
20	05:38			06:27		06:55 (1)	07:19		07:45 (2)	08:12			08:08	08:47
	21:50			20:55	9	07:04 (1)	19:44	25	08:10 (2)	18:34			16:39	16:24
21	05:40			06:29		06:56 (1)	07:21		07:47 (2)	08:13			08:10	08:47
	21:49			20:53	6	07:02 (1)	19:41	23	08:10 (2)	18:32			16:38	16:25
22	05:41			06:31		06:58 (1)	07:23		07:48 (2)	08:15			08:12	08:48
	21:48			20:51	3	07:01 (1)	19:39	21	08:09 (2)	18:30			16:37	16:25
23	05:42			06:32			07:24		07:50 (2)	08:17			08:13	08:48
	21:46			20:49			19:37	19	08:09 (3)	18:28			16:35	16:26
24	05:44			06:34			07:26		07:52 (2)	08:19			08:15	08:49
	21:45			20:47			19:34	18	08:10 (3)	18:26			16:34	16:26
25	05:45			06:36		07:15 (4)	07:28		07:53 (2)	07:21			08:17	08:49
	21:44			20:45	8	07:23 (4)	19:32	17	08:10 (3)	17:24			16:33	16:27
26	05:47		20:48 (6)	06:37		07:12 (4)	07:30		07:55 (2)	07:22			08:18	08:50
	21:42	3	20:51 (6)	20:42	12	07:24 (4)	19:29	16	08:11 (3)	17:22			16:32	16:28
27	05:48		20:45 (6)	06:39		07:10 (4)	07:31		07:57 (2)	07:24			08:20	08:50
	21:41	8	20:53 (6)	20:40	16	07:26 (4)	19:27	14	08:11 (3)	17:20			16:31	16:29
28	05:50		20:45 (6)	06:41		07:09 (4)	07:33		07:58 (2)	07:26			08:21	08:50
	21:39	10	20:55 (6)	20:38	19	07:28 (4)	19:25	12	08:10 (3)	17:18			16:30	16:29
29	05:51		20:43 (6)	06:42		07:09 (4)	07:35		08:00 (3)	07:28			08:23	08:50
	21:37	12	20:55 (6)	20:36	19	07:28 (4)	19:22	9	08:09 (3)	17:16			16:30	16:30
30	05:53		20:42 (6)	06:44		07:11 (4)	07:36		08:02 (3)	07:30			08:25	08:50
	21:36	13	20:55 (6)	20:33	17	07:28 (4)	19:20	7	08:09 (3)	17:14			16:29	16:31
31	05:54		06:49 (1)	06:46		07:12 (4)				07:32				08:50
	21:34	23	20:56 (6)	20:31	16	07:28 (4)				17:12				16:32
Potential sun hours	506			456			381			330			263	240
Total, worst case		69			644			500			5			
Sun reduction		0.26			0.30			0.28			0.24			
Oper. time red.		1.00			1.00			1.00			1.00			
Wind dir. red.		0.68			0.68			0.69			0.69			
Total reduction		0.18			0.20			0.20			0.16			
Total, real		12			129			98			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)

Licensed user:
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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: AG - H33

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January	February	March		April		May		June
1	08:50	08:22	07:27		07:15		07:44 (2)	06:08	06:33 (1)	05:22
	16:33	17:23	18:16		20:11	28	08:12 (2)	21:04	21	06:54 (1)	21:51
2	08:50	08:20	07:25		07:12		07:44 (2)	06:06	06:31 (1)	05:21
	16:35	17:24	18:18		20:13	26	08:10 (2)	21:06	23	06:54 (1)	21:53
3	08:50	08:19	07:23		07:10		07:45 (2)	06:04	06:30 (1)	05:20
	16:36	17:26	18:19		20:15	24	08:09 (2)	21:07	24	06:54 (1)	21:54
4	08:50	08:17	07:20		07:08		07:47 (2)	06:02	06:28 (1)	05:19
	16:37	17:28	18:21		20:17	21	08:08 (2)	21:09	26	06:54 (1)	21:55
5	08:49	08:15	07:18		07:05		07:49 (2)	06:01	06:26 (1)	05:18
	16:38	17:30	18:23		20:18	17	08:06 (2)	21:11	27	06:53 (1)	21:56
6	08:49	08:14	07:16		07:03		07:50 (2)	05:59	06:24 (1)	05:18
	16:39	17:32	18:25		20:20	12	08:02 (2)	21:13	29	06:53 (1)	21:57
7	08:49	08:12	07:13		07:01			05:57	06:24 (1)	05:17
	16:41	17:34	18:27		20:22			21:14	29	06:53 (1)	21:58
8	08:48	08:10	07:11		06:58		07:22 (4)	05:55	06:24 (1)	05:16
	16:42	17:36	18:29		20:24	1	07:23 (4)	21:16	28	06:52 (1)	21:59
9	08:48	08:08	07:09		06:56		07:19 (4)	05:53	06:24 (1)	05:16
	16:43	17:38	18:30		20:26	4	07:23 (4)	21:18	33	20:47 (6)	21:59
10	08:47	08:06	07:07		06:54		07:17 (4)	05:51	06:26 (1)	05:16
	16:45	17:40	18:32		20:27	7	07:24 (4)	21:19	35	20:50 (6)	22:00
11	08:46	08:05	07:04		06:51		07:15 (4)	05:50	06:26 (1)	05:15
	16:46	17:42	18:34		20:29	9	07:24 (4)	21:21	36	20:51 (6)	22:01
12	08:46	08:03	07:02		06:49		07:13 (4)	05:48	06:26 (1)	05:15
	16:48	17:44	18:36		20:31	12	07:25 (4)	21:23	35	20:51 (6)	22:02
13	08:45	08:01	07:00		06:47		07:10 (4)	05:46	06:28 (1)	05:14
	16:49	17:46	18:38		20:33	13	07:23 (4)	21:24	34	20:52 (6)	22:02
14	08:44	07:59	06:57	07:21 (3)	06:45		07:08 (4)	05:45	06:29 (1)	05:14
	16:51	17:47	18:40	2 07:23 (3)	20:34	15	07:23 (4)	21:26	32	20:52 (6)	22:03
15	08:43	07:57	06:55	07:18 (3)	06:42		07:06 (4)	05:43	06:31 (1)	05:14
	16:52	17:49	18:41	5 07:23 (3)	20:36	17	07:23 (4)	21:27	28	20:52 (6)	22:04
16	08:42	07:55	06:53	07:16 (3)	06:40		07:04 (4)	05:41	06:33 (1)	05:14
	16:54	17:51	18:43	8 07:24 (3)	20:38	18	07:22 (4)	21:29	24	20:52 (6)	22:04
17	08:42	07:53	06:50	07:13 (3)	06:38		07:03 (4)	05:40	20:38 (6)	05:14
	16:56	17:53	18:45	10 07:23 (3)	20:40	18	07:21 (4)	21:31	14	20:52 (6)	22:05
18	08:41	07:51	06:48	07:11 (3)	06:36		07:03 (4)	05:38	20:39 (6)	05:14
	16:57	17:55	18:47	12 07:23 (3)	20:41	16	07:19 (4)	21:32	13	20:52 (6)	22:05
19	08:40	07:49	06:46	07:09 (2)	06:34		07:04 (4)	05:37	20:39 (6)	05:14
	16:59	17:57	18:48	14 07:23 (3)	20:43	13	07:17 (4)	21:34	12	20:51 (6)	22:05
20	08:38	07:47	06:43	07:06 (2)	06:31		07:07 (4)	05:36	20:40 (6)	05:14
	17:01	17:59	18:50	16 07:22 (3)	20:45	7	07:14 (4)	21:35	10	20:50 (6)	22:06
21	08:37	07:44	06:41	07:04 (2)	06:29			05:34	20:41 (6)	05:14
	17:02	18:01	18:52	18 07:22 (3)	20:47			21:37	9	20:50 (6)	22:06
22	08:36	07:42	06:38	07:02 (2)	06:27			05:33	20:43 (6)	05:14
	17:04	18:03	18:54	19 07:21 (3)	20:48			21:38	6	20:49 (6)	22:06
23	08:35	07:40	06:36	06:59 (2)	06:25			05:31			05:14
	17:06	18:05	18:56	19 07:18 (3)	20:50			21:40			22:06
24	08:34	07:38	06:34	06:57 (2)	06:23		06:47 (1)	05:30			05:15
	17:08	18:06	18:57	19 07:16 (2)	20:52	3	06:50 (1)	21:41			22:06
25	08:32	07:36	06:31	06:54 (2)	06:21		06:45 (1)	05:29			05:15
	17:10	18:08	18:59	21 07:15 (2)	20:54	6	06:51 (1)	21:42			22:06
26	08:31	07:34	06:29	06:52 (2)	06:18		06:43 (1)	05:28			05:15
	17:11	18:10	19:01	24 07:16 (2)	20:55	9	06:52 (1)	21:44			22:06
27	08:30	07:31	06:27	06:50 (2)	06:16		06:41 (1)	05:27			05:16
	17:13	18:12	19:03	26 07:16 (2)	20:57	12	06:53 (1)	21:45			22:06
28	08:28	07:29	06:24	06:47 (2)	06:14		06:39 (1)	05:25			05:16
	17:15	18:14	19:04	28 07:15 (2)	20:59	14	06:53 (1)	21:46			22:06
29	08:27		07:22	07:45 (2)	06:12		06:37 (1)	05:24			05:17
	17:17		20:06	30 08:15 (2)	21:01	17	06:54 (1)	21:48			22:06
30	08:25		07:19	07:44 (2)	06:10		06:35 (1)	05:23			05:18
	17:19		20:08	31 08:15 (2)	21:02	19	06:54 (1)	21:49			22:06
31	08:24		07:17	07:43 (2)				05:22			
	17:21		20:10	30 08:13 (2)				21:50			
Potential sun hours	256	276	367		418			489			503
Total, worst case				332		358			528		
Sun reduction				0.24		0.35			0.37		
Oper. time red.				1.00		1.00			1.00		
Wind dir. red.				0.69		0.68			0.67		
Total reduction				0.17		0.24			0.25		
Total, real				56		86			131		

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)

Licensed user:
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abyrne / abyrne@jodireland.com

Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: AG - H33

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	July			August			September			October		November	December
1	05:18			05:56		06:36 (1)	06:47		07:14 (4)	07:38		07:34	08:26
	22:06			21:32	35	21:01 (6)	20:29	9	07:23 (4)	19:18		17:10	16:28
2	05:19			05:58		06:36 (1)	06:49		07:16 (4)	07:40		07:35	08:27
	22:05			21:31	35	21:00 (6)	20:26	7	07:23 (4)	19:15		17:08	16:27
3	05:20			05:59		06:35 (1)	06:51		07:17 (4)	07:42		07:37	08:29
	22:05			21:29	34	20:58 (6)	20:24	4	07:21 (4)	19:13		17:06	16:27
4	05:20			06:01		06:35 (1)	06:52		07:19 (4)	07:43		07:39	08:30
	22:04			21:27	32	20:57 (6)	20:22	1	07:20 (4)	19:11		17:04	16:26
5	05:21			06:02		06:33 (1)	06:54			07:45		07:41	08:32
	22:04			21:25	29	07:02 (1)	20:19			19:08		17:02	16:26
6	05:22			06:04		06:33 (1)	06:56		07:47 (2)	07:47		07:43	08:33
	22:03			21:24	30	07:03 (1)	20:17	11	07:58 (2)	19:06		17:01	16:25
7	05:23			06:06		06:34 (1)	06:58		07:44 (2)	07:48		07:45	08:34
	22:03			21:22	28	07:02 (1)	20:15	17	08:01 (2)	19:04		16:59	16:25
8	05:24			06:07		06:36 (1)	06:59		07:41 (2)	07:50		07:47	08:36
	22:02			21:20	27	07:03 (1)	20:12	21	08:02 (2)	19:01		16:57	16:24
9	05:25			06:09		06:37 (1)	07:01		07:39 (2)	07:52		07:48	08:37
	22:01			21:18	25	07:02 (1)	20:10	24	08:03 (2)	18:59		16:55	16:24
10	05:26			06:11		06:39 (1)	07:03		07:37 (2)	07:54		07:50	08:38
	22:01			21:16	24	07:03 (1)	20:08	27	08:04 (2)	18:57		16:54	16:24
11	05:27			06:12		06:41 (1)	07:04		07:36 (2)	07:55		07:52	08:39
	22:00			21:14	22	07:03 (1)	20:05	29	08:05 (2)	18:54		16:52	16:23
12	05:28			06:14		06:42 (1)	07:06		07:36 (2)	07:57		07:54	08:40
	21:59			21:12	20	07:02 (1)	20:03	29	08:05 (2)	18:52		16:50	16:23
13	05:29			06:16		06:44 (1)	07:08		07:34 (2)	07:59		07:56	08:41
	21:58			21:10	18	07:02 (1)	20:00	31	08:05 (2)	18:50		16:49	16:23
14	05:31			06:17		06:45 (1)	07:09		07:35 (2)	08:01		07:57	08:42
	21:57			21:08	16	07:01 (1)	19:58	30	08:05 (2)	18:48		16:47	16:23
15	05:32			06:19		06:47 (1)	07:11		07:37 (2)	08:03		07:59	08:43
	21:56			21:06	14	07:01 (1)	19:56	28	08:05 (2)	18:45		16:46	16:23
16	05:33			06:21		06:48 (1)	07:13		07:38 (2)	08:04		08:01	08:44
	21:55			21:04	11	06:59 (1)	19:53	26	08:04 (2)	18:43		16:44	16:23
17	05:34			06:22		06:50 (1)	07:14		07:40 (2)	08:06		08:03	08:45
	21:54			21:02	9	06:59 (1)	19:51	24	08:04 (2)	18:41		16:43	16:24
18	05:36			06:24		06:52 (1)	07:16		07:42 (2)	08:08		08:05	08:45
	21:53			21:00	6	06:58 (1)	19:49	22	08:04 (2)	18:39		16:42	16:24
19	05:37			06:26		06:53 (1)	07:18		07:43 (2)	08:10		08:06	08:46
	21:52			20:58	3	06:56 (1)	19:46	20	08:03 (2)	18:36		16:40	16:24
20	05:38			06:27			07:19		07:45 (2)	08:12		08:08	08:47
	21:50			20:55			19:44	20	08:05 (3)	18:34		16:39	16:24
21	05:40		20:53 (6)	06:29			07:21		07:47 (2)	08:13		08:10	08:47
	21:49	4	20:57 (6)	20:53			19:41	19	08:06 (3)	18:32		16:38	16:25
22	05:41		20:51 (6)	06:31			07:23		07:48 (2)	08:15		08:12	08:48
	21:48	8	20:59 (6)	20:51			19:39	18	08:06 (3)	18:30		16:37	16:25
23	05:42		20:51 (6)	06:32		07:11 (4)	07:24		07:50 (2)	08:17		08:13	08:48
	21:46	10	21:01 (6)	20:49	9	07:20 (4)	19:37	16	08:06 (3)	18:28		16:35	16:26
24	05:44		20:50 (6)	06:34		07:08 (4)	07:26		07:52 (2)	08:19		08:15	08:49
	21:45	11	21:01 (6)	20:47	13	07:21 (4)	19:34	15	08:07 (3)	18:26		16:34	16:26
25	05:45		20:49 (6)	06:36		07:06 (4)	07:28		07:53 (3)	07:21		08:17	08:49
	21:43	12	21:01 (6)	20:45	17	07:23 (4)	19:32	13	08:06 (3)	17:24		16:33	16:27
26	05:47		20:49 (6)	06:37		07:04 (4)	07:30		07:55 (3)	07:22		08:18	08:50
	21:42	13	21:02 (6)	20:42	19	07:23 (4)	19:29	11	08:06 (3)	17:22		16:32	16:28
27	05:48		06:46 (1)	06:39		07:06 (4)	07:31		07:57 (3)	07:24		08:20	08:50
	21:41	18	21:02 (6)	20:40	18	07:24 (4)	19:27	9	08:06 (3)	17:20		16:31	16:29
28	05:50		06:43 (1)	06:41		07:08 (4)	07:33		07:58 (3)	07:26		08:21	08:50
	21:39	25	21:03 (6)	20:38	17	07:25 (4)	19:25	6	08:04 (3)	17:18		16:30	16:29
29	05:51		06:41 (1)	06:42		07:09 (4)	07:35		08:00 (3)	07:28		08:23	08:50
	21:37	30	21:03 (6)	20:36	15	07:24 (4)	19:22	3	08:03 (3)	17:16		16:30	16:30
30	05:53		06:39 (1)	06:44		07:11 (4)	07:36			07:30		08:25	08:50
	21:36	32	21:02 (6)	20:33	13	07:24 (4)	19:20			17:14		16:29	16:31
31	05:54		06:38 (1)	06:46		07:12 (4)				07:32			08:50
	21:34	34	21:02 (6)	20:31	11	07:23 (4)				17:12			16:32
Potential sun hours	506			456			381			330		263	240
Total, worst case		197			550			490					
Sun reduction		0.26			0.30			0.28					
Oper. time red.		1.00			1.00			1.00					
Wind dir. red.		0.68			0.67			0.69					
Total reduction		0.18			0.20			0.20					
Total, real		35			110			96					

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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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: AH - H34

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January		February		March		April		May		June	
1	08:50		08:22		07:27		07:15		06:08		05:21	
	16:33		17:22		18:16	9	17:48 (7)		20:11		21:51	7
2	08:50		08:20		07:25		07:12		06:06		05:21	
	16:34		17:24		18:18	6	17:47 (7)		20:13		21:53	8
3	08:50		08:19		07:23		07:10		06:04		05:20	
	16:36		17:26		18:19		20:15		21:07	4	21:54	8
4	08:50		08:17		07:20		07:08		06:02		05:19	
	16:37		17:28		18:21		20:17		21:09	5	21:55	8
5	08:49		08:15		07:18		07:05		06:00		05:18	
	16:38		17:30		18:23		20:18		21:11	7	21:56	7
6	08:49		08:14		07:16		07:03		05:59		05:18	
	16:39		17:32		18:25		20:20		21:13	9	21:57	5
7	08:49		08:12		07:13		07:01		05:57		05:17	
	16:41		17:34		18:27		20:22		21:14	9	21:58	4
8	08:48		08:10		07:11		06:58		05:55		05:16	
	16:42		17:36		18:29		20:24		21:16	6	21:59	
9	08:48		08:08		07:09		06:56		05:53		05:16	
	16:43		17:38		18:30		20:26		21:18		21:59	
10	08:47		08:06		07:07		06:54		05:51		05:15	
	16:45		17:40		18:32		20:27		21:19		22:00	
11	08:46		08:05		07:04		06:51		05:50		05:15	
	16:46		17:42		18:34		20:29		21:21		22:01	
12	08:46		08:03		07:02		06:49		05:48		05:15	
	16:48		17:44		18:36		20:31		21:23		22:02	
13	08:45		08:01		07:00		06:47		05:46		05:14	
	16:49		17:45		18:38		20:33		21:24		22:02	
14	08:44		07:59		06:57		06:45		05:45		05:14	
	16:51		17:47		18:39		20:34		21:26		22:03	
15	08:43		07:57		06:55		06:42		05:43		05:14	
	16:52		17:49		18:41		20:36		21:27		22:04	
16	08:43		07:55		06:53		06:40		05:41		05:14	
	16:54		17:51		18:43		20:38		21:29		22:04	
17	08:42		07:53		06:50		06:38		05:40		05:14	
	16:56		17:53		18:45		20:40		21:31		22:05	
18	08:41		07:51		06:48		06:36		05:38		05:14	
	16:57		17:55		18:47		20:41		21:32		22:05	
19	08:40		07:49		06:45		06:33		05:37		05:14	
	16:59		17:57		18:48		20:43		21:34		22:05	
20	08:38		07:47		06:43		06:31		05:35		05:14	
	17:01		17:59		18:50		20:45		21:35		22:06	
21	08:37		07:44		06:41		06:29		05:34		05:14	
	17:02		18:01		18:52		20:47	1	21:37		22:06	
22	08:36		07:42		06:38		06:27		05:33		05:14	
	17:04		18:03		18:54		20:48	4	21:38		22:06	
23	08:35		07:40		06:36		06:25		05:31		05:14	
	17:06		18:04		18:56		20:50	7	21:40		22:06	
24	08:34		07:38		06:34		06:23		05:30		05:15	
	17:08		18:06		18:57		20:52	10	21:41		22:06	
25	08:32		07:36		17:40 (7)		06:31		06:21		05:29	
	17:09		18:08	1	17:41 (7)		18:59		20:54	11	21:42	
26	08:31		07:34		17:39 (7)		06:29		06:18		05:28	
	17:11		18:10	4	17:43 (7)		19:01		20:55	12	21:44	1
27	08:30		07:31		17:39 (7)		06:27		06:16		05:26	
	17:13		18:12	6	17:45 (7)		19:03		20:57	11	21:45	2
28	08:28		07:29		17:38 (7)		06:24		06:14		05:25	
	17:15		18:14	9	17:47 (7)		19:04		20:59	9	21:46	4
29	08:27						07:22		06:12		05:24	
	17:17						20:06		21:01	6	21:48	5
30	08:25						07:19		06:10		05:23	
	17:19						20:08		21:02		21:49	6
31	08:24						07:17				05:22	
	17:21						20:10				21:50	7
Potential sun hours	255		276		367		418		489		503	
Total, worst case				20		15		71		66		47
Sun reduction				0.21		0.24		0.35		0.37		0.30
Oper. time red.				1.00		1.00		1.00		1.00		1.00
Wind dir. red.				0.67		0.67		0.69		0.68		0.66
Total reduction				0.14		0.16		0.24		0.25		0.20
Total, real				3		2		17		16		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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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: AH - H34

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	July			August			September	October			November	December
1	05:18			05:56			06:47	07:38			07:34	08:26
	22:06			21:32			20:29	19:18			17:10	16:28
2	05:19			05:57			06:49	07:40			07:35	08:27
	22:05			21:31			20:26	19:15			17:08	16:27
3	05:20			05:59			06:51	07:41			07:37	08:29
	22:05			21:29			20:24	19:13			17:06	16:27
4	05:20			06:01		20:48 (13)	06:52	07:43			07:39	08:30
	22:04			21:27	3	20:51 (13)	20:22	19:10			17:04	16:26
5	05:21		21:21 (14)	06:02		20:45 (13)	06:54	07:45			07:41	08:32
	22:04	3	21:24 (14)	21:25	7	20:52 (13)	20:19	19:08			17:02	16:25
6	05:22		21:19 (14)	06:04		20:45 (13)	06:56	07:47			07:43	08:33
	22:03	5	21:24 (14)	21:24	8	20:53 (13)	20:17	19:06			17:00	16:25
7	05:23		21:19 (14)	06:06		20:43 (13)	06:57	07:48			07:45	08:34
	22:03	6	21:25 (14)	21:22	9	20:52 (13)	20:15	19:03			16:59	16:25
8	05:24		21:19 (14)	06:07		20:44 (13)	06:59	07:50			07:46	08:36
	22:02	7	21:26 (14)	21:20	6	20:50 (13)	20:12	19:01			16:57	16:24
9	05:25		21:18 (14)	06:09		20:43 (13)	07:01	07:52			07:48	08:37
	22:01	9	21:27 (14)	21:18	5	20:48 (13)	20:10	18:59			16:55	16:24
10	05:26		21:18 (14)	06:11		20:44 (13)	07:03	07:54			07:50	08:38
	22:01	9	21:27 (14)	21:16	3	20:47 (13)	20:08	18:57			16:54	16:24
11	05:27		21:18 (14)	06:12			07:04	07:55		18:16 (7)	07:52	08:39
	22:00	8	21:26 (14)	21:14			20:05	18:54	2	18:18 (7)	16:52	16:23
12	05:28		21:18 (14)	06:14			07:06	07:57		18:13 (7)	07:54	08:40
	21:59	7	21:25 (14)	21:12			20:03	18:52	8	18:21 (7)	16:50	16:23
13	05:29		21:18 (14)	06:15			07:08	07:59		18:12 (7)	07:56	08:41
	21:58	7	21:25 (14)	21:10			20:00	18:50	9	18:21 (7)	16:49	16:23
14	05:30		21:18 (14)	06:17		20:23 (12)	07:09	08:01		18:11 (7)	07:57	08:42
	21:57	6	21:24 (14)	21:08	7	20:30 (12)	19:58	18:47	8	18:19 (7)	16:47	16:23
15	05:32		21:19 (14)	06:19		20:22 (12)	07:11	08:03		18:11 (7)	07:59	08:43
	21:56	5	21:24 (14)	21:06	10	20:32 (12)	19:56	18:45	6	18:17 (7)	16:46	16:23
16	05:33		21:19 (14)	06:20		20:21 (12)	07:13	08:04		18:11 (7)	08:01	08:44
	21:55	3	21:22 (14)	21:04	11	20:32 (12)	19:53	18:43	4	18:15 (7)	16:44	16:23
17	05:34		21:19 (14)	06:22		20:20 (12)	07:14	08:06			08:03	08:45
	21:54	2	21:21 (14)	21:02	13	20:33 (12)	19:51	18:41			16:43	16:23
18	05:35			06:24		20:21 (12)	07:16	08:08			08:05	08:45
	21:53			21:00	11	20:32 (12)	19:49	18:39			16:42	16:24
19	05:37			06:26		20:20 (12)	07:18	08:10			08:06	08:46
	21:52			20:58	9	20:29 (12)	19:46	18:36			16:40	16:24
20	05:38			06:27		20:21 (12)	07:19	08:11			08:08	08:47
	21:50			20:55	6	20:27 (12)	19:44	18:34			16:39	16:24
21	05:39			06:29		20:21 (12)	07:21	08:13			08:10	08:47
	21:49			20:53	4	20:25 (12)	19:41	18:32			16:38	16:25
22	05:41			06:31			07:23	08:15			08:12	08:48
	21:48			20:51			19:39	18:30			16:37	16:25
23	05:42			06:32			07:24	08:17			08:13	08:48
	21:46			20:49			19:37	18:28			16:35	16:26
24	05:44			06:34			07:26	08:19			08:15	08:49
	21:45			20:47			19:34	18:26			16:34	16:26
25	05:45			06:36			07:28	07:21			08:17	08:49
	21:44			20:45			19:32	17:24			16:33	16:27
26	05:47			06:37			07:29	07:22			08:18	08:50
	21:42			20:42			19:29	17:22			16:32	16:28
27	05:48			06:39			07:31	07:24			08:20	08:50
	21:41			20:40			19:27	17:20			16:31	16:28
28	05:50			06:41			07:33	07:26			08:21	08:50
	21:39			20:38			19:25	17:18			16:30	16:29
29	05:51			06:42			07:35	07:28			08:23	08:50
	21:37			20:36			19:22	17:16			16:29	16:30
30	05:53			06:44			07:36	07:30			08:25	08:50
	21:36			20:33			19:20	17:14			16:29	16:31
31	05:54			06:46				07:32				08:50
	21:34			20:31				17:12				16:32
Potential sun hours	506			456			381	330			263	240
Total, worst case		77			112				37			
Sun reduction		0.26			0.30				0.24			
Oper. time red.		1.00			1.00				1.00			
Wind dir. red.		0.66			0.69				0.67			
Total reduction		0.18			0.20				0.16			
Total, real		14			23				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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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: AI - H35

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January			February	March	April	May	June	July	August	September	October	November			December		
1	08:50		15:29 (1)	08:22	07:27	07:15	06:08	05:21	05:18	05:56	06:47	07:38	07:33			08:26		15:17 (1)
	16:33	29	15:58 (1)	17:22	18:16	20:11	21:04	21:51	22:06	21:32	20:29	19:17	17:10			16:28	25	15:42 (1)
2	08:50		15:28 (1)	08:20	07:25	07:12	06:06	05:20	05:19	05:57	06:49	07:40	07:35			08:27		15:17 (1)
	16:34	30	15:58 (1)	17:24	18:17	20:13	21:06	21:52	22:05	21:31	20:26	19:15	17:08			16:27	26	15:43 (1)
3	08:50		15:29 (1)	08:19	07:22	07:10	06:04	05:20	05:19	05:59	06:51	07:41	07:37			08:29		15:17 (1)
	16:35	30	15:59 (1)	17:26	18:19	20:15	21:07	21:54	22:05	21:29	20:24	19:13	17:06			16:26	26	15:43 (1)
4	08:50		15:30 (1)	08:17	07:20	07:08	06:02	05:19	05:20	06:01	06:52	07:43	07:39			08:30		15:17 (1)
	16:37	30	16:00 (1)	17:28	18:21	20:17	21:09	21:55	22:04	21:27	20:22	19:10	17:04			16:26	28	15:45 (1)
5	08:49		15:30 (1)	08:15	07:18	07:05	06:00	05:18	05:21	06:02	06:54	07:45	07:41			08:32		15:17 (1)
	16:38	29	15:59 (1)	17:30	18:23	20:18	21:11	21:56	22:04	21:25	20:19	19:08	17:02			16:25	28	15:45 (1)
6	08:49		15:32 (1)	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43			08:33		15:17 (1)
	16:39	28	16:00 (1)	17:32	18:25	20:20	21:13	21:57	22:03	21:24	20:17	19:06	17:00			16:25	28	15:45 (1)
7	08:49		15:32 (1)	08:12	07:13	07:01	05:57	05:17	05:23	06:06	06:57	07:48	07:45			08:34		15:17 (1)
	16:40	28	16:00 (1)	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:03	16:59			16:24	29	15:46 (1)
8	08:48		15:32 (1)	08:10	07:11	06:58	05:55	05:16	05:24	06:07	06:59	07:50	07:46			08:35		15:17 (1)
	16:42	28	16:00 (1)	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:12	19:01	16:57			16:24	30	15:47 (1)
9	08:48		15:34 (1)	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48			08:37		15:17 (1)
	16:43	26	16:00 (1)	17:38	18:30	20:25	21:18	21:59	22:01	21:18	20:10	18:59	16:55			16:24	30	15:47 (1)
10	08:47		15:34 (1)	08:06	07:06	06:54	05:51	05:15	05:26	06:10	07:02	07:54	07:50			08:38		15:18 (1)
	16:45	26	16:00 (1)	17:40	18:32	20:27	21:19	22:00	22:01	21:16	20:08	18:57	16:54			16:24	30	15:48 (1)
11	08:46		15:35 (1)	08:04	07:04	06:51	05:50	05:15	05:27	06:12	07:04	07:55	07:52			08:39		15:19 (1)
	16:46	25	16:00 (1)	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:54	16:52			16:23	29	15:48 (1)
12	08:46		15:36 (1)	08:03	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54			08:40		15:19 (1)
	16:48	24	16:00 (1)	17:43	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:50			16:23	29	15:48 (1)
13	08:45		15:37 (1)	08:01	07:00	06:47	05:46	05:14	05:29	06:15	07:07	07:59	07:56			08:41		15:19 (1)
	16:49	22	15:59 (1)	17:45	18:38	20:32	21:24	22:02	21:58	21:10	20:00	18:50	16:49			16:23	28	15:47 (1)
14	08:44		15:38 (1)	07:59	06:57	06:45	05:45	05:14	05:30	06:17	07:09	08:01	07:57			08:42		15:20 (1)
	16:51	21	15:59 (1)	17:47	18:39	20:34	21:26	22:03	21:57	21:08	19:58	18:47	16:47			16:23	27	15:47 (1)
15	08:43		15:39 (1)	07:57	06:55	06:42	05:43	05:14	05:32	06:19	07:11	08:02	07:59			08:43		15:20 (1)
	16:52	19	15:58 (1)	17:49	18:41	20:36	21:27	22:04	21:56	21:06	19:56	18:45	16:46			16:23	27	15:47 (1)
16	08:42		15:41 (1)	07:55	06:52	06:40	05:41	05:14	05:33	06:20	07:13	08:04	08:01			08:44		15:21 (1)
	16:54	17	15:58 (1)	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:53	18:43	16:44			16:23	27	15:48 (1)
17	08:41		15:43 (1)	07:53	06:50	06:38	05:40	05:14	05:34	06:22	07:14	08:06	08:03			08:45		15:20 (1)
	16:55	14	15:57 (1)	17:53	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43			16:23	27	15:47 (1)
18	08:41		15:45 (1)	07:51	06:48	06:36	05:38	05:14	05:35	06:24	07:16	08:08	08:05			08:45		15:21 (1)
	16:57	10	15:55 (1)	17:55	18:47	20:41	21:32	22:05	21:53	21:00	19:48	18:39	16:42			16:24	26	15:47 (1)
19	08:39			07:49	06:45	06:33	05:37	05:14	05:37	06:25	07:18	08:10	08:06			08:46		15:22 (1)
	16:59			17:57	18:48	20:43	21:34	22:05	21:51	20:58	19:46	18:36	16:40			16:24	26	15:48 (1)
20	08:38			07:46	06:43	06:31	05:35	05:14	05:38	06:27	07:19	08:11	08:08			08:47		15:22 (1)
	17:01			17:59	18:50	20:45	21:35	22:06	21:50	20:55	19:44	18:34	16:39			16:24	26	15:48 (1)
21	08:37			07:44	06:41	06:29	05:34	05:14	05:39	06:29	07:21	08:13	08:10			08:47		15:22 (1)
	17:02			18:01	18:52	20:47	21:37	22:06	21:49	20:53	19:41	18:32	16:38			16:25	26	15:48 (1)
22	08:36			07:42	06:38	06:27	05:33	05:14	05:41	06:30	07:23	08:15	08:12			08:48		15:23 (1)
	17:04			18:03	18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:36			16:25	26	15:49 (1)
23	08:35			07:40	06:36	06:25	05:31	05:14	05:42	06:32	07:24	08:17	08:13			08:48		15:23 (1)
	17:06			18:04	18:55	20:50	21:40	22:06	21:46	20:49	19:37	18:28	16:35			16:26	27	15:50 (1)
24	08:34			07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15		15:23 (1)	08:49		15:24 (1)
	17:08			18:06	18:57	20:52	21:41	22:06	21:45	20:47	19:34	18:26	16:34	9	15:32 (1)	16:26	26	15:50 (1)
25	08:32			07:36	06:31	06:20	05:29	05:15	05:45	06:36	07:28	07:21	08:17		15:21 (1)	08:49		15:25 (1)
	17:09			18:08	18:59	20:54	21:42	22:06	21:43	20:44	19:32	17:24	16:33	14	15:35 (1)	16:27	26	15:51 (1)
26	08:31			07:34	06:29	06:18	05:28	05:15	05:47	06:37	07:29	07:22	08:18		15:20 (1)	08:49		15:25 (1)
	17:11			18:10	19:01	20:55	21:44	22:06	21:42	20:42	19:29	17:22	16:32	17	15:37 (1)	16:28	27	15:52 (1)
27	08:29			07:31	06:26	06:16	05:26	05:16	05:48	06:39	07:31	07:24	08:20		15:18 (1)	08:50		15:25 (1)
	17:13			18:12	19:03	20:57	21:45	22:06	21:40	20:40	19:27	17:20	16:31	19	15:37 (1)	16:28	27	15:52 (1)
28	08:28			07:29	06:24	06:14	05:25	05:16	05:50	06:41	07:33	07:26	08:21		15:18 (1)	08:50		15:26 (1)
	17:15			18:14	19:04	20:59	21:46	22:06	21:39	20:38	19:25	17:17	16:30	21	15:39 (1)	16:29	27	15:53 (1)
29	08:27				07:22	06:12	05:24	05:17	05:51	06:42	07:35	07:28	08:23		15:18 (1)	08:50		15:26 (1)
	17:17				20:06	21:01	21:48	22:06	21:37	20:35	19:22	17:16	16:29	22	15:40 (1)	16:30	28	15:54 (1)
30	08:25				07:19	06:10	05:23	05:17	05:53	06:44	07:36	07:30	08:24		15:17 (1)	08:50		15:27 (1)
	17:19				20:08	21:02	21:49	22:06	21:36	20:33	19:20	17:14	16:29	24	15:41 (1)	16:31	28	15:55 (1)
31	08:24				07:17		05:22		05:54	06:46		07:32				08:50		15:28 (1)
	17:21				20:10		21:50		21:34	20:31		17:12				16:32	28	15:56 (1)
Potential sun hours	255			276	367	418	489	503	506	456	381	330	263			240		
Total, worst case		436												126			848	
Sun reduction		0.16												0.19			0.14	
Oper. time red.		1.00												1.00			1.00	
Wind dir. red.		0.61												0.61			0.61	
Total reduction		0.10												0.11			0.08	
Total, real		42												14			71	

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)

Licensed user:
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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: AJ - H36

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50 16:33	08:22 17:23	07:27 18:16	07:15 20:11	06:08 21:04 (12)	06:33 (3) 06:45 (3) 21:51 (8)	05:22 05:51 (2) 05:59 (2) 22:06 (17)	05:18 05:50 (2) 06:07 (2) 21:32	05:56 06:47 20:29	07:38 19:18	07:34 17:10	08:26 16:28
2	08:50 16:35	08:20 17:24	07:25 18:18	07:12 20:13	06:06 21:06 (14)	06:31 (3) 06:45 (3) 21:52 (9)	05:21 05:50 (2) 05:59 (2) 22:05 (16)	05:19 05:50 (2) 06:06 (2) 21:31	05:58 06:49 20:26	07:40 19:15	07:35 17:08	08:27 16:27
3	08:50 16:36	08:19 17:26	07:23 18:19	07:10 20:15	06:04 21:07 (15)	06:30 (3) 06:45 (3) 21:54 (10)	05:20 05:50 (2) 06:00 (2) 22:05 (15)	05:20 05:51 (2) 06:06 (2) 21:29 (6)	05:59 06:39 (3) 06:45 (3)	06:51 07:41 20:24	07:37 19:13	08:29 17:06	16:27
4	08:50 16:37	08:17 17:28	07:20 18:21	07:08 20:17	06:02 21:09 (16)	06:28 (3) 06:44 (3) 21:55 (11)	05:19 05:49 (2) 06:00 (2) 22:04 (15)	05:20 05:52 (2) 06:01 06:07 (2) 21:27 (12)	06:37 (3) 06:49 (3)	06:52 07:43 20:22	07:39 19:11	08:30 17:04	16:26
5	08:49 16:38	08:15 17:30	07:18 18:23	07:05 20:18	06:01 21:11 (17)	06:26 (3) 06:43 (3) 21:56 (12)	05:18 05:48 (2) 06:00 (2) 22:04 (14)	05:53 (2) 06:02 06:07 (2) 21:25 (15)	06:35 (3) 06:50 (3)	06:54 07:45 20:19	07:41 19:08	08:32 17:02	16:26
6	08:49 16:39	08:14 17:32	07:16 18:25	07:03 20:20	05:59 21:13 (18)	06:24 (3) 06:42 (3) 21:57 (13)	05:18 05:48 (2) 06:01 (2) 22:03 (13)	05:22 05:54 (2) 06:04 06:07 (2) 21:24 (18)	06:34 (3) 06:52 (3)	06:56 07:47 20:17	07:43 19:06	08:33 17:01	16:25
7	08:49 16:41	08:12 17:34	07:13 18:27	07:01 20:22	05:57 21:14 (17)	06:25 (3) 06:42 (3) 21:58 (14)	05:17 05:47 (2) 06:01 (2) 22:03 (12)	05:23 05:54 (2) 06:06 06:06 (2) 21:22 (18)	06:34 (3) 06:52 (3)	06:58 07:48 20:15	07:45 19:04	08:34 16:59	16:25
8	08:48 16:42	08:10 17:36	07:11 18:29	06:58 20:24	05:55 21:16 (14)	06:26 (3) 06:40 (3) 21:59 (15)	05:17 05:47 (2) 06:02 (2) 22:02 (12)	05:24 05:55 (2) 06:07 (2) 21:20 (17)	06:36 (3) 06:53 (3)	06:59 07:50 20:12	07:46 19:01	08:35 16:57	16:24
9	08:48 16:43	08:08 17:38	07:09 18:30	06:56 20:26	05:53 21:18 (10)	06:27 (3) 06:37 (3) 21:59 (15)	05:16 05:46 (2) 06:01 (2) 22:01 (11)	05:25 05:56 (2) 06:09 06:07 (2) 21:18 (16)	06:37 (3) 06:53 (3)	07:01 07:52 20:10	07:48 18:59	08:37 16:55	16:24
10	08:47 16:45	08:06 17:40	07:07 18:32	06:54 20:27	05:51 21:19	05:16 22:00 (16)	05:26 05:46 (2) 06:02 (2) 22:01 (9)	05:57 (2) 06:11 06:06 (2) 21:16 (15)	06:39 (3) 06:54 (3)	07:03 07:54 20:08	07:50 18:57	08:38 16:54	16:24
11	08:46 16:46	08:04 17:42	07:04 18:34	06:51 20:29	05:50 21:21	05:15 22:01 (16)	05:27 05:46 (2) 06:02 (2) 22:00 (8)	05:58 (2) 06:12 06:06 (2) 21:14 (14)	06:41 (3) 06:55 (3)	07:04 07:55 20:05	07:52 18:54	08:39 16:52	16:24
12	08:46 16:48	08:03 17:44	07:02 18:36	06:49 20:31	05:48 21:23	05:15 22:02 (17)	05:28 05:45 (2) 06:02 (2) 21:59 (7)	05:59 (2) 06:14 06:06 (2) 21:12 (12)	06:42 (3) 06:54 (3)	07:06 07:57 20:03	07:54 18:52	08:40 16:51	16:23
13	08:45 16:49	08:01 17:46	07:00 18:38	06:47 20:33	05:46 21:24	05:14 22:02 (17)	05:29 05:45 (2) 06:02 (2) 21:58 (6)	06:00 (2) 06:16 06:06 (2) 21:10 (10)	06:44 (3) 06:54 (3)	07:08 07:59 20:00	07:56 18:50	08:41 16:49	16:23
14	08:44 16:51	07:59 17:47	06:57 18:40	06:45 20:34	05:45 21:26	05:14 22:03 (18)	05:31 05:45 (2) 06:03 (2) 21:57 (4)	06:02 (2) 06:17 06:06 (2) 21:08 (9)	06:45 (3) 06:55 (3)	07:09 08:01 19:58	07:57 18:48	08:42 16:47	16:23
15	08:43 16:52	07:57 17:49	06:55 18:41	06:42 20:36	05:43 21:27	05:14 22:04 (18)	05:32 05:45 (2) 06:03 (2) 21:56 (3)	06:03 (2) 06:19 06:06 (2) 21:06 (7)	06:47 (3) 06:54 (3)	07:11 08:03 19:56	07:59 18:45	08:43 16:46	16:23
16	08:42 16:54	07:55 17:51	06:53 18:43	06:40 20:38	05:41 21:29	05:14 22:04 (18)	05:33 05:45 (2) 06:03 (2) 21:55 (1)	06:04 (2) 06:21 06:05 (2) 21:04 (5)	06:48 (3) 06:53 (3)	07:13 08:04 19:53	08:01 18:43	08:44 16:44	16:23
17	08:42 16:56	07:53 17:53	06:50 18:45	06:38 20:40	05:40 21:31	05:14 22:05 (19)	05:45 (2) 06:04 (2) 21:54	05:34 06:22 21:02 (2)	06:50 (3) 06:52 (3)	07:14 19:51	08:06 18:41	08:03 16:43	16:24
18	08:41 16:57	07:51 17:55	06:48 18:47	06:36 20:41	05:38 21:32	05:14 22:05 (19)	05:45 (2) 06:04 (2) 21:53	05:36 06:24 21:00	07:16 19:49	08:08 18:39	08:05 16:42	08:45 16:24	
19	08:39 16:59	07:49 17:57	06:45 18:48	06:34 20:43	05:37 21:34	05:14 22:05 (19)	05:45 (2) 06:04 (2) 21:51	05:37 06:26 20:58	07:18 19:46	08:10 18:36	08:06 16:40	08:46 16:24	
20	08:38 17:01	07:47 17:59	06:43 18:50	06:31 20:45	05:36 21:35	05:14 22:06 (19)	05:45 (2) 06:04 (2) 21:50	05:38 06:27 20:55	07:19 19:44	08:11 18:34	08:08 16:39	08:47 16:24	
21	08:37 17:02	07:44 18:01	06:41 18:52	06:29 20:47	05:34 21:37	05:14 22:06 (19)	05:45 (2) 06:04 (2) 21:49	05:40 06:29 20:53	07:21 19:41	08:13 18:32	08:10 16:38	08:47 16:25	
22	08:36 17:04	07:42 18:03	06:38 18:54	06:27 20:48	05:33 21:38	05:14 22:06 (19)	05:46 (2) 06:05 (2) 21:48	05:41 06:31 20:51	07:23 19:39	08:15 18:30	08:12 16:37	08:48 16:25	
23	08:35 17:06	07:40 18:05	06:36 18:56	06:25 20:50	05:31 21:40	05:14 22:06 (19)	05:46 (2) 06:05 (2) 21:46	05:42 06:32 20:49	07:24 19:37	08:17 18:28	08:13 16:35	08:48 16:26	
24	08:34 17:08	07:38 18:06	06:34 18:57	06:23 20:52	05:30 21:41	05:15 22:06 (19)	05:46 (2) 06:05 (2) 21:45	05:44 06:34 20:47	07:26 19:34	08:19 18:26	08:15 16:34	08:49 16:26	
25	08:32 17:10	07:36 18:08	06:31 18:59	06:21 20:54	05:29 21:42	05:15 22:06 (19)	05:47 (2) 06:06 (2) 21:43	05:45 06:36 20:45	07:28 19:32	08:21 17:24	08:17 16:33	08:49 16:27	
26	08:31 17:11	07:34 18:10	06:29 19:01	06:19 20:55 (3)	06:43 (3) 05:28 21:44	05:15 22:06 (19)	05:47 (2) 06:06 (2) 21:42	05:47 06:37 20:42	07:29 19:29	08:22 17:22	08:18 16:32	08:49 16:28	
27	08:30 17:13	07:31 18:12	06:27 19:03	06:16 20:57 (5)	06:41 (3) 05:27 21:45 (1)	05:55 (2) 05:16 05:56 (2)	05:48 (2) 06:06 (2) 21:40	05:48 06:39 20:40	07:31 19:27	08:24 17:20	08:20 16:31	08:50 16:29	
28	08:28 17:15	07:29 18:14	06:24 19:04	06:14 20:59 (7)	06:39 (3) 05:25 21:46 (2)	05:54 (2) 05:16 05:56 (2)	05:48 (2) 06:06 (2) 21:39	05:50 06:41 20:38	07:33 19:25	08:26 17:18	08:21 16:30	08:50 16:29	
29	08:27 17:17		07:22 20:06	06:12 21:01 (9)	06:37 (3) 05:24 21:48 (4)	05:53 (2) 05:17 05:57 (2)	05:49 (2) 05:51 06:07 (2)	06:42 20:36	07:35 19:22	08:28 17:16	08:23 16:30	08:50 16:30	
30	08:25 17:19		07:19 20:08	06:10 21:02 (11)	06:35 (3) 06:46 (3) 05:23 21:49 (5)	05:53 (2) 05:18 05:58 (2)	05:49 (2) 05:53 21:36	06:44 20:33	07:36 19:20	07:30 17:14	08:24 16:29	08:50 16:31	
31	08:24 17:21		07:17 20:10		05:22 21:50 (7)	05:52 (2) 05:59 (2)	05:54 21:34	06:46 20:31		07:32 17:12		08:50 16:32	
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240	
Total, worst case				35	152	488	163	176					
Sun reduction				0.35	0.37	0.30	0.26	0.30					
Oper. time red.				1.00	1.00	1.00	1.00	1.00					
Wind dir. red.				0.67	0.67	0.63	0.63	0.67					
Total reduction				0.24	0.24	0.19	0.17	0.20					
Total, real				8	37	92	27	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)

Licensed user:
Jennings O'Donovan
Finisklin Business Park
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+353719161416
abyrne / abyrne@jodireland.com

Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: AK - H37

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January	February	March		April		May		June
1	08:50	08:22	07:27		07:15		06:08		06:37 (1)	05:22
	16:33	17:23	18:16		20:11		21:04	27	07:04 (1)	21:51
2	08:50	08:20	07:25		07:12		06:06		06:38 (1)	05:21
	16:35	17:24	18:18		20:13		21:06	25	07:03 (1)	21:53
3	08:50	08:19	07:23		07:10		06:04		06:40 (1)	05:20
	16:36	17:26	18:19		20:15		21:07	22	07:02 (1)	21:54
4	08:50	08:17	07:20		07:08		07:31 (4)	06:02		06:40 (1)	05:19
	16:37	17:28	18:21		20:17	2	07:33 (4)	21:09	27	20:40 (6)	21:55
5	08:49	08:15	07:18		07:05		07:29 (4)	06:01		06:42 (1)	05:18
	16:38	17:30	18:23		20:18	5	07:34 (4)	21:11	26	20:41 (6)	21:56
6	08:49	08:14	07:16		07:03		07:26 (4)	05:59		06:43 (1)	05:18
	16:39	17:32	18:25		20:20	8	07:34 (4)	21:13	25	20:43 (6)	21:57
7	08:49	08:12	07:14		07:01		07:24 (4)	05:57		06:47 (1)	05:17
	16:41	17:34	18:27		20:22	10	07:34 (4)	21:14	20	20:44 (6)	21:58
8	08:48	08:10	07:11		06:58		07:22 (4)	05:55		20:30 (6)	05:16
	16:42	17:36	18:29		20:24	12	07:34 (4)	21:16	15	20:45 (6)	21:59
9	08:48	08:08	07:09		06:56		07:19 (4)	05:53		20:29 (6)	05:16
	16:43	17:38	18:30		20:26	14	07:33 (4)	21:18	15	20:44 (6)	21:59
10	08:47	08:06	07:07	07:30 (3)	06:54		07:17 (4)	05:51		20:30 (6)	05:16
	16:45	17:40	18:32	1 07:31 (3)	20:27	15	07:32 (4)	21:19	15	20:45 (6)	22:00
11	08:46	08:05	07:04	07:28 (3)	06:51		07:15 (4)	05:50		20:30 (6)	05:15
	16:46	17:42	18:34	4 07:32 (3)	20:29	17	07:32 (4)	21:21	14	20:44 (6)	22:01
12	08:46	08:03	07:02	07:25 (3)	06:49		07:13 (4)	05:48		20:29 (6)	05:15
	16:48	17:44	18:36	6 07:31 (3)	20:31	18	07:31 (4)	21:23	15	20:44 (6)	22:02
13	08:45	08:01	07:00	07:23 (3)	06:47		07:13 (4)	05:46		20:30 (6)	05:14
	16:49	17:46	18:38	9 07:32 (3)	20:33	16	07:29 (4)	21:24	14	20:44 (6)	22:02
14	08:44	07:59	06:57	07:21 (2)	06:45		07:14 (4)	05:45		20:31 (6)	05:14
	16:51	17:47	18:40	11 07:32 (3)	20:34	13	07:27 (4)	21:26	11	20:42 (6)	22:03
15	08:43	07:57	06:55	07:18 (2)	06:42		07:17 (4)	05:43		20:32 (6)	05:14
	16:52	17:49	18:41	13 07:31 (3)	20:36	7	07:24 (4)	21:27	10	20:42 (6)	22:04
16	08:42	07:55	06:53	07:16 (2)	06:40			05:41		20:33 (6)	05:14
	16:54	17:51	18:43	15 07:31 (3)	20:38			21:29	7	20:40 (6)	22:04
17	08:42	07:53	06:50	07:13 (2)	06:38		07:02 (1)	05:40		20:36 (6)	05:14
	16:56	17:53	18:45	16 07:29 (3)	20:40	2	07:04 (1)	21:31	2	20:38 (6)	22:05
18	08:41	07:51	06:48	07:11 (2)	06:36		06:59 (1)	05:38			05:14
	16:57	17:55	18:47	17 07:28 (2)	20:41	5	07:04 (1)	21:32			22:05
19	08:40	07:49	06:46	07:09 (2)	06:34		06:57 (1)	05:37			05:14
	16:59	17:57	18:48	19 07:28 (2)	20:43	8	07:05 (1)	21:34			22:05
20	08:38	07:47	06:43	07:06 (2)	06:31		06:55 (1)	05:36			05:14
	17:01	17:59	18:50	22 07:28 (2)	20:45	11	07:06 (1)	21:35			22:06
21	08:37	07:44	06:41	07:04 (2)	06:29		06:53 (1)	05:34			05:14
	17:02	18:01	18:52	24 07:28 (2)	20:47	13	07:06 (1)	21:37			22:06
22	08:36	07:42	06:38	07:02 (2)	06:27		06:51 (1)	05:33			05:14
	17:04	18:03	18:54	26 07:28 (2)	20:48	16	07:07 (1)	21:38			22:06
23	08:35	07:40	06:36	06:59 (2)	06:25		06:49 (1)	05:31			05:14
	17:06	18:05	18:56	28 07:27 (2)	20:50	18	07:07 (1)	21:40			22:06
24	08:34	07:38	06:34	06:57 (2)	06:23		06:47 (1)	05:30			05:15
	17:08	18:06	18:57	30 07:27 (2)	20:52	20	07:07 (1)	21:41			22:06
25	08:32	07:36	06:31	06:56 (2)	06:21		06:45 (1)	05:29			05:15
	17:10	18:08	18:59	29 07:25 (2)	20:54	22	07:07 (1)	21:42			22:07
26	08:31	07:34	06:29	06:57 (2)	06:18		06:43 (1)	05:28			05:15
	17:11	18:10	19:01	27 07:24 (2)	20:55	24	07:07 (1)	21:44			22:06
27	08:30	07:31	06:27	06:58 (2)	06:16		06:41 (1)	05:27			05:16
	17:13	18:12	19:03	25 07:23 (2)	20:57	25	07:06 (1)	21:45			22:06
28	08:28	07:29	06:24	06:59 (2)	06:14		06:39 (1)	05:25			05:16
	17:15	18:14	19:04	22 07:21 (2)	20:59	27	07:06 (1)	21:46			22:06
29	08:27		07:22	08:00 (2)	06:12		06:37 (1)	05:24			05:17
	17:17		20:06	19 08:19 (2)	21:01	28	07:05 (1)	21:48			22:06
30	08:25		07:19	08:03 (2)	06:10		06:37 (1)	05:23			05:18
	17:19		20:08	14 08:17 (2)	21:02	28	07:05 (1)	21:49			22:06
31	08:24		07:17	08:06 (2)				05:22			
	17:21		20:10	6 08:12 (2)				21:50			
Potential sun hours	256	276	367		418		489		503
Total, worst case			383		384		290		
Sun reduction			0.24		0.35		0.37		
Oper. time red.			1.00		1.00		1.00		
Wind dir. red.			0.69		0.68		0.68		
Total reduction			0.17		0.24		0.25		
Total, real			65		92		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)

Licensed user:
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abyrne / abyrne@jodireland.com

Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: AK - H37

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	July		August		September		October		November	December
1	05:18		05:56		20:40 (6)	06:47	07:14 (4)	07:38	08:04 (3)	07:34	08:26
	22:06		21:32	14	20:54 (6)	20:29	17	07:31 (4)	19:18	7	08:11 (3)	17:10	16:28
2	05:19		05:58		20:40 (6)	06:49	07:16 (4)	07:40	08:05 (3)	07:35	08:27
	22:05		21:31	15	20:55 (6)	20:26	15	07:31 (4)	19:15	5	08:10 (3)	17:08	16:27
3	05:20		05:59		20:39 (6)	06:51	07:17 (4)	07:42	08:07 (3)	07:37	08:29
	22:05		21:29	15	20:54 (6)	20:24	14	07:31 (4)	19:13	2	08:09 (3)	17:06	16:27
4	05:20		06:01		20:40 (6)	06:52	07:19 (4)	07:43		07:39	08:30
	22:04		21:27	15	20:55 (6)	20:22	12	07:31 (4)	19:11			17:04	16:26
5	05:21		06:02		20:40 (6)	06:54	07:20 (4)	07:45		07:41	08:32
	22:04		21:25	14	20:54 (6)	20:19	10	07:30 (4)	19:08			17:02	16:26
6	05:22		06:04		06:55 (1)	06:56	07:22 (4)	07:47		07:43	08:33
	22:03		21:24	24	20:54 (6)	20:17	8	07:30 (4)	19:06			17:01	16:25
7	05:23		06:06		06:52 (1)	06:58	07:24 (4)	07:48		07:45	08:34
	22:03		21:22	26	20:52 (6)	20:15	5	07:29 (4)	19:04			16:59	16:25
8	05:24		06:07		06:51 (1)	06:59	07:25 (4)	07:50		07:47	08:36
	22:02		21:20	26	20:50 (6)	20:12	3	07:28 (4)	19:01			16:57	16:24
9	05:25		06:09		06:49 (1)	07:01			07:52			07:48	08:37
	22:01		21:18	26	20:48 (6)	20:10			18:59			16:55	16:24
10	05:26		06:11		06:48 (1)	07:03			07:54			07:50	08:38
	22:01		21:16	23	07:11 (1)	20:08			18:57			16:54	16:24
11	05:27		06:12		06:47 (1)	07:04			07:55			07:52	08:39
	22:00		21:14	25	07:12 (1)	20:05			18:54			16:52	16:23
12	05:28		06:14		06:46 (1)	07:06	08:00 (2)	07:57		07:54	08:40
	21:59		21:12	26	07:12 (1)	20:03	2	08:02 (2)	18:52			16:50	16:23
13	05:29		06:16		06:45 (1)	07:08	07:53 (2)	07:59		07:56	08:41
	21:58		21:10	28	07:13 (1)	20:00	14	08:07 (2)	18:50			16:49	16:23
14	05:31		06:17		06:45 (1)	07:09	07:51 (2)	08:01		07:57	08:42
	21:57		21:08	28	07:13 (1)	19:58	18	08:09 (2)	18:48			16:47	16:23
15	05:32		06:19		06:47 (1)	07:11	07:49 (2)	08:03		07:59	08:43
	21:56		21:06	27	07:14 (1)	19:56	22	08:11 (2)	18:45			16:46	16:23
16	05:33		06:21		06:48 (1)	07:13	07:47 (2)	08:04		08:01	08:44
	21:55		21:04	25	07:13 (1)	19:53	24	08:11 (2)	18:43			16:44	16:23
17	05:34		06:22		06:50 (1)	07:14	07:46 (2)	08:06		08:03	08:45
	21:54		21:02	23	07:13 (1)	19:51	27	08:13 (2)	18:41			16:43	16:24
18	05:36		06:24		06:52 (1)	07:16	07:45 (2)	08:08		08:05	08:45
	21:53		21:00	22	07:14 (1)	19:49	28	08:13 (2)	18:39			16:42	16:24
19	05:37		06:26		06:53 (1)	07:18	07:43 (2)	08:10		08:06	08:46
	21:52		20:58	20	07:13 (1)	19:46	30	08:13 (2)	18:36			16:40	16:24
20	05:38		06:27		06:55 (1)	07:19	07:45 (2)	08:12		08:08	08:47
	21:50		20:55	18	07:13 (1)	19:44	28	08:13 (2)	18:34			16:39	16:24
21	05:40		06:29		06:56 (1)	07:21	07:47 (2)	08:13		08:10	08:47
	21:49		20:53	15	07:11 (1)	19:41	26	08:13 (2)	18:32			16:38	16:25
22	05:41		06:31		06:58 (1)	07:23	07:48 (2)	08:15		08:12	08:48
	21:48		20:51	13	07:11 (1)	19:39	25	08:13 (2)	18:30			16:37	16:25
23	05:42		06:32		07:00 (1)	07:24	07:50 (2)	08:17		08:13	08:48
	21:46		20:49	11	07:11 (1)	19:37	22	08:12 (2)	18:28			16:35	16:26
24	05:44		06:34		07:01 (1)	07:26	07:52 (2)	08:19		08:15	08:49
	21:45		20:47	8	07:09 (1)	19:34	20	08:12 (2)	18:26			16:34	16:26
25	05:45		06:36		07:03 (1)	07:28	07:53 (2)	07:21		08:17	08:49
	21:44		20:45	5	07:08 (1)	19:32	18	08:11 (2)	17:24			16:33	16:27
26	05:47		06:37		07:04 (1)	07:30	07:55 (2)	07:22		08:18	08:50
	21:42		20:42	1	07:05 (1)	19:29	17	08:12 (3)	17:22			16:32	16:28
27	05:48	20:45 (6)	06:39			07:31	07:57 (2)	07:24		08:20	08:50
	21:41	5	20:50 (6)	20:40			19:27	15	08:12 (3)	17:20		16:31	16:29
28	05:50	20:43 (6)	06:41		07:19 (4)	07:33	07:58 (2)	07:26		08:21	08:50
	21:39	9	20:52 (6)	20:38	7	07:26 (4)	19:25	14	08:12 (3)	17:18		16:30	16:29
29	05:51	20:42 (6)	06:42		07:15 (4)	07:35	08:00 (2)	07:28		08:23	08:50
	21:37	11	20:53 (6)	20:36	13	07:28 (4)	19:22	12	08:12 (3)	17:16		16:30	16:30
30	05:53	20:41 (6)	06:44		07:13 (4)	07:36	08:02 (2)	07:30		08:25	08:50
	21:36	12	20:53 (6)	20:33	17	07:30 (4)	19:20	10	08:12 (3)	17:14		16:29	16:31
31	05:54	20:41 (6)	06:46		07:12 (4)			07:32			08:50
	21:34	13	20:54 (6)	20:31	18	07:30 (4)			17:12				16:32
Potential sun hours	506		456			381		330		263	240
Total, worst case		50			548		456		14				
Sun reduction		0.26			0.30		0.28		0.24				
Oper. time red.		1.00			1.00		1.00		1.00				
Wind dir. red.		0.68			0.68		0.69		0.69				
Total reduction		0.18			0.20		0.20		0.16				
Total, real		9			110		89		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)

Licensed user:
Jennings O'Donovan
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abyrne / abyrne@jodireland.com

Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: AL - H38

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January		February		March		April	May	June
1	08:50		08:22		16:32 (3)	07:27	17:34 (4)	07:15	06:08	05:21
	16:33		17:22	20	16:52 (3)	18:16	15	17:49 (4)	20:11	21:04	21:51
2	08:50		08:20		16:32 (3)	07:25	17:34 (4)	07:12	06:06	05:20
	16:34		17:24	22	16:54 (3)	18:17	17	17:51 (4)	20:13	21:06	21:52
3	08:50		08:19		16:33 (3)	07:22	17:33 (4)	07:10	06:04	05:20
	16:35		17:26	22	16:55 (3)	18:19	19	17:52 (4)	20:15	21:07	21:54
4	08:50		08:17		16:33 (3)	07:20	17:33 (4)	07:08	06:02	05:19
	16:37		17:28	24	16:57 (3)	18:21	22	17:55 (4)	20:17	21:09	21:55
5	08:49		08:15		16:35 (3)	07:18	17:33 (4)	07:05	06:00	05:18
	16:38		17:30	23	16:58 (3)	18:23	24	17:57 (4)	20:18	21:11	21:56
6	08:49		08:14		16:36 (3)	07:16	17:33 (4)	07:03	05:59	05:17
	16:39		17:32	21	16:57 (3)	18:25	25	17:58 (4)	20:20	21:12	21:57
7	08:49		08:12		16:37 (3)	07:13	17:33 (4)	07:01	05:57	05:17
	16:40		17:34	19	16:56 (3)	18:27	27	18:00 (4)	20:22	21:14	21:58
8	08:48		08:10		16:39 (3)	07:11	17:34 (4)	06:58	05:55	05:16
	16:42		17:36	16	16:55 (3)	18:28	27	18:01 (4)	20:24	21:16	21:58
9	08:48		08:08		16:41 (3)	07:09	17:34 (4)	06:56	05:53	05:16
	16:43		17:38	12	16:53 (3)	18:30	25	17:59 (4)	20:25	21:18	21:59
10	08:47		08:06		16:46 (3)	07:06	17:36 (4)	06:54	05:51	05:15
	16:45		17:40	2	16:48 (3)	18:32	22	17:58 (4)	20:27	21:19	22:00
11	08:46		08:04			07:04	17:38 (4)	06:51	05:50	05:15
	16:46		17:42			18:34	19	17:57 (4)	20:29	21:21	22:01
12	08:46		08:02			07:02	17:39 (4)	06:49	05:48	05:15
	16:48		17:43			18:36	17	18:10 (1)	20:31	21:23	22:02
13	08:45		08:01			06:59	17:44 (4)	06:47	05:46	05:14
	16:49		17:45			18:38	10	18:12 (1)	20:32	21:24	22:02
14	08:44		07:59			06:57	18:06 (1)	06:45	05:45	05:14
	16:51		17:47			18:39	7	18:13 (1)	20:34	21:26	22:03
15	08:43		07:57			06:55	18:06 (1)	06:42	05:43	05:14
	16:52		17:49			18:41	9	18:15 (1)	20:36	21:27	22:04
16	08:42		07:55			06:52	18:06 (1)	06:40	05:41	05:14
	16:54		17:51			18:43	11	18:17 (1)	20:38	21:29	22:04
17	08:41		07:53		17:23 (2)	06:50	18:05 (1)	06:38	05:40	05:14
	16:55		17:53	2	17:25 (2)	18:45	14	18:19 (1)	20:39	21:31	22:05
18	08:40		07:51		17:22 (2)	06:48	18:06 (1)	06:36	05:38	05:14
	16:57		17:55	5	17:27 (2)	18:47	15	18:21 (1)	20:41	21:32	22:05
19	08:39		07:48		17:22 (2)	06:45	18:07 (1)	06:33	05:37	05:14
	16:59		17:57	7	17:29 (2)	18:48	16	18:23 (1)	20:43	21:34	22:05
20	08:38		07:46		17:22 (2)	06:43	18:07 (1)	06:31	05:35	05:14
	17:01		17:59	9	17:31 (2)	18:50	16	18:23 (1)	20:45	21:35	22:06
21	08:37		07:44		17:22 (2)	06:41	18:09 (1)	06:29	05:34	05:14
	17:02		18:01	11	17:33 (2)	18:52	12	18:21 (1)	20:46	21:37	22:06
22	08:36		07:42		17:23 (2)	06:38	18:12 (1)	06:27	05:33	05:14
	17:04		18:03	12	17:35 (2)	18:54	5	18:17 (1)	20:48	21:38	22:06
23	08:35	16:32 (3)	07:40		17:23 (2)	06:36		06:25	05:31	05:14
	17:06	1	16:33 (3)	18:04	14	17:37 (2)	18:55		20:50	21:40	22:06
24	08:33	16:32 (3)	07:38			17:24 (2)	06:34		06:23	05:30	05:15
	17:08	3	16:35 (3)	18:06	15	17:39 (2)	18:57		20:52	21:41	22:06
25	08:32	16:31 (3)	07:36			17:26 (2)	06:31		06:20	05:29	05:15
	17:09	6	16:37 (3)	18:08	15	17:41 (4)	18:59		20:53	21:42	22:06
26	08:31	16:32 (3)	07:34			17:28 (2)	06:29		06:18	05:28	05:15
	17:11	7	16:39 (3)	18:10	14	17:43 (4)	19:01		20:55	21:44	22:06
27	08:29	16:31 (3)	07:31			17:35 (4)	06:26		06:16	05:26	05:16
	17:13	10	16:41 (3)	18:12	10	17:45 (4)	19:02		20:57	21:45	22:06
28	08:28	16:32 (3)	07:29			17:34 (4)	06:24		06:14	05:25	05:16
	17:15	12	16:44 (3)	18:14	13	17:47 (4)	19:04		20:59	21:46	22:06
29	08:27	16:31 (3)					07:22		06:12	05:24	05:17
	17:17	14	16:45 (3)				20:06		21:00	21:48	22:06
30	08:25	16:31 (3)					07:19		06:10	05:23	05:17
	17:19	16	16:47 (3)				20:08		21:02	21:49	22:06
31	08:23	16:32 (3)					07:17			05:22	
	17:21	18	16:50 (3)				20:10			21:50	
Potential sun hours	256		276		367		418	489	503
Total, worst case	87		308		374				
Sun reduction	0.16		0.21		0.24				
Oper. time red.	1.00		1.00		1.00				
Wind dir. red.	0.63		0.65		0.68				
Total reduction	0.10		0.13		0.17				
Total, real	9		41		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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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: AL - H38

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	July	August	September			October		November			December
1	05:18	05:56	06:47			07:38		18:20 (4)	07:33		16:14 (3)	08:26
	22:05	21:32	20:29			19:17	14	18:49 (1)	17:10	5	16:19 (3)	16:28
2	05:19	05:57	06:49			07:40		18:17 (4)	07:35		16:10 (3)	08:27
	22:05	21:31	20:26			19:15	17	18:34 (4)	17:08	13	16:23 (3)	16:27
3	05:19	05:59	06:51			07:41		18:15 (4)	07:37		16:08 (3)	08:29
	22:05	21:29	20:24			19:13	20	18:35 (4)	17:06	17	16:25 (3)	16:26
4	05:20	06:01	06:52			07:43		18:13 (4)	07:39		16:06 (3)	08:30
	22:04	21:27	20:22			19:10	24	18:37 (4)	17:04	20	16:26 (3)	16:26
5	05:21	06:02	06:54			07:45		18:11 (4)	07:41		16:05 (3)	08:32
	22:04	21:25	20:19			19:08	26	18:37 (4)	17:02	22	16:27 (3)	16:25
6	05:22	06:04	06:56			07:47		18:10 (4)	07:43		16:04 (3)	08:33
	22:03	21:23	20:17			19:06	27	18:37 (4)	17:00	24	16:28 (3)	16:25
7	05:23	06:05	06:57			07:48		18:09 (4)	07:45		16:04 (3)	08:34
	22:03	21:22	20:15			19:03	26	18:35 (4)	16:59	24	16:28 (3)	16:24
8	05:24	06:07	06:59			07:50		18:09 (4)	07:46		16:03 (3)	08:35
	22:02	21:20	20:12			19:01	24	18:33 (4)	16:57	23	16:26 (3)	16:24
9	05:25	06:09	07:01			07:52		18:08 (4)	07:48		16:03 (3)	08:37
	22:01	21:18	20:10			18:59	23	18:31 (4)	16:55	21	16:24 (3)	16:24
10	05:26	06:10	07:02			07:54		18:07 (4)	07:50		16:03 (3)	08:38
	22:00	21:16	20:07			18:56	21	18:28 (4)	16:54	19	16:22 (3)	16:24
11	05:27	06:12	07:04			07:55		18:07 (4)	07:52		16:03 (3)	08:39
	22:00	21:14	20:05			18:54	19	18:26 (4)	16:52	18	16:21 (3)	16:23
12	05:28	06:14	07:06			07:57		18:07 (4)	07:54		16:03 (3)	08:40
	21:59	21:12	20:03			18:52	16	18:23 (4)	16:50	16	16:19 (3)	16:23
13	05:29	06:15	07:07			07:59		18:07 (4)	07:56		16:03 (3)	08:41
	21:58	21:10	20:00			18:50	14	18:21 (4)	16:49	14	16:17 (3)	16:23
14	05:30	06:17	07:09			08:01		18:08 (4)	07:57		16:04 (3)	08:42
	21:57	21:08	19:58			18:47	11	18:19 (4)	16:47	12	16:16 (3)	16:23
15	05:32	06:19	07:11			08:02		18:08 (4)	07:59		16:04 (3)	08:43
	21:56	21:06	19:56			18:45	9	18:17 (4)	16:46	10	16:14 (3)	16:23
16	05:33	06:20	07:12			08:04		17:59 (2)	08:01		16:05 (3)	08:44
	21:55	21:04	19:53			18:43	16	18:15 (4)	16:44	7	16:12 (3)	16:23
17	05:34	06:22	07:14			08:06		17:56 (2)	08:03		16:05 (3)	08:45
	21:54	21:02	19:51			18:41	16	18:12 (4)	16:43	6	16:11 (3)	16:23
18	05:35	06:24	07:16			08:08		17:55 (2)	08:05		16:06 (3)	08:45
	21:53	21:00	19:48			18:39	14	18:09 (2)	16:42	3	16:09 (3)	16:24
19	05:37	06:25	07:18			08:10		17:54 (2)	08:06		16:07 (3)	08:46
	21:51	20:57	19:46			18:36	13	18:07 (2)	16:40	1	16:08 (3)	16:24
20	05:38	06:27	07:19			08:11		17:53 (2)	08:08			08:47
	21:50	20:55	19:44			18:34	12	18:05 (2)	16:39			16:24
21	05:39	06:29	07:21			08:13		17:53 (2)	08:10			08:47
	21:49	20:53	19:41			18:32	10	18:03 (2)	16:38			16:25
22	05:41	06:30	07:23		18:55 (1)	08:15		17:52 (2)	08:11			08:48
	21:48	20:51	19:39	10	19:05 (1)	18:30	9	18:01 (2)	16:36			16:25
23	05:42	06:32	07:24		18:53 (1)	08:17		17:52 (2)	08:13			08:48
	21:46	20:49	19:36	14	19:07 (1)	18:28	7	17:59 (2)	16:35			16:26
24	05:44	06:34	07:26		18:50 (1)	08:19		17:52 (2)	08:15			08:49
	21:45	20:47	19:34	16	19:06 (1)	18:26	4	17:56 (2)	16:34			16:26
25	05:45	06:36	07:28		18:49 (1)	07:20		16:53 (2)	08:16			08:49
	21:43	20:44	19:32	15	19:04 (1)	17:24	1	16:54 (2)	16:33			16:27
26	05:47	06:37	07:29		18:48 (1)	07:22			08:18			08:49
	21:42	20:42	19:29	14	19:02 (1)	17:22			16:32			16:28
27	05:48	06:39	07:31		18:48 (1)	07:24			08:20			08:50
	21:40	20:40	19:27	12	19:00 (1)	17:19			16:31			16:28
28	05:50	06:41	07:33		18:46 (1)	07:26			08:21			08:50
	21:39	20:38	19:25	11	18:57 (1)	17:17			16:30			16:29
29	05:51	06:42	07:34		18:46 (1)	07:28			08:23			08:50
	21:37	20:35	19:22	9	18:55 (1)	17:15			16:29			16:30
30	05:53	06:44	07:36		18:46 (1)	07:30			08:24			08:50
	21:36	20:33	19:20	6	18:52 (1)	17:14			16:29			16:31
31	05:54	06:46				07:32						08:50
	21:34	20:31				17:12						16:32
Potential sun hours	506	456	381			330			263			240
Total, worst case				107			393			275		
Sun reduction				0.28			0.24			0.19		
Oper. time red.				1.00			1.00			1.00		
Wind dir. red.				0.69			0.67			0.63		
Total reduction				0.19			0.16			0.12		
Total, real				21			63			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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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: AM - H39

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January	February	March	April	May		June		July		August		September	October	November	December
1	08:50	08:22	07:27	07:15	06:08		06:33 (3)	05:22		05:18		05:56	06:25 (3)	06:47	07:38	07:34	08:26
	16:33	17:23	18:16	20:11	21:04	1	06:34 (3)	21:51		22:06		21:32	18 06:43 (3)	20:29	19:18	17:10	16:28
2	08:50	08:20	07:25	07:12	06:06		06:31 (3)	05:21		05:19		05:58	06:27 (3)	06:49	07:40	07:35	08:27
	16:35	17:24	18:18	20:13	21:06	3	06:34 (3)	21:52		22:05		21:31	17 06:44 (3)	20:26	19:15	17:08	16:27
3	08:50	08:19	07:23	07:10	06:04		06:30 (3)	05:20		05:20		05:59	06:28 (3)	06:51	07:41	07:37	08:29
	16:36	17:26	18:19	20:15	21:07	5	06:35 (3)	21:54		22:05		21:29	16 06:44 (3)	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:02		06:28 (3)	05:19		05:20		06:01	06:30 (3)	06:52	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09	7	06:35 (3)	21:55		22:04		21:27	14 06:44 (3)	20:22	19:11	17:04	16:26
5	08:49	08:15	07:18	07:05	06:01		06:26 (3)	05:18		05:21		06:02	06:31 (3)	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:18	21:11	9	06:35 (3)	21:56		22:04		21:25	13 06:44 (3)	20:19	19:08	17:02	16:26
6	08:49	08:14	07:16	07:03	05:59		06:24 (3)	05:18		05:22		06:04	06:33 (3)	06:56	07:47	07:43	08:33
	16:39	17:32	18:25	20:20	21:13	11	06:35 (3)	21:57		22:03		21:24	12 06:45 (3)	20:17	19:06	17:01	16:25
7	08:49	08:12	07:13	07:01	05:57		06:23 (3)	05:17		05:23		06:06	06:34 (3)	06:58	07:48	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	12	06:35 (3)	21:58		22:03		21:22	10 06:44 (3)	20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:58	05:55		06:21 (3)	05:17		05:24		06:07	06:36 (3)	06:59	07:50	07:46	08:35
	16:42	17:36	18:29	20:24	21:16	14	06:35 (3)	21:59		22:02		21:20	8 06:44 (3)	20:12	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	05:53		06:19 (3)	05:16		05:25		06:09	06:38 (3)	07:01	07:52	07:48	08:37
	16:43	17:38	18:30	20:26	21:18	15	06:34 (3)	21:59		22:01		21:18	7 06:45 (3)	20:10	18:59	16:55	16:24
10	08:47	08:06	07:07	06:54	05:51		06:18 (3)	05:16		05:26		06:11	06:39 (3)	07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	16	06:34 (3)	22:00		22:01		21:16	5 06:44 (3)	20:08	18:57	16:54	16:24
11	08:46	08:04	07:04	06:51	05:50		06:16 (3)	05:15		05:27		06:12	06:41 (3)	07:04	07:55	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	17	06:33 (3)	22:01		22:00		21:14	3 06:44 (3)	20:05	18:54	16:52	16:24
12	08:46	08:03	07:02	06:49	05:48		06:14 (3)	05:15		05:28		06:14		07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	18	06:32 (3)	22:02		21:59		21:12		20:03	18:52	16:51	16:23
13	08:45	08:01	07:00	06:47	05:46		06:13 (3)	05:14		05:29		06:16		07:08	07:59	07:56	08:41
	16:49	17:46	18:38	20:33	21:24	19	06:32 (3)	22:02		21:58		21:10		20:00	18:50	16:49	16:23
14	08:44	07:59	06:57	06:45	05:45		06:14 (3)	05:14		05:31		06:17		07:09	08:01	07:57	08:42
	16:51	17:47	18:40	20:34	21:26	16	06:30 (3)	22:03		21:57		21:08		19:58	18:48	16:47	16:23
15	08:43	07:57	06:55	06:42	05:43		06:15 (3)	05:14		05:32		06:19		07:11	08:03	07:59	08:43
	16:52	17:49	18:41	20:36	21:27	14	06:29 (3)	22:04		21:56		21:06		19:56	18:45	16:46	16:23
16	08:42	07:55	06:53	06:40	05:41		06:16 (3)	05:14	05:45 (4)	05:33		06:21		07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	11	06:27 (3)	22:04	1 05:46 (4)	21:55		21:04		19:53	18:43	16:44	16:23
17	08:42	07:53	06:50	06:38	05:40		06:20 (3)	05:14	05:45 (2)	05:34		06:22		07:14	08:06	08:03	08:45
	16:56	17:53	18:45	20:40	21:31	4	06:24 (3)	22:05	1 05:46 (2)	21:54		21:02		19:51	18:41	16:43	16:24
18	08:41	07:51	06:48	06:36	05:38			05:14	05:45 (2)	05:36		06:24		07:16	08:08	08:05	08:45
	16:57	17:55	18:47	20:41	21:32			22:05	1 05:46 (2)	21:53		21:00		19:49	18:39	16:42	16:24
19	08:39	07:49	06:45	06:34	05:37			05:14	05:45 (2)	05:37		06:26		07:18	08:10	08:06	08:46
	16:59	17:57	18:48	20:43	21:34			22:05	1 05:46 (2)	21:51		20:58		19:46	18:36	16:40	16:24
20	08:38	07:47	06:43	06:31	05:36			05:14	05:45 (2)	05:38		06:27		07:19	08:11	08:08	08:47
	17:01	17:59	18:50	20:45	21:35			22:06	1 05:46 (2)	21:50		20:55		19:44	18:34	16:39	16:24
21	08:37	07:44	06:41	06:29	05:34			05:14	05:45 (2)	05:40		06:29		07:21	08:13	08:10	08:47
	17:02	18:01	18:52	20:47	21:37			22:06	1 05:46 (2)	21:49		20:53		19:41	18:32	16:38	16:25
22	08:36	07:42	06:38	06:27	05:33			05:14	05:46 (2)	05:41		06:31		07:23	08:15	08:12	08:48
	17:04	18:03	18:54	20:48	21:38			22:06	1 05:47 (2)	21:48		20:51		19:39	18:30	16:37	16:25
23	08:35	07:40	06:36	06:25	05:31			05:14	05:46 (2)	05:42		06:32		07:24	08:17	08:13	08:48
	17:06	18:05	18:56	20:50	21:40			22:06	1 05:47 (2)	21:46		20:49		19:37	18:28	16:35	16:26
24	08:34	07:38	06:34	06:23	05:30			05:15	05:46 (2)	05:44		06:34		07:26	08:19	08:15	08:49
	17:08	18:06	18:57	20:52	21:41			22:06	1 05:47 (2)	21:45		20:47		19:34	18:26	16:34	16:26
25	08:32	07:36	06:31	06:21	05:29			05:15	05:47 (2)	05:45		06:36		07:28	07:21	08:17	08:49
	17:10	18:08	18:59	20:54	21:42			22:06	1 05:48 (2)	21:43		20:45		19:32	17:24	16:33	16:27
26	08:31	07:34	06:29	06:19	05:28			05:15	05:47 (4)	05:47		06:37		07:29	07:22	08:18	08:49
	17:11	18:10	19:01	20:55	21:44			22:06	1 05:48 (4)	21:42		20:42		19:29	17:22	16:32	16:28
27	08:30	07:31	06:27	06:16	05:27			05:16	05:48 (4)	05:48	06:29 (3)	06:39		07:31	07:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45			22:06	1 05:49 (4)	21:40	7 06:36 (3)	20:40		19:27	17:20	16:31	16:29
28	08:28	07:29	06:24	06:14	05:25			05:16		05:50	06:27 (3)	06:41		07:33	07:26	08:21	08:50
	17:15	18:14	19:04	20:59	21:46			22:06		21:39	12 06:39 (3)	20:38		19:25	17:18	16:30	16:29
29	08:27		07:22	06:12	05:24			05:17		05:51	06:25 (3)	06:42		07:35	07:28	08:23	08:50
	17:17		20:06	21:01	21:48			22:06		21:37	15 06:40 (3)	20:36		19:22	17:16	16:30	16:30
30	08:25		07:19	06:10	05:23			05:18		05:53	06:23 (3)	06:44		07:36	07:30	08:24	08:50
	17:19		20:08	21:02	21:49			22:06		21:36	18 06:41 (3)	20:33		19:20	17:14	16:29	16:31
31	08:24		07:17		05:22					05:54	06:24 (3)	06:46			07:32		08:50
	17:21		20:10		21:50					21:34	18 06:42 (3)	20:31			17:12		16:32
Potential sun hours	256	276	367	418	488			503		506		456		381	330	263	240
Total, worst case						192		12		70		123					
Sun reduction						0.37		0.30		0.26		0.30					
Oper. time red.						1.00		1.00		1.00		1.00					
Wind dir. red.						0.66		0.63		0.66		0.66					
Total reduction						0.24		0.19		0.18		0.20					
Total, real						47		2		12		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)

Licensed user:
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abyrne / abyrne@jodireland.com

Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: AN - H40

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January	February	March		April		May		June		
1	08:50	08:22	07:27		07:15		07:40 (2)	06:08		06:33 (1)	05:22		20:51 (6)
	16:33	17:23	18:16		20:11	28	08:08 (2)	21:04	21	06:54 (1)	21:51	6	20:57 (6)
2	08:50	08:20	07:25		07:12		07:40 (2)	06:06		06:31 (1)	05:21		
	16:35	17:24	18:18		20:13	26	08:06 (2)	21:06	22	06:53 (1)	21:53		
3	08:50	08:19	07:23		07:10		07:41 (2)	06:04		06:30 (1)	05:20		
	16:36	17:26	18:19		20:15	24	08:05 (2)	21:07	24	06:54 (1)	21:54		
4	08:50	08:17	07:20		07:08		07:43 (2)	06:02		06:28 (1)	05:19		
	16:37	17:28	18:21		20:17	21	08:04 (2)	21:09	25	06:53 (1)	21:55		
5	08:49	08:15	07:18		07:05		07:44 (2)	06:01		06:26 (1)	05:18		
	16:38	17:30	18:23		20:18	18	08:02 (2)	21:11	27	06:53 (1)	21:56		
6	08:49	08:14	07:16		07:03		07:46 (2)	05:59		06:26 (1)	05:18		
	16:39	17:32	18:25		20:20	12	07:58 (2)	21:13	26	06:52 (1)	21:57		
7	08:49	08:12	07:14		07:01			05:57		06:27 (1)	05:17		
	16:41	17:34	18:27		20:22			21:14	25	06:52 (1)	21:58		
8	08:48	08:10	07:11		06:58			05:55		06:28 (1)	05:16		
	16:42	17:36	18:29		20:24			21:16	23	06:51 (1)	21:59		
9	08:48	08:08	07:09		06:56		07:19 (4)	05:53		06:28 (1)	05:16		
	16:43	17:38	18:30		20:26	3	07:22 (4)	21:18	21	06:49 (1)	21:59		
10	08:47	08:06	07:07		06:54		07:17 (4)	05:51		06:30 (1)	05:16		
	16:45	17:40	18:32		20:27	6	07:23 (4)	21:19	19	06:49 (1)	22:00		
11	08:46	08:05	07:04		06:51		07:15 (4)	05:50		06:31 (1)	05:15		
	16:46	17:42	18:34		20:29	8	07:23 (4)	21:21	16	06:47 (1)	22:01		
12	08:46	08:03	07:02		06:49		07:13 (4)	05:48		06:32 (1)	05:15		
	16:48	17:44	18:36		20:31	10	07:23 (4)	21:23	12	06:44 (1)	22:02		
13	08:45	08:01	07:00		06:47		07:10 (4)	05:46		06:36 (1)	05:14		
	16:49	17:46	18:38		20:33	12	07:22 (4)	21:24	6	06:42 (1)	22:02		
14	08:44	07:59	06:57		06:45		07:08 (4)	05:45		20:50 (6)	05:14		
	16:51	17:47	18:40		20:34	14	07:22 (4)	21:26	4	20:54 (6)	22:03		
15	08:43	07:57	06:55		06:42		07:06 (4)	05:43		20:49 (6)	05:14		
	16:52	17:49	18:41		20:36	15	07:21 (4)	21:27	8	20:57 (6)	22:04		
16	08:42	07:55	06:53	07:16 (3)	06:40		07:04 (4)	05:41		20:47 (6)	05:14		
	16:54	17:51	18:43	3 07:19 (3)	20:38	16	07:20 (4)	21:29	11	20:58 (6)	22:04		
17	08:42	07:53	06:50	07:13 (3)	06:38		07:03 (4)	05:40		20:46 (6)	05:14		
	16:56	17:53	18:45	6 07:19 (3)	20:40	16	07:19 (4)	21:31	13	20:59 (6)	22:05		
18	08:41	07:51	06:48	07:11 (3)	06:36		07:03 (4)	05:38		20:46 (6)	05:14		
	16:57	17:55	18:47	8 07:19 (3)	20:41	14	07:17 (4)	21:32	14	21:00 (6)	22:05		
19	08:40	07:49	06:46	07:09 (3)	06:34		07:05 (4)	05:37		20:45 (6)	05:14		
	16:59	17:57	18:48	10 07:19 (3)	20:43	10	07:15 (4)	21:34	15	21:00 (6)	22:05		
20	08:38	07:47	06:43	07:06 (3)	06:31			05:36		20:45 (6)	05:14		
	17:01	17:59	18:50	12 07:18 (3)	20:45			21:35	15	21:00 (6)	22:06		
21	08:37	07:44	06:41	07:04 (2)	06:29			05:34		20:45 (6)	05:14		
	17:02	18:01	18:52	14 07:18 (3)	20:47			21:37	16	21:01 (6)	22:06		
22	08:36	07:42	06:38	07:02 (2)	06:27			05:33		20:46 (6)	05:14		
	17:04	18:03	18:54	16 07:18 (3)	20:48			21:38	15	21:01 (6)	22:06		
23	08:35	07:40	06:36	06:59 (2)	06:25		06:49 (1)	05:31		20:45 (6)	05:14		
	17:06	18:05	18:56	17 07:16 (3)	20:50	2	06:51 (1)	21:40	15	21:00 (6)	22:06		
24	08:34	07:38	06:34	06:57 (2)	06:23		06:47 (1)	05:30		20:45 (6)	05:15		
	17:08	18:06	18:57	17 07:14 (3)	20:52	5	06:52 (1)	21:41	15	21:00 (6)	22:06		
25	08:32	07:36	06:31	06:54 (2)	06:21		06:45 (1)	05:29		20:46 (6)	05:15		
	17:10	18:08	18:59	17 07:11 (3)	20:54	8	06:53 (1)	21:42	14	21:00 (6)	22:07		
26	08:31	07:34	06:29	06:52 (2)	06:19		06:43 (1)	05:28		20:46 (6)	05:15		
	17:11	18:10	19:01	18 07:10 (2)	20:55	10	06:53 (1)	21:44	14	21:00 (6)	22:06		
27	08:30	07:32	06:27	06:50 (2)	06:16		06:41 (1)	05:27		20:47 (6)	05:16		
	17:13	18:12	19:03	21 07:11 (2)	20:57	13	06:54 (1)	21:45	13	21:00 (6)	22:06		
28	08:28	07:29	06:24	06:47 (2)	06:14		06:39 (1)	05:25		20:47 (6)	05:16		
	17:15	18:14	19:04	23 07:10 (2)	20:59	15	06:54 (1)	21:46	12	20:59 (6)	22:06		
29	08:27		07:22	07:45 (2)	06:12		06:37 (1)	05:24		20:48 (6)	05:17		
	17:17		20:06	25 08:10 (2)	21:01	17	06:54 (1)	21:48	11	20:59 (6)	22:06		
30	08:25		07:19	07:43 (2)	06:10		06:35 (1)	05:23		20:49 (6)	05:18		
	17:19		20:08	27 08:10 (2)	21:02	19	06:54 (1)	21:49	10	20:59 (6)	22:06		
31	08:24		07:17	07:40 (2)				05:22		20:50 (6)			
	17:21		20:10	28 08:08 (2)				21:50	8	20:58 (6)			
Potential sun hours	256	276	367		418			489			503		
Total, worst case				262		342			490			6	
Sun reduction				0.24		0.35			0.37			0.30	
Oper. time red.				1.00		1.00			1.00			1.00	
Wind dir. red.				0.69		0.68			0.67			0.68	
Total reduction				0.17		0.24			0.25			0.20	
Total, real				44		83			121			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)

Licensed user:
Jennings O'Donovan
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abyrne / abyrne@jodireland.com

Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: AN - H40

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	July			August			September			October	November	December
1	05:18			05:56		06:42 (1)	06:47		07:14 (4)	07:38	07:34	08:26
	22:06			21:32	14	06:56 (1)	20:29	8	07:22 (4)	19:18	17:10	16:28
2	05:19			05:58		06:41 (1)	06:49		07:16 (4)	07:40	07:35	08:27
	22:05			21:31	17	06:58 (1)	20:26	6	07:22 (4)	19:15	17:08	16:27
3	05:20			05:59		06:39 (1)	06:51		07:17 (4)	07:42	07:37	08:29
	22:05			21:29	19	06:58 (1)	20:24	3	07:20 (4)	19:13	17:06	16:27
4	05:20			06:01		06:38 (1)	06:53			07:43	07:39	08:30
	22:04			21:27	22	07:00 (1)	20:22			19:11	17:04	16:26
5	05:21			06:02		06:37 (1)	06:54			07:45	07:41	08:32
	22:04			21:25	23	07:00 (1)	20:19			19:08	17:02	16:26
6	05:22			06:04		06:37 (1)	06:56		07:42 (2)	07:47	07:43	08:33
	22:03			21:24	24	07:01 (1)	20:17	12	07:54 (2)	19:06	17:01	16:25
7	05:23			06:06		06:35 (1)	06:58		07:39 (2)	07:48	07:45	08:34
	22:03			21:22	26	07:01 (1)	20:15	18	07:57 (2)	19:04	16:59	16:25
8	05:24			06:07		06:36 (1)	06:59		07:37 (2)	07:50	07:47	08:36
	22:02			21:20	26	07:02 (1)	20:12	21	07:58 (2)	19:01	16:57	16:24
9	05:25			06:09		06:38 (1)	07:01		07:36 (2)	07:52	07:48	08:37
	22:01			21:18	25	07:03 (1)	20:10	23	07:59 (2)	18:59	16:55	16:24
10	05:26			06:11		06:39 (1)	07:03		07:33 (2)	07:54	07:50	08:38
	22:01			21:16	23	07:02 (1)	20:08	26	07:59 (2)	18:57	16:54	16:24
11	05:27		21:00 (6)	06:12		06:41 (1)	07:04		07:33 (2)	07:55	07:52	08:39
	22:00	4	21:04 (6)	21:14	22	07:03 (1)	20:05	27	08:00 (2)	18:54	16:52	16:23
12	05:28		20:58 (6)	06:14		06:42 (1)	07:06		07:32 (2)	07:57	07:54	08:40
	21:59	7	21:05 (6)	21:12	20	07:02 (1)	20:03	28	08:00 (2)	18:52	16:50	16:23
13	05:29		20:57 (6)	06:16		06:44 (1)	07:08		07:33 (2)	07:59	07:56	08:41
	21:58	9	21:06 (6)	21:10	18	07:02 (1)	20:01	27	08:00 (2)	18:50	16:49	16:23
14	05:31		20:58 (6)	06:17		06:45 (1)	07:09		07:35 (2)	08:01	07:57	08:42
	21:57	10	21:08 (6)	21:08	16	07:01 (1)	19:58	25	08:00 (2)	18:48	16:47	16:23
15	05:32		20:57 (6)	06:19		06:47 (1)	07:11		07:37 (2)	08:03	07:59	08:43
	21:56	12	21:09 (6)	21:06	14	07:01 (1)	19:56	23	08:00 (2)	18:45	16:46	16:23
16	05:33		20:56 (6)	06:21		06:48 (1)	07:13		07:38 (2)	08:04	08:01	08:44
	21:55	13	21:09 (6)	21:04	12	07:00 (1)	19:53	21	07:59 (2)	18:43	16:44	16:23
17	05:34		20:56 (6)	06:22		06:50 (1)	07:14		07:40 (2)	08:06	08:03	08:45
	21:54	13	21:09 (6)	21:02	10	07:00 (1)	19:51	19	07:59 (2)	18:41	16:43	16:24
18	05:36		20:55 (6)	06:24		06:52 (1)	07:16		07:42 (2)	08:08	08:05	08:45
	21:53	15	21:10 (6)	21:00	7	06:59 (1)	19:49	17	07:59 (3)	18:39	16:42	16:24
19	05:37		20:55 (6)	06:26		06:53 (1)	07:18		07:43 (2)	08:10	08:06	08:46
	21:52	15	21:10 (6)	20:58	4	06:57 (1)	19:46	17	08:00 (3)	18:36	16:40	16:24
20	05:38		20:56 (6)	06:27		06:55 (1)	07:19		07:45 (2)	08:12	08:08	08:47
	21:50	15	21:11 (6)	20:55	1	06:56 (1)	19:44	17	08:02 (3)	18:34	16:39	16:24
21	05:40		20:55 (6)	06:29			07:21		07:47 (2)	08:13	08:10	08:47
	21:49	16	21:11 (6)	20:53			19:41	16	08:03 (3)	18:32	16:38	16:25
22	05:41		20:55 (6)	06:31			07:23		07:48 (2)	08:15	08:12	08:48
	21:48	15	21:10 (6)	20:51			19:39	15	08:03 (3)	18:30	16:37	16:25
23	05:42		20:56 (6)	06:32		07:13 (4)	07:24		07:50 (3)	08:17	08:13	08:48
	21:46	15	21:11 (6)	20:49	2	07:15 (4)	19:37	13	08:03 (3)	18:28	16:35	16:26
24	05:44		20:56 (6)	06:34		07:08 (4)	07:26		07:52 (3)	08:19	08:15	08:49
	21:45	15	21:11 (6)	20:47	11	07:19 (4)	19:34	11	08:03 (3)	18:26	16:34	16:26
25	05:45		20:56 (6)	06:36		07:06 (4)	07:28		07:53 (3)	07:21	08:17	08:49
	21:44	14	21:10 (6)	20:45	15	07:21 (4)	19:32	9	08:02 (3)	17:24	16:33	16:27
26	05:47		20:57 (6)	06:37		07:04 (4)	07:30		07:55 (3)	07:22	08:18	08:50
	21:42	13	21:10 (6)	20:42	17	07:21 (4)	19:29	6	08:01 (3)	17:22	16:32	16:28
27	05:48		20:57 (6)	06:39		07:06 (4)	07:31		07:57 (3)	07:24	08:20	08:50
	21:41	12	21:09 (6)	20:40	16	07:22 (4)	19:27	4	08:01 (3)	17:20	16:31	16:29
28	05:50		20:59 (6)	06:41		07:08 (4)	07:33		07:58 (3)	07:26	08:21	08:50
	21:39	9	21:08 (6)	20:38	15	07:23 (4)	19:25	1	07:59 (3)	17:18	16:30	16:29
29	05:51		21:00 (6)	06:42		07:09 (4)	07:35			07:28	08:23	08:50
	21:37	6	21:06 (6)	20:36	14	07:23 (4)	19:22			17:16	16:30	16:30
30	05:53			06:44		07:11 (4)	07:36			07:30	08:25	08:50
	21:36			20:33	12	07:23 (4)	19:20			17:14	16:29	16:31
31	05:54		06:45 (1)	06:46		07:12 (4)				07:32		08:50
	21:34	9	06:54 (1)	20:31	10	07:22 (4)				17:12		16:32
Potential sun hours	506			456			381			330	263	240
Total, worst case		237			455			413				
Sun reduction		0.26			0.30			0.28				
Oper. time red.		1.00			1.00			1.00				
Wind dir. red.		0.68			0.67			0.69				
Total reduction		0.18			0.20			0.20				
Total, real		42			91			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)

Licensed user:
Jennings O'Donovan
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+353719161416
abyrne / abyrne@jodireland.com

Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: AO - H41

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January	February	March	April	May		June		July		August		September	October	November	December
1	08:50	08:22	07:27	07:15	06:08		05:22		06:02 (3)	05:18		05:56	06:25 (3)	06:47	07:38	07:34	08:26
	16:33	17:23	18:16	20:11	21:04		21:51	11	06:13 (3)	22:06		21:32	3 06:28 (3)	20:29	19:18	17:10	16:28
2	08:50	08:20	07:25	07:12	06:06		05:21		06:03 (3)	05:19		05:58		06:49	07:40	07:35	08:27
	16:35	17:24	18:18	20:13	21:06		21:52	8	06:11 (3)	22:05		21:31		20:26	19:15	17:08	16:27
3	08:50	08:19	07:23	07:10	06:04		05:20		06:07 (3)	05:20		05:59		06:51	07:41	07:37	08:29
	16:36	17:26	18:19	20:15	21:07		21:54	2	06:09 (3)	22:05		21:29		20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:02		05:19			05:20		06:01		06:52	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09		21:55			22:04		21:27		20:22	19:11	17:04	16:26
5	08:49	08:15	07:18	07:05	06:01		05:18			05:21		06:02		06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:18	21:11		21:56			22:04		21:25		20:19	19:08	17:02	16:26
6	08:49	08:14	07:16	07:03	05:59		05:18			05:22		06:04		06:56	07:47	07:43	08:33
	16:39	17:32	18:25	20:20	21:13		21:57			22:03		21:24		20:17	19:06	17:01	16:25
7	08:49	08:12	07:13	07:01	05:57		05:17			05:23		06:06		06:58	07:48	07:45	08:34
	16:41	17:34	18:27	20:22	21:14		21:58			22:03		21:22		20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:58	05:55		05:17			05:24		06:07		06:59	07:50	07:46	08:35
	16:42	17:36	18:29	20:24	21:16		21:59			22:02		21:20		20:12	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	05:53		05:16			05:25		06:09		07:01	07:52	07:48	08:37
	16:43	17:38	18:30	20:25	21:18		21:59			22:01		21:18		20:10	18:59	16:55	16:24
10	08:47	08:06	07:07	06:54	05:51		05:16			05:26	06:12 (3)	06:11		07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19		22:00			22:01	5 06:17 (3)	21:16		20:08	18:57	16:54	16:24
11	08:46	08:04	07:04	06:51	05:50	06:16 (3)	05:15			05:27	06:10 (3)	06:12		07:04	07:55	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	1 06:17 (3)	22:01			22:00	9 06:19 (3)	21:14		20:05	18:54	16:52	16:24
12	08:46	08:03	07:02	06:49	05:48	06:14 (3)	05:15			05:28	06:09 (3)	06:14		07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	3 06:17 (3)	22:02			21:59	12 06:21 (3)	21:12		20:03	18:52	16:51	16:23
13	08:45	08:01	07:00	06:47	05:46	06:13 (3)	05:14			05:29	06:08 (3)	06:16		07:08	07:59	07:56	08:41
	16:49	17:46	18:38	20:33	21:24	5 06:18 (3)	22:02			21:58	14 06:22 (3)	21:10		20:00	18:50	16:49	16:23
14	08:44	07:59	06:57	06:45	05:45	06:11 (3)	05:14			05:31	06:08 (3)	06:17		07:09	08:01	07:57	08:42
	16:51	17:47	18:39	20:34	21:26	7 06:18 (3)	22:03			21:57	16 06:24 (3)	21:08		19:58	18:48	16:47	16:23
15	08:43	07:57	06:55	06:42	05:43	06:10 (3)	05:14			05:32	06:07 (3)	06:19		07:11	08:03	07:59	08:43
	16:52	17:49	18:41	20:36	21:27	9 06:19 (3)	22:04			21:56	18 06:25 (3)	21:06		19:56	18:45	16:46	16:23
16	08:42	07:55	06:53	06:40	05:41	06:08 (3)	05:14			05:33	06:07 (3)	06:21		07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	10 06:18 (3)	22:04			21:55	18 06:25 (3)	21:04		19:53	18:43	16:44	16:23
17	08:42	07:53	06:50	06:38	05:40	06:07 (3)	05:14			05:34	06:06 (3)	06:22		07:14	08:06	08:03	08:45
	16:56	17:53	18:45	20:40	21:31	12 06:19 (3)	22:05			21:54	20 06:26 (3)	21:02		19:51	18:41	16:43	16:24
18	08:41	07:51	06:48	06:36	05:38	06:06 (3)	05:14			05:36	06:06 (3)	06:24		07:16	08:08	08:05	08:45
	16:57	17:55	18:47	20:41	21:32	13 06:19 (3)	22:05			21:53	20 06:26 (3)	21:00		19:49	18:39	16:42	16:24
19	08:39	07:49	06:45	06:34	05:37	06:04 (3)	05:14			05:37	06:07 (3)	06:26		07:18	08:10	08:06	08:46
	16:59	17:57	18:48	20:43	21:34	14 06:18 (3)	22:05			21:51	20 06:27 (3)	20:58		19:46	18:36	16:40	16:24
20	08:38	07:47	06:43	06:31	05:36	06:03 (3)	05:14			05:38	06:09 (3)	06:27		07:19	08:11	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	15 06:18 (3)	22:06			21:50	19 06:28 (3)	20:55		19:44	18:34	16:39	16:24
21	08:37	07:44	06:41	06:29	05:34	06:02 (3)	05:14			05:40	06:10 (3)	06:29		07:21	08:13	08:10	08:47
	17:02	18:01	18:52	20:47	21:37	17 06:19 (3)	22:06			21:49	18 06:28 (3)	20:53		19:41	18:32	16:38	16:25
22	08:36	07:42	06:38	06:27	05:33	06:01 (3)	05:14			05:41	06:11 (3)	06:31		07:23	08:15	08:12	08:48
	17:04	18:03	18:54	20:48	21:38	18 06:19 (3)	22:06			21:48	17 06:28 (3)	20:51		19:39	18:30	16:37	16:25
23	08:35	07:40	06:36	06:25	05:31	05:59 (3)	05:14			05:42	06:13 (3)	06:32		07:24	08:17	08:13	08:48
	17:06	18:05	18:56	20:50	21:40	18 06:17 (3)	22:06			21:46	16 06:29 (3)	20:49		19:37	18:28	16:35	16:26
24	08:34	07:38	06:34	06:23	05:30	05:58 (3)	05:15			05:44	06:14 (3)	06:34		07:26	08:19	08:15	08:49
	17:08	18:06	18:57	20:52	21:41	19 06:17 (3)	22:06			21:45	15 06:29 (3)	20:47		19:34	18:26	16:34	16:26
25	08:32	07:36	06:31	06:21	05:29	05:57 (3)	05:15			05:45	06:15 (3)	06:36		07:28	07:21	08:17	08:49
	17:10	18:08	18:59	20:54	21:42	20 06:17 (3)	22:06			21:43	14 06:29 (3)	20:45		19:32	17:24	16:33	16:27
26	08:31	07:34	06:29	06:18	05:28	05:56 (3)	05:15			05:47	06:17 (3)	06:37		07:29	07:22	08:18	08:49
	17:11	18:10	19:01	20:55	21:44	20 06:16 (3)	22:06			21:42	12 06:29 (3)	20:42		19:29	17:22	16:32	16:28
27	08:30	07:31	06:27	06:16	05:27	05:57 (3)	05:16			05:48	06:18 (3)	06:39		07:31	07:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	19 06:16 (3)	22:06			21:40	11 06:29 (3)	20:40		19:27	17:20	16:31	16:29
28	08:28	07:29	06:24	06:14	05:25	05:57 (3)	05:16			05:50	06:20 (3)	06:41		07:33	07:26	08:21	08:50
	17:15	18:14	19:04	20:59	21:46	18 06:15 (3)	22:06			21:39	10 06:30 (3)	20:38		19:25	17:18	16:30	16:29
29	08:27		07:22	06:12	05:24	05:58 (3)	05:17			05:51	06:21 (3)	06:42		07:35	07:28	08:23	08:50
	17:17		20:06	21:01	21:48	17 06:15 (3)	22:06			21:37	8 06:29 (3)	20:36		19:22	17:16	16:30	16:30
30	08:25		07:19	06:10	05:23	06:00 (3)	05:18			05:53	06:22 (3)	06:44		07:36	07:30	08:24	08:50
	17:19		20:08	21:02	21:49	15 06:15 (3)	22:06			21:36	6 06:28 (3)	20:33		19:20	17:14	16:29	16:31
31	08:24		07:17		05:22	06:01 (3)				05:54	06:24 (3)	06:46			07:32		08:50
	17:21		20:10		21:50	13 06:14 (3)				21:34	4 06:28 (3)	20:31			17:12		16:32
Potential sun hours	256	276	367	418	488		503			506		456		381	330	263	240
Total, worst case						283		21			302		3				
Sun reduction						0.37		0.30			0.26		0.30				
Oper. time red.						1.00		1.00			1.00		1.00				
Wind dir. red.						0.65		0.65			0.65		0.65				
Total reduction						0.24		0.19			0.17		0.19				
Total, real						68		4			52		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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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: AP - H42

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January			February	March	April	May	June	July	August	September	October	November			December		
1	08:50		15:57 (1)	08:22	07:27	07:15	06:08	05:21	05:18	05:56	06:47	07:38	07:33			08:26		15:41 (1)
	16:33	1	15:58 (1)	17:22	18:16	20:11	21:04	21:51	22:06	21:32	20:29	19:17	17:10			16:28	12	15:53 (1)
2	08:50		15:56 (1)	08:20	07:25	07:12	06:06	05:20	05:19	05:57	06:49	07:40	07:35			08:27		15:42 (1)
	16:34	2	15:58 (1)	17:24	18:17	20:13	21:06	21:52	22:05	21:31	20:26	19:15	17:08			16:27	11	15:53 (1)
3	08:50		15:57 (1)	08:19	07:22	07:10	06:04	05:20	05:19	05:59	06:51	07:41	07:37			08:29		15:42 (1)
	16:35	3	16:00 (1)	17:26	18:19	20:15	21:07	21:54	22:05	21:29	20:24	19:13	17:06			16:26	10	15:52 (1)
4	08:50		15:57 (1)	08:17	07:20	07:08	06:02	05:19	05:20	06:01	06:52	07:43	07:39			08:30		15:43 (1)
	16:37	4	16:01 (1)	17:28	18:21	20:17	21:09	21:55	22:04	21:27	20:22	19:10	17:04			16:26	8	15:51 (1)
5	08:49		15:57 (1)	08:15	07:18	07:05	06:00	05:18	05:21	06:02	06:54	07:45	07:41			08:32		15:43 (1)
	16:38	5	16:02 (1)	17:30	18:23	20:18	21:11	21:56	22:04	21:25	20:19	19:08	17:02			16:25	7	15:50 (1)
6	08:49		15:58 (1)	08:14	07:16	07:03	05:59	05:17	05:22	06:04	06:56	07:47	07:43			08:33		15:43 (1)
	16:39	6	16:04 (1)	17:32	18:25	20:20	21:13	21:57	22:03	21:24	20:17	19:06	17:00			16:25	6	15:49 (1)
7	08:49		15:58 (1)	08:12	07:13	07:01	05:57	05:17	05:23	06:06	06:57	07:48	07:45			08:34		15:44 (1)
	16:40	7	16:05 (1)	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:03	16:59			16:24	5	15:49 (1)
8	08:48		15:58 (1)	08:10	07:11	06:58	05:55	05:16	05:24	06:07	06:59	07:50	07:46			08:35		15:44 (1)
	16:42	8	16:06 (1)	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:12	19:01	16:57			16:24	5	15:49 (1)
9	08:48		15:59 (1)	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48			08:37		15:45 (1)
	16:43	10	16:09 (1)	17:38	18:30	20:25	21:18	21:59	22:01	21:18	20:10	18:59	16:55			16:24	3	15:48 (1)
10	08:47		15:59 (1)	08:06	07:06	06:54	05:51	05:15	05:26	06:10	07:02	07:54	07:50			08:38		15:46 (1)
	16:45	11	16:10 (1)	17:40	18:32	20:27	21:19	22:00	22:01	21:16	20:08	18:56	16:54			16:24	2	15:48 (1)
11	08:46		15:59 (1)	08:04	07:04	06:51	05:50	05:15	05:27	06:12	07:04	07:55	07:52			08:39		15:47 (1)
	16:46	12	16:11 (1)	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:54	16:52			16:23	1	15:48 (1)
12	08:46		15:59 (1)	08:03	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54			08:40		15:47 (1)
	16:48	14	16:13 (1)	17:43	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:50			16:23	1	15:48 (1)
13	08:45		15:59 (1)	08:01	06:59	06:47	05:46	05:14	05:29	06:15	07:07	07:59	07:56			08:41		
	16:49	15	16:14 (1)	17:45	18:38	20:32	21:24	22:02	21:58	21:10	20:00	18:50	16:49			16:23		
14	08:44		15:59 (1)	07:59	06:57	06:45	05:45	05:14	05:30	06:17	07:09	08:01	07:57		15:47 (1)	08:42		
	16:51	17	16:16 (1)	17:47	18:39	20:34	21:26	22:03	21:57	21:08	19:58	18:47	16:47	7	15:54 (1)	16:23		
15	08:43		16:00 (1)	07:57	06:55	06:42	05:43	05:14	05:32	06:19	07:11	08:02	07:59		15:44 (1)	08:43		
	16:52	18	16:18 (1)	17:49	18:41	20:36	21:27	22:04	21:56	21:06	19:56	18:45	16:46	13	15:57 (1)	16:23		
16	08:42		16:00 (1)	07:55	06:52	06:40	05:41	05:14	05:33	06:20	07:13	08:04	08:01		15:43 (1)	08:44		
	16:54	20	16:20 (1)	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:53	18:43	16:44	16	15:59 (1)	16:23		
17	08:41		16:01 (1)	07:53	06:50	06:38	05:40	05:14	05:34	06:22	07:14	08:06	08:03		15:42 (1)	08:45		
	16:55	21	16:22 (1)	17:53	18:45	20:39	21:31	22:05	21:54	21:02	19:51	18:41	16:43	18	16:00 (1)	16:23		
18	08:40		16:02 (1)	07:51	06:48	06:36	05:38	05:14	05:35	06:24	07:16	08:08	08:05		15:41 (1)	08:45		
	16:57	22	16:24 (1)	17:55	18:47	20:41	21:32	22:05	21:53	21:00	19:48	18:39	16:42	21	16:02 (1)	16:24		
19	08:39		16:03 (1)	07:49	06:45	06:33	05:37	05:14	05:37	06:25	07:18	08:10	08:06		15:40 (1)	08:46		
	16:59	23	16:26 (1)	17:57	18:48	20:43	21:34	22:05	21:51	20:58	19:46	18:36	16:40	23	16:03 (1)	16:24		
20	08:38		16:03 (1)	07:46	06:43	06:31	05:35	05:14	05:38	06:27	07:19	08:11	08:08		15:40 (1)	08:47		
	17:01	24	16:27 (1)	17:59	18:50	20:45	21:35	22:06	21:50	20:55	19:44	18:34	16:39	24	16:04 (1)	16:24		
21	08:37		16:04 (1)	07:44	06:41	06:29	05:34	05:14	05:39	06:29	07:21	08:13	08:10		15:39 (1)	08:47		
	17:02	24	16:28 (1)	18:01	18:52	20:47	21:37	22:06	21:49	20:53	19:41	18:32	16:38	24	16:03 (1)	16:25		
22	08:36		16:05 (1)	07:42	06:38	06:27	05:33	05:14	05:41	06:30	07:23	08:15	08:12		15:39 (1)	08:48		
	17:04	24	16:29 (1)	18:03	18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:36	24	16:03 (1)	16:25		
23	08:35		16:05 (1)	07:40	06:36	06:25	05:31	05:14	05:42	06:32	07:24	08:17	08:13		15:39 (1)	08:48		
	17:06	23	16:28 (1)	18:04	18:55	20:50	21:40	22:06	21:46	20:49	19:36	18:28	16:35	23	16:02 (1)	16:26		
24	08:34		16:07 (1)	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15		15:39 (1)	08:49		
	17:08	21	16:28 (1)	18:06	18:57	20:52	21:41	22:06	21:45	20:47	19:34	18:26	16:34	22	16:01 (1)	16:26		
25	08:32		16:08 (1)	07:36	06:31	06:20	05:29	05:15	05:45	06:36	07:28	07:21	08:17		15:39 (1)	08:49		
	17:09	18	16:26 (1)	18:08	18:59	20:54	21:42	22:06	21:43	20:44	19:32	17:24	16:33	21	16:00 (1)	16:27		
26	08:31		16:10 (1)	07:34	06:29	06:18	05:28	05:15	05:47	06:37	07:29	07:22	08:18		15:40 (1)	08:49		
	17:11	16	16:26 (1)	18:10	19:01	20:55	21:44	22:06	21:42	20:42	19:29	17:22	16:32	19	15:59 (1)	16:28		
27	08:29		16:11 (1)	07:31	06:26	06:16	05:26	05:16	05:48	06:39	07:31	07:24	08:20		15:39 (1)	08:50		
	17:13	13	16:24 (1)	18:12	19:03	20:57	21:45	22:06	21:40	20:40	19:27	17:20	16:31	18	15:57 (1)	16:28		
28	08:28		16:15 (1)	07:29	06:24	06:14	05:25	05:16	05:50	06:41	07:33	07:26	08:21		15:40 (1)	08:50		
	17:15	6	16:21 (1)	18:14	19:04	20:59	21:46	22:06	21:39	20:38	19:25	17:17	16:30	16	15:56 (1)	16:29		
29	08:27				07:22	06:12	05:24	05:17	05:51	06:42	07:35	07:28	08:23		15:40 (1)	08:50		
	17:17				20:06	21:00	21:48	22:06	21:37	20:35	19:22	17:15	16:29	16	15:56 (1)	16:30		
30	08:25				07:19	06:10	05:23	05:17	05:53	06:44	07:36	07:30	08:24		15:40 (1)	08:50		
	17:19				20:08	21:02	21:49	22:06	21:36	20:33	19:20	17:14	16:29	14	15:54 (1)	16:31		
31	08:24				07:17		05:22		05:54	06:46		07:32				08:50		
	17:21				20:10		21:50		21:34	20:31		17:12				16:32		
Potential sun hours	255			276	367	418	489	503	506	456	381	330	263			240		
Total, worst case		388												319			71	
Sun reduction		0.16												0.19			0.14	
Oper. time red.		1.00												1.00			1.00	
Wind dir. red.		0.63												0.63			0.63	
Total reduction		0.10												0.12			0.09	
Total, real		38												37			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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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: AQ - H43

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:08	05:21	05:18	05:56	06:47	07:38	07:33	08:26
	16:33	17:23	18:16	20:11	21:04	21:51	22:05	21:32	20:29	19:17	17:10	16:28
2	08:50	08:20	07:25	07:12	06:06	05:21	05:19	05:58	06:49	07:40	07:35	08:27
	16:34	17:24	18:18	20:13	21:06	21:52	22:05	21:31	20:26	19:15	17:08	16:27
3	08:50	08:19	07:22	07:10	06:04	05:20	05:20	05:59	06:51	07:41	07:37	08:29
	16:36	17:26	18:19	20:15	21:07	21:53	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:02	05:19	05:20	06:01	06:52	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09	21:55	22:04	21:27	20:22	19:10	17:04	16:26
5	08:49	08:15	07:18	07:05	06:00	05:18	05:21	06:02	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:18	21:11	21:56	22:04	21:25	20:19	19:08	17:02	16:25
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:39	17:32	18:25	20:20	21:12	21:57	22:03	21:23	20:17	19:06	17:01	16:25
7	08:48	08:12	07:13	07:01	05:57	05:17	05:23	06:06	06:57	07:48	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:03	16:59	16:25
8	08:48	08:10	07:11	06:58	05:55	05:16	05:24	06:07	06:59	07:50	07:46	08:35
	16:42	17:36	18:29	20:24	21:16	21:58	22:02	21:20	20:12	19:01	16:57	16:24
9	08:47	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48	08:37
	16:43	17:38	18:30	20:25	21:18	21:59	22:01	21:18	20:10	18:59	16:55	16:24
10	08:47	08:06	07:06	06:54	05:51	05:15	05:26	06:11	07:02	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	22:00	21:16	20:08	18:57	16:54	16:24
11	08:46	08:04	07:04	06:51	05:50	05:15	05:27	06:12	07:04	07:55	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:54	16:52	16:23
12	08:46	08:02	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:22	22:02	21:59	21:12	20:03	18:52	16:50	16:23
13	08:45	08:01	06:59	06:47	05:46	05:14	05:29	06:15	07:08	07:59	07:56	08:41
	16:49	17:45	18:38	20:32	21:24	22:02	21:58	21:10	20:00	18:50	16:49	16:23
14	08:44	07:59	06:57	06:45	05:45	05:14	05:31	06:17	07:09	08:01	07:57	08:42
	16:51	17:47	18:39	20:34	21:26	22:03	21:57	21:08	19:58	18:47	16:47	16:23
15	08:43	07:57	06:55	06:42	05:43	05:14	05:32	06:19	07:11	08:02	07:59	08:43
	16:52	17:49	18:41	20:36	21:27	22:03	21:56	21:06	19:56	18:45	16:46	16:23
16	08:42	07:55	06:52	06:40	05:41	05:14	05:33	06:20	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:53	18:43	16:44	16:23
17	08:41	07:53	06:50	06:38	05:40	05:14	05:34	06:22	07:14	08:06	08:03	08:44
	16:56	17:53	18:45	20:39	21:30	22:04	21:54	21:02	19:51	18:41	16:43	16:24
18	08:40	07:51	06:48	06:36	05:38	05:14	05:36	06:24	07:16	08:08	08:04	08:45
	16:57	17:55	18:47	20:41	21:32	22:05	21:53	21:00	19:48	18:39	16:42	16:24
19	08:39	07:48	06:45	06:33	05:37	05:14	05:37	06:26	07:18	08:10	08:06	08:46
	16:59	17:57	18:48	20:43	21:34	22:05	21:51	20:57	19:46	18:36	16:40	16:24
20	08:38	07:46	06:43	06:31	05:35	05:14	05:38	06:27	07:19	08:11	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:55	19:44	18:34	16:39	16:24
21	08:37	07:44	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:13	08:10	08:47
	17:02	18:01	18:52	20:46	21:37	22:06	21:49	20:53	19:41	18:32	16:38	16:25
22	08:36	07:42	06:38	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:11	08:48
	17:04	18:03	18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:25
23	08:35	07:40	06:36	06:25	05:31	05:14	05:42	06:32	07:24	08:17	08:13	08:48
	17:06	18:04	18:55	20:50	21:39	22:06	21:46	20:49	19:37	18:28	16:35	16:26
24	08:33	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:06	18:57	20:52	21:41	22:06	21:45	20:47	19:34	18:26	16:34	16:26
25	08:32	07:36	06:31	06:21	05:29	05:15	05:45	06:36	07:28	07:21	08:16	08:49
	17:10	18:08	18:59	20:53	21:42	22:06	21:43	20:44	19:32	17:24	16:33	16:27
26	08:31	07:34	06:29	06:18	05:28	05:15	05:47	06:37	07:29	07:22	08:18	08:49
	17:11	18:10	19:01	20:55	21:44	22:06	21:42	20:42	19:29	17:22	16:32	16:28
27	08:29	07:31	06:26	06:16	05:27	05:16	05:48	06:39	07:31	07:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	22:06	21:40	20:40	19:27	17:20	16:31	16:29
28	08:28	07:29	06:24	06:14	05:25	05:16	05:50	06:41	07:33	07:26	08:21	08:50
	17:15	18:14	19:04	20:59	21:46	22:06	21:39	20:38	19:25	17:18	16:30	16:29
29	08:27		07:22	06:12	05:24	05:17	05:51	06:42	07:35	07:28	08:23	08:50
	17:17		20:06	21:00	21:48	22:06	21:37	20:35	19:22	17:16	16:30	16:30
30	08:25		07:19	06:10	05:23	05:18	05:53	06:44	07:36	07:30	08:24	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	17:14	16:29	16:31
31	08:23		07:17		05:22		05:54	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240
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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abyrne / abyrne@jodireland.com

Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: AR - H44

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January		February		March		April	May	June
1	08:50		08:22		16:48 (3)	07:27	17:35 (2)	07:15	06:08	05:21
	16:33		17:22	4	16:52 (3)	18:16	12	17:47 (2)	20:11	21:04	21:51
2	08:50		08:20		16:47 (3)	07:25	17:38 (2)	07:12	06:06	05:20
	16:34		17:24	7	16:54 (3)	18:17	6	17:44 (2)	20:13	21:06	21:52
3	08:50		08:19		16:47 (3)	07:22	17:49 (4)	07:10	06:04	05:20
	16:35		17:26	8	16:55 (3)	18:19	3	17:52 (4)	20:15	21:07	21:54
4	08:50		08:17		16:47 (3)	07:20	17:48 (4)	07:08	06:02	05:19
	16:37		17:28	10	16:57 (3)	18:21	7	17:55 (4)	20:17	21:09	21:55
5	08:49		08:15		16:47 (3)	07:18	17:47 (4)	07:05	06:00	05:18
	16:38		17:30	13	17:00 (3)	18:23	10	17:57 (4)	20:18	21:11	21:56
6	08:49		08:14		16:47 (3)	07:16	17:46 (4)	07:03	05:59	05:17
	16:39		17:32	15	17:02 (3)	18:25	12	17:58 (4)	20:20	21:12	21:57
7	08:49		08:12		16:47 (3)	07:13	17:45 (4)	07:01	05:57	05:17
	16:40		17:34	17	17:04 (3)	18:27	15	18:00 (4)	20:22	21:14	21:58
8	08:48		08:10		16:48 (3)	07:11	17:45 (4)	06:58	05:55	05:16
	16:42		17:36	18	17:06 (3)	18:28	18	18:03 (4)	20:24	21:16	21:58
9	08:48		08:08		16:48 (3)	07:09	17:45 (4)	06:56	05:53	05:16
	16:43		17:38	20	17:08 (3)	18:30	19	18:04 (4)	20:25	21:18	21:59
10	08:47		08:06		16:49 (3)	07:06	17:45 (4)	06:54	05:51	05:15
	16:45		17:40	21	17:10 (3)	18:32	21	18:06 (4)	20:27	21:19	22:00
11	08:46		08:04		16:49 (3)	07:04	17:45 (4)	06:51	05:50	05:15
	16:46		17:42	23	17:12 (3)	18:34	23	18:08 (4)	20:29	21:21	22:01
12	08:46		08:02		16:50 (3)	07:02	17:45 (4)	06:49	05:48	05:15
	16:48		17:43	21	17:11 (3)	18:36	25	18:10 (4)	20:31	21:23	22:02
13	08:45		08:01		16:52 (3)	06:59	17:46 (4)	06:47	05:46	05:14
	16:49		17:45	18	17:10 (3)	18:38	25	18:11 (4)	20:32	21:24	22:02
14	08:44		07:59		16:54 (3)	06:57	17:46 (4)	06:45	05:45	05:14
	16:51		17:47	14	17:08 (3)	18:39	23	18:09 (4)	20:34	21:26	22:03
15	08:43		07:57		16:56 (3)	06:55	17:48 (4)	06:42	05:43	05:14
	16:52		17:49	10	17:06 (3)	18:41	19	18:07 (4)	20:36	21:27	22:04
16	08:42		07:55			06:52	17:50 (4)	06:40	05:41	05:14
	16:54		17:51			18:43	19	18:17 (1)	20:38	21:29	22:04
17	08:41		07:53			06:50	17:52 (4)	06:38	05:40	05:14
	16:55		17:53			18:45	15	18:19 (1)	20:39	21:31	22:05
18	08:40		07:51			06:48	18:13 (1)	06:36	05:38	05:14
	16:57		17:55			18:47	8	18:21 (1)	20:41	21:32	22:05
19	08:39		07:48			06:45	18:13 (1)	06:33	05:37	05:14
	16:59		17:57			18:48	10	18:23 (1)	20:43	21:34	22:05
20	08:38		07:46			06:43	18:13 (1)	06:31	05:35	05:14
	17:01		17:59			18:50	11	18:24 (1)	20:45	21:35	22:06
21	08:37		07:44		17:32 (2)	06:41	18:13 (1)	06:29	05:34	05:14
	17:02		18:01	1	17:33 (2)	18:52	13	18:26 (1)	20:46	21:37	22:06
22	08:36		07:42		17:32 (2)	06:38	18:13 (1)	06:27	05:33	05:14
	17:04		18:02	3	17:35 (2)	18:54	14	18:27 (1)	20:48	21:38	22:06
23	08:35		07:40		17:31 (2)	06:36	18:15 (1)	06:25	05:31	05:14
	17:06		18:04	6	17:37 (2)	18:55	15	18:30 (1)	20:50	21:39	22:06
24	08:33		07:38		17:31 (2)	06:34	18:17 (1)	06:23	05:30	05:15
	17:08		18:06	8	17:39 (2)	18:57	11	18:28 (1)	20:52	21:41	22:06
25	08:32		07:36		17:31 (2)	06:31	18:21 (1)	06:20	05:29	05:15
	17:09		18:08	10	17:41 (2)	18:59	1	18:22 (1)	20:53	21:42	22:06
26	08:31		07:34		17:32 (2)	06:29		06:18	05:28	05:15
	17:11		18:10	11	17:43 (2)	19:01		20:55	21:44	22:06
27	08:29		07:31		17:32 (2)	06:26		06:16	05:26	05:16
	17:13		18:12	13	17:45 (2)	19:02		20:57	21:45	22:06
28	08:28		07:29		17:33 (2)	06:24		06:14	05:25	05:16
	17:15		18:14	14	17:47 (2)	19:04		20:59	21:46	22:06
29	08:27					07:22		06:12	05:24	05:17
	17:17					20:06		21:00	21:48	22:06
30	08:25					07:19		06:10	05:23	05:17
	17:19					20:08		21:02	21:49	22:06
31	08:23	16:49 (3)				07:17			05:22	
	17:21	1 16:50 (3)				20:10			21:50	
Potential sun hours	256		276			367		418	489	503
Total, worst case		1		285		355				
Sun reduction		0.16		0.21		0.24				
Oper. time red.		1.00		1.00		1.00				
Wind dir. red.		0.64		0.65		0.68				
Total reduction		0.10		0.13		0.17				
Total, real		0		38		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)

Licensed user:
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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: AR - H44

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	July		August		September			October			November			December
1	05:18		05:56		06:47			07:38		18:24 (4)	07:33		16:18 (3)	08:26
	22:05		21:32		20:29			19:17	25	18:49 (4)	17:10	22	16:40 (3)	16:28
2	05:19		05:57		06:49			07:40		18:24 (4)	07:35		16:18 (3)	08:27
	22:05		21:31		20:26			19:15	23	18:47 (4)	17:08	20	16:38 (3)	16:27
3	05:19		05:59		06:51			07:41		18:23 (4)	07:37		16:17 (3)	08:29
	22:05		21:29		20:24			19:13	22	18:45 (4)	17:06	19	16:36 (3)	16:26
4	05:20		06:01		06:52			07:43		18:23 (4)	07:39		16:17 (3)	08:30
	22:04		21:27		20:22			19:10	20	18:43 (4)	17:04	17	16:34 (3)	16:26
5	05:21		06:02		06:54			07:45		18:21 (4)	07:41		16:17 (3)	08:32
	22:04		21:25		20:19			19:08	19	18:40 (4)	17:02	15	16:32 (3)	16:25
6	05:22		06:04		06:56			07:47		18:21 (4)	07:43		16:17 (3)	08:33
	22:03		21:23		20:17			19:06	16	18:37 (4)	17:00	13	16:30 (3)	16:25
7	05:23		06:05		06:57			07:48		18:22 (4)	07:45		16:17 (3)	08:34
	22:03		21:22		20:15			19:03	13	18:35 (4)	16:59	11	16:28 (3)	16:24
8	05:24		06:07		06:59			07:50		18:22 (4)	07:46		16:18 (3)	08:35
	22:02		21:20		20:12			19:01	11	18:33 (4)	16:57	8	16:26 (3)	16:24
9	05:25		06:09		07:01			07:52		18:22 (4)	07:48		16:18 (3)	08:37
	22:01		21:18		20:10			18:59	9	18:31 (4)	16:55	6	16:24 (3)	16:24
10	05:26		06:10		07:02			07:54		18:22 (4)	07:50		16:19 (3)	08:38
	22:00		21:16		20:07			18:56	6	18:28 (4)	16:54	3	16:22 (3)	16:24
11	05:27		06:12		07:04			07:55		18:23 (4)	07:52		16:20 (3)	08:39
	22:00		21:14		20:05			18:54	3	18:26 (4)	16:52	1	16:21 (3)	16:23
12	05:28		06:14		07:06			07:57		18:10 (2)	07:54			08:40
	21:59		21:12		20:03			18:52	9	18:19 (2)	16:50			16:23
13	05:29		06:15		07:07			07:59		18:07 (2)	07:56			08:41
	21:58		21:10		20:00			18:50	14	18:21 (2)	16:49			16:23
14	05:30		06:17		07:09			08:01		18:06 (2)	07:57			08:42
	21:57		21:08		19:58			18:47	13	18:19 (2)	16:47			16:23
15	05:32		06:19		07:11			08:02		18:05 (2)	07:59			08:43
	21:56		21:06		19:56			18:45	12	18:17 (2)	16:46			16:23
16	05:33		06:20		07:12			08:04		18:04 (2)	08:01			08:44
	21:55		21:04		19:53			18:43	11	18:15 (2)	16:44			16:23
17	05:34		06:22		07:14			08:06		18:03 (2)	08:03			08:45
	21:54		21:02		19:51			18:41	9	18:12 (2)	16:43			16:23
18	05:35		06:24		07:16			08:08		18:02 (2)	08:05			08:45
	21:53		21:00		19:48			18:39	7	18:09 (2)	16:42			16:24
19	05:37		06:25		07:18		19:04 (1)	08:10		18:02 (2)	08:06			08:46
	21:51		20:57		19:46	10	19:14 (1)	18:36	5	18:07 (2)	16:40			16:24
20	05:38		06:27		07:19		19:02 (1)	08:11		18:03 (2)	08:08			08:47
	21:50		20:55		19:44	14	19:16 (1)	18:34	2	18:05 (2)	16:39			16:24
21	05:39		06:29		07:21		18:59 (1)	08:13			08:10			08:47
	21:49		20:53		19:41	14	19:13 (1)	18:32			16:38			16:25
22	05:41		06:30		07:23		18:58 (1)	08:15			08:11			08:48
	21:48		20:51		19:39	13	19:11 (1)	18:30			16:36			16:25
23	05:42		06:32		07:24		18:57 (1)	08:17			08:13			08:48
	21:46		20:49		19:36	12	19:09 (1)	18:28			16:35			16:26
24	05:44		06:34		07:26		18:56 (1)	08:19			08:15			08:49
	21:45		20:47		19:34	10	19:06 (1)	18:26			16:34			16:26
25	05:45		06:36		07:28		18:56 (1)	07:20			08:16			08:49
	21:43		20:44		19:32	8	19:04 (1)	17:24			16:33			16:27
26	05:47		06:37		07:29		18:37 (4)	07:22			08:18			08:49
	21:42		20:42		19:29	11	19:02 (1)	17:22			16:32			16:28
27	05:48		06:39		07:31		18:33 (4)	07:24		16:25 (3)	08:20			08:50
	21:40		20:40		19:27	17	19:00 (1)	17:19	11	16:36 (3)	16:31			16:28
28	05:50		06:41		07:33		18:29 (4)	07:26		16:23 (3)	08:21			08:50
	21:39		20:38		19:25	20	18:57 (1)	17:17	15	16:38 (3)	16:30			16:29
29	05:51		06:42		07:34		18:28 (4)	07:28		16:21 (3)	08:23			08:50
	21:37		20:35		19:22	21	18:49 (4)	17:15	19	16:40 (3)	16:29			16:30
30	05:53		06:44		07:36		18:26 (4)	07:30		16:20 (3)	08:24			08:50
	21:36		20:33		19:20	24	18:50 (4)	17:14	21	16:41 (3)	16:29			16:31
31	05:54		06:46					07:32		16:19 (3)				08:50
	21:34		20:31					17:12	23	16:42 (3)				16:32
Potential sun hours	506		456		381			330			263			240
Total, worst case						174			338			135		
Sun reduction						0.28			0.24			0.19		
Oper. time red.						1.00			1.00			1.00		
Wind dir. red.						0.68			0.67			0.64		
Total reduction						0.19			0.16			0.12		
Total, real						34			54			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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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: AS - H45

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January	February	March	April	May		June		July		August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:08		05:22		05:18		05:56	06:47	07:38	07:33	08:26
	16:33	17:23	18:16	20:11	21:04		21:51	5	05:56 (3)	13	06:03 (3)	21:32	20:29	19:18	17:10	16:28
2	08:50	08:20	07:25	07:12	06:06		05:21		05:50 (3)		05:50 (3)	05:58	06:49	07:40	07:35	08:27
	16:35	17:24	18:18	20:13	21:06		21:52	7	05:57 (3)	13	06:03 (3)	21:31	20:26	19:15	17:08	16:27
3	08:50	08:19	07:23	07:10	06:04		05:20		05:50 (3)		05:51 (3)	05:59	06:51	07:41	07:37	08:29
	16:36	17:26	18:19	20:15	21:07		21:54	7	05:57 (3)	12	06:03 (3)	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:02		05:19		05:49 (3)		05:52 (3)	06:01	06:52	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09		21:55	8	05:57 (3)	12	06:04 (3)	21:27	20:22	19:11	17:04	16:26
5	08:49	08:15	07:18	07:05	06:01		05:18		05:48 (3)		05:53 (3)	06:02	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:18	21:11		21:56	9	05:57 (3)	11	06:04 (3)	21:25	20:19	19:08	17:02	16:26
6	08:49	08:14	07:16	07:03	05:59		05:18		05:48 (3)		05:54 (3)	06:04	06:56	07:47	07:43	08:33
	16:39	17:32	18:25	20:20	21:13		21:57	10	05:58 (3)	10	06:04 (3)	21:24	20:17	19:06	17:01	16:25
7	08:49	08:12	07:13	07:01	05:57		05:17		05:47 (3)		05:54 (3)	06:06	06:58	07:48	07:45	08:34
	16:41	17:34	18:27	20:22	21:14		21:58	11	05:58 (3)	10	06:04 (3)	21:22	20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:58	05:55		05:17		05:47 (3)		05:55 (3)	06:07	06:59	07:50	07:46	08:35
	16:42	17:36	18:29	20:24	21:16		21:59	11	05:58 (3)	9	06:04 (3)	21:20	20:12	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	05:53		05:16		05:46 (3)		05:56 (3)	06:09	07:01	07:52	07:48	08:37
	16:43	17:38	18:30	20:25	21:18		21:59	12	05:58 (3)	8	06:04 (3)	21:18	20:10	18:59	16:55	16:24
10	08:47	08:06	07:07	06:54	05:51		05:16		05:46 (3)		05:57 (3)	06:11	07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19		22:00	13	05:59 (3)	7	06:04 (3)	21:16	20:08	18:57	16:54	16:24
11	08:46	08:04	07:04	06:51	05:50		05:15		05:46 (3)		05:58 (3)	06:12	07:04	07:55	07:52	08:39
	16:46	17:42	18:34	20:29	21:21		22:01	13	05:59 (3)	6	06:04 (3)	21:14	20:05	18:54	16:52	16:24
12	08:46	08:03	07:02	06:49	05:48		05:15		05:45 (3)		05:59 (3)	06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23		22:02	13	05:58 (3)	5	06:04 (3)	21:12	20:03	18:52	16:51	16:23
13	08:45	08:01	07:00	06:47	05:46		05:14		05:45 (3)		06:00 (3)	06:16	07:08	07:59	07:56	08:41
	16:49	17:46	18:38	20:33	21:24		22:02	14	05:59 (3)	4	06:04 (3)	21:10	20:00	18:50	16:49	16:23
14	08:44	07:59	06:57	06:45	05:45		05:14		05:45 (3)		06:02 (3)	06:17	07:09	08:01	07:57	08:42
	16:51	17:47	18:39	20:34	21:26		22:03	14	05:59 (3)	2	06:04 (3)	21:08	19:58	18:48	16:47	16:23
15	08:43	07:57	06:55	06:42	05:43		05:14		05:45 (3)		06:03 (3)	06:19	07:11	08:03	07:59	08:43
	16:52	17:49	18:41	20:36	21:27		22:04	15	06:00 (3)	1	06:04 (3)	21:06	19:56	18:45	16:46	16:23
16	08:42	07:55	06:53	06:40	05:41		05:14		05:45 (3)			06:21	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29		22:04	15	06:00 (3)			21:04	19:53	18:43	16:44	16:23
17	08:41	07:53	06:50	06:38	05:40		05:14		05:45 (3)			06:22	07:14	08:06	08:03	08:45
	16:56	17:53	18:45	20:40	21:31		22:05	15	06:00 (3)			21:02	19:51	18:41	16:43	16:24
18	08:40	07:51	06:48	06:36	05:38		05:14		05:45 (3)			06:24	07:16	08:08	08:05	08:45
	16:57	17:55	18:47	20:41	21:32		22:05	15	06:00 (3)			21:00	19:49	18:39	16:42	16:24
19	08:39	07:49	06:45	06:34	05:37		05:14		05:45 (3)			06:26	07:18	08:10	08:06	08:46
	16:59	17:57	18:48	20:43	21:34		22:05	15	06:00 (3)			20:58	19:46	18:36	16:40	16:24
20	08:38	07:47	06:43	06:31	05:36		05:14		05:45 (3)			06:27	07:19	08:11	08:08	08:47
	17:01	17:59	18:50	20:45	21:35		22:06	15	06:00 (3)			20:55	19:44	18:34	16:39	16:24
21	08:37	07:44	06:41	06:29	05:34		05:14		05:45 (3)			06:29	07:21	08:13	08:10	08:47
	17:02	18:01	18:52	20:47	21:37		22:06	15	06:00 (3)			20:53	19:41	18:32	16:38	16:25
22	08:36	07:42	06:38	06:27	05:33		05:14		05:46 (3)			06:31	07:23	08:15	08:12	08:48
	17:04	18:03	18:54	20:48	21:38		22:06	15	06:01 (3)			20:51	19:39	18:30	16:37	16:25
23	08:35	07:40	06:36	06:25	05:31		05:14		05:46 (3)			06:32	07:24	08:17	08:13	08:48
	17:06	18:05	18:56	20:50	21:40		22:06	15	06:01 (3)			20:49	19:37	18:28	16:35	16:26
24	08:34	07:38	06:34	06:23	05:30		05:15		05:46 (3)			06:34	07:26	08:19	08:15	08:49
	17:08	18:06	18:57	20:52	21:41		22:06	15	06:01 (3)			20:47	19:34	18:26	16:34	16:26
25	08:32	07:36	06:31	06:21	05:29		05:15		05:47 (3)			06:36	07:28	07:21	08:17	08:49
	17:10	18:08	18:59	20:54	21:42		22:06	15	06:02 (3)			20:44	19:32	17:24	16:33	16:27
26	08:31	07:34	06:29	06:18	05:28		05:15		05:47 (3)			06:37	07:29	07:22	08:18	08:49
	17:11	18:10	19:01	20:55	21:44		22:06	15	06:02 (3)			20:42	19:29	17:22	16:32	16:28
27	08:30	07:31	06:27	06:16	05:27		05:16		05:48 (3)			06:39	07:31	07:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45		22:06	15	06:03 (3)			20:40	19:27	17:20	16:31	16:29
28	08:28	07:29	06:24	06:14	05:25		05:16		05:48 (3)			06:41	07:33	07:26	08:21	08:50
	17:15	18:14	19:04	20:59	21:46		22:06	14	06:02 (3)			20:38	19:25	17:18	16:30	16:29
29	08:27		07:22	06:12	05:24	05:53 (3)	05:17		05:49 (3)			06:42	07:35	07:28	08:23	08:50
	17:17		20:06	21:01	21:48	2 05:55 (3)	22:06	14	06:03 (3)			20:36	19:22	17:16	16:30	16:30
30	08:25		07:19	06:10	05:23	05:53 (3)	05:18		05:49 (3)			06:44	07:36	07:30	08:24	08:50
	17:19		20:08	21:02	21:49	3 05:56 (3)	22:06	14	06:03 (3)			20:33	19:20	17:14	16:29	16:31
31	08:24		07:17		05:22	05:52 (3)			05:54			06:46		07:32		08:50
	17:21		20:10		21:50	4 05:56 (3)			21:34			20:31		17:12		16:32
Potential sun hours	256	276	367	418	488		503		506		456	381	330	263	240
Total, worst case						9		384		123					
Sun reduction						0.37		0.30		0.26					
Oper. time red.						1.00		1.00		1.00					
Wind dir. red.						0.63		0.63		0.63					
Total reduction						0.23		0.19		0.17					
Total, real						2		72		21					

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)

Licensed user:
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abyrne / abyrne@jodireland.com

Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: AT - H46

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January	February	March	April		May		June	July		August		September	October	November	December
1	08:50	08:22	07:27	07:15		06:08		06:33 (2)	05:22		05:56		06:25 (2)	06:47	07:38	07:34	08:26
	16:33	17:23	18:16	20:11		21:04	7	06:40 (2)	21:51		22:06		21:32	26	06:51 (2)	20:29	19:18	17:10	16:28
2	08:50	08:20	07:25	07:12		06:06		06:31 (2)	05:21		05:19		05:58		06:27 (2)	06:49	07:40	07:35	08:27
	16:35	17:24	18:18	20:13		21:06	9	06:40 (2)	21:53		22:05		21:31	25	06:52 (2)	20:26	19:15	17:08	16:27
3	08:50	08:19	07:23	07:10		06:04		06:30 (2)	05:20		05:20		05:59		06:28 (2)	06:51	07:42	07:37	08:29
	16:36	17:26	18:19	20:15		21:07	11	06:41 (2)	21:54		22:05		21:29	23	06:51 (2)	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08		06:02		06:28 (2)	05:19		05:20		06:01		06:30 (2)	06:53	07:43	07:39	08:30
	16:37	17:28	18:21	20:17		21:09	14	06:42 (2)	21:55		22:04		21:27	22	06:52 (2)	20:22	19:11	17:04	16:26
5	08:49	08:15	07:18	07:05		06:01		06:26 (2)	05:18		05:21		06:02		06:31 (2)	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:18		21:11	16	06:42 (2)	21:56		22:04		21:25	20	06:51 (2)	20:19	19:08	17:02	16:26
6	08:49	08:14	07:16	07:03		05:59		06:24 (2)	05:18		05:22		06:04		06:33 (2)	06:56	07:47	07:43	08:33
	16:39	17:32	18:25	20:20		21:13	17	06:41 (2)	21:57		22:03		21:24	19	06:52 (2)	20:17	19:06	17:01	16:25
7	08:49	08:12	07:13	07:01		05:57		06:23 (2)	05:17		05:23		06:06		06:34 (2)	06:58	07:48	07:45	08:34
	16:41	17:34	18:27	20:22		21:14	19	06:42 (2)	21:58		22:03		21:22	17	06:51 (2)	20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:58		05:55		06:21 (2)	05:17		05:24		06:07		06:36 (2)	06:59	07:50	07:46	08:35
	16:42	17:36	18:29	20:24		21:16	21	06:42 (2)	21:59		22:02		21:20	15	06:51 (2)	20:12	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56		05:53		06:19 (2)	05:16		05:25		06:09		06:38 (2)	07:01	07:52	07:48	08:37
	16:43	17:38	18:30	20:26		21:18	22	06:41 (2)	21:59		22:01		21:18	13	06:51 (2)	20:10	18:59	16:55	16:24
10	08:47	08:06	07:07	06:54		05:51		06:18 (2)	05:16		05:26		06:11		06:39 (2)	07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:27		21:19	24	06:42 (2)	22:00		22:01		21:16	11	06:50 (2)	20:08	18:57	16:54	16:24
11	08:46	08:05	07:04	06:52		05:50		06:16 (2)	05:15		05:27		06:12		06:41 (2)	07:04	07:55	07:52	08:39
	16:46	17:42	18:34	20:29		21:21	25	06:41 (2)	22:01		22:00		21:14	8	06:49 (2)	20:05	18:54	16:52	16:24
12	08:46	08:03	07:02	06:49	07:13 (3)	05:48		06:14 (2)	05:15		05:28		06:14		06:42 (2)	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	2 07:15 (3)	21:23	26	06:40 (2)	22:02		21:59		21:12	6	06:48 (2)	20:03	18:52	16:51	16:23
13	08:45	08:01	07:00	06:47	07:10 (3)	05:46		06:13 (2)	05:14		05:29		06:16		06:44 (2)	07:08	07:59	07:56	08:41
	16:49	17:46	18:38	20:33	4 07:14 (3)	21:24	27	06:40 (2)	22:02		21:58		21:10	3	06:47 (2)	20:00	18:50	16:49	16:23
14	08:44	07:59	06:57	06:45	07:08 (3)	05:45		06:11 (4)	05:14		05:31		06:17			07:09	08:01	07:57	08:42
	16:51	17:47	18:40	20:34	7 07:15 (3)	21:26	28	06:39 (2)	22:03		21:57		21:08			19:58	18:48	16:47	16:23
15	08:43	07:57	06:55	06:42	07:06 (3)	05:43		06:10 (4)	05:14		05:32		06:19			07:11	08:03	07:59	08:43
	16:52	17:49	18:41	20:36	9 07:15 (3)	21:27	29	06:39 (2)	22:04		21:56		21:06			19:56	18:45	16:46	16:23
16	08:42	07:55	06:53	06:40	07:04 (3)	05:41		06:08 (4)	05:14		05:33		06:21			07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	11 07:15 (3)	21:29	30	06:38 (2)	22:04		21:55		21:04			19:53	18:43	16:44	16:23
17	08:42	07:53	06:50	06:38	07:02 (3)	05:40		06:07 (4)	05:14		05:34		06:22			07:14	08:06	08:03	08:45
	16:56	17:53	18:45	20:40	12 07:14 (3)	21:31	31	06:38 (2)	22:05		21:54		21:02			19:51	18:41	16:43	16:24
18	08:41	07:51	06:48	06:36	06:59 (3)	05:38		06:06 (4)	05:14		05:36		06:24			07:16	08:08	08:05	08:45
	16:57	17:55	18:47	20:41	14 07:13 (3)	21:32	31	06:37 (2)	22:05		21:53		21:00			19:49	18:39	16:42	16:24
19	08:39	07:49	06:46	06:34	06:57 (3)	05:37		06:04 (4)	05:14		05:37		06:26			07:18	08:10	08:06	08:46
	16:59	17:57	18:48	20:43	15 07:12 (3)	21:34	31	06:35 (2)	22:05		21:52		20:58			19:46	18:36	16:40	16:24
20	08:38	07:47	06:43	06:31	06:55 (3)	05:36		06:04 (4)	05:14		05:38		06:27		07:05 (3)	07:19	08:12	08:08	08:47
	17:01	17:59	18:50	20:45	16 07:11 (3)	21:35	30	06:34 (2)	22:06		21:50		20:55	5	07:10 (3)	19:44	18:34	16:39	16:24
21	08:37	07:44	06:41	06:29	06:55 (3)	05:34		06:05 (4)	05:14		05:40	06:18 (4)	06:29		07:01 (3)	07:21	08:13	08:10	08:47
	17:02	18:01	18:52	20:47	14 07:09 (3)	21:37	25	06:33 (2)	22:06		21:49	14 06:40 (2)	20:53	11	07:12 (3)	19:41	18:32	16:38	16:25
22	08:36	07:42	06:38	06:27	06:57 (3)	05:33		06:07 (4)	05:14		05:41	06:16 (4)	06:31		06:59 (3)	07:23	08:15	08:12	08:48
	17:04	18:03	18:54	20:48	10 07:07 (3)	21:38	18	06:31 (2)	22:06		21:48	21 06:42 (2)	20:51	15	07:14 (3)	19:39	18:30	16:37	16:25
23	08:35	07:40	06:36	06:25	07:00 (3)	05:31		06:09 (4)	05:14		05:42	06:15 (4)	06:32		07:00 (3)	07:24	08:17	08:13	08:48
	17:06	18:05	18:56	20:50	4 07:04 (3)	21:40	4	06:13 (4)	22:06		21:46	27 06:44 (2)	20:49	16	07:16 (3)	19:37	18:28	16:35	16:26
24	08:34	07:38	06:34	06:23		05:30			05:15		05:44	06:14 (4)	06:34		07:01 (3)	07:26	08:19	08:15	08:49
	17:08	18:06	18:57	20:52		21:41			22:06		21:45	31 06:45 (2)	20:47	15	07:16 (3)	19:34	18:26	16:34	16:26
25	08:32	07:36	06:31	06:21		05:29			05:15		05:45	06:15 (4)	06:36		07:03 (3)	07:28	07:21	08:17	08:49
	17:10	18:08	18:59	20:54		21:42			22:06		21:43	31 06:46 (2)	20:45	14	07:17 (3)	19:32	17:24	16:33	16:27
26	08:31	07:34	06:29	06:19		05:28			05:15		05:47	06:17 (4)	06:37		07:04 (3)	07:30	07:22	08:18	08:50
	17:11	18:10	19:01	20:55		21:44			22:06		21:42	31 06:48 (2)	20:42	12	07:16 (3)	19:29	17:22	16:32	16:28
27	08:30	07:31	06:27	06:16		05:27			05:16		05:48	06:18 (4)	06:39		07:06 (3)	07:31	07:24	08:20	08:50
	17:13	18:12	19:03	20:57		21:45			22:06		21:40	30 06:48 (2)	20:40	10	07:16 (3)	19:27	17:20	16:31	16:29
28	08:28	07:29	06:24	06:14		05:25			05:16		05:50	06:20 (4)	06:41		07:08 (3)	07:33	07:26	08:21	08:50
	17:15	18:14	19:04	20:59		21:46			22:06		21:39	30 06:50 (2)	20:38	9	07:17 (3)	19:25	17:18	16:30	16:29
29	08:27		07:22	06:12	06:37 (2)	05:24			05:17		05:51	06:21 (4)	06:42		07:09 (3)	07:35	07:28	08:23	08:50
	17:17		20:06	21:01	1 06:38 (2)	21:48			22:06		21:37	29 06:50 (2)	20:36	6	07:15 (3)	19:22	17:16	16:30	16:30
30	08:25		07:19	06:10	06:35 (2)	05:23			05:18		05:53	06:22 (4)	06:44		07:11 (3)	07:36	07:30	08:24	08:50
	17:19		20:08	21:02	4 06:39 (2)	21:49			22:06		21:36	28 06:50 (2)	20:33	4	07:15 (3)	19:20	17:14	16:29	16:31
31	08:24		07:17			05:22					05:54	06:24 (2)	06:46		07:12 (3)		07:32		08:50
	17:21		20:10			21:50					21:34	27 06:51 (2)	20:31	2	07:14 (3)		17:12		16:32
Potential sun hours	256	276	367	418		488		503	506		456		381	330	263	240	
Total, worst case				123		495			299		327						
Sun reduction				0.35		0.37			0.26		0.30						
Oper. time red.				1.00		1.00			1.00		1.00						
Wind dir. red.				0.68		0.66			0.66		0.67						
Total reduction				0.24		0.24			0.18		0.20						
Total, real				29		121			52		65						

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)

Licensed user:
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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: AU - H47

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January	February	March	April		May		June		
1	08:50	08:22	07:27	07:15		06:08		06:33 (2)	05:22	
	16:33	17:23	18:16	20:11		21:04	16	06:49 (2)	21:51	
2	08:50	08:20	07:25	07:12		06:06		06:31 (2)	05:21	
	16:35	17:24	18:18	20:13		21:06	18	06:49 (2)	21:53	
3	08:50	08:19	07:23	07:10		06:04		06:30 (2)	05:20	
	16:36	17:26	18:19	20:15		21:07	20	06:50 (2)	21:54	
4	08:50	08:17	07:20	07:08		06:02		06:28 (2)	05:19	
	16:37	17:28	18:21	20:17		21:09	22	06:50 (2)	21:55	
5	08:49	08:15	07:18	07:05		06:01		06:26 (2)	05:18	
	16:38	17:30	18:23	20:18		21:11	23	06:49 (2)	21:56	
6	08:49	08:14	07:16	07:03		05:59		06:24 (2)	05:18	05:48 (1)
	16:39	17:32	18:25	20:20		21:13	25	06:49 (2)	21:57	1 05:49 (1)
7	08:49	08:12	07:13	07:01		05:57		06:23 (2)	05:17	05:47 (1)
	16:41	17:34	18:27	20:22		21:14	26	06:49 (2)	21:58	1 05:48 (1)
8	08:48	08:10	07:11	06:58		05:55		06:21 (2)	05:17	05:47 (1)
	16:42	17:36	18:29	20:24		21:16	27	06:48 (2)	21:59	2 05:49 (1)
9	08:48	08:08	07:09	06:56		05:53		06:19 (4)	05:16	05:46 (1)
	16:43	17:38	18:30	20:26		21:18	28	06:47 (2)	21:59	3 05:49 (1)
10	08:47	08:06	07:07	06:54	07:17 (3)	05:51		06:18 (4)	05:16	05:46 (1)
	16:45	17:40	18:32	20:27	3 07:20 (3)	21:19	29	06:47 (2)	22:00	4 05:50 (1)
11	08:46	08:05	07:04	06:52	07:15 (3)	05:50		06:16 (4)	05:15	05:46 (1)
	16:46	17:42	18:34	20:29	6 07:21 (3)	21:21	30	06:46 (2)	22:01	5 05:51 (1)
12	08:46	08:03	07:02	06:49	07:13 (3)	05:48		06:14 (4)	05:15	05:45 (1)
	16:48	17:44	18:36	20:31	8 07:21 (3)	21:23	31	06:45 (2)	22:02	5 05:50 (1)
13	08:45	08:01	07:00	06:47	07:10 (3)	05:46		06:13 (4)	05:14	05:45 (1)
	16:49	17:46	18:38	20:33	10 07:20 (3)	21:24	31	06:44 (2)	22:02	6 05:51 (1)
14	08:44	07:59	06:57	06:45	07:08 (3)	05:45		06:11 (4)	05:14	05:45 (1)
	16:51	17:47	18:40	20:34	12 07:20 (3)	21:26	32	06:43 (2)	22:03	6 05:51 (1)
15	08:43	07:57	06:55	06:42	07:06 (3)	05:43		06:10 (4)	05:14	05:45 (1)
	16:52	17:49	18:41	20:36	13 07:19 (3)	21:27	31	06:42 (2)	22:04	7 05:52 (1)
16	08:42	07:55	06:53	06:40	07:04 (3)	05:41		06:09 (4)	05:14	05:45 (1)
	16:54	17:51	18:43	20:38	15 07:19 (3)	21:29	26	06:39 (2)	22:04	7 05:52 (1)
17	08:42	07:53	06:50	06:38	07:02 (3)	05:40		06:10 (4)	05:14	05:45 (1)
	16:56	17:53	18:45	20:40	16 07:18 (3)	21:31	19	06:37 (2)	22:05	7 05:52 (1)
18	08:41	07:51	06:48	06:36	07:00 (3)	05:38		06:12 (4)	05:14	05:45 (1)
	16:57	17:55	18:47	20:41	16 07:16 (3)	21:32	10	06:22 (4)	22:05	7 05:52 (1)
19	08:39	07:49	06:46	06:34	07:01 (3)	05:37		06:14 (4)	05:14	05:45 (1)
	16:59	17:57	18:48	20:43	13 07:14 (3)	21:34	5	06:19 (4)	22:05	8 05:53 (1)
20	08:38	07:47	06:43	06:31	07:04 (3)	05:36			05:14	05:45 (1)
	17:01	17:59	18:50	20:45	7 07:11 (3)	21:35			22:06	8 05:53 (1)
21	08:37	07:44	06:41	06:29		05:34			05:14	05:45 (1)
	17:02	18:01	18:52	20:47		21:37			22:06	8 05:53 (1)
22	08:36	07:42	06:38	06:27		05:33			05:14	05:46 (1)
	17:04	18:03	18:54	20:48		21:38			22:06	8 05:54 (1)
23	08:35	07:40	06:36	06:25		05:31			05:14	05:46 (1)
	17:06	18:05	18:56	20:50		21:40			22:06	8 05:54 (1)
24	08:34	07:38	06:34	06:23		05:30			05:15	05:46 (1)
	17:08	18:06	18:57	20:52		21:41			22:06	7 05:53 (1)
25	08:32	07:36	06:31	06:21	06:45 (2)	05:29			05:15	05:47 (1)
	17:10	18:08	18:59	20:54	1 06:46 (2)	21:42			22:06	7 05:54 (1)
26	08:31	07:34	06:29	06:19	06:43 (2)	05:28			05:15	05:47 (1)
	17:11	18:10	19:01	20:55	4 06:47 (2)	21:44			22:06	7 05:54 (1)
27	08:30	07:31	06:27	06:16	06:41 (2)	05:27			05:16	05:48 (1)
	17:13	18:12	19:03	20:57	7 06:48 (2)	21:45			22:06	7 05:55 (1)
28	08:28	07:29	06:24	06:14	06:39 (2)	05:25			05:16	05:48 (1)
	17:15	18:14	19:04	20:59	9 06:48 (2)	21:46			22:06	6 05:54 (1)
29	08:27		07:22	06:12	06:37 (2)	05:24			05:17	05:49 (1)
	17:17		20:06	21:01	12 06:49 (2)	21:48			22:06	6 05:55 (1)
30	08:25		07:19	06:10	06:35 (2)	05:23			05:18	05:49 (1)
	17:19		20:08	21:02	14 06:49 (2)	21:49			22:06	5 05:54 (1)
31	08:24		07:17			05:22				
	17:21		20:10			21:50				
Potential sun hours	256	276	367	418		488		503		
Total, worst case					166		449		146	
Sun reduction					0.35		0.37		0.30	
Oper. time red.					1.00		1.00		1.00	
Wind dir. red.					0.68		0.67		0.63	
Total reduction					0.24		0.25		0.19	
Total, real					40		110		27	

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)

Licensed user:
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abyrne / abyrne@jodireland.com

Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: AU - H47

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	July			August			September			October	November	December
1	05:18		05:50 (1)	05:56		06:25 (4)	06:47		07:14 (3)	07:38	07:34	08:26
	22:06	5	05:55 (1)	21:32	31	06:56 (2)	20:29	6	07:20 (3)	19:18	17:10	16:28
2	05:19		05:50 (1)	05:58		06:27 (4)	06:49		07:16 (3)	07:40	07:35	08:27
	22:05	4	05:54 (1)	21:31	30	06:57 (2)	20:26	3	07:19 (3)	19:15	17:08	16:27
3	05:20		05:51 (1)	05:59		06:28 (4)	06:51			07:42	07:37	08:29
	22:05	4	05:55 (1)	21:29	29	06:57 (2)	20:24			19:13	17:06	16:27
4	05:20		05:52 (1)	06:01		06:30 (4)	06:53			07:43	07:39	08:30
	22:04	3	05:55 (1)	21:27	28	06:58 (2)	20:22			19:11	17:04	16:26
5	05:21		05:53 (1)	06:02		06:31 (2)	06:54			07:45	07:41	08:32
	22:04	2	05:55 (1)	21:25	27	06:58 (2)	20:19			19:08	17:02	16:26
6	05:22		05:54 (1)	06:04		06:33 (2)	06:56			07:47	07:43	08:33
	22:03	1	05:55 (1)	21:24	26	06:59 (2)	20:17			19:06	17:01	16:25
7	05:23			06:06		06:34 (2)	06:58			07:48	07:45	08:34
	22:03			21:22	24	06:58 (2)	20:15			19:04	16:59	16:25
8	05:24			06:07		06:36 (2)	06:59			07:50	07:46	08:35
	22:02			21:20	23	06:59 (2)	20:12			19:01	16:57	16:24
9	05:25			06:09		06:38 (2)	07:01			07:52	07:48	08:37
	22:01			21:18	21	06:59 (2)	20:10			18:59	16:55	16:24
10	05:26			06:11		06:39 (2)	07:03			07:54	07:50	08:38
	22:01			21:16	19	06:58 (2)	20:08			18:57	16:54	16:24
11	05:27			06:12		06:41 (2)	07:04			07:55	07:52	08:39
	22:00			21:14	18	06:59 (2)	20:05			18:54	16:52	16:24
12	05:28			06:14		06:42 (2)	07:06			07:57	07:54	08:40
	21:59			21:12	16	06:58 (2)	20:03			18:52	16:51	16:23
13	05:29			06:16		06:44 (2)	07:08			07:59	07:56	08:41
	21:58			21:10	13	06:57 (2)	20:00			18:50	16:49	16:23
14	05:31			06:17		06:45 (2)	07:09			08:01	07:57	08:42
	21:57			21:08	11	06:56 (2)	19:58			18:48	16:47	16:23
15	05:32			06:19		06:47 (2)	07:11			08:03	07:59	08:43
	21:56			21:06	9	06:56 (2)	19:56			18:45	16:46	16:23
16	05:33			06:21		06:48 (2)	07:13			08:04	08:01	08:44
	21:55			21:04	6	06:54 (2)	19:53			18:43	16:44	16:23
17	05:34			06:22		06:50 (2)	07:14			08:06	08:03	08:45
	21:54			21:02	3	06:53 (2)	19:51			18:41	16:43	16:24
18	05:36			06:24			07:16			08:08	08:05	08:45
	21:53			21:00			19:49			18:39	16:42	16:24
19	05:37			06:26			07:18			08:10	08:06	08:46
	21:52			20:58			19:46			18:36	16:40	16:24
20	05:38			06:27			07:19			08:12	08:08	08:47
	21:50			20:55			19:44			18:34	16:39	16:24
21	05:40			06:29			07:21			08:13	08:10	08:47
	21:49			20:53			19:41			18:32	16:38	16:25
22	05:41			06:31			07:23			08:15	08:12	08:48
	21:48			20:51			19:39			18:30	16:37	16:25
23	05:42			06:32		07:08 (3)	07:24			08:17	08:13	08:48
	21:46			20:49	8	07:16 (3)	19:37			18:28	16:35	16:26
24	05:44			06:34		07:05 (3)	07:26			08:19	08:15	08:49
	21:45			20:47	13	07:18 (3)	19:34			18:26	16:34	16:26
25	05:45		06:23 (4)	06:36		07:04 (3)	07:28			07:21	08:17	08:49
	21:43	7	06:30 (4)	20:45	15	07:19 (3)	19:32			17:24	16:33	16:27
26	05:47		06:22 (4)	06:37		07:04 (3)	07:30			07:22	08:18	08:50
	21:42	11	06:33 (4)	20:42	16	07:20 (3)	19:29			17:22	16:32	16:28
27	05:48		06:20 (4)	06:39		07:06 (3)	07:31			07:24	08:20	08:50
	21:41	23	06:49 (2)	20:40	15	07:21 (3)	19:27			17:20	16:31	16:29
28	05:50		06:20 (4)	06:41		07:08 (3)	07:33			07:26	08:21	08:50
	21:39	28	06:51 (2)	20:38	13	07:21 (3)	19:25			17:18	16:30	16:29
29	05:51		06:21 (4)	06:42		07:09 (3)	07:35			07:28	08:23	08:50
	21:37	32	06:53 (2)	20:36	12	07:21 (3)	19:22			17:16	16:30	16:30
30	05:53		06:22 (4)	06:44		07:11 (3)	07:36			07:30	08:24	08:50
	21:36	32	06:54 (2)	20:33	10	07:21 (3)	19:20			17:14	16:29	16:31
31	05:54		06:24 (4)	06:46		07:12 (3)				07:32		08:50
	21:34	31	06:55 (2)	20:31	8	07:20 (3)				17:12		16:32
Potential sun hours	506			456			381			330	263	240
Total, worst case		183			444			9				
Sun reduction		0.26			0.30			0.28				
Oper. time red.		1.00			1.00			1.00				
Wind dir. red.		0.66			0.67			0.68				
Total reduction		0.18			0.20			0.19				
Total, real		32			88			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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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: AV - H48

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January	February	March	April		May		June	
1	08:50	08:22	07:27	07:15		06:08		05:22	
	16:33	17:23	18:16	20:11		21:04	22	06:55 (2)	1
2	08:50	08:20	07:25	07:12		06:06		05:21	
	16:35	17:24	18:18	20:13		21:06	23	06:54 (2)	2
3	08:50	08:19	07:23	07:10		06:04		05:20	
	16:36	17:26	18:19	20:15		21:07	25	06:55 (2)	4
4	08:50	08:17	07:20	07:08		06:02		05:19	
	16:37	17:28	18:21	20:17		21:09	26	06:54 (2)	5
5	08:49	08:15	07:18	07:05		06:01		05:18	
	16:38	17:30	18:23	20:18		21:11	28	06:54 (2)	6
6	08:49	08:14	07:16	07:03		05:59		05:18	
	16:39	17:32	18:25	20:20		21:13	29	06:53 (2)	7
7	08:49	08:12	07:13	07:01		05:57		05:17	
	16:41	17:34	18:27	20:22		21:14	30	06:53 (2)	7
8	08:48	08:10	07:11	06:58	07:22 (3)	05:55		05:17	
	16:42	17:36	18:29	20:24	3 07:25 (3)	21:16	31	06:52 (2)	8
9	08:48	08:08	07:09	06:56	07:19 (3)	05:53		05:16	
	16:43	17:38	18:30	20:26	5 07:24 (3)	21:18	31	06:50 (2)	9
10	08:47	08:06	07:07	06:54	07:17 (3)	05:51		05:16	
	16:45	17:40	18:32	20:27	8 07:25 (3)	21:19	32	06:50 (2)	10
11	08:46	08:05	07:04	06:52	07:15 (3)	05:50		05:15	
	16:46	17:42	18:34	20:29	10 07:25 (3)	21:21	32	06:48 (2)	10
12	08:46	08:03	07:02	06:49	07:13 (3)	05:48		05:15	
	16:48	17:44	18:36	20:31	12 07:25 (3)	21:23	30	06:46 (2)	11
13	08:45	08:01	07:00	06:47	07:10 (3)	05:46		05:14	
	16:49	17:46	18:38	20:33	13 07:23 (3)	21:24	25	06:44 (2)	11
14	08:44	07:59	06:57	06:45	07:08 (3)	05:45		05:14	
	16:51	17:47	18:40	20:34	15 07:23 (3)	21:26	14	06:27 (4)	12
15	08:43	07:57	06:55	06:42	07:06 (3)	05:43		05:14	
	16:52	17:49	18:41	20:36	16 07:22 (3)	21:27	12	06:26 (4)	12
16	08:42	07:55	06:53	06:40	07:04 (3)	05:41		05:14	
	16:54	17:51	18:43	20:38	17 07:21 (3)	21:29	9	06:24 (4)	12
17	08:42	07:53	06:50	06:38	07:06 (3)	05:40		05:14	
	16:56	17:53	18:45	20:40	13 07:19 (3)	21:31		22:05	12
18	08:41	07:51	06:48	06:36	07:07 (3)	05:38		05:14	
	16:57	17:55	18:47	20:41	9 07:16 (3)	21:32		22:05	13
19	08:40	07:49	06:46	06:34		05:37		05:14	
	16:59	17:57	18:48	20:43		21:34		22:05	13
20	08:38	07:47	06:43	06:31		05:36		05:14	
	17:01	17:59	18:50	20:45		21:35		22:06	13
21	08:37	07:44	06:41	06:29		05:34		05:14	
	17:02	18:01	18:52	20:47		21:37		22:06	13
22	08:36	07:42	06:38	06:27		05:33		05:14	
	17:04	18:03	18:54	20:48		21:38		22:06	13
23	08:35	07:40	06:36	06:25	06:49 (2)	05:31		05:14	
	17:06	18:05	18:56	20:50	3 06:52 (2)	21:40		22:06	13
24	08:34	07:38	06:34	06:23	06:47 (2)	05:30		05:15	
	17:08	18:06	18:57	20:52	6 06:53 (2)	21:41		22:06	13
25	08:32	07:36	06:31	06:21	06:45 (2)	05:29		05:15	
	17:10	18:08	18:59	20:54	9 06:54 (2)	21:42		22:06	13
26	08:31	07:34	06:29	06:19	06:43 (2)	05:28		05:15	
	17:11	18:10	19:01	20:55	11 06:54 (2)	21:44		22:06	12
27	08:30	07:31	06:27	06:16	06:41 (2)	05:27		05:16	
	17:13	18:12	19:03	20:57	14 06:55 (2)	21:45		22:06	12
28	08:28	07:29	06:24	06:14	06:39 (2)	05:25		05:16	
	17:15	18:14	19:04	20:59	16 06:55 (2)	21:46		22:06	12
29	08:27		07:22	06:12	06:37 (2)	05:24		05:17	
	17:17		20:06	21:01	18 06:55 (2)	21:48		22:06	11
30	08:25		07:19	06:10	06:35 (2)	05:23		05:18	
	17:19		20:08	21:02	20 06:55 (2)	21:49		22:06	11
31	08:24		07:17			05:22			
	17:21		20:10			21:50			
Potential sun hours	256	276	367	418		489		503	
Total, worst case				218		399		301	
Sun reduction				0.35		0.37		0.30	
Oper. time red.				1.00		1.00		1.00	
Wind dir. red.				0.68		0.67		0.63	
Total reduction				0.24		0.25		0.19	
Total, real				52		98		57	

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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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: AV - H48

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	July			August			September			October	November	December
1	05:18		05:50 (1)	05:56		06:25 (4)	06:47		07:14 (3)	07:38	07:34	08:26
	22:06	10	06:00 (1)	21:32	30	06:57 (2)	20:29	10	07:24 (3)	19:18	17:10	16:28
2	05:19		05:50 (1)	05:58		06:27 (4)	06:49		07:16 (3)	07:40	07:35	08:27
	22:05	10	06:00 (1)	21:31	32	06:59 (2)	20:26	7	07:23 (3)	19:15	17:08	16:27
3	05:20		05:51 (1)	05:59		06:28 (4)	06:51		07:17 (3)	07:42	07:37	08:29
	22:05	9	06:00 (1)	21:29	32	07:00 (2)	20:24	5	07:22 (3)	19:13	17:06	16:27
4	05:20		05:52 (1)	06:01		06:30 (4)	06:53		07:19 (3)	07:43	07:39	08:30
	22:04	9	06:01 (1)	21:27	31	07:01 (2)	20:22	3	07:22 (3)	19:11	17:04	16:26
5	05:21		05:53 (1)	06:02		06:31 (4)	06:54			07:45	07:41	08:32
	22:04	8	06:01 (1)	21:25	30	07:01 (2)	20:19			19:08	17:02	16:26
6	05:22		05:54 (1)	06:04		06:33 (4)	06:56			07:47	07:43	08:33
	22:03	7	06:01 (1)	21:24	29	07:02 (2)	20:17			19:06	17:01	16:25
7	05:23		05:54 (1)	06:06		06:34 (4)	06:58			07:48	07:45	08:34
	22:03	6	06:00 (1)	21:22	28	07:02 (2)	20:15			19:04	16:59	16:25
8	05:24		05:55 (1)	06:07		06:36 (2)	06:59			07:50	07:46	08:36
	22:02	5	06:00 (1)	21:20	27	07:03 (2)	20:12			19:01	16:57	16:24
9	05:25		05:56 (1)	06:09		06:38 (2)	07:01			07:52	07:48	08:37
	22:01	4	06:00 (1)	21:18	26	07:04 (2)	20:10			18:59	16:55	16:24
10	05:26		05:57 (1)	06:11		06:39 (2)	07:03			07:54	07:50	08:38
	22:01	3	06:00 (1)	21:16	24	07:03 (2)	20:08			18:57	16:54	16:24
11	05:27		05:58 (1)	06:12		06:41 (2)	07:04			07:55	07:52	08:39
	22:00	2	06:00 (1)	21:14	23	07:04 (2)	20:05			18:54	16:52	16:24
12	05:28			06:14		06:42 (2)	07:06			07:57	07:54	08:40
	21:59			21:12	21	07:03 (2)	20:03			18:52	16:51	16:23
13	05:29			06:16		06:44 (2)	07:08			07:59	07:56	08:41
	21:58			21:10	19	07:03 (2)	20:00			18:50	16:49	16:23
14	05:31			06:17		06:45 (2)	07:09			08:01	07:57	08:42
	21:57			21:08	17	07:02 (2)	19:58			18:48	16:47	16:23
15	05:32			06:19		06:47 (2)	07:11			08:03	07:59	08:43
	21:56			21:06	15	07:02 (2)	19:56			18:45	16:46	16:23
16	05:33			06:21		06:48 (2)	07:13			08:04	08:01	08:44
	21:55			21:04	13	07:01 (2)	19:53			18:43	16:44	16:23
17	05:34			06:22		06:50 (2)	07:14			08:06	08:03	08:45
	21:54			21:02	11	07:01 (2)	19:51			18:41	16:43	16:24
18	05:36			06:24		06:52 (2)	07:16			08:08	08:05	08:45
	21:53			21:00	8	07:00 (2)	19:49			18:39	16:42	16:24
19	05:37			06:26		06:53 (2)	07:18			08:10	08:06	08:46
	21:52			20:58	5	06:58 (2)	19:46			18:36	16:40	16:24
20	05:38			06:27		06:55 (2)	07:19			08:12	08:08	08:47
	21:50			20:55	2	06:57 (2)	19:44			18:34	16:39	16:24
21	05:40			06:29			07:21			08:13	08:10	08:47
	21:49			20:53			19:41			18:32	16:38	16:25
22	05:41			06:31			07:23			08:15	08:12	08:48
	21:48			20:51			19:39			18:30	16:37	16:25
23	05:42			06:32			07:24			08:17	08:13	08:48
	21:46			20:49			19:37			18:28	16:35	16:26
24	05:44			06:34			07:26			08:19	08:15	08:49
	21:45			20:47			19:34			18:26	16:34	16:26
25	05:45			06:36		07:10 (3)	07:28			07:21	08:17	08:49
	21:43			20:45	10	07:20 (3)	19:32			17:24	16:33	16:27
26	05:47			06:37		07:07 (3)	07:30			07:22	08:18	08:50
	21:42			20:42	14	07:21 (3)	19:29			17:22	16:32	16:28
27	05:48		06:28 (4)	06:39		07:06 (3)	07:31			07:24	08:20	08:50
	21:41	5	06:33 (4)	20:40	17	07:23 (3)	19:27			17:20	16:31	16:29
28	05:50		06:26 (4)	06:41		07:08 (3)	07:33			07:26	08:21	08:50
	21:39	10	06:36 (4)	20:38	16	07:24 (3)	19:25			17:18	16:30	16:29
29	05:51		06:24 (4)	06:42		07:09 (3)	07:35			07:28	08:23	08:50
	21:37	13	06:37 (4)	20:36	15	07:24 (3)	19:22			17:16	16:30	16:30
30	05:53		06:23 (4)	06:44		07:11 (3)	07:36			07:30	08:24	08:50
	21:36	21	06:52 (2)	20:33	13	07:24 (3)	19:20			17:14	16:29	16:31
31	05:54		06:24 (4)	06:46		07:12 (3)				07:32		08:50
	21:34	27	06:56 (2)	20:31	11	07:23 (3)				17:12		16:32
Potential sun hours	506			456			381			330	263	240
Total, worst case		149			519			25				
Sun reduction		0.26			0.30			0.28				
Oper. time red.		1.00			1.00			1.00				
Wind dir. red.		0.65			0.67			0.68				
Total reduction		0.17			0.20			0.19				
Total, real		26			103			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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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: AW - H49

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50 16:33	08:22 17:23	07:27 18:16	07:15 20:11	06:08 21:04	05:22 21:51	05:57 (4) 06:22 (2)	05:18 22:06	05:56 21:32	06:25 (2) 06:35 (2)	06:47 20:29	07:38 19:18	07:34 17:10	08:26 16:28
2	08:50 16:35	08:20 17:24	07:25 18:18	07:12 20:13	06:06 21:06	05:21 21:53	05:59 (4) 06:21 (2)	05:19 22:05	05:58 21:31	06:27 (2) 06:35 (2)	06:49 20:26	07:40 19:15	07:35 17:08	08:27 16:27
3	08:50 16:36	08:19 17:26	07:23 18:19	07:10 20:15	06:04 21:07	05:20 21:54	06:04 (2) 06:22 (2)	05:20 22:05	06:17 (2) 06:19 (2)	05:59 21:29	06:28 (2) 06:33 (2)	06:51 20:24	07:42 19:13	07:37 17:06	08:29 16:27
4	08:50 16:37	08:17 17:28	07:20 18:21	07:08 20:17	06:02 21:09	05:19 21:55	06:05 (2) 06:21 (2)	05:20 22:04	06:15 (2) 06:22 (2)	06:01 21:27	06:30 (2) 06:33 (2)	06:53 20:22	07:43 19:11	07:39 17:04	08:30 16:26
5	08:49 16:38	08:15 17:30	07:18 18:23	07:05 20:18	06:01 21:11	05:18 21:56	06:05 (2) 06:20 (2)	05:21 22:04	06:14 (2) 06:24 (2)	06:02 21:25	06:54 20:19	07:45 19:08	07:41 17:02	08:32 16:26
6	08:49 16:39	08:14 17:32	07:16 18:25	07:03 20:20	05:59 21:13	05:18 21:57	06:07 (2) 06:19 (2)	05:22 22:03	06:14 (2) 06:25 (2)	06:04 21:24	06:56 20:17	07:47 19:06	07:43 17:01	08:33 16:25
7	08:49 16:41	08:12 17:34	07:13 18:27	07:01 20:22	05:57 21:14	05:17 21:58	06:07 (2) 06:18 (2)	05:23 22:03	06:12 (2) 06:26 (2)	06:06 21:22	06:58 20:15	07:48 19:04	07:45 16:59	08:34 16:25
8	08:48 16:42	08:10 17:36	07:11 18:29	06:58 20:24	05:55 21:16	06:21 (2) 06:22 (2)	05:17 21:59	06:09 (2) 06:17 (2)	06:11 (2) 06:27 (2)	06:07 21:20	06:59 20:12	07:50 19:01	07:46 16:57	08:35 16:24
9	08:48 16:43	08:08 17:38	07:09 18:30	06:56 20:26	05:53 21:18	06:19 (2) 06:23 (2)	05:16 21:59	06:11 (2) 06:15 (2)	06:11 (2) 06:28 (2)	06:09 21:18	07:01 20:10	07:52 18:59	07:48 16:55	08:37 16:24
10	08:47 16:45	08:06 17:40	07:07 18:32	06:54 20:27	05:51 21:19	06:18 (2) 06:24 (2)	05:16 22:00	05:26 22:01	06:08 (4) 06:29 (2)	06:11 21:16	07:03 20:08	07:54 18:57	07:50 16:54	08:38 16:24
11	08:46 16:46	08:05 17:42	07:04 18:34	06:52 20:29	05:50 21:21	06:16 (2) 06:24 (2)	05:15 22:01	05:27 22:00	06:05 (4) 06:29 (2)	06:12 21:14	07:04 20:05	07:55 18:54	07:52 16:52	08:39 16:24
12	08:46 16:48	08:03 17:44	07:02 18:36	06:49 20:31	05:48 21:23	06:14 (2) 06:24 (2)	05:15 22:02	05:28 21:59	06:04 (4) 06:30 (2)	06:14 21:12	07:06 20:03	07:57 18:52	07:54 16:51	08:40 16:23
13	08:45 16:49	08:01 17:46	07:00 18:38	06:47 20:33	05:46 21:24	06:13 (2) 06:25 (2)	05:14 22:02	05:29 21:58	06:03 (4) 06:31 (2)	06:16 21:10	07:08 20:00	07:59 18:50	07:56 16:49	08:41 16:23
14	08:44 16:51	07:59 17:47	06:57 18:40	06:45 20:34	05:45 21:26	06:11 (2) 06:25 (2)	05:14 22:03	05:31 21:57	06:03 (4) 06:32 (2)	06:17 21:08	06:53 (3) 07:01 (3)	08:01 19:58	07:57 18:48	08:42 16:47	16:23
15	08:43 16:52	07:57 17:49	06:55 18:41	06:42 20:36	05:43 21:27	06:10 (2) 06:26 (2)	05:14 22:04	05:32 21:56	06:03 (4) 06:33 (2)	06:19 21:06	06:51 (3) 07:03 (3)	07:11 19:56	08:03 18:45	07:59 16:46	08:43 16:23
16	08:42 16:54	07:55 17:51	06:53 18:43	06:40 20:38	05:41 21:29	06:08 (2) 06:25 (2)	05:14 22:04	05:33 21:55	06:04 (4) 06:33 (2)	06:21 21:04	06:49 (3) 07:04 (3)	07:13 19:53	08:04 18:43	08:01 16:44	08:44 16:23
17	08:42 16:56	07:53 17:53	06:50 18:45	06:38 20:40	05:40 21:31	06:07 (2) 06:26 (2)	05:14 22:05	05:34 21:54	06:05 (4) 06:34 (2)	06:22 21:02	06:50 (3) 07:06 (3)	07:14 19:51	08:06 18:41	08:03 16:43	08:45 16:24
18	08:41 16:57	07:51 17:55	06:48 18:47	06:36 20:41	06:59 (3) 07:02 (3)	05:38 21:32	06:06 (2) 06:26 (2)	05:14 22:05	05:36 21:53	06:06 (4) 06:34 (2)	06:24 21:00	06:52 (3) 07:07 (3)	07:16 19:49	08:08 18:39	08:05 16:42	08:45 16:24
19	08:39 16:59	07:49 17:57	06:45 18:48	06:34 20:43	06:57 (3) 07:02 (3)	05:37 21:34	06:04 (2) 06:26 (2)	05:14 22:05	05:37 21:52	06:07 (2) 06:34 (2)	06:26 20:58	06:53 (3) 07:07 (3)	07:18 19:46	08:10 18:36	08:06 16:40	08:46 16:24
20	08:38 17:01	07:47 17:59	06:43 18:50	06:31 20:45	06:55 (3) 07:02 (3)	05:36 21:35	06:03 (2) 06:26 (2)	05:14 22:06	05:38 21:50	06:09 (2) 06:35 (2)	06:27 20:55	06:55 (3) 07:07 (3)	07:19 19:44	08:12 18:34	08:08 16:39	08:47 16:24
21	08:37 17:02	07:44 18:01	06:41 18:52	06:29 20:47	06:53 (3) 07:02 (3)	05:34 21:37	06:02 (2) 06:26 (2)	05:14 22:06	05:40 21:49	06:10 (2) 06:35 (2)	06:29 20:53	06:56 (3) 07:07 (3)	07:21 19:41	08:13 18:32	08:10 16:38	08:47 16:25
22	08:36 17:04	07:42 18:03	06:38 18:54	06:27 20:48	06:51 (3) 07:02 (3)	05:33 21:38	06:01 (2) 06:26 (2)	05:14 22:06	05:41 21:48	06:11 (2) 06:35 (2)	06:31 20:51	06:58 (3) 07:07 (3)	07:23 19:39	08:15 18:30	08:12 16:37	08:48 16:25
23	08:35 17:06	07:40 18:05	06:36 18:56	06:25 20:50	06:49 (3) 07:01 (3)	05:31 21:40	05:59 (2) 06:25 (2)	05:14 22:06	05:42 21:46	06:13 (2) 06:36 (2)	06:32 20:49	07:00 (3) 07:07 (3)	07:24 19:37	08:17 18:28	08:13 16:35	08:48 16:26
24	08:34 17:08	07:38 18:06	06:34 18:57	06:23 20:52	06:47 (3) 07:01 (3)	05:30 21:41	05:58 (2) 06:25 (2)	05:15 22:06	05:44 21:45	06:14 (2) 06:36 (2)	06:34 20:47	07:01 (3) 07:06 (3)	07:26 19:34	08:19 18:26	08:15 16:34	08:49 16:26
25	08:32 17:10	07:36 18:08	06:31 18:59	06:21 20:54	06:45 (3) 07:00 (3)	05:29 21:42	05:57 (2) 06:25 (2)	05:15 22:06	05:45 21:43	06:15 (2) 06:36 (2)	06:36 20:45	07:03 (3) 07:05 (3)	07:28 19:32	08:21 17:24	08:17 16:33	08:49 16:27
26	08:31 17:11	07:34 18:10	06:29 19:01	06:19 20:55	06:43 (3) 06:59 (3)	05:28 21:44	05:56 (4) 06:24 (2)	05:16 22:06	05:47 21:42	06:17 (2) 06:37 (2)	06:37 20:42		07:30 19:29	07:22 17:22	08:18 16:32	08:50 16:28
27	08:30 17:13	07:31 18:12	06:27 19:03	06:16 20:57	06:43 (3) 06:57 (3)	05:27 21:45	05:55 (4) 06:24 (2)	05:16 22:06	05:48 21:40	06:18 (2) 06:36 (2)	06:39 20:40		07:31 19:27	07:24 17:20	08:20 16:31	08:50 16:29
28	08:28 17:15	07:29 18:14	06:24 19:04	06:14 20:59	06:44 (3) 06:55 (3)	05:25 21:46	05:54 (4) 06:24 (2)	05:16 22:06	05:50 21:39	06:20 (2) 06:37 (2)	06:41 20:38		07:33 19:25	07:26 17:18	08:21 16:30	08:50 16:29
29	08:27 17:17		07:22 20:06	06:12 21:01	06:47 (3) 06:52 (3)	05:24 21:48	05:54 (4) 06:23 (2)	05:17 22:06	05:51 21:37	06:21 (2) 06:36 (2)	06:42 20:36		07:35 19:22	07:28 17:16	08:23 16:30	08:50 16:30
30	08:25 17:19		07:19 20:08	06:10 21:02		05:23 21:49	05:55 (4) 06:24 (2)	05:18 22:06	05:53 21:36	06:22 (2) 06:35 (2)	06:44 20:33		07:36 19:20	07:30 17:14	08:24 16:29	08:50 16:31
31	08:24 17:21		07:17 20:10			05:22 21:50	05:56 (4) 06:23 (2)		05:54 21:34	06:24 (2) 06:36 (2)	06:46 20:31			07:32 17:12		08:50 16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240
Total, worst case				122	474	131	584	152				
Sun reduction				0.35	0.37	0.30	0.26	0.30				
Oper. time red.				1.00	1.00	1.00	1.00	1.00				
Wind dir. red.				0.68	0.65	0.65	0.65	0.67				
Total reduction				0.24	0.24	0.19	0.17	0.20				
Total, real				29	114	25	101	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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IE-F91 RHH9 Sligo
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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: AX - H50

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:08	05:21	05:18	05:56	06:47	07:38	07:33	08:26
	16:33	17:22	18:16	20:11	21:04	21:51	22:05	21:32	20:29	19:17	17:10	16:28
2	08:50	08:20	07:25	07:12	06:06	05:21	05:19	05:58	06:49	07:40	07:35	08:27
	16:34	17:24	18:18	20:13	21:06	21:52	22:05	21:31	20:26	19:15	17:08	16:27
3	08:50	08:19	07:22	07:10	06:04	05:20	05:20	05:59	06:51	07:41	07:37	08:29
	16:36	17:26	18:19	20:15	21:07	21:53	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:02	05:19	05:20	06:01	06:52	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09	21:55	22:04	21:27	20:22	19:10	17:04	16:26
5	08:49	08:15	07:18	07:05	06:00	05:18	05:21	06:02	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:18	21:11	21:56	22:04	21:25	20:19	19:08	17:02	16:25
6	08:49	08:13	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:39	17:32	18:25	20:20	21:12	21:57	22:03	21:23	20:17	19:06	17:00	16:25
7	08:48	08:12	07:13	07:01	05:57	05:17	05:23	06:06	06:57	07:48	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:03	16:59	16:25
8	08:48	08:10	07:11	06:58	05:55	05:16	05:24	06:07	06:59	07:50	07:46	08:35
	16:42	17:36	18:29	20:24	21:16	21:58	22:02	21:20	20:12	19:01	16:57	16:24
9	08:47	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48	08:37
	16:43	17:38	18:30	20:25	21:18	21:59	22:01	21:18	20:10	18:59	16:55	16:24
10	08:47	08:06	07:06	06:54	05:51	05:15	05:26	06:11	07:02	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	22:00	21:16	20:07	18:57	16:54	16:24
11	08:46	08:04	07:04	06:51	05:50	05:15	05:27	06:12	07:04	07:55	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:54	16:52	16:23
12	08:46	08:02	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:22	22:02	21:59	21:12	20:03	18:52	16:50	16:23
13	08:45	08:01	06:59	06:47	05:46	05:14	05:29	06:15	07:07	07:59	07:56	08:41
	16:49	17:45	18:38	20:32	21:24	22:02	21:58	21:10	20:00	18:50	16:49	16:23
14	08:44	07:59	06:57	06:45	05:45	05:14	05:30	06:17	07:09	08:01	07:57	08:42
	16:51	17:47	18:39	20:34	21:26	22:03	21:57	21:08	19:58	18:47	16:47	16:23
15	08:43	07:57	06:55	06:42	05:43	05:14	05:32	06:19	07:11	08:02	07:59	08:43
	16:52	17:49	18:41	20:36	21:27	22:03	21:56	21:06	19:56	18:45	16:46	16:23
16	08:42	07:55	06:52	06:40	05:41	05:14	05:33	06:20	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:53	18:43	16:44	16:23
17	08:41	07:53	06:50	06:38	05:40	05:14	05:34	06:22	07:14	08:06	08:03	08:44
	16:56	17:53	18:45	20:39	21:30	22:04	21:54	21:02	19:51	18:41	16:43	16:24
18	08:40	07:51	06:48	06:36	05:38	05:14	05:35	06:24	07:16	08:08	08:04	08:45
	16:57	17:55	18:47	20:41	21:32	22:05	21:53	21:00	19:48	18:39	16:42	16:24
19	08:39	07:48	06:45	06:33	05:37	05:14	05:37	06:26	07:18	08:10	08:06	08:46
	16:59	17:57	18:48	20:43	21:34	22:05	21:51	20:57	19:46	18:36	16:40	16:24
20	08:38	07:46	06:43	06:31	05:35	05:14	05:38	06:27	07:19	08:11	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:55	19:44	18:34	16:39	16:24
21	08:37	07:44	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:13	08:10	08:47
	17:02	18:01	18:52	20:46	21:37	22:06	21:49	20:53	19:41	18:32	16:38	16:25
22	08:36	07:42	06:38	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:11	08:48
	17:04	18:03	18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:25
23	08:35	07:40	06:36	06:25	05:31	05:14	05:42	06:32	07:24	08:17	08:13	08:48
	17:06	18:04	18:55	20:50	21:39	22:06	21:46	20:49	19:36	18:28	16:35	16:26
24	08:33	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:06	18:57	20:52	21:41	22:06	21:45	20:47	19:34	18:26	16:34	16:26
25	08:32	07:36	06:31	06:21	05:29	05:15	05:45	06:36	07:28	07:20	08:16	08:49
	17:10	18:08	18:59	20:53	21:42	22:06	21:43	20:44	19:32	17:24	16:33	16:27
26	08:31	07:34	06:29	06:18	05:28	05:15	05:47	06:37	07:29	07:22	08:18	08:49
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27	08:29	07:31	06:26	06:16	05:27	05:16	05:48	06:39	07:31	07:24	08:20	08:50
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30	08:25		07:19	06:10	05:23	05:18	05:53	06:44	07:36	07:30	08:24	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	17:14	16:29	16:31
31	08:23		07:17		05:22		05:54	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240
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)

Licensed user:
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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: AY - H51

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January	February	March	April		May		June	
1	08:50	08:22	07:27	07:15		06:08		05:21	
	16:33	17:22	18:16	20:11		21:04		21:51	
2	08:50	08:20	07:25	07:12		06:06		05:21	
	16:34	17:24	18:18	20:13		21:06		21:53	
3	08:50	08:19	07:23	07:10		06:04		05:20	
	16:36	17:26	18:19	20:15		21:07		21:54	
4	08:50	08:17	07:20	07:08		06:02		05:19	
	16:37	17:28	18:21	20:17		21:09		21:55	
5	08:49	08:15	07:18	07:05		06:00		05:18	
	16:38	17:30	18:23	20:18		21:11		21:56	
6	08:49	08:14	07:16	07:03		05:59		05:18	
	16:39	17:32	18:25	20:20		21:13		21:57	
7	08:49	08:12	07:13	07:01		05:57		05:17	
	16:41	17:34	18:27	20:22		21:14		21:58	
8	08:48	08:10	07:11	06:58		05:55		05:16	
	16:42	17:36	18:29	20:24		21:16		21:59	
9	08:48	08:08	07:09	06:56		05:53		05:16	
	16:43	17:38	18:30	20:25		21:18		21:59	
10	08:47	08:06	07:07	06:54		05:51		05:15	
	16:45	17:40	18:32	20:27		21:19		22:00	
11	08:46	08:05	07:04	06:51	20:00 (12)	05:50		05:15	
	16:46	17:42	18:34	20:29	2 20:02 (12)	21:21		22:01	
12	08:46	08:03	07:02	06:49	19:59 (12)	05:48		05:15	
	16:48	17:44	18:36	20:31	5 20:04 (12)	21:23		22:02	
13	08:45	08:01	07:00	06:47	19:57 (12)	05:46	20:52 (14)	05:14	
	16:49	17:45	18:38	20:33	8 20:05 (12)	21:24	2 20:54 (14)	22:02	
14	08:44	07:59	06:57	06:45	19:57 (12)	05:45	20:51 (14)	05:14	
	16:51	17:47	18:39	20:34	10 20:07 (12)	21:26	4 20:55 (14)	22:03	
15	08:43	07:57	06:55	06:42	19:58 (12)	05:43	20:52 (14)	05:14	
	16:52	17:49	18:41	20:36	11 20:09 (12)	21:27	5 20:57 (14)	22:04	
16	08:43	07:55	06:53	06:40	19:58 (12)	05:41	20:51 (14)	05:14	
	16:54	17:51	18:43	20:38	10 20:08 (12)	21:29	7 20:58 (14)	22:04	
17	08:42	07:53	06:50	06:38	20:00 (12)	05:40	20:52 (14)	05:14	
	16:56	17:53	18:45	20:40	6 20:06 (12)	21:31	7 20:59 (14)	22:05	
18	08:41	07:51	06:48	06:36		05:38	20:53 (14)	05:14	
	16:57	17:55	18:47	20:41		21:32	7 21:00 (14)	22:05	
19	08:40	07:49	06:45	06:33		05:37	20:54 (14)	05:14	
	16:59	17:57	18:48	20:43		21:34	4 20:58 (14)	22:05	
20	08:38	07:47	06:43	06:31		05:35		05:14	
	17:01	17:59	18:50	20:45		21:35		22:06	
21	08:37	07:44	06:41	06:29		05:34		05:14	
	17:02	18:01	18:52	20:47		21:37		22:06	
22	08:36	07:42	06:38	06:27		05:33		05:14	
	17:04	18:03	18:54	20:48		21:38		22:06	
23	08:35	07:40	06:36	06:25	20:20 (13)	05:31		05:14	
	17:06	18:04	18:56	20:50	2 20:22 (13)	21:40		22:06	
24	08:34	07:38	06:34	06:23	20:19 (13)	05:30		05:15	
	17:08	18:06	18:57	20:52	5 20:24 (13)	21:41		22:06	
25	08:32	07:36	06:31	06:21	20:19 (13)	05:29		05:15	
	17:09	18:08	18:59	20:54	6 20:25 (13)	21:42		22:07	
26	08:31	07:34	06:29	06:18	20:19 (13)	05:28		05:15	
	17:11	18:10	19:01	20:55	8 20:27 (13)	21:44		22:07	
27	08:30	07:31	06:27	06:16	20:20 (13)	05:26		05:16	
	17:13	18:12	19:03	20:57	7 20:27 (13)	21:45		22:06	
28	08:28	07:29	06:24	06:14		05:25		05:16	
	17:15	18:14	19:04	20:59		21:46		22:06	
29	08:27		07:22	06:12		05:24		05:17	
	17:17		20:06	21:01		21:48		22:06	
30	08:25		07:19	06:10		05:23		05:17	
	17:19		20:08	21:02		21:49		22:06	
31	08:24		07:17			05:22			
	17:21		20:10			21:50			
Potential sun hours	255	276	367	418		489		503	
Total, worst case				80		36			
Sun reduction				0.35		0.37			
Oper. time red.				1.00		1.00			
Wind dir. red.				0.69		0.68			
Total reduction				0.24		0.25			
Total, real				19		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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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: AY - H51

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	July		August		September		October	November	December
1	05:18		05:56		06:47	19:59 (12)	07:38	07:34	08:26
	22:06		21:32		20:29	2 20:01 (12)	19:18	17:10	16:28
2	05:19		05:57		06:49		07:40	07:35	08:27
	22:05		21:31		20:26		19:15	17:08	16:27
3	05:20		05:59		06:51		07:41	07:37	08:29
	22:05		21:29		20:24		19:13	17:06	16:27
4	05:20		06:01		06:52		07:43	07:39	08:30
	22:04		21:27		20:22		19:10	17:04	16:26
5	05:21		06:02		06:54		07:45	07:41	08:32
	22:04		21:25		20:19		19:08	17:02	16:25
6	05:22		06:04		06:56		07:47	07:43	08:33
	22:03		21:24		20:17		19:06	17:00	16:25
7	05:23		06:06		06:57		07:48	07:45	08:34
	22:03		21:22		20:15		19:03	16:59	16:24
8	05:24		06:07		06:59		07:50	07:46	08:36
	22:02		21:20		20:12		19:01	16:57	16:24
9	05:25		06:09		07:01		07:52	07:48	08:37
	22:01		21:18		20:10		18:59	16:55	16:24
10	05:26		06:10		07:03		07:54	07:50	08:38
	22:01		21:16		20:08		18:57	16:54	16:24
11	05:27		06:12		07:04		07:55	07:52	08:39
	22:00		21:14		20:05		18:54	16:52	16:23
12	05:28		06:14		07:06		07:57	07:54	08:40
	21:59		21:12		20:03		18:52	16:50	16:23
13	05:29		06:15		07:08		07:59	07:56	08:41
	21:58		21:10		20:00		18:50	16:49	16:23
14	05:30		06:17		07:09		08:01	07:57	08:42
	21:57		21:08		19:58		18:47	16:47	16:23
15	05:32		06:19	20:29 (13)	07:11		08:03	07:59	08:43
	21:56		21:06	3 20:32 (13)	19:56		18:45	16:46	16:23
16	05:33		06:20	20:27 (13)	07:13		08:04	08:01	08:44
	21:55		21:04	7 20:34 (13)	19:53		18:43	16:44	16:23
17	05:34		06:22	20:26 (13)	07:14		08:06	08:03	08:45
	21:54		21:02	7 20:33 (13)	19:51		18:41	16:43	16:23
18	05:35		06:24	20:26 (13)	07:16		08:08	08:05	08:45
	21:53		21:00	6 20:32 (13)	19:49		18:39	16:42	16:24
19	05:37		06:26	20:25 (13)	07:18		08:10	08:06	08:46
	21:52		20:58	4 20:29 (13)	19:46		18:36	16:40	16:24
20	05:38		06:27	20:25 (13)	07:19		08:11	08:08	08:47
	21:50		20:55	2 20:27 (13)	19:44		18:34	16:39	16:24
21	05:39		06:29		07:21		08:13	08:10	08:47
	21:49		20:53		19:41		18:32	16:38	16:25
22	05:41		06:31		07:23		08:15	08:12	08:48
	21:48		20:51		19:39		18:30	16:37	16:25
23	05:42		06:32		07:24		08:17	08:13	08:48
	21:46		20:49		19:37		18:28	16:35	16:26
24	05:44	21:06 (14)	06:34		07:26		08:19	08:15	08:49
	21:45	2 21:08 (14)	20:47		19:34		18:26	16:34	16:26
25	05:45	21:03 (14)	06:36		07:28		07:21	08:17	08:49
	21:44	6 21:09 (14)	20:45		19:32		17:24	16:33	16:27
26	05:47	21:03 (14)	06:37	20:01 (12)	07:29		07:22	08:18	08:50
	21:42	8 21:11 (14)	20:42	7 20:08 (12)	19:29		17:22	16:32	16:28
27	05:48	21:02 (14)	06:39	20:00 (12)	07:31		07:24	08:20	08:50
	21:41	7 21:09 (14)	20:40	10 20:10 (12)	19:27		17:20	16:31	16:28
28	05:50	21:01 (14)	06:41	19:58 (12)	07:33		07:26	08:21	08:50
	21:39	6 21:07 (14)	20:38	12 20:10 (12)	19:25		17:18	16:30	16:29
29	05:51	21:02 (14)	06:42	19:58 (12)	07:35		07:28	08:23	08:50
	21:37	5 21:07 (14)	20:36	10 20:08 (12)	19:22		17:16	16:29	16:30
30	05:53	21:02 (14)	06:44	19:58 (12)	07:36		07:30	08:25	08:50
	21:36	3 21:05 (14)	20:33	8 20:06 (12)	19:20		17:14	16:29	16:31
31	05:54	21:02 (14)	06:46	19:58 (12)			07:32		08:50
	21:34	2 21:04 (14)	20:31	5 20:03 (12)			17:12		16:32
Potential sun hours	506		456		381		330	263	240
Total, worst case		39		81		2			
Sun reduction		0.26		0.30		0.28			
Oper. time red.		1.00		1.00		1.00			
Wind dir. red.		0.68		0.69		0.68			
Total reduction		0.18		0.20		0.19			
Total, real		7		16		0			

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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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: AZ - H52

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:08	05:21	05:18	05:56	06:47	07:38	07:33	08:26
	16:33	17:23	18:16	20:11	21:04	21:51	22:05	21:32	20:29	19:17	17:10	16:28
2	08:50	08:20	07:25	07:12	06:06	05:21	05:19	05:58	06:49	07:40	07:35	08:27
	16:34	17:24	18:18	20:13	21:06	21:52	22:05	21:31	20:26	19:15	17:08	16:27
3	08:50	08:19	07:22	07:10	06:04	05:20	05:20	05:59	06:51	07:41	07:37	08:29
	16:36	17:26	18:19	20:15	21:07	21:53	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:02	05:19	05:20	06:01	06:52	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09	21:55	22:04	21:27	20:22	19:10	17:04	16:26
5	08:49	08:15	07:18	07:05	06:01	05:18	05:21	06:02	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:18	21:11	21:56	22:04	21:25	20:19	19:08	17:02	16:25
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:39	17:32	18:25	20:20	21:12	21:57	22:03	21:23	20:17	19:06	17:01	16:25
7	08:48	08:12	07:13	07:01	05:57	05:17	05:23	06:06	06:57	07:48	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:03	16:59	16:25
8	08:48	08:10	07:11	06:58	05:55	05:16	05:24	06:07	06:59	07:50	07:46	08:35
	16:42	17:36	18:29	20:24	21:16	21:58	22:02	21:20	20:12	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48	08:37
	16:43	17:38	18:30	20:25	21:18	21:59	22:01	21:18	20:10	18:59	16:55	16:24
10	08:47	08:06	07:06	06:54	05:51	05:15	05:26	06:11	07:02	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	22:00	21:16	20:08	18:57	16:54	16:24
11	08:46	08:04	07:04	06:51	05:50	05:15	05:27	06:12	07:04	07:55	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:54	16:52	16:23
12	08:46	08:02	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:22	22:02	21:59	21:12	20:03	18:52	16:50	16:23
13	08:45	08:01	07:00	06:47	05:46	05:14	05:29	06:16	07:08	07:59	07:56	08:41
	16:49	17:45	18:38	20:32	21:24	22:02	21:58	21:10	20:00	18:50	16:49	16:23
14	08:44	07:59	06:57	06:45	05:45	05:14	05:31	06:17	07:09	08:01	07:57	08:42
	16:51	17:47	18:39	20:34	21:26	22:03	21:57	21:08	19:58	18:47	16:47	16:23
15	08:43	07:57	06:55	06:42	05:43	05:14	05:32	06:19	07:11	08:02	07:59	08:43
	16:52	17:49	18:41	20:36	21:27	22:03	21:56	21:06	19:56	18:45	16:46	16:23
16	08:42	07:55	06:52	06:40	05:41	05:14	05:33	06:21	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:53	18:43	16:44	16:23
17	08:41	07:53	06:50	06:38	05:40	05:14	05:34	06:22	07:14	08:06	08:03	08:44
	16:56	17:53	18:45	20:39	21:30	22:04	21:54	21:02	19:51	18:41	16:43	16:24
18	08:40	07:51	06:48	06:36	05:38	05:14	05:36	06:24	07:16	08:08	08:04	08:45
	16:57	17:55	18:47	20:41	21:32	22:05	21:53	21:00	19:48	18:39	16:42	16:24
19	08:39	07:49	06:45	06:33	05:37	05:14	05:37	06:26	07:18	08:10	08:06	08:46
	16:59	17:57	18:48	20:43	21:34	22:05	21:51	20:57	19:46	18:36	16:40	16:24
20	08:38	07:46	06:43	06:31	05:35	05:14	05:38	06:27	07:19	08:11	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:55	19:44	18:34	16:39	16:24
21	08:37	07:44	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:13	08:10	08:47
	17:02	18:01	18:52	20:46	21:37	22:06	21:49	20:53	19:41	18:32	16:38	16:25
22	08:36	07:42	06:38	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:11	08:48
	17:04	18:03	18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:25
23	08:35	07:40	06:36	06:25	05:31	05:14	05:42	06:32	07:24	08:17	08:13	08:48
	17:06	18:04	18:55	20:50	21:39	22:06	21:46	20:49	19:37	18:28	16:35	16:26
24	08:33	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:06	18:57	20:52	21:41	22:06	21:45	20:47	19:34	18:26	16:34	16:26
25	08:32	07:36	06:31	06:21	05:29	05:15	05:45	06:36	07:28	07:21	08:16	08:49
	17:10	18:08	18:59	20:53	21:42	22:06	21:43	20:44	19:32	17:24	16:33	16:27
26	08:31	07:34	06:29	06:18	05:28	05:15	05:47	06:37	07:29	07:22	08:18	08:49
	17:11	18:10	19:01	20:55	21:44	22:06	21:42	20:42	19:29	17:22	16:32	16:28
27	08:29	07:31	06:26	06:16	05:27	05:16	05:48	06:39	07:31	07:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	22:06	21:40	20:40	19:27	17:20	16:31	16:29
28	08:28	07:29	06:24	06:14	05:25	05:16	05:50	06:41	07:33	07:26	08:21	08:50
	17:15	18:14	19:04	20:59	21:46	22:06	21:39	20:38	19:25	17:18	16:30	16:29
29	08:27		07:22	06:12	05:24	05:17	05:51	06:42	07:35	07:28	08:23	08:50
	17:17		20:06	21:00	21:48	22:06	21:37	20:35	19:22	17:16	16:30	16:30
30	08:25		07:19	06:10	05:23	05:18	05:53	06:44	07:36	07:30	08:24	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	17:14	16:29	16:31
31	08:23		07:17		05:22		05:54	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240
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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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: BA - H53

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:08	05:21	05:18	05:56	06:47	07:38	07:33	08:26
	16:33	17:23	18:16	20:11	21:04	21:51	22:05	21:32	20:29	19:18	17:10	16:28
2	08:50	08:20	07:25	07:12	06:06	05:21	05:19	05:58	06:49	07:40	07:35	08:27
	16:35	17:24	18:18	20:13	21:06	21:52	22:05	21:31	20:26	19:15	17:08	16:27
3	08:50	08:19	07:22	07:10	06:04	05:20	05:20	05:59	06:51	07:41	07:37	08:29
	16:36	17:26	18:19	20:15	21:07	21:53	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:02	05:19	05:20	06:01	06:52	07:43	07:39	08:30
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	17:02	18:01	18:52	20:46	21:37	22:06	21:49	20:53	19:41	18:32	16:38	16:25
22	08:36	07:42	06:38	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:11	08:48
	17:04	18:03	18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:25
23	08:35	07:40	06:36	06:25	05:31	05:14	05:42	06:32	07:24	08:17	08:13	08:48
	17:06	18:04	18:55	20:50	21:39	22:06	21:46	20:49	19:37	18:28	16:35	16:26
24	08:33	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
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25	08:32	07:36	06:31	06:21	05:29	05:15	05:45	06:36	07:28	07:21	08:16	08:49
	17:10	18:08	18:59	20:53	21:42	22:06	21:43	20:44	19:32	17:24	16:33	16:27
26	08:31	07:34	06:29	06:18	05:28	05:15	05:47	06:37	07:29	07:22	08:18	08:49
	17:11	18:10	19:01	20:55	21:44	22:06	21:42	20:42	19:29	17:22	16:32	16:28
27	08:29	07:31	06:26	06:16	05:27	05:16	05:48	06:39	07:31	07:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	22:06	21:40	20:40	19:27	17:20	16:31	16:29
28	08:28	07:29	06:24	06:14	05:25	05:16	05:50	06:41	07:33	07:26	08:21	08:50
	17:15	18:14	19:04	20:59	21:46	22:06	21:39	20:38	19:25	17:18	16:30	16:29
29	08:27		07:22	06:12	05:24	05:17	05:51	06:42	07:35	07:28	08:23	08:50
	17:17		20:06	21:00	21:48	22:06	21:37	20:35	19:22	17:16	16:30	16:30
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	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	17:14	16:29	16:31
31	08:23		07:17		05:22		05:54	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240
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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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: BB - H54

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:08	05:22	05:18	05:56	06:47	07:38	07:33	08:26
	16:33	17:23	18:16	20:11	21:04	21:51	22:05	21:32	20:29	19:18	17:10	16:28
2	08:50	08:20	07:25	07:12	06:06	05:21	05:19	05:58	06:49	07:40	07:35	08:27
	16:35	17:24	18:18	20:13	21:06	21:52	22:05	21:31	20:26	19:15	17:08	16:27
3	08:50	08:19	07:22	07:10	06:04	05:20	05:20	05:59	06:51	07:41	07:37	08:29
	16:36	17:26	18:19	20:15	21:07	21:53	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:02	05:19	05:20	06:01	06:52	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09	21:55	22:04	21:27	20:22	19:10	17:04	16:26
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	16:38	17:30	18:23	20:18	21:11	21:56	22:04	21:25	20:19	19:08	17:02	16:25
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:39	17:32	18:25	20:20	21:12	21:57	22:03	21:23	20:17	19:06	17:01	16:25
7	08:48	08:12	07:13	07:01	05:57	05:17	05:23	06:06	06:57	07:48	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:03	16:59	16:25
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9	08:48	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48	08:37
	16:43	17:38	18:30	20:25	21:18	21:59	22:01	21:18	20:10	18:59	16:55	16:24
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	16:52	17:49	18:41	20:36	21:27	22:03	21:56	21:06	19:56	18:45	16:46	16:23
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	16:56	17:53	18:45	20:39	21:30	22:04	21:54	21:02	19:51	18:41	16:43	16:24
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	16:59	17:57	18:48	20:43	21:34	22:05	21:51	20:57	19:46	18:36	16:40	16:24
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	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:55	19:44	18:34	16:39	16:24
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	17:17		20:06	21:00	21:48	22:06	21:37	20:35	19:22	17:16	16:30	16:30
30	08:25		07:19	06:10	05:23	05:18	05:53	06:44	07:36	07:30	08:24	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	17:14	16:29	16:31
31	08:23		07:17		05:22		05:54	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240
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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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: BC - H55

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January	February	March	April		May		June	
1	08:50	08:22	07:27	07:15		06:08		05:21	
	16:33	17:22	18:16	20:11		21:04		21:51	
2	08:50	08:20	07:25	07:12		06:06		05:21	
	16:34	17:24	18:18	20:13		21:06		21:53	
3	08:50	08:19	07:23	07:10		06:04		05:20	
	16:36	17:26	18:19	20:15		21:07		21:54	
4	08:50	08:17	07:20	07:08		06:02		05:19	
	16:37	17:28	18:21	20:17		21:09		21:55	
5	08:49	08:15	07:18	07:05		06:00		05:18	
	16:38	17:30	18:23	20:18		21:11		21:56	
6	08:49	08:14	07:16	07:03		05:59		05:18	
	16:39	17:32	18:25	20:20		21:13		21:57	
7	08:49	08:12	07:13	07:01		05:57		05:17	
	16:40	17:34	18:27	20:22		21:14		21:58	
8	08:48	08:10	07:11	06:58		05:55		05:16	
	16:42	17:36	18:29	20:24	2	19:58 (12)	21:16		21:59
9	08:48	08:08	07:09	06:56		19:54 (12)	05:53		05:16
	16:43	17:38	18:30	20:25	4	19:58 (12)	21:18		21:59
10	08:47	08:06	07:07	06:54		19:53 (12)	05:51	20:47 (14)	05:15
	16:45	17:40	18:32	20:27	7	20:00 (12)	21:19	2 20:49 (14)	22:00
11	08:46	08:05	07:04	06:51		19:53 (12)	05:50	20:47 (14)	05:15
	16:46	17:42	18:34	20:29	9	20:02 (12)	21:21	4 20:51 (14)	22:01
12	08:46	08:03	07:02	06:49		19:53 (12)	05:48	20:46 (14)	05:15
	16:48	17:44	18:36	20:31	11	20:04 (12)	21:23	6 20:52 (14)	22:02
13	08:45	08:01	07:00	06:47		19:53 (12)	05:46	20:47 (14)	05:14
	16:49	17:45	18:38	20:33	10	20:03 (12)	21:24	7 20:54 (14)	22:02
14	08:44	07:59	06:57	06:45		19:54 (12)	05:45	20:47 (14)	05:14
	16:51	17:47	18:39	20:34	8	20:02 (12)	21:26	8 20:55 (14)	22:03
15	08:43	07:57	06:55	06:42			05:43	20:48 (14)	05:14
	16:52	17:49	18:41	20:36			21:27	7 20:55 (14)	22:04
16	08:43	07:55	06:53	06:40			05:41	20:49 (14)	05:14
	16:54	17:51	18:43	20:38			21:29	4 20:53 (14)	22:04
17	08:42	07:53	06:50	06:38			05:40		05:14
	16:56	17:53	18:45	20:40			21:31		22:05
18	08:41	07:51	06:48	06:36			05:38		05:14
	16:57	17:55	18:47	20:41			21:32		22:05
19	08:40	07:49	06:45	06:33			05:37		05:14
	16:59	17:57	18:48	20:43			21:34		22:05
20	08:38	07:47	06:43	06:31		20:16 (13)	05:35		05:14
	17:01	17:59	18:50	20:45	1	20:17 (13)	21:35		22:06
21	08:37	07:44	06:41	06:29		20:15 (13)	05:34		05:14
	17:02	18:01	18:52	20:47	4	20:19 (13)	21:37		22:06
22	08:36	07:42	06:38	06:27		20:15 (13)	05:33		05:14
	17:04	18:03	18:54	20:48	5	20:20 (13)	21:38		22:06
23	08:35	07:40	06:36	06:25		20:15 (13)	05:31		05:14
	17:06	18:04	18:56	20:50	7	20:22 (13)	21:40		22:06
24	08:34	07:38	06:34	06:23		20:16 (13)	05:30		05:15
	17:08	18:06	18:57	20:52	7	20:23 (13)	21:41		22:06
25	08:32	07:36	06:31	06:21		20:17 (13)	05:29		05:15
	17:09	18:08	18:59	20:54	5	20:22 (13)	21:42		22:07
26	08:31	07:34	06:29	06:18			05:28		05:15
	17:11	18:10	19:01	20:55			21:44		22:07
27	08:30	07:31	06:27	06:16			05:26		05:16
	17:13	18:12	19:03	20:57			21:45		22:06
28	08:28	07:29	06:24	06:14			05:25		05:16
	17:15	18:14	19:04	20:59			21:46		22:06
29	08:27		07:22	06:12			05:24		05:17
	17:17		20:06	21:01			21:48		22:06
30	08:25		07:19	06:10			05:23		05:17
	17:19		20:08	21:02			21:49		22:06
31	08:24		07:17				05:22		
	17:21		20:10				21:50		
Potential sun hours	255	276	367	418		489		503	
Total, worst case					80		38		
Sun reduction					0.35		0.37		
Oper. time red.					1.00		1.00		
Wind dir. red.					0.69		0.68		
Total reduction					0.24		0.25		
Total, real					19		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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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: BC - H55

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	July			August			September			October	November	December
1	05:18			05:56		20:57 (14)	06:47		19:52 (12)	07:38	07:34	08:26
	22:06			21:32	5	21:02 (14)	20:29	9	20:01 (12)	19:18	17:10	16:28
2	05:19			05:57		20:57 (14)	06:49		19:51 (12)	07:40	07:35	08:27
	22:05			21:31	4	21:01 (14)	20:26	7	19:58 (12)	19:15	17:08	16:27
3	05:20			05:59		20:57 (14)	06:51		19:52 (12)	07:41	07:37	08:29
	22:05			21:29	1	20:58 (14)	20:24	5	19:57 (12)	19:13	17:06	16:27
4	05:20			06:01			06:52		19:53 (12)	07:43	07:39	08:30
	22:04			21:27			20:22	2	19:55 (12)	19:10	17:04	16:26
5	05:21			06:02			06:54			07:45	07:41	08:32
	22:04			21:25			20:19			19:08	17:02	16:25
6	05:22			06:04			06:56			07:47	07:43	08:33
	22:03			21:24			20:17			19:06	17:00	16:25
7	05:23			06:06			06:57			07:48	07:45	08:34
	22:03			21:22			20:15			19:03	16:59	16:24
8	05:24			06:07			06:59			07:50	07:46	08:36
	22:02			21:20			20:12			19:01	16:57	16:24
9	05:25			06:09			07:01			07:52	07:48	08:37
	22:01			21:18			20:10			18:59	16:55	16:24
10	05:26			06:10			07:03			07:54	07:50	08:38
	22:01			21:16			20:08			18:57	16:54	16:24
11	05:27			06:12			07:04			07:55	07:52	08:39
	22:00			21:14			20:05			18:54	16:52	16:23
12	05:28			06:14			07:06			07:57	07:54	08:40
	21:59			21:12			20:03			18:52	16:50	16:23
13	05:29			06:15			07:08			07:59	07:56	08:41
	21:58			21:10			20:00			18:50	16:49	16:23
14	05:30			06:17			07:09			08:01	07:57	08:42
	21:57			21:08			19:58			18:47	16:47	16:23
15	05:32			06:19			07:11			08:03	07:59	08:43
	21:56			21:06			19:56			18:45	16:46	16:23
16	05:33			06:20			07:13			08:04	08:01	08:44
	21:55			21:04			19:53			18:43	16:44	16:23
17	05:34			06:22			07:14			08:06	08:03	08:45
	21:54			21:02			19:51			18:41	16:43	16:23
18	05:35			06:24		20:23 (13)	07:16			08:08	08:05	08:45
	21:53			21:00	6	20:29 (13)	19:49			18:39	16:42	16:24
19	05:37			06:26		20:21 (13)	07:18			08:10	08:06	08:46
	21:52			20:58	8	20:29 (13)	19:46			18:36	16:40	16:24
20	05:38			06:27		20:21 (13)	07:19			08:11	08:08	08:47
	21:50			20:55	6	20:27 (13)	19:44			18:34	16:39	16:24
21	05:39			06:29		20:20 (13)	07:21			08:13	08:10	08:47
	21:49			20:53	5	20:25 (13)	19:41			18:32	16:38	16:25
22	05:41			06:31		20:20 (13)	07:23			08:15	08:12	08:48
	21:48			20:51	3	20:23 (13)	19:39			18:30	16:37	16:25
23	05:42			06:32			07:24			08:17	08:13	08:48
	21:46			20:49			19:37			18:28	16:35	16:26
24	05:44			06:34			07:26			08:19	08:15	08:49
	21:45			20:47			19:34			18:26	16:34	16:26
25	05:45			06:36			07:28			07:21	08:17	08:49
	21:44			20:45			19:32			17:24	16:33	16:27
26	05:47			06:37			07:29			07:22	08:18	08:50
	21:42			20:42			19:29			17:22	16:32	16:28
27	05:48			06:39			07:31			07:24	08:20	08:50
	21:41			20:40			19:27			17:20	16:31	16:28
28	05:50		20:59 (14)	06:41		19:58 (12)	07:33			07:26	08:21	08:50
	21:39	5	21:04 (14)	20:38	1	19:59 (12)	19:25			17:18	16:30	16:29
29	05:51		20:58 (14)	06:42		19:55 (12)	07:35			07:28	08:23	08:50
	21:37	8	21:06 (14)	20:36	8	20:03 (12)	19:22			17:16	16:29	16:30
30	05:53		20:57 (14)	06:44		19:54 (12)	07:36			07:30	08:25	08:50
	21:36	8	21:05 (14)	20:33	10	20:04 (12)	19:20			17:14	16:29	16:31
31	05:54		20:57 (14)	06:46		19:52 (12)				07:32		08:50
	21:34	7	21:04 (14)	20:31	11	20:03 (12)				17:12		16:32
Potential sun hours	506			456			381			330	263	240
Total, worst case		28			68			23				
Sun reduction		0.26			0.30			0.28				
Oper. time red.		1.00			1.00			1.00				
Wind dir. red.		0.68			0.69			0.69				
Total reduction		0.18			0.20			0.19				
Total, real		5			14			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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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: BD - H56

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January		February		March		April			May			June		
1	08:50		08:22		07:27		07:15			06:08		06:33 (4)	05:22		05:51 (1)
	16:33		17:23		18:16		20:11			21:04	20	07:02 (2)	21:51	21	06:12 (1)
2	08:50		08:20		07:25		07:12		07:35 (3)	06:06		06:31 (4)	05:21		05:50 (1)
	16:35		17:24		18:18		20:13	2	07:37 (3)	21:06	12	06:43 (4)	21:53	22	06:12 (1)
3	08:50		08:19		07:23		07:10		07:33 (3)	06:04		06:30 (4)	05:20		05:50 (1)
	16:36		17:26		18:19		20:15	4	07:37 (3)	21:07	14	06:44 (4)	21:54	22	06:12 (1)
4	08:50		08:17		07:20		07:08		07:31 (3)	06:02		06:28 (4)	05:19		05:49 (1)
	16:37		17:28		18:21		20:17	7	07:38 (3)	21:09	15	06:43 (4)	21:55	23	06:12 (1)
5	08:49		08:15		07:18		07:05		07:29 (3)	06:01		06:27 (4)	05:18		05:49 (1)
	16:38		17:30		18:23		20:18	9	07:38 (3)	21:11	14	06:41 (4)	21:56	22	06:11 (1)
6	08:49		08:14		07:16		07:03		07:26 (3)	05:59		06:28 (4)	05:18		05:50 (1)
	16:39		17:32		18:25		20:20	11	07:37 (3)	21:13	12	06:40 (4)	21:57	22	06:12 (1)
7	08:49		08:12		07:14		07:01		07:24 (3)	05:57		06:30 (4)	05:17		05:50 (1)
	16:41		17:34		18:27		20:22	13	07:37 (3)	21:14	8	06:38 (4)	21:58	21	06:11 (1)
8	08:48		08:10		07:11		06:58		07:22 (3)	05:55			05:17		05:51 (1)
	16:42		17:36		18:29		20:24	14	07:36 (3)	21:16			21:59	20	06:11 (1)
9	08:48		08:08		07:09		06:56		07:19 (3)	05:53			05:16		05:50 (1)
	16:43		17:38		18:30		20:26	15	07:34 (3)	21:18			21:59	21	06:11 (1)
10	08:47		08:06		07:07		06:54		07:18 (3)	05:51			05:16		05:51 (1)
	16:45		17:40		18:32		20:27	15	07:33 (3)	21:19			22:00	20	06:11 (1)
11	08:46		08:05		07:04		06:52		07:20 (3)	05:50			05:15		05:52 (1)
	16:46		17:42		18:34		20:29	11	07:31 (3)	21:21			22:01	19	06:11 (1)
12	08:46		08:03		07:02		06:49		07:24 (3)	05:48			05:15		05:52 (1)
	16:48		17:44		18:36		20:31	3	07:27 (3)	21:23			22:02	18	06:10 (1)
13	08:45		08:01		07:00		06:47			05:46			05:14		05:52 (1)
	16:49		17:46		18:38		20:33			21:24			22:02	19	06:11 (1)
14	08:44		07:59		06:57		06:45		07:08 (2)	05:45			05:14		05:53 (1)
	16:51		17:47		18:40		20:34	3	07:11 (2)	21:26			22:03	18	06:11 (1)
15	08:43		07:57		06:55		06:42		07:06 (2)	05:43			05:14		05:53 (1)
	16:52		17:49		18:41		20:36	6	07:12 (2)	21:27			22:04	18	06:11 (1)
16	08:42		07:55		06:53		06:40		07:04 (2)	05:41			05:14		05:54 (1)
	16:54		17:51		18:43		20:38	9	07:13 (2)	21:29			22:04	17	06:11 (1)
17	08:42		07:53		06:50		06:38		07:02 (2)	05:40		06:07 (1)	05:14		05:54 (1)
	16:56		17:53		18:45		20:40	12	07:14 (2)	21:31	1	06:08 (1)	22:05	17	06:11 (1)
18	08:41		07:51		06:48		06:36		06:59 (2)	05:38		06:06 (1)	05:14		05:55 (1)
	16:57		17:55		18:47		20:41	14	07:13 (2)	21:32	3	06:09 (1)	22:05	16	06:11 (1)
19	08:40		07:49		06:46		06:34		06:57 (2)	05:37		06:04 (1)	05:14		05:55 (1)
	16:59		17:57		18:48		20:43	16	07:13 (2)	21:34	5	06:09 (1)	22:05	16	06:11 (1)
20	08:38		07:47		06:43		06:31		06:55 (2)	05:36		06:03 (1)	05:14		05:55 (1)
	17:01		17:59		18:50		20:45	19	07:14 (2)	21:35	7	06:10 (1)	22:06	16	06:11 (1)
21	08:37		07:44		06:41		06:29		06:53 (2)	05:34		06:02 (1)	05:14		05:55 (1)
	17:02		18:01		18:52		20:47	21	07:14 (2)	21:37	9	06:11 (1)	22:06	16	06:11 (1)
22	08:36		07:42		06:38		06:27		06:51 (2)	05:33		06:01 (1)	05:14		05:56 (1)
	17:04		18:03		18:54		20:48	22	07:13 (2)	21:38	10	06:11 (1)	22:06	16	06:12 (1)
23	08:35		07:40		06:36		06:25		06:49 (2)	05:31		05:59 (1)	05:14		05:56 (1)
	17:06		18:05		18:56		20:50	24	07:13 (2)	21:40	12	06:11 (1)	22:06	16	06:12 (1)
24	08:34		07:38		06:34		06:23		06:47 (2)	05:30		05:58 (1)	05:15		05:56 (1)
	17:08		18:06		18:57		20:52	25	07:12 (2)	21:41	13	06:11 (1)	22:06	16	06:12 (1)
25	08:32		07:36		06:31		06:21		06:46 (2)	05:29		05:57 (1)	05:15		05:56 (1)
	17:10		18:08		18:59		20:54	26	07:12 (2)	21:42	14	06:11 (1)	22:06	17	06:13 (1)
26	08:31		07:34		06:29		06:19		06:43 (4)	05:28		05:56 (1)	05:15		05:56 (1)
	17:11		18:10		19:01		20:55	26	07:11 (2)	21:44	15	06:11 (1)	22:06	17	06:13 (1)
27	08:30		07:31		06:27		06:16		06:41 (4)	05:27		05:55 (1)	05:16		05:57 (1)
	17:13		18:12		19:03		20:57	27	07:10 (2)	21:45	17	06:12 (1)	22:06	17	06:14 (1)
28	08:28		07:29		06:24		06:14		06:39 (4)	05:25		05:54 (1)	05:16		05:56 (1)
	17:15		18:14		19:04		20:59	26	07:08 (2)	21:46	18	06:12 (1)	22:06	18	06:14 (1)
29	08:27				07:22		06:12		06:37 (4)	05:24		05:53 (1)	05:17		05:57 (1)
	17:17				20:06		21:01	26	07:07 (2)	21:48	18	06:11 (1)	22:06	18	06:15 (1)
30	08:25				07:19		06:10		06:35 (4)	05:23		05:53 (1)	05:18		05:56 (1)
	17:19				20:08		21:02	23	07:05 (2)	21:49	19	06:12 (1)	22:06	19	06:15 (1)
31	08:24				07:17					05:22		05:52 (1)			
	17:21				20:10					21:50	20	06:12 (1)			
Potential sun hours	256		276		367		418			489			503		
Total, worst case								429			276			558	
Sun reduction								0.35			0.37			0.30	
Oper. time red.								1.00			1.00			1.00	
Wind dir. red.								0.68			0.65			0.64	
Total reduction								0.24			0.24			0.19	
Total, real								103			66			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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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: BD - H56

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	July			August			September			October	November	December
1	05:18		05:56 (1)	05:56			06:47		07:19 (3)	07:38	07:34	08:26
	22:06	19	06:15 (1)	21:32			20:29	11	07:30 (3)	19:18	17:10	16:28
2	05:19		05:56 (1)	05:58			06:49		07:17 (3)	07:40	07:35	08:27
	22:05	19	06:15 (1)	21:31			20:26	15	07:32 (3)	19:15	17:08	16:27
3	05:20		05:56 (1)	05:59			06:51		07:17 (3)	07:42	07:37	08:29
	22:05	20	06:16 (1)	21:29			20:24	15	07:32 (3)	19:13	17:06	16:27
4	05:20		05:56 (1)	06:01			06:53		07:19 (3)	07:43	07:39	08:30
	22:04	21	06:17 (1)	21:27			20:22	14	07:33 (3)	19:11	17:04	16:26
5	05:21		05:56 (1)	06:02		06:42 (4)	06:54		07:20 (3)	07:45	07:41	08:32
	22:04	21	06:17 (1)	21:25	2	06:44 (4)	20:19	13	07:33 (3)	19:08	17:02	16:26
6	05:22		05:56 (1)	06:04		06:39 (4)	06:56		07:22 (3)	07:47	07:43	08:33
	22:03	22	06:18 (1)	21:24	9	06:48 (4)	20:17	11	07:33 (3)	19:06	17:01	16:25
7	05:23		05:55 (1)	06:06		06:37 (4)	06:58		07:24 (3)	07:48	07:45	08:34
	22:03	22	06:17 (1)	21:22	12	06:49 (4)	20:15	9	07:33 (3)	19:04	16:59	16:25
8	05:24		05:55 (1)	06:07		06:36 (4)	06:59		07:25 (3)	07:50	07:47	08:36
	22:02	23	06:18 (1)	21:20	15	06:51 (4)	20:12	7	07:32 (3)	19:01	16:57	16:24
9	05:25		05:56 (1)	06:09		06:38 (4)	07:01		07:27 (3)	07:52	07:48	08:37
	22:01	22	06:18 (1)	21:18	14	06:52 (4)	20:10	5	07:32 (3)	18:59	16:55	16:24
10	05:26		05:57 (1)	06:11		06:39 (4)	07:03		07:28 (3)	07:54	07:50	08:38
	22:01	22	06:19 (1)	21:16	13	06:52 (4)	20:08	2	07:30 (3)	18:57	16:54	16:24
11	05:27		05:58 (1)	06:12		06:41 (4)	07:04			07:55	07:52	08:39
	22:00	21	06:19 (1)	21:14	12	06:53 (4)	20:05			18:54	16:52	16:24
12	05:28		05:59 (1)	06:14		06:42 (4)	07:06			07:57	07:54	08:40
	21:59	21	06:20 (1)	21:12	21	07:11 (2)	20:03			18:52	16:51	16:23
13	05:29		06:00 (1)	06:16		06:44 (4)	07:08			07:59	07:56	08:41
	21:58	20	06:20 (1)	21:10	24	07:14 (2)	20:01			18:50	16:49	16:23
14	05:31		06:02 (1)	06:17		06:45 (4)	07:09			08:01	07:57	08:42
	21:57	19	06:21 (1)	21:08	26	07:15 (2)	19:58			18:48	16:47	16:23
15	05:32		06:03 (1)	06:19		06:47 (4)	07:11			08:03	07:59	08:43
	21:56	18	06:21 (1)	21:06	26	07:16 (2)	19:56			18:45	16:46	16:23
16	05:33		06:04 (1)	06:21		06:48 (4)	07:13			08:04	08:01	08:44
	21:55	17	06:21 (1)	21:04	26	07:17 (2)	19:53			18:43	16:44	16:23
17	05:34		06:05 (1)	06:22		06:50 (4)	07:14			08:06	08:03	08:45
	21:54	16	06:21 (1)	21:02	26	07:18 (2)	19:51			18:41	16:43	16:24
18	05:36		06:06 (1)	06:24		06:53 (2)	07:16			08:08	08:05	08:45
	21:53	15	06:21 (1)	21:00	25	07:18 (2)	19:49			18:39	16:42	16:24
19	05:37		06:07 (1)	06:26		06:53 (2)	07:18			08:10	08:06	08:46
	21:52	14	06:21 (1)	20:58	25	07:18 (2)	19:46			18:36	16:40	16:24
20	05:38		06:09 (1)	06:27		06:55 (2)	07:19			08:12	08:08	08:47
	21:50	12	06:21 (1)	20:55	24	07:19 (2)	19:44			18:34	16:39	16:24
21	05:40		06:10 (1)	06:29		06:56 (2)	07:21			08:13	08:10	08:47
	21:49	11	06:21 (1)	20:53	22	07:18 (2)	19:41			18:32	16:38	16:25
22	05:41		06:11 (1)	06:31		06:58 (2)	07:23			08:15	08:12	08:48
	21:48	10	06:21 (1)	20:51	20	07:18 (2)	19:39			18:30	16:37	16:25
23	05:42		06:13 (1)	06:32		07:00 (2)	07:24			08:17	08:13	08:48
	21:46	8	06:21 (1)	20:49	18	07:18 (2)	19:37			18:28	16:35	16:26
24	05:44		06:14 (1)	06:34		07:01 (2)	07:26			08:19	08:15	08:49
	21:45	6	06:20 (1)	20:47	16	07:17 (2)	19:34			18:26	16:34	16:26
25	05:45		06:15 (1)	06:36		07:03 (2)	07:28			07:21	08:17	08:49
	21:43	4	06:19 (1)	20:45	14	07:17 (2)	19:32			17:24	16:33	16:27
26	05:47		06:17 (1)	06:37		07:04 (2)	07:30			07:22	08:18	08:50
	21:42	3	06:20 (1)	20:42	12	07:16 (2)	19:29			17:22	16:32	16:28
27	05:48			06:39		07:06 (2)	07:31			07:24	08:20	08:50
	21:41			20:40	9	07:15 (2)	19:27			17:20	16:31	16:29
28	05:50			06:41		07:08 (2)	07:33			07:26	08:21	08:50
	21:39			20:38	6	07:14 (2)	19:25			17:18	16:30	16:29
29	05:51			06:42		07:09 (2)	07:35			07:28	08:23	08:50
	21:37			20:36	3	07:12 (2)	19:22			17:16	16:30	16:30
30	05:53			06:44			07:36			07:30	08:25	08:50
	21:36			20:33			19:20			17:14	16:29	16:31
31	05:54			06:46		07:23 (3)				07:32		08:50
	21:34			20:31	3	07:26 (3)				17:12		16:32
Potential sun hours	506			456			381			330	263	240
Total, worst case		426			423			102				
Sun reduction		0.26			0.30			0.28				
Oper. time red.		1.00			1.00			1.00				
Wind dir. red.		0.64			0.68			0.69				
Total reduction		0.17			0.20			0.19				
Total, real		72			84			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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abyrne / abyrne@jodireland.com

Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: BE - H57

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:08	05:22	05:18	05:56	06:47	07:38	07:33	08:26
	16:33	17:23	18:16	20:11	21:04	21:51	22:05	21:32	20:29	19:18	17:10	16:28
2	08:50	08:20	07:25	07:12	06:06	05:21	05:19	05:58	06:49	07:40	07:35	08:27
	16:35	17:24	18:18	20:13	21:06	21:52	22:05	21:31	20:26	19:15	17:08	16:27
3	08:50	08:19	07:22	07:10	06:04	05:20	05:20	05:59	06:51	07:41	07:37	08:29
	16:36	17:26	18:19	20:15	21:07	21:53	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:02	05:19	05:20	06:01	06:52	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09	21:55	22:04	21:27	20:22	19:10	17:04	16:26
5	08:49	08:15	07:18	07:05	06:01	05:18	05:21	06:02	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:18	21:11	21:56	22:04	21:25	20:19	19:08	17:02	16:25
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:39	17:32	18:25	20:20	21:12	21:57	22:03	21:23	20:17	19:06	17:01	16:25
7	08:48	08:12	07:13	07:01	05:57	05:17	05:23	06:06	06:57	07:48	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:03	16:59	16:25
8	08:48	08:10	07:11	06:58	05:55	05:16	05:24	06:07	06:59	07:50	07:46	08:35
	16:42	17:36	18:29	20:24	21:16	21:58	22:02	21:20	20:12	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48	08:37
	16:43	17:38	18:30	20:25	21:18	21:59	22:01	21:18	20:10	18:59	16:55	16:24
10	08:47	08:06	07:06	06:54	05:51	05:15	05:26	06:11	07:02	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	22:00	21:16	20:08	18:57	16:54	16:24
11	08:46	08:04	07:04	06:51	05:50	05:15	05:27	06:12	07:04	07:55	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:54	16:52	16:23
12	08:46	08:02	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:50	16:23
13	08:45	08:01	07:00	06:47	05:46	05:14	05:29	06:16	07:08	07:59	07:56	08:41
	16:49	17:45	18:38	20:32	21:24	22:02	21:58	21:10	20:00	18:50	16:49	16:23
14	08:44	07:59	06:57	06:45	05:45	05:14	05:31	06:17	07:09	08:01	07:57	08:42
	16:51	17:47	18:39	20:34	21:26	22:03	21:57	21:08	19:58	18:47	16:47	16:23
15	08:43	07:57	06:55	06:42	05:43	05:14	05:32	06:19	07:11	08:02	07:59	08:43
	16:52	17:49	18:41	20:36	21:27	22:03	21:56	21:06	19:56	18:45	16:46	16:23
16	08:42	07:55	06:52	06:40	05:41	05:14	05:33	06:21	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:53	18:43	16:44	16:23
17	08:41	07:53	06:50	06:38	05:40	05:14	05:34	06:22	07:14	08:06	08:03	08:45
	16:56	17:53	18:45	20:39	21:30	22:04	21:54	21:02	19:51	18:41	16:43	16:24
18	08:40	07:51	06:48	06:36	05:38	05:14	05:36	06:24	07:16	08:08	08:05	08:45
	16:57	17:55	18:47	20:41	21:32	22:05	21:53	21:00	19:48	18:39	16:42	16:24
19	08:39	07:49	06:45	06:33	05:37	05:14	05:37	06:26	07:18	08:10	08:06	08:46
	16:59	17:57	18:48	20:43	21:34	22:05	21:51	20:57	19:46	18:36	16:40	16:24
20	08:38	07:46	06:43	06:31	05:35	05:14	05:38	06:27	07:19	08:11	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:55	19:44	18:34	16:39	16:24
21	08:37	07:44	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:13	08:10	08:47
	17:02	18:01	18:52	20:46	21:37	22:06	21:49	20:53	19:41	18:32	16:38	16:25
22	08:36	07:42	06:38	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:11	08:48
	17:04	18:03	18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:25
23	08:35	07:40	06:36	06:25	05:31	05:14	05:42	06:32	07:24	08:17	08:13	08:48
	17:06	18:04	18:55	20:50	21:39	22:06	21:46	20:49	19:37	18:28	16:35	16:26
24	08:33	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:06	18:57	20:52	21:41	22:06	21:45	20:47	19:34	18:26	16:34	16:26
25	08:32	07:36	06:31	06:21	05:29	05:15	05:45	06:36	07:28	07:21	08:16	08:49
	17:10	18:08	18:59	20:53	21:42	22:06	21:43	20:44	19:32	17:24	16:33	16:27
26	08:31	07:34	06:29	06:18	05:28	05:15	05:47	06:37	07:29	07:22	08:18	08:49
	17:11	18:10	19:01	20:55	21:44	22:06	21:42	20:42	19:29	17:22	16:32	16:28
27	08:29	07:31	06:26	06:16	05:27	05:16	05:48	06:39	07:31	07:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	22:06	21:40	20:40	19:27	17:20	16:31	16:29
28	08:28	07:29	06:24	06:14	05:25	05:16	05:50	06:41	07:33	07:26	08:21	08:50
	17:15	18:14	19:04	20:59	21:46	22:06	21:39	20:38	19:25	17:18	16:30	16:29
29	08:27		07:22	06:12	05:24	05:17	05:51	06:42	07:35	07:28	08:23	08:50
	17:17		20:06	21:00	21:48	22:06	21:37	20:35	19:22	17:16	16:30	16:30
30	08:25		07:19	06:10	05:23	05:18	05:53	06:44	07:36	07:30	08:24	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	17:14	16:29	16:31
31	08:23		07:17		05:22		05:54	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240
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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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: BF - H58

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January	February	March	April		May		June	
1	08:50	08:22	07:27	07:15		06:08		06:33 (4)	05:22		05:51 (1)
	16:33	17:23	18:16	20:11		21:04	27	07:02 (2)	21:51	17	06:08 (1)
2	08:50	08:20	07:25	07:12		06:06		06:31 (4)	05:21		05:50 (1)
	16:35	17:24	18:18	20:13		21:06	26	07:00 (2)	21:53	18	06:08 (1)
3	08:50	08:19	07:23	07:10		06:04		06:30 (4)	05:20		05:50 (1)
	16:36	17:26	18:19	20:15		21:07	24	06:59 (2)	21:54	19	06:09 (1)
4	08:50	08:17	07:20	07:08	07:31 (3)	06:02		06:28 (4)	05:19		05:49 (1)
	16:37	17:28	18:21	20:17	2 07:33 (3)	21:09	19	06:56 (2)	21:55	19	06:08 (1)
5	08:49	08:15	07:18	07:05	07:29 (3)	06:01		06:26 (4)	05:18		05:48 (1)
	16:38	17:30	18:23	20:18	4 07:33 (3)	21:11	13	06:39 (4)	21:56	20	06:08 (1)
6	08:49	08:14	07:16	07:03	07:26 (3)	05:59		06:24 (4)	05:18		05:48 (1)
	16:39	17:32	18:25	20:20	7 07:33 (3)	21:13	14	06:38 (4)	21:57	20	06:08 (1)
7	08:49	08:12	07:14	07:01	07:24 (3)	05:57		06:23 (4)	05:17		05:47 (1)
	16:41	17:34	18:27	20:22	9 07:33 (3)	21:14	15	06:38 (4)	21:58	21	06:08 (1)
8	08:48	08:10	07:11	06:58	07:22 (3)	05:55		06:24 (4)	05:17		05:47 (1)
	16:42	17:36	18:29	20:24	11 07:33 (3)	21:16	12	06:36 (4)	21:59	21	06:08 (1)
9	08:48	08:08	07:09	06:56	07:19 (3)	05:53		06:26 (4)	05:16		05:46 (1)
	16:43	17:38	18:30	20:26	12 07:31 (3)	21:18	8	06:34 (4)	21:59	22	06:08 (1)
10	08:47	08:06	07:07	06:54	07:17 (3)	05:51			05:16		05:46 (1)
	16:45	17:40	18:32	20:27	14 07:31 (3)	21:19			22:00	22	06:08 (1)
11	08:46	08:05	07:04	06:52	07:15 (3)	05:50			05:15		05:46 (1)
	16:46	17:42	18:34	20:29	15 07:30 (3)	21:21			22:01	23	06:09 (1)
12	08:46	08:03	07:02	06:49	07:14 (3)	05:48			05:15		05:46 (1)
	16:48	17:44	18:36	20:31	15 07:29 (3)	21:23			22:02	22	06:08 (1)
13	08:45	08:01	07:00	06:47	07:15 (3)	05:46			05:14		05:47 (1)
	16:49	17:46	18:38	20:33	11 07:26 (3)	21:24			22:02	21	06:08 (1)
14	08:44	07:59	06:57	06:45	07:19 (3)	05:45			05:14		05:47 (1)
	16:51	17:47	18:40	20:34	2 07:21 (3)	21:26			22:03	21	06:08 (1)
15	08:43	07:57	06:55	06:42		05:43			05:14		05:48 (1)
	16:52	17:49	18:41	20:36		21:27			22:04	20	06:08 (1)
16	08:42	07:55	06:53	06:40		05:41			05:14		05:48 (1)
	16:54	17:51	18:43	20:38		21:29			22:04	21	06:09 (1)
17	08:42	07:53	06:50	06:38	07:02 (2)	05:40			05:14		05:48 (1)
	16:56	17:53	18:45	20:40	4 07:06 (2)	21:31			22:05	21	06:09 (1)
18	08:41	07:51	06:48	06:36	06:59 (2)	05:38			05:14		05:49 (1)
	16:57	17:55	18:47	20:41	7 07:06 (2)	21:32			22:05	20	06:09 (1)
19	08:40	07:49	06:46	06:34	06:57 (2)	05:37			05:14		05:49 (1)
	16:59	17:57	18:48	20:43	10 07:07 (2)	21:34			22:05	20	06:09 (1)
20	08:38	07:47	06:43	06:31	06:55 (2)	05:36		06:03 (1)	05:14		05:49 (1)
	17:01	17:59	18:50	20:45	12 07:07 (2)	21:35	1	06:04 (1)	22:06	20	06:09 (1)
21	08:37	07:44	06:41	06:29	06:53 (2)	05:34		06:02 (1)	05:14		05:49 (1)
	17:02	18:01	18:52	20:47	14 07:07 (2)	21:37	3	06:05 (1)	22:06	20	06:09 (1)
22	08:36	07:42	06:38	06:27	06:51 (2)	05:33		06:01 (1)	05:14		05:50 (1)
	17:04	18:03	18:54	20:48	17 07:08 (2)	21:38	5	06:06 (1)	22:06	20	06:10 (1)
23	08:35	07:40	06:36	06:25	06:49 (2)	05:31		05:59 (1)	05:14		05:50 (1)
	17:06	18:05	18:56	20:50	19 07:08 (2)	21:40	7	06:06 (1)	22:06	20	06:10 (1)
24	08:34	07:38	06:34	06:23	06:47 (2)	05:30		05:58 (1)	05:15		05:50 (1)
	17:08	18:06	18:57	20:52	20 07:07 (2)	21:41	8	06:06 (1)	22:06	20	06:10 (1)
25	08:32	07:36	06:31	06:21	06:45 (2)	05:29		05:57 (1)	05:15		05:50 (1)
	17:10	18:08	18:59	20:54	22 07:07 (2)	21:42	10	06:07 (1)	22:06	21	06:11 (1)
26	08:31	07:34	06:29	06:19	06:43 (2)	05:28		05:56 (1)	05:15		05:50 (1)
	17:11	18:10	19:01	20:55	24 07:07 (2)	21:44	11	06:07 (1)	22:06	21	06:11 (1)
27	08:30	07:31	06:27	06:16	06:41 (2)	05:27		05:55 (1)	05:16		05:51 (1)
	17:13	18:12	19:03	20:57	25 07:06 (2)	21:45	12	06:07 (1)	22:06	21	06:12 (1)
28	08:28	07:29	06:24	06:14	06:39 (4)	05:25		05:54 (1)	05:16		05:50 (1)
	17:15	18:14	19:04	20:59	26 07:05 (2)	21:46	13	06:07 (1)	22:06	21	06:11 (1)
29	08:27		07:22	06:12	06:37 (4)	05:24		05:53 (1)	05:17		05:51 (1)
	17:17		20:06	21:01	27 07:04 (2)	21:48	14	06:07 (1)	22:06	21	06:12 (1)
30	08:25		07:19	06:10	06:35 (4)	05:23		05:53 (1)	05:18		05:50 (1)
	17:19		20:08	21:02	28 07:03 (2)	21:49	15	06:08 (1)	22:06	22	06:12 (1)
31	08:24		07:17			05:22		05:52 (1)			
	17:21		20:10			21:50	16	06:08 (1)			
Potential sun hours	256	276	367	418		489			503		
Total, worst case					357			273			615
Sun reduction					0.35			0.37			0.30
Oper. time red.					1.00			1.00			1.00
Wind dir. red.					0.68			0.66			0.64
Total reduction					0.24			0.24			0.19
Total, real					85			66			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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abyrne / abyrne@jodireland.com

Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: BF - H58

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	July			August			September			October	November	December
1	05:18		05:51 (1)	05:56			06:47		07:14 (3)	07:38	07:34	08:26
	22:06	22	06:13 (1)	21:32			20:29	15	07:29 (3)	19:18	17:10	16:28
2	05:19		05:50 (1)	05:58			06:49		07:16 (3)	07:40	07:35	08:27
	22:05	22	06:12 (1)	21:31			20:26	14	07:30 (3)	19:15	17:08	16:27
3	05:20		05:51 (1)	05:59		06:38 (4)	06:51		07:17 (3)	07:42	07:37	08:29
	22:05	22	06:13 (1)	21:29	3	06:41 (4)	20:24	12	07:29 (3)	19:13	17:06	16:27
4	05:20		05:52 (1)	06:01		06:35 (4)	06:53		07:19 (3)	07:43	07:39	08:30
	22:04	22	06:14 (1)	21:27	10	06:45 (4)	20:22	11	07:30 (3)	19:11	17:04	16:26
5	05:21		05:53 (1)	06:02		06:33 (4)	06:54		07:20 (3)	07:45	07:41	08:32
	22:04	21	06:14 (1)	21:25	13	06:46 (4)	20:19	9	07:29 (3)	19:08	17:02	16:26
6	05:22		05:54 (1)	06:04		06:33 (4)	06:56		07:22 (3)	07:47	07:43	08:33
	22:03	21	06:15 (1)	21:24	15	06:48 (4)	20:17	7	07:29 (3)	19:06	17:01	16:25
7	05:23		05:54 (1)	06:06		06:34 (4)	06:58		07:24 (3)	07:48	07:45	08:34
	22:03	20	06:14 (1)	21:22	14	06:48 (4)	20:15	4	07:28 (3)	19:04	16:59	16:25
8	05:24		05:55 (1)	06:07		06:36 (4)	06:59		07:25 (3)	07:50	07:47	08:36
	22:02	20	06:15 (1)	21:20	13	06:49 (4)	20:12	2	07:27 (3)	19:01	16:57	16:24
9	05:25		05:56 (1)	06:09		06:38 (4)	07:01			07:52	07:48	08:37
	22:01	19	06:15 (1)	21:18	21	07:06 (2)	20:10			18:59	16:55	16:24
10	05:26		05:57 (1)	06:11		06:39 (4)	07:03			07:54	07:50	08:38
	22:01	18	06:15 (1)	21:16	24	07:08 (2)	20:08			18:57	16:54	16:24
11	05:27		05:58 (1)	06:12		06:41 (4)	07:04			07:55	07:52	08:39
	22:00	17	06:15 (1)	21:14	27	07:10 (2)	20:05			18:54	16:52	16:24
12	05:28		05:59 (1)	06:14		06:42 (4)	07:06			07:57	07:54	08:40
	21:59	17	06:16 (1)	21:12	28	07:11 (2)	20:03			18:52	16:51	16:23
13	05:29		06:00 (1)	06:16		06:44 (4)	07:08			07:59	07:56	08:41
	21:58	16	06:16 (1)	21:10	27	07:12 (2)	20:01			18:50	16:49	16:23
14	05:31		06:02 (1)	06:17		06:45 (4)	07:09			08:01	07:57	08:42
	21:57	15	06:17 (1)	21:08	27	07:12 (2)	19:58			18:48	16:47	16:23
15	05:32		06:03 (1)	06:19		06:47 (4)	07:11			08:03	07:59	08:43
	21:56	14	06:17 (1)	21:06	26	07:13 (2)	19:56			18:45	16:46	16:23
16	05:33		06:04 (1)	06:21		06:48 (2)	07:13			08:04	08:01	08:44
	21:55	13	06:17 (1)	21:04	25	07:13 (2)	19:53			18:43	16:44	16:23
17	05:34		06:05 (1)	06:22		06:50 (2)	07:14			08:06	08:03	08:45
	21:54	11	06:16 (1)	21:02	23	07:13 (2)	19:51			18:41	16:43	16:24
18	05:36		06:06 (1)	06:24		06:52 (2)	07:16			08:08	08:05	08:45
	21:53	10	06:16 (1)	21:00	22	07:14 (2)	19:49			18:39	16:42	16:24
19	05:37		06:07 (1)	06:26		06:53 (2)	07:18			08:10	08:06	08:46
	21:52	9	06:16 (1)	20:58	20	07:13 (2)	19:46			18:36	16:40	16:24
20	05:38		06:09 (1)	06:27		06:55 (2)	07:19			08:12	08:08	08:47
	21:50	7	06:16 (1)	20:55	18	07:13 (2)	19:44			18:34	16:39	16:24
21	05:40		06:10 (1)	06:29		06:56 (2)	07:21			08:13	08:10	08:47
	21:49	6	06:16 (1)	20:53	16	07:12 (2)	19:41			18:32	16:38	16:25
22	05:41		06:11 (1)	06:31		06:58 (2)	07:23			08:15	08:12	08:48
	21:48	4	06:15 (1)	20:51	14	07:12 (2)	19:39			18:30	16:37	16:25
23	05:42		06:13 (1)	06:32		07:00 (2)	07:24			08:17	08:13	08:48
	21:46	2	06:15 (1)	20:49	12	07:12 (2)	19:37			18:28	16:36	16:26
24	05:44			06:34		07:01 (2)	07:26			08:19	08:15	08:49
	21:45			20:47	9	07:10 (2)	19:34			18:26	16:34	16:26
25	05:45			06:36		07:03 (2)	07:28			07:21	08:17	08:49
	21:43			20:45	6	07:09 (2)	19:32			17:24	16:33	16:27
26	05:47			06:37		07:04 (2)	07:30			07:22	08:18	08:50
	21:42			20:42	3	07:07 (2)	19:29			17:22	16:32	16:28
27	05:48			06:39			07:31			07:24	08:20	08:50
	21:41			20:40			19:27			17:20	16:31	16:29
28	05:50			06:41			07:33			07:26	08:21	08:50
	21:39			20:38			19:25			17:18	16:30	16:29
29	05:51			06:42		07:19 (3)	07:35			07:28	08:23	08:50
	21:37			20:36	4	07:23 (3)	19:22			17:16	16:30	16:30
30	05:53			06:44		07:16 (3)	07:36			07:30	08:25	08:50
	21:36			20:33	11	07:27 (3)	19:20			17:14	16:29	16:31
31	05:54			06:46		07:13 (3)				07:32		08:50
	21:34			20:31	15	07:28 (3)				17:12		16:32
Potential sun hours	506			456			381			330	263	240
Total, worst case		348			446			74				
Sun reduction		0.26			0.30			0.28				
Oper. time red.		1.00			1.00			1.00				
Wind dir. red.		0.64			0.67			0.69				
Total reduction		0.17			0.20			0.19				
Total, real		59			89			14				

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)

Licensed user:
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abyrne / abyrne@jodireland.com

Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: BG - H59

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:08	05:21	05:18	05:56	06:47	07:38	07:34	08:26
	16:33	17:22	18:16	20:11	21:04	21:51	22:06	21:32	20:29	19:18	17:10	16:28
2	08:50	08:20	07:25	07:12	06:06	05:21	05:19	05:57	06:49	07:40	07:35	08:27
	16:34	17:24	18:18	20:13	21:06	21:53	22:05	21:31	20:26	19:15	17:08	16:27
3	08:50	08:19	07:23	07:10	06:04 20:35 (14)	05:20	05:20	05:59	06:51 19:46 (12)	07:41	07:37	08:29
	16:36	17:26	18:19	20:15	21:07 3 20:38 (14)	21:54	22:05	21:29	20:24 6 19:52 (12)	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08 19:49 (12)	06:02 20:36 (14)	05:19	05:20	06:01	06:52 19:44 (12)	07:43	07:39	08:30
	16:37	17:28	18:21	20:17 2 19:51 (12)	21:09 4 20:40 (14)	21:55	22:04	21:27	20:22 9 19:53 (12)	19:10	17:04	16:26
5	08:49	08:15	07:18	07:05 19:47 (12)	06:00 20:36 (14)	05:18	05:21	06:02 20:48 (14)	06:54 19:43 (12)	07:45	07:41	08:32
	16:38	17:30	18:23	20:18 5 19:52 (12)	21:11 5 20:41 (14)	21:56	22:04	21:25 2 20:50 (14)	20:19 9 19:52 (12)	19:08	17:02	16:25
6	08:49	08:14	07:16	07:03 19:47 (12)	05:59 20:36 (14)	05:18	05:22	06:04 20:47 (14)	06:56 19:43 (12)	07:47	07:43	08:33
	16:39	17:32	18:25	20:20 7 19:54 (12)	21:13 7 20:43 (14)	21:57	22:03	21:24 6 20:53 (14)	20:17 7 19:50 (12)	19:06	17:00	16:25
7	08:49	08:12	07:13	07:01 19:47 (12)	05:57 20:37 (14)	05:17	05:23	06:06 20:45 (14)	06:57 19:43 (12)	07:48	07:45	08:34
	16:40	17:34	18:27	20:22 9 19:56 (12)	21:14 5 20:42 (14)	21:58	22:03	21:22 7 20:52 (14)	20:15 5 19:48 (12)	19:03	16:59	16:24
8	08:48	08:10	07:11	06:58 19:47 (12)	05:55	05:16	05:24	06:07 20:45 (14)	06:59 19:43 (12)	07:50	07:46	08:36
	16:42	17:36	18:29	20:24 9 19:56 (12)	21:16	21:59	22:02	21:20 5 20:50 (14)	20:12 2 19:45 (12)	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56 19:48 (12)	05:53	05:16	05:25	06:09 20:44 (14)	07:01	07:52	07:48	08:37
	16:43	17:38	18:30	20:25 6 19:54 (12)	21:18	21:59	22:01	21:18 4 20:48 (14)	20:10	18:59	16:55	16:24
10	08:47	08:06	07:07	06:54	05:51	05:15	05:26	06:10 20:45 (14)	07:02	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	22:01	21:16 2 20:47 (14)	20:08	18:57	16:54	16:24
11	08:46	08:04	07:04	06:51	05:50	05:15	05:27	06:12	07:04	07:55	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:54	16:52	16:23
12	08:46	08:03	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:50	16:23
13	08:45	08:01	07:00	06:47	05:46	05:14	05:29	06:15	07:08	07:59	07:56	08:41
	16:49	17:45	18:38	20:33	21:24	22:02	21:58	21:10	20:00	18:50	16:49	16:23
14	08:44	07:59	06:57	06:45	05:45	05:14	05:30	06:17	07:09	08:01	07:57	08:42
	16:51	17:47	18:39	20:34	21:26	22:03	21:57	21:08	19:58	18:47	16:47	16:23
15	08:43	07:57	06:55	06:42	05:43	05:14	05:32	06:19	07:11	08:03	07:59	08:43
	16:52	17:49	18:41	20:36	21:27	22:04	21:56	21:06	19:56	18:45	16:46	16:23
16	08:42	07:55	06:53	06:40 20:08 (13)	05:41	05:14	05:33	06:20	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38 3 20:11 (13)	21:29	22:04	21:55	21:04	19:53	18:43	16:44	16:23
17	08:42	07:53	06:50	06:38 20:08 (13)	05:40	05:14	05:34	06:22	07:14	08:06	08:03	08:45
	16:56	17:53	18:45	20:40 5 20:13 (13)	21:31	22:05	21:54	21:02	19:51	18:41	16:43	16:23
18	08:41	07:51	06:48	06:36 20:07 (13)	05:38	05:14	05:35	06:24	07:16	08:08	08:05	08:45
	16:57	17:55	18:47	20:41 6 20:13 (13)	21:32	22:05	21:53	21:00	19:49	18:39	16:42	16:24
19	08:40	07:49	06:45	06:33 20:08 (13)	05:37	05:14	05:37	06:25	07:18	08:10	08:06	08:46
	16:59	17:57	18:48	20:43 6 20:14 (13)	21:34	22:05	21:52	20:58	19:46	18:36	16:40	16:24
20	08:38	07:47	06:43	06:31	05:35	05:14	05:38	06:27	07:19	08:11	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:55	19:44	18:34	16:39	16:24
21	08:37	07:44	06:41	06:29	05:34	05:14	05:39	06:29	07:21	08:13	08:10	08:47
	17:02	18:01	18:52	20:47	21:37	22:06	21:49	20:53	19:41	18:32	16:38	16:25
22	08:36	07:42	06:38	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:12	08:48
	17:04	18:03	18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:25
23	08:35	07:40	06:36	06:25	05:31	05:14	05:42	06:32	07:24	08:17	08:13	08:48
	17:06	18:04	18:56	20:50	21:40	22:06	21:46	20:49	19:37	18:28	16:35	16:26
24	08:34	07:38	06:34	06:23	05:30	05:15	05:44	06:34 20:12 (13)	07:26	08:19	08:15	08:49
	17:08	18:06	18:57	20:52	21:41	22:06	21:45	20:47 6 20:18 (13)	19:34	18:26	16:34	16:26
25	08:32	07:36	06:31	06:20	05:29	05:15	05:45	06:36 20:11 (13)	07:28	07:21	08:17	08:49
	17:09	18:08	18:59	20:54	21:42	22:07	21:44	20:45 6 20:17 (13)	19:32	17:24	16:33	16:27
26	08:31	07:34	06:29	06:18	05:28	05:15	05:47	06:37 20:09 (13)	07:29	07:22	08:18	08:50
	17:11	18:10	19:01	20:55	21:44	22:07	21:42	20:42 5 20:14 (13)	19:29	17:22	16:32	16:28
27	08:30	07:31	06:26	06:16	05:26	05:16	05:48	06:39 20:10 (13)	07:31	07:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	22:06	21:41	20:40 2 20:12 (13)	19:27	17:20	16:31	16:28
28	08:28	07:29	06:24	06:14	05:25	05:16	05:50	06:41 20:09 (13)	07:33	07:26	08:21	08:50
	17:15	18:14	19:04	20:59	21:46	22:06	21:39	20:38 1 20:10 (13)	19:25	17:18	16:30	16:29
29	08:27		07:22	06:12	05:24	05:17	05:51	06:42	07:35	07:28	08:23	08:50
	17:17		20:06	21:01	21:48	22:06	21:37	20:36	19:22	17:16	16:29	16:30
30	08:25		07:19	06:10	05:23	05:17	05:53	06:44	07:36	07:30	08:25	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	17:14	16:29	16:31
31	08:24		07:17		05:22		05:54	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	255	276	367	418	489	503	506	456	381	330	263	240
Total, worst case				58	24			46	38			
Sun reduction				0.35	0.37			0.30	0.28			
Oper. time red.				1.00	1.00			1.00	1.00			
Wind dir. red.				0.69	0.68			0.69	0.69			
Total reduction				0.24	0.25			0.20	0.20			
Total, real				14	6			9	7			

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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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: BH - H60

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:08	05:22	05:18	05:56	06:47	07:38	07:33	08:26
	16:33	17:23	18:16	20:11	21:04	21:51	22:05	21:32	20:29	19:18	17:10	16:28
2	08:50	08:20	07:25	07:12	06:06	05:21	05:19	05:58	06:49	07:40	07:35	08:27
	16:35	17:24	18:18	20:13	21:06	21:52	22:05	21:31	20:26	19:15	17:08	16:27
3	08:50	08:19	07:22	07:10	06:04	05:20	05:20	05:59	06:51	07:41	07:37	08:29
	16:36	17:26	18:19	20:15	21:07	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:02	05:19	05:20	06:01	06:52	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09	21:55	22:04	21:27	20:22	19:10	17:04	16:26
5	08:49	08:15	07:18	07:05	06:01	05:18	05:21	06:02	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:18	21:11	21:56	22:04	21:25	20:19	19:08	17:02	16:26
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:39	17:32	18:25	20:20	21:13	21:57	22:03	21:23	20:17	19:06	17:01	16:25
7	08:49	08:12	07:13	07:01	05:57	05:17	05:23	06:06	06:57	07:48	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:03	16:59	16:25
8	08:48	08:10	07:11	06:58	05:55	05:16	05:24	06:07	06:59	07:50	07:46	08:35
	16:42	17:36	18:29	20:24	21:16	21:58	22:02	21:20	20:12	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48	08:37
	16:43	17:38	18:30	20:25	21:18	21:59	22:01	21:18	20:10	18:59	16:55	16:24
10	08:47	08:06	07:07	06:54	05:51	05:16	05:26	06:11	07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	22:00	21:16	20:08	18:57	16:54	16:24
11	08:46	08:04	07:04	06:51	05:50	05:15	05:27	06:12	07:04	07:55	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:54	16:52	16:23
12	08:46	08:03	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:50	16:23
13	08:45	08:01	07:00	06:47	05:46	05:14	05:29	06:16	07:08	07:59	07:56	08:41
	16:49	17:45	18:38	20:32	21:24	22:02	21:58	21:10	20:00	18:50	16:49	16:23
14	08:44	07:59	06:57	06:45	05:45	05:14	05:31	06:17	07:09	08:01	07:57	08:42
	16:51	17:47	18:39	20:34	21:26	22:03	21:57	21:08	19:58	18:47	16:47	16:23
15	08:43	07:57	06:55	06:42	05:43	05:14	05:32	06:19	07:11	08:02	07:59	08:43
	16:52	17:49	18:41	20:36	21:27	22:03	21:56	21:06	19:56	18:45	16:46	16:23
16	08:42	07:55	06:52	06:40	05:41	05:14	05:33	06:21	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:53	18:43	16:44	16:23
17	08:41	07:53	06:50	06:38	05:40	05:14	05:34	06:22	07:14	08:06	08:03	08:45
	16:56	17:53	18:45	20:39	21:31	22:04	21:54	21:02	19:51	18:41	16:43	16:24
18	08:40	07:51	06:48	06:36	05:38	05:14	05:36	06:24	07:16	08:08	08:05	08:45
	16:57	17:55	18:47	20:41	21:32	22:05	21:53	21:00	19:48	18:39	16:42	16:24
19	08:39	07:49	06:45	06:33	05:37	05:14	05:37	06:26	07:18	08:10	08:06	08:46
	16:59	17:57	18:48	20:43	21:34	22:05	21:51	20:58	19:46	18:36	16:40	16:24
20	08:38	07:46	06:43	06:31	05:35	05:14	05:38	06:27	07:19	08:11	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:55	19:44	18:34	16:39	16:24
21	08:37	07:44	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:13	08:10	08:47
	17:02	18:01	18:52	20:47	21:37	22:06	21:49	20:53	19:41	18:32	16:38	16:25
22	08:36	07:42	06:38	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:11	08:48
	17:04	18:03	18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:25
23	08:35	07:40	06:36	06:25	05:31	05:14	05:42	06:32	07:24	08:17	08:13	08:48
	17:06	18:04	18:55	20:50	21:39	22:06	21:46	20:49	19:37	18:28	16:35	16:26
24	08:33	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:06	18:57	20:52	21:41	22:06	21:45	20:47	19:34	18:26	16:34	16:26
25	08:32	07:36	06:31	06:21	05:29	05:15	05:45	06:36	07:28	07:21	08:16	08:49
	17:10	18:08	18:59	20:53	21:42	22:06	21:43	20:44	19:32	17:24	16:33	16:27
26	08:31	07:34	06:29	06:18	05:28	05:15	05:47	06:37	07:29	07:22	08:18	08:49
	17:11	18:10	19:01	20:55	21:44	22:06	21:42	20:42	19:29	17:22	16:32	16:28
27	08:29	07:31	06:26	06:16	05:27	05:16	05:48	06:39	07:31	07:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	22:06	21:40	20:40	19:27	17:20	16:31	16:29
28	08:28	07:29	06:24	06:14	05:25	05:16	05:50	06:41	07:33	07:26	08:21	08:50
	17:15	18:14	19:04	20:59	21:46	22:06	21:39	20:38	19:25	17:18	16:30	16:29
29	08:27		07:22	06:12	05:24	05:17	05:51	06:42	07:35	07:28	08:23	08:50
	17:17		20:06	21:00	21:48	22:06	21:37	20:35	19:22	17:16	16:30	16:30
30	08:25		07:19	06:10	05:23	05:18	05:53	06:44	07:36	07:30	08:24	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	17:14	16:29	16:31
31	08:23		07:17		05:22		05:54	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240
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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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: BI - H61

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:08	05:21	05:18	05:56	06:47	07:38	07:33	08:26
	16:33	17:22	18:16	20:11	21:04	21:51	22:05	21:32	20:29	19:17	17:10	16:28
2	08:50	08:20	07:25	07:12	06:06	05:21	05:19	05:58	06:49	07:40	07:35	08:27
	16:34	17:24	18:18	20:13	21:06	21:52	22:05	21:31	20:26	19:15	17:08	16:27
3	08:50	08:19	07:22	07:10	06:04	05:20	05:20	05:59	06:51	07:41	07:37	08:29
	16:36	17:26	18:19	20:15	21:07	21:53	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:02	05:19	05:20	06:01	06:52	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09	21:55	22:04	21:27	20:22	19:10	17:04	16:26
5	08:49	08:15	07:18	07:05	06:00	05:18	05:21	06:02	06:54	07:45	07:41	08:31
	16:38	17:30	18:23	20:18	21:11	21:56	22:04	21:25	20:19	19:08	17:02	16:25
6	08:49	08:13	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:39	17:32	18:25	20:20	21:12	21:57	22:03	21:23	20:17	19:06	17:00	16:25
7	08:48	08:12	07:13	07:01	05:57	05:17	05:23	06:06	06:57	07:48	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:03	16:59	16:25
8	08:48	08:10	07:11	06:58	05:55	05:16	05:24	06:07	06:59	07:50	07:46	08:35
	16:42	17:36	18:29	20:24	21:16	21:58	22:02	21:20	20:12	19:01	16:57	16:24
9	08:47	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48	08:37
	16:43	17:38	18:30	20:25	21:18	21:59	22:01	21:18	20:10	18:59	16:55	16:24
10	08:47	08:06	07:06	06:54	05:51	05:15	05:26	06:10	07:02	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	22:00	21:16	20:07	18:57	16:54	16:24
11	08:46	08:04	07:04	06:51	05:50	05:15	05:27	06:12	07:04	07:55	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:54	16:52	16:23
12	08:46	08:02	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:22	22:02	21:59	21:12	20:03	18:52	16:50	16:23
13	08:45	08:01	06:59	06:47	05:46	05:14	05:29	06:15	07:07	07:59	07:56	08:41
	16:49	17:45	18:38	20:32	21:24	22:02	21:58	21:10	20:00	18:50	16:49	16:23
14	08:44	07:59	06:57	06:45	05:45	05:14	05:30	06:17	07:09	08:01	07:57	08:42
	16:51	17:47	18:39	20:34	21:26	22:03	21:57	21:08	19:58	18:47	16:47	16:23
15	08:43	07:57	06:55	06:42	05:43	05:14	05:32	06:19	07:11	08:02	07:59	08:43
	16:52	17:49	18:41	20:36	21:27	22:03	21:56	21:06	19:56	18:45	16:46	16:23
16	08:42	07:55	06:52	06:40	05:41	05:14	05:33	06:20	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:53	18:43	16:44	16:23
17	08:41	07:53	06:50	06:38	05:40	05:14	05:34	06:22	07:14	08:06	08:03	08:44
	16:56	17:53	18:45	20:39	21:30	22:04	21:54	21:02	19:51	18:41	16:43	16:24
18	08:40	07:51	06:48	06:36	05:38	05:14	05:35	06:24	07:16	08:08	08:04	08:45
	16:57	17:55	18:47	20:41	21:32	22:05	21:53	21:00	19:48	18:39	16:42	16:24
19	08:39	07:48	06:45	06:33	05:37	05:14	05:37	06:25	07:18	08:10	08:06	08:46
	16:59	17:57	18:48	20:43	21:34	22:05	21:51	20:57	19:46	18:36	16:40	16:24
20	08:38	07:46	06:43	06:31	05:35	05:14	05:38	06:27	07:19	08:11	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:55	19:44	18:34	16:39	16:24
21	08:37	07:44	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:13	08:10	08:47
	17:02	18:01	18:52	20:46	21:37	22:06	21:49	20:53	19:41	18:32	16:38	16:25
22	08:36	07:42	06:38	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:11	08:48
	17:04	18:03	18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:25
23	08:35	07:40	06:36	06:25	05:31	05:14	05:42	06:32	07:24	08:17	08:13	08:48
	17:06	18:04	18:55	20:50	21:39	22:06	21:46	20:49	19:36	18:28	16:35	16:26
24	08:33	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:06	18:57	20:52	21:41	22:06	21:45	20:47	19:34	18:26	16:34	16:26
25	08:32	07:36	06:31	06:20	05:29	05:15	05:45	06:36	07:28	07:20	08:16	08:49
	17:09	18:08	18:59	20:53	21:42	22:06	21:43	20:44	19:32	17:24	16:33	16:27
26	08:31	07:34	06:29	06:18	05:28	05:15	05:47	06:37	07:29	07:22	08:18	08:49
	17:11	18:10	19:01	20:55	21:44	22:06	21:42	20:42	19:29	17:22	16:32	16:28
27	08:29	07:31	06:26	06:16	05:27	05:16	05:48	06:39	07:31	07:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	22:06	21:40	20:40	19:27	17:20	16:31	16:28
28	08:28	07:29	06:24	06:14	05:25	05:16	05:50	06:41	07:33	07:26	08:21	08:50
	17:15	18:14	19:04	20:59	21:46	22:06	21:39	20:38	19:25	17:18	16:30	16:29
29	08:26		07:22	06:12	05:24	05:17	05:51	06:42	07:35	07:28	08:23	08:50
	17:17		20:06	21:00	21:48	22:06	21:37	20:35	19:22	17:16	16:29	16:30
30	08:25		07:19	06:10	05:23	05:18	05:53	06:44	07:36	07:30	08:24	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	17:14	16:29	16:31
31	08:23		07:17		05:22		05:54	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240
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)

Licensed user:
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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: BJ - H62

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:08	05:22	05:18	05:56	06:47	07:38	07:33	08:26
	16:33	17:23	18:16	20:11	21:04	21:51	22:05	21:32	20:29	19:18	17:10	16:28
2	08:50	08:20	07:25	07:12	06:06	05:21	05:19	05:58	06:49	07:40	07:35	08:27
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	16:36	17:26	18:19	20:15	21:07	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:02	05:19	05:20	06:01	06:52	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09	21:55	22:04	21:27	20:22	19:10	17:04	16:26
5	08:49	08:15	07:18	07:05	06:01	05:18	05:21	06:02	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:18	21:11	21:56	22:04	21:25	20:19	19:08	17:02	16:26
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:39	17:32	18:25	20:20	21:13	21:57	22:03	21:23	20:17	19:06	17:01	16:25
7	08:49	08:12	07:13	07:01	05:57	05:17	05:23	06:06	06:57	07:48	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:03	16:59	16:25
8	08:48	08:10	07:11	06:58	05:55	05:16	05:24	06:07	06:59	07:50	07:46	08:35
	16:42	17:36	18:29	20:24	21:16	21:58	22:02	21:20	20:12	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48	08:37
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10	08:47	08:06	07:07	06:54	05:51	05:16	05:26	06:11	07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	22:00	21:16	20:08	18:57	16:54	16:24
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	16:49	17:45	18:38	20:32	21:24	22:02	21:58	21:10	20:00	18:50	16:49	16:23
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	16:52	17:49	18:41	20:36	21:27	22:03	21:56	21:06	19:56	18:45	16:46	16:23
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	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:53	18:43	16:44	16:23
17	08:41	07:53	06:50	06:38	05:40	05:14	05:34	06:22	07:14	08:06	08:03	08:45
	16:56	17:53	18:45	20:39	21:30	22:04	21:54	21:02	19:51	18:41	16:43	16:24
18	08:40	07:51	06:48	06:36	05:38	05:14	05:36	06:24	07:16	08:08	08:05	08:45
	16:57	17:55	18:47	20:41	21:32	22:05	21:53	21:00	19:48	18:39	16:42	16:24
19	08:39	07:49	06:45	06:33	05:37	05:14	05:37	06:26	07:18	08:10	08:06	08:46
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	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:55	19:44	18:34	16:39	16:24
21	08:37	07:44	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:13	08:10	08:47
	17:02	18:01	18:52	20:47	21:37	22:06	21:49	20:53	19:41	18:32	16:38	16:25
22	08:36	07:42	06:38	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:11	08:48
	17:04	18:03	18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:25
23	08:35	07:40	06:36	06:25	05:31	05:14	05:42	06:32	07:24	08:17	08:13	08:48
	17:06	18:04	18:55	20:50	21:39	22:06	21:46	20:49	19:37	18:28	16:35	16:26
24	08:33	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:06	18:57	20:52	21:41	22:06	21:45	20:47	19:34	18:26	16:34	16:26
25	08:32	07:36	06:31	06:21	05:29	05:15	05:45	06:36	07:28	07:21	08:16	08:49
	17:10	18:08	18:59	20:53	21:42	22:06	21:43	20:44	19:32	17:24	16:33	16:27
26	08:31	07:34	06:29	06:18	05:28	05:15	05:47	06:37	07:29	07:22	08:18	08:49
	17:11	18:10	19:01	20:55	21:44	22:06	21:42	20:42	19:29	17:22	16:32	16:28
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	17:13	18:12	19:03	20:57	21:45	22:06	21:40	20:40	19:27	17:20	16:31	16:29
28	08:28	07:29	06:24	06:14	05:25	05:16	05:50	06:41	07:33	07:26	08:21	08:50
	17:15	18:14	19:04	20:59	21:46	22:06	21:39	20:38	19:25	17:18	16:30	16:29
29	08:27		07:22	06:12	05:24	05:17	05:51	06:42	07:35	07:28	08:23	08:50
	17:17		20:06	21:00	21:48	22:06	21:37	20:35	19:22	17:16	16:30	16:30
30	08:25		07:19	06:10	05:23	05:18	05:53	06:44	07:36	07:30	08:24	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	17:14	16:29	16:31
31	08:23		07:17		05:22		05:54	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240
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)

Licensed user:
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Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
abyrne / abyrne@jodireland.com

Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: BK - H63

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:08	05:22	05:18	05:56	06:47	07:38	07:33	08:26
	16:33	17:23	18:16	20:11	21:04	21:51	22:06	21:32	20:29	19:18	17:10	16:28
2	08:50	08:20	07:25	07:12	06:06	05:21	05:19	05:58	06:49	07:40	07:35	08:27
	16:35	17:24	18:18	20:13	21:06	21:52	22:05	21:31	20:26	19:15	17:08	16:27
3	08:50	08:19	07:23	07:10	06:04	05:20	05:20	05:59	06:51	07:41	07:37	08:29
	16:36	17:26	18:19	20:15	21:07	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:02	05:19	05:20	06:01	06:52	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09	21:55	22:04	21:27	20:22	19:10	17:04	16:26
5	08:49	08:15	07:18	07:05	06:01	05:18	05:21	06:02	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:18	21:11	21:56	22:04	21:25	20:19	19:08	17:02	16:26
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:39	17:32	18:25	20:20	21:13	21:57	22:03	21:24	20:17	19:06	17:01	16:25
7	08:49	08:12	07:13	07:01	05:57	05:17	05:23	06:06	06:58	07:48	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:58	05:55	05:17	05:24	06:07	06:59	07:50	07:46	08:35
	16:42	17:36	18:29	20:24	21:16	21:58	22:02	21:20	20:12	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48	08:37
	16:43	17:38	18:30	20:25	21:18	21:59	22:01	21:18	20:10	18:59	16:55	16:24
10	08:47	08:06	07:07	06:54	05:51	05:16	05:26	06:11	07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	22:01	21:16	20:08	18:57	16:54	16:24
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	16:48	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:50	16:23
13	08:45	08:01	07:00	06:47	05:46	05:14	05:29	06:16	07:08	07:59	07:56	08:41
	16:49	17:46	18:38	20:33	21:24	22:02	21:58	21:10	20:00	18:50	16:49	16:23
14	08:44	07:59	06:57	06:45	05:45	05:14	05:31	06:17	07:09	08:01	07:57	08:42
	16:51	17:47	18:39	20:34	21:26	22:03	21:57	21:08	19:58	18:48	16:47	16:23
15	08:43	07:57	06:55	06:42	05:43	05:14	05:32	06:19	07:11	08:02	07:59	08:43
	16:52	17:49	18:41	20:36	21:27	22:04	21:56	21:06	19:56	18:45	16:46	16:23
16	08:42	07:55	06:53	06:40	05:41	05:14	05:33	06:21	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:53	18:43	16:44	16:23
17	08:41	07:53	06:50	06:38	05:40	05:14	05:34	06:22	07:14	08:06	08:03	08:45
	16:56	17:53	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43	16:24
18	08:40	07:51	06:48	06:36	05:38	05:14	05:36	06:24	07:16	08:08	08:05	08:45
	16:57	17:55	18:47	20:41	21:32	22:05	21:53	21:00	19:49	18:39	16:42	16:24
19	08:39	07:49	06:45	06:33	05:37	05:14	05:37	06:26	07:18	08:10	08:06	08:46
	16:59	17:57	18:48	20:43	21:34	22:05	21:51	20:58	19:46	18:36	16:40	16:24
20	08:38	07:46	06:43	06:31	05:36	05:14	05:38	06:27	07:19	08:11	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:55	19:44	18:34	16:39	16:24
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	17:02	18:01	18:52	20:47	21:37	22:06	21:49	20:53	19:41	18:32	16:38	16:25
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28	08:28	07:29	06:24	06:14	05:25	05:16	05:50	06:41	07:33	07:26	08:21	08:50
	17:15	18:14	19:04	20:59	21:46	22:06	21:39	20:38	19:25	17:18	16:30	16:29
29	08:27		07:22	06:12	05:24	05:17	05:51	06:42	07:35	07:28	08:23	08:50
	17:17		20:06	21:01	21:48	22:06	21:37	20:35	19:22	17:16	16:30	16:30
30	08:25		07:19	06:10	05:23	05:18	05:53	06:44	07:36	07:30	08:24	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	17:14	16:29	16:31
31	08:24		07:17		05:22		05:54	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240
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)

Licensed user:
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Finisklin Business Park
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abyrne / abyrne@jodireland.com

Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: BL - H64

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:08	05:22	05:18	05:56	06:47	07:38	07:33	08:26
	16:33	17:23	18:16	20:11	21:04	21:51	22:06	21:32	20:29	19:18	17:10	16:28
2	08:50	08:20	07:25	07:12	06:06	05:21	05:19	05:58	06:49	07:40	07:35	08:27
	16:35	17:24	18:18	20:13	21:06	21:52	22:05	21:31	20:26	19:15	17:08	16:27
3	08:50	08:19	07:23	07:10	06:04	05:20	05:20	05:59	06:51	07:41	07:37	08:29
	16:36	17:26	18:19	20:15	21:07	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:02	05:19	05:20	06:01	06:52	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09	21:55	22:04	21:27	20:22	19:11	17:04	16:26
5	08:49	08:15	07:18	07:05	06:01	05:18	05:21	06:02	06:54	07:45	07:41	08:32
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6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
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7	08:49	08:12	07:13	07:01	05:57	05:17	05:23	06:06	06:58	07:48	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:58	05:55	05:17	05:24	06:07	06:59	07:50	07:46	08:35
	16:42	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:12	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48	08:37
	16:43	17:38	18:30	20:25	21:18	21:59	22:01	21:18	20:10	18:59	16:55	16:24
10	08:47	08:06	07:07	06:54	05:51	05:16	05:26	06:11	07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	22:01	21:16	20:08	18:57	16:54	16:24
11	08:46	08:04	07:04	06:51	05:50	05:15	05:27	06:12	07:04	07:55	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:54	16:52	16:24
12	08:46	08:03	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:50	16:23
13	08:45	08:01	07:00	06:47	05:46	05:14	05:29	06:16	07:08	07:59	07:56	08:41
	16:49	17:46	18:38	20:33	21:24	22:02	21:58	21:10	20:00	18:50	16:49	16:23
14	08:44	07:59	06:57	06:45	05:45	05:14	05:31	06:17	07:09	08:01	07:57	08:42
	16:51	17:47	18:39	20:34	21:26	22:03	21:57	21:08	19:58	18:48	16:47	16:23
15	08:43	07:57	06:55	06:42	05:43	05:14	05:32	06:19	07:11	08:02	07:59	08:43
	16:52	17:49	18:41	20:36	21:27	22:04	21:56	21:06	19:56	18:45	16:46	16:23
16	08:42	07:55	06:53	06:40	05:41	05:14	05:33	06:21	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:53	18:43	16:44	16:23
17	08:41	07:53	06:50	06:38	05:40	05:14	05:34	06:22	07:14	08:06	08:03	08:45
	16:56	17:53	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43	16:24
18	08:40	07:51	06:48	06:36	05:38	05:14	05:36	06:24	07:16	08:08	08:05	08:45
	16:57	17:55	18:47	20:41	21:32	22:05	21:53	21:00	19:49	18:39	16:42	16:24
19	08:39	07:49	06:45	06:34	05:37	05:14	05:37	06:26	07:18	08:10	08:06	08:46
	16:59	17:57	18:48	20:43	21:34	22:05	21:51	20:58	19:46	18:36	16:40	16:24
20	08:38	07:46	06:43	06:31	05:36	05:14	05:38	06:27	07:19	08:11	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:55	19:44	18:34	16:39	16:24
21	08:37	07:44	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:13	08:10	08:47
	17:02	18:01	18:52	20:47	21:37	22:06	21:49	20:53	19:41	18:32	16:38	16:25
22	08:36	07:42	06:38	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:11	08:48
	17:04	18:03	18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:25
23	08:35	07:40	06:36	06:25	05:31	05:14	05:42	06:32	07:24	08:17	08:13	08:48
	17:06	18:05	18:56	20:50	21:40	22:06	21:46	20:49	19:37	18:28	16:35	16:26
24	08:34	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:06	18:57	20:52	21:41	22:06	21:45	20:47	19:34	18:26	16:34	16:26
25	08:32	07:36	06:31	06:21	05:29	05:15	05:45	06:36	07:28	07:21	08:17	08:49
	17:10	18:08	18:59	20:54	21:42	22:06	21:43	20:44	19:32	17:24	16:33	16:27
26	08:31	07:34	06:29	06:18	05:28	05:15	05:47	06:37	07:29	07:22	08:18	08:49
	17:11	18:10	19:01	20:55	21:44	22:06	21:42	20:42	19:29	17:22	16:32	16:28
27	08:29	07:31	06:27	06:16	05:27	05:16	05:48	06:39	07:31	07:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	22:06	21:40	20:40	19:27	17:20	16:31	16:29
28	08:28	07:29	06:24	06:14	05:25	05:16	05:50	06:41	07:33	07:26	08:21	08:50
	17:15	18:14	19:04	20:59	21:46	22:06	21:39	20:38	19:25	17:18	16:30	16:29
29	08:27		07:22	06:12	05:24	05:17	05:51	06:42	07:35	07:28	08:23	08:50
	17:17		20:06	21:01	21:48	22:06	21:37	20:35	19:22	17:16	16:30	16:30
30	08:25		07:19	06:10	05:23	05:18	05:53	06:44	07:36	07:30	08:24	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	17:14	16:29	16:31
31	08:24		07:17		05:22		05:54	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240
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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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: BM - H65

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January	February	March		April		May		June
1	08:50	08:22	07:27		07:15		07:38 (2)	06:08	06:33 (1)	05:22
	16:33	17:23	18:16		20:11	8	07:46 (2)	21:04	11	06:44 (1)	21:51
2	08:50	08:20	07:25		07:12		07:36 (2)	06:06	06:31 (1)	05:21
	16:35	17:24	18:18		20:13	11	07:47 (2)	21:06	13	06:44 (1)	21:53
3	08:50	08:19	07:23		07:10		07:33 (2)	06:04	06:30 (1)	05:20
	16:36	17:26	18:19		20:15	14	07:47 (2)	21:08	15	06:45 (1)	21:54
4	08:50	08:17	07:20		07:08		07:31 (2)	06:02	06:28 (1)	05:19
	16:37	17:28	18:21		20:17	16	07:47 (2)	21:09	17	06:45 (1)	21:55
5	08:49	08:15	07:18		07:05		07:29 (2)	06:01	06:26 (1)	05:18
	16:38	17:30	18:23		20:19	18	07:47 (2)	21:11	18	06:44 (1)	21:56
6	08:49	08:14	07:16		07:03		07:26 (2)	05:59	06:24 (1)	05:18
	16:39	17:32	18:25		20:20	20	07:46 (2)	21:13	19	06:43 (1)	21:57
7	08:49	08:12	07:14		07:01		07:24 (2)	05:57	06:23 (1)	05:17
	16:41	17:34	18:27		20:22	21	07:45 (2)	21:14	20	06:43 (1)	21:58
8	08:48	08:10	07:11		06:58		07:22 (2)	05:55	06:23 (1)	05:17
	16:42	17:36	18:29		20:24	23	07:45 (2)	21:16	19	06:42 (1)	21:59
9	08:48	08:08	07:09		06:56		07:22 (2)	05:53	06:23 (1)	05:16
	16:43	17:38	18:30		20:26	21	07:43 (2)	21:18	18	06:41 (1)	21:59
10	08:47	08:06	07:07		06:54		07:23 (2)	05:51	06:25 (1)	05:16
	16:45	17:40	18:32		20:27	18	07:41 (2)	21:19	15	06:40 (1)	22:00
11	08:46	08:05	07:04		06:52		07:25 (2)	05:50	06:26 (1)	05:15
	16:46	17:42	18:34		20:29	15	07:40 (2)	21:21	12	06:38 (1)	22:01
12	08:46	08:03	07:02		06:49		07:27 (2)	05:48	06:27 (1)	05:15
	16:48	17:44	18:36		20:31	10	07:37 (2)	21:23	9	06:36 (1)	22:02
13	08:45	08:01	07:00		06:47			05:46			05:14
	16:49	17:46	18:38		20:33			21:24			22:02
14	08:44	07:59	06:57		06:45		07:08 (4)	05:45			05:14
	16:51	17:47	18:40		20:34	3	07:11 (4)	21:26			22:03
15	08:43	07:57	06:55		06:42		07:06 (4)	05:43			05:14
	16:52	17:49	18:41		20:36	5	07:11 (4)	21:27			22:04
16	08:43	07:55	06:53		06:40		07:04 (4)	05:41			05:14
	16:54	17:51	18:43		20:38	7	07:11 (4)	21:29			22:04
17	08:42	07:53	06:50		06:38		07:02 (4)	05:40			05:14
	16:56	17:53	18:45		20:40	9	07:11 (4)	21:31			22:05
18	08:41	07:51	06:48		06:36		06:59 (4)	05:38			05:14
	16:57	17:55	18:47		20:41	11	07:10 (4)	21:32			22:05
19	08:40	07:49	06:46		06:34		06:57 (4)	05:37			05:14
	16:59	17:57	18:48		20:43	12	07:09 (4)	21:34			22:05
20	08:38	07:47	06:43		06:31		06:55 (4)	05:36			05:14
	17:01	17:59	18:50		20:45	13	07:08 (4)	21:35			22:06
21	08:37	07:44	06:41		06:29		06:55 (4)	05:34			05:14
	17:02	18:01	18:52		20:47	11	07:06 (4)	21:37			22:06
22	08:36	07:42	06:38		06:27		06:57 (4)	05:33			05:14
	17:04	18:03	18:54		20:48	7	07:04 (4)	21:38			22:06
23	08:35	07:40	06:36	06:59 (3)	06:25			05:31			05:14
	17:06	18:05	18:56	1	07:00 (3)	20:50			21:40		22:06
24	08:34	07:38	06:34	06:57 (3)	06:23			05:30			05:15
	17:08	18:06	18:57	4	07:01 (3)	20:52			21:41		22:06
25	08:32	07:36	06:31	06:54 (3)	06:21			05:29			05:15
	17:10	18:08	18:59	6	07:00 (3)	20:54			21:42		22:07
26	08:31	07:34	06:29	06:52 (3)	06:19			05:28			05:15
	17:11	18:10	19:01	8	07:00 (3)	20:55			21:44		22:06
27	08:30	07:32	06:27	06:50 (3)	06:16		06:41 (1)	05:27			05:16
	17:13	18:12	19:03	10	07:00 (3)	20:57	2	06:43 (1)	21:45		22:06
28	08:28	07:29	06:24	06:47 (3)	06:14		06:39 (1)	05:25			05:16
	17:15	18:14	19:04	12	06:59 (3)	20:59	5	06:44 (1)	21:46		22:06
29	08:27		07:22	07:45 (3)	06:12		06:37 (1)	05:24			05:17
	17:17		20:06	13	07:58 (3)	21:01	7	06:44 (1)	21:48		22:06
30	08:25		07:19	07:43 (2)	06:10		06:35 (1)	05:23			05:18
	17:19		20:08	13	07:56 (3)	21:02	9	06:44 (1)	21:49		22:06
31	08:24		07:17	07:40 (2)				05:22			
	17:21		20:10	13	07:53 (3)				21:50		
Potential sun hours	256	276	367		418			489			503
Total, worst case				80		296			186		
Sun reduction				0.24		0.35			0.37		
Oper. time red.				1.00		1.00			1.00		
Wind dir. red.				0.69		0.68			0.67		
Total reduction				0.17		0.24			0.25		
Total, real				14		72			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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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: BM - H65

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	July		August		September		October	November	December
1	05:18		05:56		06:37 (1)	06:47	07:24 (2)	07:38	07:34	08:26
	22:06		21:32	10	06:47 (1)	20:29	15	07:39 (2)	19:18	17:10	16:28
2	05:19		05:58		06:36 (1)	06:49	07:22 (2)	07:40	07:35	08:27
	22:05		21:31	13	06:49 (1)	20:26	18	07:40 (2)	19:15	17:08	16:27
3	05:20		05:59		06:34 (1)	06:51	07:20 (2)	07:42	07:37	08:29
	22:05		21:29	16	06:50 (1)	20:24	21	07:41 (2)	19:13	17:06	16:27
4	05:20		06:01		06:33 (1)	06:53	07:19 (2)	07:43	07:39	08:30
	22:04		21:27	19	06:52 (1)	20:22	23	07:42 (2)	19:11	17:04	16:26
5	05:21		06:02		06:32 (1)	06:54	07:20 (2)	07:45	07:41	08:32
	22:04		21:25	20	06:52 (1)	20:19	21	07:41 (2)	19:08	17:02	16:26
6	05:22		06:04		06:33 (1)	06:56	07:22 (2)	07:47	07:43	08:33
	22:03		21:24	20	06:53 (1)	20:17	20	07:42 (2)	19:06	17:01	16:25
7	05:23		06:06		06:34 (1)	06:58	07:24 (2)	07:48	07:45	08:34
	22:03		21:22	19	06:53 (1)	20:15	18	07:42 (2)	19:04	16:59	16:25
8	05:24		06:07		06:36 (1)	06:59	07:25 (2)	07:50	07:47	08:36
	22:02		21:20	18	06:54 (1)	20:12	16	07:41 (2)	19:01	16:57	16:24
9	05:25		06:09		06:38 (1)	07:01	07:27 (2)	07:52	07:48	08:37
	22:01		21:18	16	06:54 (1)	20:10	14	07:41 (2)	18:59	16:55	16:24
10	05:26		06:11		06:39 (1)	07:03	07:28 (2)	07:54	07:50	08:38
	22:01		21:16	14	06:53 (1)	20:08	11	07:39 (2)	18:57	16:54	16:24
11	05:27		06:12		06:41 (1)	07:04	07:30 (2)	07:55	07:52	08:39
	22:00		21:14	13	06:54 (1)	20:05	9	07:39 (2)	18:54	16:52	16:24
12	05:28		06:14		06:42 (1)	07:06	07:32 (2)	07:57	07:54	08:40
	21:59		21:12	11	06:53 (1)	20:03	13	07:45 (3)	18:52	16:51	16:23
13	05:29		06:16		06:44 (1)	07:08	07:33 (2)	07:59	07:56	08:41
	21:58		21:10	9	06:53 (1)	20:01	13	07:46 (3)	18:50	16:49	16:23
14	05:31		06:17		06:45 (1)	07:09	07:35 (3)	08:01	07:57	08:42
	21:57		21:08	7	06:52 (1)	19:58	13	07:48 (3)	18:48	16:47	16:23
15	05:32		06:19		06:47 (1)	07:11	07:37 (3)	08:03	07:59	08:43
	21:56		21:06	4	06:51 (1)	19:56	12	07:49 (3)	18:45	16:46	16:23
16	05:33		06:21		06:48 (1)	07:13	07:38 (3)	08:04	08:01	08:44
	21:55		21:04	2	06:50 (1)	19:53	10	07:48 (3)	18:43	16:44	16:23
17	05:34		06:22			07:14	07:40 (3)	08:06	08:03	08:45
	21:54		21:02			19:51	9	07:49 (3)	18:41	16:43	16:24
18	05:36		06:24			07:16	07:42 (3)	08:08	08:05	08:45
	21:53		21:00			19:49	7	07:49 (3)	18:39	16:42	16:24
19	05:37		06:26			07:18	07:43 (3)	08:10	08:06	08:46
	21:52		20:58			19:46	4	07:47 (3)	18:36	16:40	16:24
20	05:38		06:27			07:19	07:45 (3)	08:12	08:08	08:47
	21:50		20:55			19:44	2	07:47 (3)	18:34	16:39	16:24
21	05:40		06:29		07:01 (4)	07:21		08:13	08:10	08:47
	21:49		20:53	8	07:09 (4)	19:41		18:32	16:38	16:25
22	05:41		06:31		06:59 (4)	07:23		08:15	08:12	08:48
	21:48		20:51	12	07:11 (4)	19:39		18:30	16:37	16:25
23	05:42		06:32		07:00 (4)	07:24		08:17	08:13	08:48
	21:46		20:49	13	07:13 (4)	19:37		18:28	16:36	16:26
24	05:44		06:34		07:01 (4)	07:26		08:19	08:15	08:49
	21:45		20:47	12	07:13 (4)	19:34		18:26	16:34	16:26
25	05:45		06:36		07:03 (4)	07:28		07:21	08:17	08:49
	21:44		20:45	11	07:14 (4)	19:32		17:24	16:33	16:27
26	05:47		06:37		07:04 (4)	07:30		07:22	08:18	08:50
	21:42		20:42	9	07:13 (4)	19:29		17:22	16:32	16:28
27	05:48		06:39		07:06 (4)	07:31		07:24	08:20	08:50
	21:41		20:40	7	07:13 (4)	19:27		17:20	16:31	16:29
28	05:50		06:41		07:08 (4)	07:33		07:26	08:21	08:50
	21:39		20:38	5	07:13 (4)	19:25		17:18	16:30	16:29
29	05:51		06:42		07:09 (4)	07:35		07:28	08:23	08:50
	21:37		20:36	3	07:12 (4)	19:22		17:16	16:30	16:30
30	05:53		06:44			07:36		07:30	08:25	08:50
	21:36		20:33			19:20		17:14	16:29	16:31
31	05:54		06:41 (1)	06:46		07:26 (2)		07:32		08:50
	21:34	3	06:44 (1)	20:31	10	07:36 (2)			17:12		16:32
Potential sun hours	506			456			381		330	263	240
Total, worst case		3			301			269			
Sun reduction		0.26			0.30			0.28			
Oper. time red.		1.00			1.00			1.00			
Wind dir. red.		0.67			0.67			0.69			
Total reduction		0.18			0.20			0.20			
Total, real		1			60			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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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: BN - H66

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January	February	March	April		May		June	
1	08:50	08:22	07:27	07:15		06:08		05:22	
	16:33	17:23	18:16	20:11		21:04	20	06:53 (2)	21:51	7	05:58 (1)
2	08:50	08:20	07:25	07:12		06:06		06:31 (2)	05:21		05:50 (1)
	16:35	17:24	18:18	20:13		21:06	21	06:52 (2)	21:53	8	05:58 (1)
3	08:50	08:19	07:23	07:10		06:04		06:30 (2)	05:20		05:50 (1)
	16:36	17:26	18:19	20:15		21:07	22	06:52 (2)	21:54	9	05:59 (1)
4	08:50	08:17	07:20	07:08		06:02		06:28 (2)	05:19		05:49 (1)
	16:37	17:28	18:21	20:17		21:09	24	06:52 (2)	21:55	10	05:59 (1)
5	08:49	08:15	07:18	07:05		06:01		06:26 (4)	05:18		05:48 (1)
	16:38	17:30	18:23	20:18		21:11	25	06:51 (2)	21:56	10	05:58 (1)
6	08:49	08:14	07:16	07:03		05:59		06:24 (4)	05:18		05:48 (1)
	16:39	17:32	18:25	20:20		21:13	25	06:49 (2)	21:57	11	05:59 (1)
7	08:49	08:12	07:14	07:01		05:57		06:23 (4)	05:17		05:47 (1)
	16:41	17:34	18:27	20:22		21:14	26	06:49 (2)	21:58	12	05:59 (1)
8	08:48	08:10	07:11	06:58		05:55		06:21 (4)	05:17		05:47 (1)
	16:42	17:36	18:29	20:24		21:16	26	06:47 (2)	21:59	12	05:59 (1)
9	08:48	08:08	07:09	06:56	07:19 (3)	05:53		06:19 (4)	05:16		05:46 (1)
	16:43	17:38	18:30	20:26	2	07:21 (3)	21:18	24	06:45 (2)	21:59	13	05:59 (1)
10	08:47	08:06	07:07	06:54	07:17 (3)	05:51		06:18 (4)	05:16		05:46 (1)
	16:45	17:40	18:32	20:27	4	07:21 (3)	21:19	22	06:44 (2)	22:00	13	05:59 (1)
11	08:46	08:05	07:04	06:52	07:15 (3)	05:50		06:16 (4)	05:15		05:46 (1)
	16:46	17:42	18:34	20:29	6	07:21 (3)	21:21	13	06:29 (4)	22:01	14	06:00 (1)
12	08:46	08:03	07:02	06:49	07:13 (3)	05:48		06:14 (4)	05:15		05:45 (1)
	16:48	17:44	18:36	20:31	8	07:21 (3)	21:23	13	06:27 (4)	22:02	14	05:59 (1)
13	08:45	08:01	07:00	06:47	07:10 (3)	05:46		06:16 (4)	05:14		05:45 (1)
	16:49	17:46	18:38	20:33	10	07:20 (3)	21:24	10	06:26 (4)	22:02	15	06:00 (1)
14	08:44	07:59	06:57	06:45	07:08 (3)	05:45		06:18 (4)	05:14		05:45 (1)
	16:51	17:47	18:40	20:34	12	07:20 (3)	21:26	5	06:23 (4)	22:03	15	06:00 (1)
15	08:43	07:57	06:55	06:42	07:06 (3)	05:43			05:14		05:45 (1)
	16:52	17:49	18:41	20:36	13	07:19 (3)	21:27		22:04	15	06:00 (1)
16	08:42	07:55	06:53	06:40	07:04 (3)	05:42			05:14		05:45 (1)
	16:54	17:51	18:43	20:38	14	07:18 (3)	21:29		22:04	16	06:01 (1)
17	08:42	07:53	06:50	06:38	07:04 (3)	05:40			05:14		05:45 (1)
	16:56	17:53	18:45	20:40	12	07:16 (3)	21:31		22:05	16	06:01 (1)
18	08:41	07:51	06:48	06:36	07:05 (3)	05:38			05:14		05:45 (1)
	16:57	17:55	18:47	20:41	8	07:13 (3)	21:32		22:05	16	06:01 (1)
19	08:40	07:49	06:46	06:34		05:37			05:14		05:45 (1)
	16:59	17:57	18:48	20:43		21:34			22:05	16	06:01 (1)
20	08:38	07:47	06:43	06:31		05:36			05:14		05:45 (1)
	17:01	17:59	18:50	20:45		21:35			22:06	16	06:01 (1)
21	08:37	07:44	06:41	06:29		05:34			05:14		05:45 (1)
	17:02	18:01	18:52	20:47		21:37			22:06	16	06:01 (1)
22	08:36	07:42	06:38	06:27		05:33			05:14		05:46 (1)
	17:04	18:03	18:54	20:48		21:38			22:06	16	06:02 (1)
23	08:35	07:40	06:36	06:25	06:49 (2)	05:31			05:14		05:46 (1)
	17:06	18:05	18:56	20:50	2	06:51 (2)	21:40			22:06	16	06:02 (1)
24	08:34	07:38	06:34	06:23	06:47 (2)	05:30			05:15		05:46 (1)
	17:08	18:06	18:57	20:52	5	06:52 (2)	21:41		22:06	16	06:02 (1)
25	08:32	07:36	06:31	06:21	06:45 (2)	05:29			05:15		05:47 (1)
	17:10	18:08	18:59	20:54	8	06:53 (2)	21:42		22:06	16	06:03 (1)
26	08:31	07:34	06:29	06:19	06:43 (2)	05:28			05:16		05:47 (1)
	17:11	18:10	19:01	20:55	10	06:53 (2)	21:44		22:06	16	06:03 (1)
27	08:30	07:32	06:27	06:16	06:41 (2)	05:27			05:16		05:48 (1)
	17:13	18:12	19:03	20:57	12	06:53 (2)	21:45		22:06	15	06:03 (1)
28	08:28	07:29	06:24	06:14	06:39 (2)	05:26		05:54 (1)	05:16		05:48 (1)
	17:15	18:14	19:04	20:59	14	06:53 (2)	21:46	2	05:56 (1)	22:06	15	06:03 (1)
29	08:27		07:22	06:12	06:37 (2)	05:24		05:53 (1)	05:17		05:49 (1)
	17:17		20:06	21:01	16	06:53 (2)	21:48	3	05:56 (1)	22:06	15	06:04 (1)
30	08:25		07:19	06:10	06:35 (2)	05:23		05:53 (1)	05:18		05:49 (1)
	17:19		20:08	21:02	18	06:53 (2)	21:49	4	05:57 (1)	22:06	15	06:04 (1)
31	08:24		07:17			05:22		05:52 (1)			
	17:21		20:10			21:50	6	05:58 (1)			
Potential sun hours	256	276	367	418		488			503		
Total, worst case					174			291			414
Sun reduction					0.35			0.37			0.30
Oper. time red.					1.00			1.00			1.00
Wind dir. red.					0.68			0.67			0.63
Total reduction					0.24			0.24			0.19
Total, real					41			71			78

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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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: BN - H66

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	July			August			September			October	November	December
1	05:18		05:50 (1)	05:56		06:25 (4)	06:47		07:14 (3)	07:38	07:34	08:26
	22:06	14	06:04 (1)	21:32	13	06:38 (4)	20:29	6	07:20 (3)	19:18	17:10	16:28
2	05:19		05:50 (1)	05:58		06:27 (4)	06:49		07:16 (3)	07:40	07:35	08:27
	22:05	14	06:04 (1)	21:31	16	06:51 (2)	20:26	4	07:20 (3)	19:15	17:08	16:27
3	05:20		05:51 (1)	05:59		06:28 (4)	06:51		07:17 (3)	07:42	07:37	08:29
	22:05	13	06:04 (1)	21:29	23	06:54 (2)	20:24	2	07:19 (3)	19:13	17:06	16:27
4	05:20		05:52 (1)	06:01		06:30 (4)	06:53			07:43	07:39	08:30
	22:04	13	06:05 (1)	21:27	26	06:56 (2)	20:22			19:11	17:04	16:26
5	05:21		05:53 (1)	06:02		06:31 (4)	06:54			07:45	07:41	08:32
	22:04	12	06:05 (1)	21:25	26	06:57 (2)	20:19			19:08	17:02	16:26
6	05:22		05:54 (1)	06:04		06:33 (4)	06:56			07:47	07:43	08:33
	22:03	11	06:05 (1)	21:24	26	06:59 (2)	20:17			19:06	17:01	16:25
7	05:23		05:54 (1)	06:06		06:34 (4)	06:58			07:48	07:45	08:34
	22:03	11	06:05 (1)	21:22	25	06:59 (2)	20:15			19:04	16:59	16:25
8	05:24		05:55 (1)	06:07		06:36 (4)	06:59			07:50	07:47	08:36
	22:02	10	06:05 (1)	21:20	24	07:00 (2)	20:12			19:01	16:57	16:24
9	05:25		05:56 (1)	06:09		06:38 (2)	07:01			07:52	07:48	08:37
	22:01	9	06:05 (1)	21:18	23	07:01 (2)	20:10			18:59	16:55	16:24
10	05:26		05:57 (1)	06:11		06:39 (2)	07:03			07:54	07:50	08:38
	22:01	8	06:05 (1)	21:16	22	07:01 (2)	20:08			18:57	16:54	16:24
11	05:27		05:58 (1)	06:12		06:41 (2)	07:04			07:55	07:52	08:39
	22:00	7	06:05 (1)	21:14	21	07:02 (2)	20:05			18:54	16:52	16:24
12	05:28		05:59 (1)	06:14		06:42 (2)	07:06			07:57	07:54	08:40
	21:59	6	06:05 (1)	21:12	19	07:01 (2)	20:03			18:52	16:51	16:23
13	05:29		06:00 (1)	06:16		06:44 (2)	07:08			07:59	07:56	08:41
	21:58	5	06:05 (1)	21:10	18	07:02 (2)	20:01			18:50	16:49	16:23
14	05:31		06:02 (1)	06:17		06:45 (2)	07:09			08:01	07:57	08:42
	21:57	4	06:06 (1)	21:08	16	07:01 (2)	19:58			18:48	16:47	16:23
15	05:32		06:03 (1)	06:19		06:47 (2)	07:11			08:03	07:59	08:43
	21:56	2	06:05 (1)	21:06	14	07:01 (2)	19:56			18:45	16:46	16:23
16	05:33		06:04 (1)	06:21		06:48 (2)	07:13			08:04	08:01	08:44
	21:55	1	06:05 (1)	21:04	12	07:00 (2)	19:53			18:43	16:44	16:23
17	05:34			06:22		06:50 (2)	07:14			08:06	08:03	08:45
	21:54			21:02	10	07:00 (2)	19:51			18:41	16:43	16:24
18	05:36			06:24		06:52 (2)	07:16			08:08	08:05	08:45
	21:53			21:00	7	06:59 (2)	19:49			18:39	16:42	16:24
19	05:37			06:26		06:53 (2)	07:18			08:10	08:06	08:46
	21:52			20:58	4	06:57 (2)	19:46			18:36	16:40	16:24
20	05:38			06:27		06:55 (2)	07:19			08:12	08:08	08:47
	21:50			20:55	2	06:57 (2)	19:44			18:34	16:39	16:25
21	05:40			06:29			07:21			08:13	08:10	08:47
	21:49			20:53			19:41			18:32	16:38	16:25
22	05:41			06:31			07:23			08:15	08:12	08:48
	21:48			20:51			19:39			18:30	16:37	16:25
23	05:42			06:32			07:24			08:17	08:13	08:48
	21:46			20:49			19:37			18:28	16:36	16:26
24	05:44			06:34			07:26			08:19	08:15	08:49
	21:45			20:47			19:34			18:26	16:34	16:26
25	05:45			06:36		07:09 (3)	07:28			07:21	08:17	08:49
	21:43			20:45	8	07:17 (3)	19:32			17:24	16:33	16:27
26	05:47			06:37		07:06 (3)	07:30			07:22	08:18	08:50
	21:42			20:42	12	07:18 (3)	19:29			17:22	16:32	16:28
27	05:48			06:39		07:06 (3)	07:31			07:24	08:20	08:50
	21:41			20:40	14	07:20 (3)	19:27			17:20	16:31	16:29
28	05:50			06:41		07:08 (3)	07:33			07:26	08:21	08:50
	21:39			20:38	13	07:21 (3)	19:25			17:18	16:30	16:29
29	05:51			06:42		07:09 (3)	07:35			07:28	08:23	08:50
	21:37			20:36	12	07:21 (3)	19:22			17:16	16:30	16:30
30	05:53		06:27 (4)	06:44		07:11 (3)	07:36			07:30	08:25	08:50
	21:36	8	06:35 (4)	20:33	10	07:21 (3)	19:20			17:14	16:29	16:31
31	05:54		06:26 (4)	06:46		07:12 (3)				07:32		08:50
	21:34	11	06:37 (4)	20:31	8	07:20 (3)				17:12		16:32
Potential sun hours	506			456			381			330	263	240
Total, worst case		159			424			12				
Sun reduction		0.26			0.30			0.28				
Oper. time red.		1.00			1.00			1.00				
Wind dir. red.		0.64			0.67			0.68				
Total reduction		0.17			0.20			0.19				
Total, real		27			84			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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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: BO - H67

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:08	05:22	05:18	05:56	06:47	07:38	07:33	08:26
	16:33	17:23	18:16	20:11	21:04	21:51	22:05	21:32	20:29	19:18	17:10	16:28
2	08:50	08:20	07:25	07:12	06:06	05:21	05:19	05:58	06:49	07:40	07:35	08:27
	16:35	17:24	18:18	20:13	21:06	21:52	22:05	21:31	20:26	19:15	17:08	16:27
3	08:50	08:19	07:23	07:10	06:04	05:20	05:20	05:59	06:51	07:41	07:37	08:29
	16:36	17:26	18:19	20:15	21:07	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:02	05:19	05:20	06:01	06:52	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09	21:55	22:04	21:27	20:22	19:10	17:04	16:26
5	08:49	08:15	07:18	07:05	06:01	05:18	05:21	06:02	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:18	21:11	21:56	22:04	21:25	20:19	19:08	17:02	16:26
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:39	17:32	18:25	20:20	21:13	21:57	22:03	21:23	20:17	19:06	17:01	16:25
7	08:49	08:12	07:13	07:01	05:57	05:17	05:23	06:06	06:57	07:48	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:03	16:59	16:25
8	08:48	08:10	07:11	06:58	05:55	05:16	05:24	06:07	06:59	07:50	07:46	08:35
	16:42	17:36	18:29	20:24	21:16	21:58	22:02	21:20	20:12	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48	08:37
	16:43	17:38	18:30	20:25	21:18	21:59	22:01	21:18	20:10	18:59	16:55	16:24
10	08:47	08:06	07:07	06:54	05:51	05:16	05:26	06:11	07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	22:00	21:16	20:08	18:57	16:54	16:24
11	08:46	08:04	07:04	06:51	05:50	05:15	05:27	06:12	07:04	07:55	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:54	16:52	16:23
12	08:46	08:03	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:50	16:23
13	08:45	08:01	07:00	06:47	05:46	05:14	05:29	06:16	07:08	07:59	07:56	08:41
	16:49	17:45	18:38	20:32	21:24	22:02	21:58	21:10	20:00	18:50	16:49	16:23
14	08:44	07:59	06:57	06:45	05:45	05:14	05:31	06:17	07:09	08:01	07:57	08:42
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	16:52	17:49	18:41	20:36	21:27	22:03	21:56	21:06	19:56	18:45	16:46	16:23
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17	08:41	07:53	06:50	06:38	05:40	05:14	05:34	06:22	07:14	08:06	08:03	08:45
	16:56	17:53	18:45	20:39	21:31	22:04	21:54	21:02	19:51	18:41	16:43	16:24
18	08:40	07:51	06:48	06:36	05:38	05:14	05:36	06:24	07:16	08:08	08:05	08:45
	16:57	17:55	18:47	20:41	21:32	22:05	21:53	21:00	19:48	18:39	16:42	16:24
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	16:59	17:57	18:48	20:43	21:34	22:05	21:51	20:58	19:46	18:36	16:40	16:24
20	08:38	07:46	06:43	06:31	05:35	05:14	05:38	06:27	07:19	08:11	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:55	19:44	18:34	16:39	16:24
21	08:37	07:44	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:13	08:10	08:47
	17:02	18:01	18:52	20:47	21:37	22:06	21:49	20:53	19:41	18:32	16:38	16:25
22	08:36	07:42	06:38	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:11	08:48
	17:04	18:03	18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:25
23	08:35	07:40	06:36	06:25	05:31	05:14	05:42	06:32	07:24	08:17	08:13	08:48
	17:06	18:04	18:55	20:50	21:39	22:06	21:46	20:49	19:37	18:28	16:35	16:26
24	08:33	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:06	18:57	20:52	21:41	22:06	21:45	20:47	19:34	18:26	16:34	16:26
25	08:32	07:36	06:31	06:21	05:29	05:15	05:45	06:36	07:28	07:21	08:16	08:49
	17:10	18:08	18:59	20:54	21:42	22:06	21:43	20:44	19:32	17:24	16:33	16:27
26	08:31	07:34	06:29	06:18	05:28	05:15	05:47	06:37	07:29	07:22	08:18	08:49
	17:11	18:10	19:01	20:55	21:44	22:06	21:42	20:42	19:29	17:22	16:32	16:28
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	17:17		20:06	21:00	21:48	22:06	21:37	20:35	19:22	17:16	16:30	16:30
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	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	17:14	16:29	16:31
31	08:23		07:17		05:22		05:54	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240
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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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: BP - H68

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:08	05:22	05:18	05:56	06:47	07:38	07:33	08:26
	16:33	17:23	18:16	20:11	21:04	21:51	22:06	21:32	20:29	19:18	17:10	16:28
2	08:50	08:20	07:25	07:12	06:06	05:21	05:19	05:58	06:49	07:40	07:35	08:27
	16:35	17:24	18:18	20:13	21:06	21:52	22:05	21:31	20:26	19:15	17:08	16:27
3	08:50	08:19	07:23	07:10	06:04	05:20	05:20	05:59	06:51	07:41	07:37	08:29
	16:36	17:26	18:19	20:15	21:07	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:02	05:19	05:20	06:01	06:52	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09	21:55	22:04	21:27	20:22	19:11	17:04	16:26
5	08:49	08:15	07:18	07:05	06:01	05:18	05:21	06:02	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:18	21:11	21:56	22:04	21:25	20:19	19:08	17:02	16:26
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:39	17:32	18:25	20:20	21:13	21:57	22:03	21:24	20:17	19:06	17:01	16:25
7	08:49	08:12	07:13	07:01	05:57	05:17	05:23	06:06	06:58	07:48	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:58	05:55	05:17	05:24	06:07	06:59	07:50	07:46	08:35
	16:42	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:12	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48	08:37
	16:43	17:38	18:30	20:25	21:18	21:59	22:01	21:18	20:10	18:59	16:55	16:24
10	08:47	08:06	07:07	06:54	05:51	05:16	05:26	06:11	07:03	07:54	07:50	08:38
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	16:51	17:47	18:39	20:34	21:26	22:03	21:57	21:08	19:58	18:48	16:47	16:23
15	08:43	07:57	06:55	06:42	05:43	05:14	05:32	06:19	07:11	08:03	07:59	08:43
	16:52	17:49	18:41	20:36	21:27	22:04	21:56	21:06	19:56	18:45	16:46	16:23
16	08:42	07:55	06:53	06:40	05:41	05:14	05:33	06:21	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:53	18:43	16:44	16:23
17	08:41	07:53	06:50	06:38	05:40	05:14	05:34	06:22	07:14	08:06	08:03	08:45
	16:56	17:53	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43	16:24
18	08:40	07:51	06:48	06:36	05:38	05:14	05:36	06:24	07:16	08:08	08:05	08:45
	16:57	17:55	18:47	20:41	21:32	22:05	21:53	21:00	19:49	18:39	16:42	16:24
19	08:39	07:49	06:45	06:34	05:37	05:14	05:37	06:26	07:18	08:10	08:06	08:46
	16:59	17:57	18:48	20:43	21:34	22:05	21:51	20:58	19:46	18:36	16:40	16:24
20	08:38	07:46	06:43	06:31	05:36	05:14	05:38	06:27	07:19	08:11	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:55	19:44	18:34	16:39	16:24
21	08:37	07:44	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:13	08:10	08:47
	17:02	18:01	18:52	20:47	21:37	22:06	21:49	20:53	19:41	18:32	16:38	16:25
22	08:36	07:42	06:38	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:12	08:48
	17:04	18:03	18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:25
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	17:06	18:05	18:56	20:50	21:40	22:06	21:46	20:49	19:37	18:28	16:35	16:26
24	08:34	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:06	18:57	20:52	21:41	22:06	21:45	20:47	19:34	18:26	16:34	16:26
25	08:32	07:36	06:31	06:21	05:29	05:15	05:45	06:36	07:28	07:21	08:17	08:49
	17:10	18:08	18:59	20:54	21:42	22:06	21:43	20:44	19:32	17:24	16:33	16:27
26	08:31	07:34	06:29	06:18	05:28	05:16	05:47	06:37	07:29	07:22	08:18	08:49
	17:11	18:10	19:01	20:55	21:44	22:06	21:42	20:42	19:29	17:22	16:32	16:28
27	08:29	07:31	06:27	06:16	05:27	05:16	05:48	06:39	07:31	07:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	22:06	21:40	20:40	19:27	17:20	16:31	16:29
28	08:28	07:29	06:24	06:14	05:25	05:16	05:50	06:41	07:33	07:26	08:21	08:50
	17:15	18:14	19:04	20:59	21:46	22:06	21:39	20:38	19:25	17:18	16:30	16:29
29	08:27		07:22	06:12	05:24	05:17	05:51	06:42	07:35	07:28	08:23	08:50
	17:17		20:06	21:01	21:48	22:06	21:37	20:35	19:22	17:16	16:30	16:30
30	08:25		07:19	06:10	05:23	05:18	05:53	06:44	07:36	07:30	08:24	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	17:14	16:29	16:31
31	08:24		07:17		05:22		05:54	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240
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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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: BQ - H69

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:08	05:21	21:08 (2)	05:18	05:56	06:47	07:38	07:33	08:26
	16:33	17:22	18:16	20:11	21:04	21:51 10	21:18 (2)	22:05	21:32	20:29	19:17	17:10	16:28
2	08:50	08:20	07:25	07:12	06:06	05:21	21:08 (2)	05:19	21:20 (2)	05:57	06:49	07:40	07:35	08:27
	16:34	17:24	18:17	20:13	21:06	21:52 11	21:19 (2)	22:05 4	21:24 (2)	21:31	20:26	19:15	17:08	16:27
3	08:50	08:19	07:22	07:10	06:04	05:20	21:08 (2)	05:20	21:19 (2)	05:59	06:51	07:41	07:37	08:29
	16:36	17:26	18:19	20:15	21:07	21:53 12	21:20 (2)	22:05 7	21:26 (2)	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:02	05:19	21:10 (2)	05:20	21:19 (2)	06:01	06:52	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09	21:55 11	21:21 (2)	22:04 8	21:27 (2)	21:27	20:22	19:10	17:04	16:26
5	08:49	08:15	07:18	07:05	06:00	05:18	21:10 (2)	05:21	21:18 (2)	06:02	06:54	07:45	07:41	08:31
	16:38	17:30	18:23	20:18	21:11	21:56 12	21:22 (2)	22:04 11	21:29 (2)	21:25	20:19	19:08	17:02	16:25
6	08:49	08:13	07:16	07:03	05:59	05:18	21:11 (2)	05:22	21:17 (2)	06:04	06:56	07:47	07:43	08:33
	16:39	17:32	18:25	20:20	21:12	21:57 12	21:23 (2)	22:03 12	21:29 (2)	21:23	20:17	19:06	17:00	16:25
7	08:48	08:12	07:13	07:01	05:57	05:17	21:12 (2)	05:23	21:17 (2)	06:06	06:57	07:48	07:44	08:34
	16:41	17:34	18:27	20:22	21:14	21:58 11	21:23 (2)	22:03 11	21:28 (2)	21:22	20:15	19:03	16:59	16:25
8	08:48	08:10	07:11	06:58	05:55	05:16	21:13 (2)	05:24	21:16 (2)	06:07	06:59	07:50	07:46	08:35
	16:42	17:36	18:29	20:24	21:16	21:58 10	21:23 (2)	22:02 12	21:28 (2)	21:20	20:12	19:01	16:57	16:24
9	08:47	08:08	07:09	06:56	05:53	05:16	21:14 (2)	05:25	21:16 (2)	06:09	07:01	07:52	07:48	08:37
	16:43	17:38	18:30	20:25	21:18	21:59 7	21:21 (2)	22:01 11	21:27 (2)	21:18	20:10	18:59	16:55	16:24
10	08:47	08:06	07:06	06:54	05:51	05:15	21:15 (2)	05:26	21:16 (2)	06:10	07:02	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00 6	21:21 (2)	22:00 11	21:27 (2)	21:16	20:07	18:56	16:54	16:24
11	08:46	08:04	07:04	06:51	05:50	05:15	21:17 (2)	05:27	21:15 (2)	06:12	07:04	07:55	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01 3	21:20 (2)	22:00 11	21:26 (2)	21:14	20:05	18:54	16:52	16:23
12	08:46	08:02	07:02	06:49	05:48	05:15	21:26 (3)	05:28	21:15 (2)	06:14	07:06	07:57	07:54	08:40
	16:48	17:43	18:36	20:31	21:22	22:02 1	21:27 (3)	21:59 10	21:25 (2)	21:12	20:03	18:52	16:50	16:23
13	08:45	08:01	06:59	06:47	05:46	05:14	21:26 (3)	05:29	21:15 (2)	06:15	07:07	07:59	07:55	08:41
	16:49	17:45	18:38	20:32	21:24	22:02 2	21:28 (3)	21:58 9	21:24 (2)	21:10	20:00	18:50	16:49	16:23
14	08:44	07:59	06:57	06:45	05:45	05:14	21:27 (3)	05:30	21:14 (2)	06:17	07:09	08:01	07:57	08:42
	16:51	17:47	18:39	20:34	21:26	22:03 2	21:29 (3)	21:57 9	21:23 (2)	21:08	19:58	18:47	16:47	16:23
15	08:43	07:57	06:55	06:42	05:43	05:14	21:27 (3)	05:32	21:15 (2)	06:19	07:11	08:02	07:59	08:43
	16:52	17:49	18:41	20:36	21:27	22:03 2	21:29 (3)	21:56 8	21:23 (2)	21:06	19:56	18:45	16:46	16:23
16	08:42	07:55	06:52	06:40	05:41	05:14	21:27 (3)	05:33	21:15 (2)	06:20	07:12	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04 3	21:30 (3)	21:55 7	21:22 (2)	21:04	19:53	18:43	16:44	16:23
17	08:41	07:53	06:50	06:38	05:40	05:14	21:27 (3)	05:34	21:14 (2)	06:22	07:14	08:06	08:03	08:44
	16:56	17:53	18:45	20:39	21:30	22:04 3	21:30 (3)	21:54 7	21:21 (2)	21:02	19:51	18:41	16:43	16:24
18	08:40	07:51	06:48	06:36	05:38	05:14	21:27 (3)	05:35	21:14 (2)	06:24	07:16	08:08	08:04	08:45
	16:57	17:55	18:47	20:41	21:32	22:05 4	21:31 (3)	21:53 6	21:20 (2)	21:00	19:48	18:39	16:42	16:24
19	08:39	07:48	06:45	06:33	05:37	05:14	21:27 (3)	05:37	21:14 (2)	06:25	07:18	08:10	08:06	08:46
	16:59	17:57	18:48	20:43	21:34	22:05 4	21:31 (3)	21:51 5	21:19 (2)	20:57	19:46	18:36	16:40	16:24
20	08:38	07:46	06:43	06:31	05:35	05:14	21:28 (3)	05:38	21:15 (2)	06:27	07:19	08:11	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06 3	21:31 (3)	21:50 3	21:18 (2)	20:55	19:44	18:34	16:39	16:24
21	08:37	07:44	06:41	06:29	05:34	05:14	21:28 (3)	05:39	21:14 (2)	06:29	07:21	08:13	08:10	08:47
	17:02	18:01	18:52	20:46	21:37	22:06 3	21:31 (3)	21:49 3	21:17 (2)	20:53	19:41	18:32	16:38	16:25
22	08:36	07:42	06:38	06:27	05:33 21:05 (2)	05:14	21:29 (3)	05:41	21:14 (2)	06:31	07:23	08:15	08:11	08:48
	17:04	18:03	18:54	20:48	21:38 2 21:07 (2)	22:06 3	21:32 (3)	21:48 1	21:15 (2)	20:51	19:39	18:30	16:37	16:25
23	08:35	07:40	06:36	06:25	05:31 21:04 (2)	05:14	21:29 (3)	05:42		06:32	07:24	08:17	08:13	08:48
	17:06	18:04	18:55	20:50	21:39 3 21:07 (2)	22:06 3	21:32 (3)	21:46		20:49	19:36	18:28	16:35	16:26
24	08:33	07:38	06:34	06:23	05:30 21:04 (2)	05:15	21:28 (3)	05:44		06:34	07:26	08:19	08:15	08:49
	17:08	18:06	18:57	20:52	21:41 4 21:08 (2)	22:06 4	21:32 (3)	21:45		20:47	19:34	18:26	16:34	16:26
25	08:32	07:36	06:31	06:20	05:29 21:04 (2)	05:15	21:29 (3)	05:45		06:36	07:28	07:20	08:16	08:49
	17:09	18:08	18:59	20:53	21:42 6 21:10 (2)	22:06 3	21:32 (3)	21:43		20:44	19:32	17:24	16:33	16:27
26	08:31	07:34	06:29	06:18	05:28 21:05 (2)	05:15	21:29 (3)	05:47		06:37	07:29	07:22	08:18	08:49
	17:11	18:10	19:01	20:55	21:44 6 21:11 (2)	22:06 3	21:32 (3)	21:42		20:42	19:29	17:22	16:32	16:28
27	08:29	07:31	06:26	06:16	05:26 21:05 (2)	05:16	21:29 (3)	05:48		06:39	07:31	07:24	08:20	08:50
	17:13	18:12	19:02	20:57	21:45 7 21:12 (2)	22:06 2	21:31 (3)	21:40		20:40	19:27	17:20	16:31	16:28
28	08:28	07:29	06:24	06:14	05:25 21:05 (2)	05:16	21:30 (3)	05:50		06:41	07:33	07:26	08:21	08:50
	17:15	18:14	19:04	20:59	21:46 8 21:13 (2)	22:06 2	21:32 (3)	21:39		20:38	19:25	17:18	16:30	16:29
29	08:26		07:22	06:12	05:24 21:06 (2)	05:17	21:30 (3)	05:51		06:42	07:34	07:28	08:23	08:50
	17:17		20:06	21:00	21:48 8 21:14 (2)	22:06 1	21:31 (3)	21:37		20:35	19:22	17:16	16:29	16:30
30	08:25		07:19	06:10	05:23 21:06 (2)	05:17	21:30 (3)	05:53		06:44	07:36	07:30	08:24	08:50
	17:19		20:08	21:02	21:49 9 21:15 (2)	22:06 1	21:31 (3)	21:36		20:33	19:20	17:14	16:29	16:31
31	08:23		07:17		05:22 21:07 (2)			05:54		06:46		07:32		08:50
	17:21		20:10		21:50 10 21:17 (2)			21:34		20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503		506		456	381	330	263	240
Total, worst case					63		154		166					
Sun reduction					0.37		0.30		0.26					
Oper. time red.					1.00		1.00		1.00					
Wind dir. red.					0.66		0.66		0.66					
Total reduction					0.24		0.20		0.18					
Total, real					15		30		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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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: BR - H70

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:08	05:21	05:18	05:56	06:47	07:38	07:33	08:26
	16:33	17:22	18:16	20:11	21:04	21:51	22:05	21:32	20:29	19:17	17:10	16:28
2	08:50	08:20	07:25	07:12	06:06	05:21	05:19	05:58	06:49	07:40	07:35	08:27
	16:34	17:24	18:18	20:13	21:06	21:52	22:05	21:31	20:26	19:15	17:08	16:27
3	08:50	08:19	07:22	07:10	06:04	05:20	05:20	05:59	06:51	07:41	07:37	08:29
	16:36	17:26	18:19	20:15	21:07	21:53	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:02	05:19	05:20	06:01	06:52	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09	21:55	22:04	21:27	20:22	19:10	17:04	16:26
5	08:49	08:15	07:18	07:05	06:00	05:18	05:21	06:02	06:54	07:45	07:41	08:31
	16:38	17:30	18:23	20:18	21:11	21:56	22:04	21:25	20:19	19:08	17:02	16:25
6	08:49	08:13	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:39	17:32	18:25	20:20	21:12	21:57	22:03	21:23	20:17	19:06	17:00	16:25
7	08:48	08:12	07:13	07:01	05:57	05:17	05:23	06:06	06:57	07:48	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:03	16:59	16:25
8	08:48	08:10	07:11	06:58	05:55	05:16	05:24	06:07	06:59	07:50	07:46	08:35
	16:42	17:36	18:29	20:24	21:16	21:58	22:02	21:20	20:12	19:01	16:57	16:24
9	08:47	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48	08:37
	16:43	17:38	18:30	20:25	21:18	21:59	22:01	21:18	20:10	18:59	16:55	16:24
10	08:47	08:06	07:06	06:54	05:51	05:15	05:26	06:10	07:02	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	22:00	21:16	20:07	18:57	16:54	16:24
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13	08:45	08:01	06:59	06:47	05:46	05:14	05:29	06:15	07:07	07:59	07:56	08:41
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	16:51	17:47	18:39	20:34	21:26	22:03	21:57	21:08	19:58	18:47	16:47	16:23
15	08:43	07:57	06:55	06:42	05:43	05:14	05:32	06:19	07:11	08:02	07:59	08:43
	16:52	17:49	18:41	20:36	21:27	22:03	21:56	21:06	19:56	18:45	16:46	16:23
16	08:42	07:55	06:52	06:40	05:41	05:14	05:33	06:20	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:53	18:43	16:44	16:23
17	08:41	07:53	06:50	06:38	05:40	05:14	05:34	06:22	07:14	08:06	08:03	08:44
	16:56	17:53	18:45	20:39	21:30	22:04	21:54	21:02	19:51	18:41	16:43	16:24
18	08:40	07:51	06:48	06:36	05:38	05:14	05:35	06:24	07:16	08:08	08:04	08:45
	16:57	17:55	18:47	20:41	21:32	22:05	21:53	21:00	19:48	18:39	16:42	16:24
19	08:39	07:48	06:45	06:33	05:37	05:14	05:37	06:25	07:18	08:10	08:06	08:46
	16:59	17:57	18:48	20:43	21:34	22:05	21:51	20:57	19:46	18:36	16:40	16:24
20	08:38	07:46	06:43	06:31	05:35	05:14	05:38	06:27	07:19	08:11	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:55	19:44	18:34	16:39	16:24
21	08:37	07:44	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:13	08:10	08:47
	17:02	18:01	18:52	20:46	21:37	22:06	21:49	20:53	19:41	18:32	16:38	16:25
22	08:36	07:42	06:38	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:11	08:48
	17:04	18:03	18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:25
23	08:35	07:40	06:36	06:25	05:31	05:14	05:42	06:32	07:24	08:17	08:13	08:48
	17:06	18:04	18:55	20:50	21:39	22:06	21:46	20:49	19:36	18:28	16:35	16:26
24	08:33	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:06	18:57	20:52	21:41	22:06	21:45	20:47	19:34	18:26	16:34	16:26
25	08:32	07:36	06:31	06:20	05:29	05:15	05:45	06:36	07:28	07:20	08:16	08:49
	17:09	18:08	18:59	20:53	21:42	22:06	21:43	20:44	19:32	17:24	16:33	16:27
26	08:31	07:34	06:29	06:18	05:28	05:15	05:47	06:37	07:29	07:22	08:18	08:49
	17:11	18:10	19:01	20:55	21:44	22:06	21:42	20:42	19:29	17:22	16:32	16:28
27	08:29	07:31	06:26	06:16	05:27	05:16	05:48	06:39	07:31	07:24	08:20	08:50
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	17:15	18:14	19:04	20:59	21:46	22:06	21:39	20:38	19:25	17:18	16:30	16:29
29	08:26		07:22	06:12	05:24	05:17	05:51	06:42	07:35	07:28	08:23	08:50
	17:17		20:06	21:00	21:48	22:06	21:37	20:35	19:22	17:16	16:29	16:30
30	08:25		07:19	06:10	05:23	05:18	05:53	06:44	07:36	07:30	08:24	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	17:14	16:29	16:31
31	08:23		07:17		05:22		05:54	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240
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)

Licensed user:
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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: BS - H71

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:08	05:22	05:18	05:56	06:47	07:38	07:33	08:26
	16:33	17:23	18:16	20:11	21:04	21:51	22:05	21:32	20:29	19:18	17:10	16:28
2	08:50	08:20	07:25	07:12	06:06	05:21	05:19	05:58	06:49	07:40	07:35	08:27
	16:35	17:24	18:18	20:13	21:06	21:52	22:05	21:31	20:26	19:15	17:08	16:27
3	08:50	08:19	07:22	07:10	06:04	05:20	05:20	05:59	06:51	07:41	07:37	08:29
	16:36	17:26	18:19	20:15	21:07	21:53	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:02	05:19	05:20	06:01	06:52	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09	21:55	22:04	21:27	20:22	19:10	17:04	16:26
5	08:49	08:15	07:18	07:05	06:01	05:18	05:21	06:02	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:18	21:11	21:56	22:04	21:25	20:19	19:08	17:02	16:26
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:39	17:32	18:25	20:20	21:12	21:57	22:03	21:23	20:17	19:06	17:01	16:25
7	08:48	08:12	07:13	07:01	05:57	05:17	05:23	06:06	06:57	07:48	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:03	16:59	16:25
8	08:48	08:10	07:11	06:58	05:55	05:16	05:24	06:07	06:59	07:50	07:46	08:35
	16:42	17:36	18:29	20:24	21:16	21:58	22:02	21:20	20:12	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48	08:37
	16:43	17:38	18:30	20:25	21:18	21:59	22:01	21:18	20:10	18:59	16:55	16:24
10	08:47	08:06	07:07	06:54	05:51	05:16	05:26	06:11	07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	22:00	21:16	20:08	18:57	16:54	16:24
11	08:46	08:04	07:04	06:51	05:50	05:15	05:27	06:12	07:04	07:55	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:54	16:52	16:23
12	08:46	08:03	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:50	16:23
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	16:49	17:45	18:38	20:32	21:24	22:02	21:58	21:10	20:00	18:50	16:49	16:23
14	08:44	07:59	06:57	06:45	05:45	05:14	05:31	06:17	07:09	08:01	07:57	08:42
	16:51	17:47	18:39	20:34	21:26	22:03	21:57	21:08	19:58	18:47	16:47	16:23
15	08:43	07:57	06:55	06:42	05:43	05:14	05:32	06:19	07:11	08:02	07:59	08:43
	16:52	17:49	18:41	20:36	21:27	22:03	21:56	21:06	19:56	18:45	16:46	16:23
16	08:42	07:55	06:52	06:40	05:41	05:14	05:33	06:21	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:53	18:43	16:44	16:23
17	08:41	07:53	06:50	06:38	05:40	05:14	05:34	06:22	07:14	08:06	08:03	08:45
	16:56	17:53	18:45	20:39	21:30	22:04	21:54	21:02	19:51	18:41	16:43	16:24
18	08:40	07:51	06:48	06:36	05:38	05:14	05:36	06:24	07:16	08:08	08:05	08:45
	16:57	17:55	18:47	20:41	21:32	22:05	21:53	21:00	19:48	18:39	16:42	16:24
19	08:39	07:49	06:45	06:33	05:37	05:14	05:37	06:26	07:18	08:10	08:06	08:46
	16:59	17:57	18:48	20:43	21:34	22:05	21:51	20:57	19:46	18:36	16:40	16:24
20	08:38	07:46	06:43	06:31	05:35	05:14	05:38	06:27	07:19	08:11	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:55	19:44	18:34	16:39	16:24
21	08:37	07:44	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:13	08:10	08:47
	17:02	18:01	18:52	20:46	21:37	22:06	21:49	20:53	19:41	18:32	16:38	16:25
22	08:36	07:42	06:38	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:11	08:48
	17:04	18:03	18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:25
23	08:35	07:40	06:36	06:25	05:31	05:14	05:42	06:32	07:24	08:17	08:13	08:48
	17:06	18:04	18:55	20:50	21:39	22:06	21:46	20:49	19:37	18:28	16:35	16:26
24	08:33	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:06	18:57	20:52	21:41	22:06	21:45	20:47	19:34	18:26	16:34	16:26
25	08:32	07:36	06:31	06:21	05:29	05:15	05:45	06:36	07:28	07:21	08:16	08:49
	17:10	18:08	18:59	20:53	21:42	22:06	21:43	20:44	19:32	17:24	16:33	16:27
26	08:31	07:34	06:29	06:18	05:28	05:15	05:47	06:37	07:29	07:22	08:18	08:49
	17:11	18:10	19:01	20:55	21:44	22:06	21:42	20:42	19:29	17:22	16:32	16:28
27	08:29	07:31	06:26	06:16	05:27	05:16	05:48	06:39	07:31	07:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	22:06	21:40	20:40	19:27	17:20	16:31	16:29
28	08:28	07:29	06:24	06:14	05:25	05:16	05:50	06:41	07:33	07:26	08:21	08:50
	17:15	18:14	19:04	20:59	21:46	22:06	21:39	20:38	19:25	17:18	16:30	16:29
29	08:27		07:22	06:12	05:24	05:17	05:51	06:42	07:35	07:28	08:23	08:50
	17:17		20:06	21:00	21:48	22:06	21:37	20:35	19:22	17:16	16:30	16:30
30	08:25		07:19	06:10	05:23	05:18	05:53	06:44	07:36	07:30	08:24	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	17:14	16:29	16:31
31	08:23		07:17		05:22		05:54	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240
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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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: BT - H72

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	17:43 (2)	07:15	06:08	05:21	05:18	05:56	06:47	07:38	18:37 (4)	07:33	16:38 (3)	08:26
	16:33	17:22	18:16 6	17:49 (2)	20:11	21:04	21:51	22:05	21:32	20:29	19:17 12	18:49 (4)	17:10 2	16:40 (3)	16:28
2	08:50	08:20	07:25	17:43 (2)	07:12	06:06	05:20	05:19	05:57	06:49	07:40	18:38 (4)	07:35		08:27
	16:34	17:24	18:17 8	17:51 (2)	20:13	21:06	21:52	22:05	21:31	20:26	19:15 9	18:47 (4)	17:08		16:27
3	08:50	08:19	07:22	17:43 (2)	07:10	06:04	05:20	05:19	05:59	06:51	07:41	18:38 (4)	07:37		08:29
	16:35	17:26	18:19 9	17:52 (2)	20:15	21:07	21:54	22:05	21:29	20:24	19:13 7	18:45 (4)	17:06		16:26
4	08:50	08:17	07:20	17:44 (2)	07:08	06:02	05:19	05:20	06:01	06:52	07:43	18:39 (4)	07:39		08:30
	16:37	17:28	18:21 11	17:55 (2)	20:17	21:09	21:55	22:04	21:27	20:22	19:10 4	18:43 (4)	17:04		16:26
5	08:49	08:15	07:18	17:46 (2)	07:05	06:00	05:18	05:21	06:02	06:54	07:45	18:39 (4)	07:41		08:32
	16:38	17:30	18:23 11	17:57 (2)	20:18	21:11	21:56	22:04	21:25	20:19	19:08 1	18:40 (4)	17:02		16:25
6	08:49	08:14	07:16	17:48 (2)	07:03	05:59	05:17	05:22	06:04	06:56	07:47		07:43		08:33
	16:39	17:32	18:25 6	17:54 (2)	20:20	21:12	21:57	22:03	21:23	20:17	19:06		17:00		16:25
7	08:49	08:12	07:13		07:01	05:57	05:17	05:23	06:05	06:57	07:48		07:45		08:34
	16:40	17:34	18:27		20:22	21:14	21:58	22:03	21:22	20:15	19:03		16:59		16:24
8	08:48	08:10	07:11		06:58	05:55	05:16	05:24	06:07	06:59	07:50	18:22 (2)	07:46		08:35
	16:42	17:36	18:28		20:24	21:16	21:58	22:02	21:20	20:12	19:01 9	18:31 (2)	16:57		16:24
9	08:48	08:08	07:09	18:01 (4)	06:56	05:53	05:16	05:25	06:09	07:01	07:52	18:20 (2)	07:48		08:37
	16:43	17:38	18:30 3	18:04 (4)	20:25	21:18	21:59	22:01	21:18	20:10	18:59 11	18:31 (2)	16:55		16:24
10	08:47	08:06	17:08 (3) 07:06	18:00 (4)	06:54	05:51	05:15	05:26	06:10	07:02	07:54	18:18 (2)	07:50		08:38
	16:45	17:40 2	17:10 (3) 18:32 6	18:06 (4)	20:27	21:19	22:00	22:00	21:16	20:07	18:56 10	18:28 (2)	16:54		16:24
11	08:46	08:04	17:07 (3) 07:04	18:00 (4)	06:51	05:50	05:15	05:27	06:12	07:04	07:55	18:17 (2)	07:52		08:39
	16:46	17:42 6	17:13 (3) 18:34 8	18:08 (4)	20:29	21:21	22:01	22:00	21:14	20:05	18:54 9	18:26 (2)	16:52		16:23
12	08:46	08:02	17:07 (3) 07:02	17:59 (4)	06:49	05:48	05:15	05:28	06:14	07:06	07:57	18:16 (2)	07:54		08:40
	16:48	17:43 8	17:15 (3) 18:36 11	18:10 (4)	20:31	21:22	22:02	21:59	21:12	20:03	18:52 7	18:23 (2)	16:50		16:23
13	08:45	08:01	17:07 (3) 06:59	17:59 (4)	06:47	05:46	05:14	05:29	06:15	07:07	07:59	18:16 (2)	07:56		08:41
	16:49	17:45 10	17:17 (3) 18:38 13	18:12 (4)	20:32	21:24	22:02	21:58	21:10	20:00	18:50 5	18:21 (2)	16:49		16:23
14	08:44	07:59	17:07 (3) 06:57	17:58 (4)	06:45	05:44	05:14	05:30	06:17	07:09	08:01	18:16 (2)	07:57		08:42
	16:51	17:47 12	17:19 (3) 18:39 15	18:13 (4)	20:34	21:26	22:03	21:57	21:08	19:58	18:47 3	18:19 (2)	16:47		16:23
15	08:43	07:57	17:07 (3) 06:55	17:58 (4)	06:42	05:43	05:14	05:32	06:19	07:11	08:02	18:16 (2)	07:59		08:43
	16:52	17:49 14	17:21 (3) 18:41 17	18:15 (4)	20:36	21:27	22:04	21:56	21:06	19:56	18:45 1	18:17 (2)	16:46		16:23
16	08:42	07:55	17:08 (3) 06:52	17:59 (4)	06:40	05:41	05:14	05:33	06:20	07:12	19:16 (1)	08:04		08:01		08:44
	16:54	17:51 15	17:23 (3) 18:43 18	18:17 (4)	20:38	21:29	22:04	21:55	21:04	19:53 4	19:20 (1)	18:43		16:44		16:23
17	08:41	07:53	17:08 (3) 06:50	17:59 (4)	06:38	05:40	05:14	05:34	06:22	07:14	19:12 (1)	08:06		08:03		08:45
	16:55	17:53 17	17:25 (3) 18:45 20	18:19 (4)	20:39	21:30	22:05	21:54	21:02	19:51 11	19:23 (1)	18:41		16:43		16:23
18	08:40	07:51	17:08 (3) 06:48	18:00 (4)	06:36	05:38	05:14	05:35	06:24	07:16	19:09 (1)	08:08		08:04		08:45
	16:57	17:55 19	17:27 (3) 18:47 20	18:20 (4)	20:41	21:32	22:05	21:53	21:00	19:48 12	19:21 (1)	18:38		16:42		16:24
19	08:39	07:48	17:09 (3) 06:45	18:01 (4)	06:33	05:37	05:14	05:37	06:25	07:18	19:08 (1)	08:10		08:06		08:46
	16:59	17:57 19	17:28 (3) 18:48 19	18:23 (1)	20:43	21:34	22:05	21:51	20:57	19:46 11	19:19 (1)	18:36		16:40		16:24
20	08:38	07:46	17:11 (3) 06:43	18:02 (4)	06:31	05:35	05:14	05:38	06:27	07:19	19:07 (1)	08:11	17:45 (3)	08:08		08:47
	17:01	17:59 16	17:27 (3) 18:50 17	18:24 (1)	20:45	21:35	22:06	21:50	20:55	19:44 10	19:17 (1)	18:34 8	17:53 (3)	16:39		16:24
21	08:37	07:44	17:13 (3) 06:41	18:06 (4)	06:29	05:34	05:14	05:39	06:29	07:21	19:06 (1)	08:13	17:42 (3)	08:10		08:47
	17:02	18:01 12	17:25 (3) 18:52 12	18:26 (1)	20:46	21:37	22:06	21:49	20:53	19:41 7	19:13 (1)	18:32 14	17:56 (3)	16:38		16:25
22	08:36	07:42	17:17 (3) 06:38	18:20 (1)	06:27	05:33	05:14	05:41	06:30	07:23	18:53 (4)	08:15	17:41 (3)	08:11		08:48
	17:04	18:02 4	17:21 (3) 18:54 7	18:27 (1)	20:48	21:38	22:06	21:48	20:51	19:39 7	19:11 (1)	18:30 17	17:58 (3)	16:36		16:25
23	08:35	07:40	06:36	18:21 (1)	06:25	05:31	05:14	05:42	06:32	07:24	18:48 (4)	08:17	17:39 (3)	08:13		08:48
	17:06	18:04	18:55 9	18:30 (1)	20:50	21:39	22:06	21:46	20:49	19:36 15	19:09 (1)	18:28 20	17:59 (3)	16:35		16:26
24	08:33	07:38	06:34	18:21 (1)	06:23	05:30	05:15	05:44	06:34	07:26	18:44 (4)	08:19	17:38 (3)	08:15		08:49
	17:08	18:06	18:57 11	18:32 (1)	20:52	21:41	22:06	21:45	20:47	19:34 18	19:06 (1)	18:26 18	17:56 (3)	16:34		16:26
25	08:32	07:36	06:31	18:21 (1)	06:20	05:29	05:15	05:45	06:36	07:28	18:43 (4)	07:20	16:38 (3)	08:16		08:49
	17:09	18:08	18:59 12	18:33 (1)	20:53	21:42	22:06	21:43	20:44	19:32 19	19:02 (4)	17:24 16	16:54 (3)	16:33		16:27
26	08:31	07:34	06:29	18:23 (1)	06:18	05:28	05:15	05:47	06:37	07:29	18:42 (4)	07:22	16:37 (3)	08:18		08:49
	17:11	18:10	19:01 12	18:35 (1)	20:55	21:44	22:06	21:42	20:42	19:29 20	19:02 (4)	17:22 15	16:52 (3)	16:32		16:28
27	08:29	07:31	17:43 (2) 06:26	18:25 (1)	06:16	05:26	05:16	05:48	06:39	07:31	18:41 (4)	07:24	16:37 (3)	08:20		08:50
	17:13	18:12 2	17:45 (2) 19:02 6	18:31 (1)	20:57	21:45	22:06	21:40	20:40	19:27 19	19:00 (4)	17:19 13	16:50 (3)	16:31		16:28
28	08:28	07:29	17:43 (2) 06:24		06:14	05:25	05:16	05:50	06:41	07:33	18:39 (4)	07:26	16:37 (3)	08:21		08:50
	17:15	18:14 4	17:47 (2) 19:04		20:59	21:46	22:06	21:39	20:38	19:25 18	18:57 (4)	17:17 11	16:48 (3)	16:30		16:29
29	08:27		07:22		06:12	05:24	05:17	05:51	06:42	07:34	18:39 (4)	07:28	16:37 (3)	08:23		08:50
	17:17		20:06		21:00	21:48	22:06	21:37	20:35	19:22 16	18:55 (4)	17:15 9	16:46 (3)	16:29		16:30
30	08:25		07:19		06:10	05:23	05:17	05:53	06:44	07:36	18:38 (4)	07:30	16:37 (3)	08:24		08:50
	17:19		20:08		21:02	21:49	22:06	21:36	20:33	19:20 14	18:52 (4)	17:13 7	16:44 (3)	16:29		16:31
31	08:23		07:17			05:22		05:54	06:46			07:32	16:37 (3)			08:50
	17:21		20:10			21:50		21:34	20:31			17:12 5	16:42 (3)			16:32
Potential sun hours	256	276	367	418	489	503	506	456	381			330		263		240
Total, worst case		160	287						201		241		2			
Sun reduction		0.21	0.24						0.28		0.24		0.19			
Oper. time red.		1.00	1.00						1.00		1.00		1.00			
Wind dir. red.		0.66	0.68						0.69		0.67		0.66			
Total reduction		0.14	0.17						0.19		0.16		0.12			
Total, real		22	48						39		38		0			

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)

Licensed user:
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+353719161416
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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: BU - H73

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:08	05:22	05:18	05:56	06:25 (2)	06:47	07:38	07:34	08:26
	16:33	17:23	18:16	20:11	21:04	21:51	22:06	21:32	18 06:43 (2)	20:29	19:18	17:10	16:28
2	08:50	08:20	07:25	07:12	06:06	05:21	05:19	05:58	06:27 (2)	06:49	07:40	07:35	08:27
	16:35	17:24	18:18	20:13	21:06	21:53	22:05	21:31	17 06:44 (2)	20:26	19:15	17:08	16:27
3	08:50	08:19	07:23	07:10	06:04	06:30 (2) 05:20	05:20	05:59	06:28 (2)	06:51	07:42	07:37	08:29
	16:36	17:26	18:19	20:15	21:07	2 06:32 (2) 21:54	22:05	21:29	15 06:43 (2)	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:02	06:28 (2) 05:19	05:20	06:01	06:30 (2)	06:53	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09	4 06:32 (2) 21:55	22:04	21:27	14 06:44 (2)	20:22	19:11	17:04	16:26
5	08:49	08:15	07:18	07:05	06:01	06:26 (2) 05:18	05:21	06:02	06:31 (2)	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:18	21:11	7 06:33 (2) 21:56	22:04	21:25	12 06:43 (2)	20:19	19:08	17:02	16:26
6	08:49	08:14	07:16	07:03	05:59	06:24 (2) 05:18	05:22	06:04	06:33 (2)	06:56	07:47	07:43	08:33
	16:39	17:32	18:25	20:20	21:13	9 06:33 (2) 21:57	22:03	21:24	10 06:43 (2)	20:17	19:06	17:01	16:25
7	08:49	08:12	07:14	07:01	05:57	06:23 (2) 05:17	05:23	06:06	06:34 (2)	06:58	07:48	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	11 06:34 (2) 21:58	22:03	21:22	8 06:42 (2)	20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:58	05:55	06:21 (2) 05:17	05:24	06:07	06:36 (2)	06:59	07:50	07:46	08:36
	16:42	17:36	18:29	20:24	21:16	12 06:33 (2) 21:59	22:02	21:20	6 06:42 (2)	20:12	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	05:53	06:19 (2) 05:16	05:25	06:09	06:38 (2)	07:01	07:52	07:48	08:37
	16:43	17:38	18:30	20:26	21:18	14 06:33 (2) 21:59	22:01	21:18	3 06:41 (2)	20:10	18:59	16:55	16:24
10	08:47	08:06	07:07	06:54	05:51	06:18 (2) 05:16	05:26	06:11	06:39 (2)	07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	16 06:34 (2) 22:00	22:01	21:16	1 06:40 (2)	20:08	18:57	16:54	16:24
11	08:46	08:05	07:04	06:52	05:50	06:16 (2) 05:15	05:27	06:12	07:04	07:55	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	17 06:33 (2) 22:01	22:00	21:14	20:05	18:54	16:52	16:24
12	08:46	08:03	07:02	06:49	05:48	06:14 (2) 05:15	05:28	06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	18 06:32 (2) 22:02	21:59	21:12	20:03	18:52	16:51	16:23
13	08:45	08:01	07:00	06:47	05:46	06:13 (2) 05:14	05:29	06:16	07:08	07:59	07:56	08:41
	16:49	17:46	18:38	20:33	21:24	20 06:33 (2) 22:02	21:58	21:10	20:01	18:50	16:49	16:23
14	08:44	07:59	06:57	06:45	05:45	06:11 (2) 05:14	05:31	06:17	07:09	08:01	07:57	08:42
	16:51	17:47	18:40	20:34	21:26	21 06:32 (2) 22:03	21:57	21:08	19:58	18:48	16:47	16:23
15	08:43	07:57	06:55	06:42	05:43	06:10 (2) 05:14	05:32	06:19	07:11	08:03	07:59	08:43
	16:52	17:49	18:41	20:36	21:27	22 06:32 (2) 22:04	21:56	21:06	19:56	18:45	16:46	16:23
16	08:42	07:55	06:53	06:40	05:42	06:08 (4) 05:14	05:33	06:21	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	23 06:31 (2) 22:04	21:55	21:04	19:53	18:43	16:45	16:23
17	08:42	07:53	06:50	06:38	07:02 (3) 05:40	06:07 (4) 05:14	05:45 (1) 05:34	06:22	06:58 (3)	07:14	08:06	08:03	08:45
	16:56	17:53	18:45	20:40	3 07:05 (3) 21:31	23 06:30 (2) 22:05	1 05:46 (1) 21:54	21:02	3 07:01 (3)	19:51	18:41	16:43	16:24
18	08:41	07:51	06:48	06:36	06:59 (3) 05:38	06:06 (4) 05:14	05:45 (1) 05:36	06:24	06:55 (3)	07:16	08:08	08:05	08:45
	16:57	17:55	18:47	20:41	5 07:04 (3) 21:32	24 06:30 (2) 22:05	1 05:46 (1) 21:53	21:00	10 07:05 (3)	19:49	18:39	16:42	16:24
19	08:40	07:49	06:46	06:34	06:57 (3) 05:37	06:04 (4) 05:14	05:45 (1) 05:37	06:26	06:53 (3)	07:18	08:10	08:06	08:46
	16:59	17:57	18:48	20:43	7 07:04 (3) 21:34	24 06:28 (2) 22:05	1 05:46 (1) 21:52	20:58	13 07:06 (3)	19:46	18:36	16:40	16:24
20	08:38	07:47	06:43	06:31	06:55 (3) 05:36	06:03 (4) 05:14	05:45 (1) 05:38	06:27	06:55 (3)	07:19	08:12	08:08	08:47
	17:01	17:59	18:50	20:45	9 07:04 (3) 21:35	24 06:27 (2) 22:06	1 05:46 (1) 21:50	20:55	12 07:07 (3)	19:44	18:34	16:39	16:25
21	08:37	07:44	06:41	06:29	06:53 (3) 05:34	06:04 (4) 05:14	05:45 (1) 05:40	06:17 (4) 06:29	06:56 (3)	07:21	08:13	08:10	08:47
	17:02	18:01	18:52	20:47	10 07:03 (3) 21:37	21 06:26 (2) 22:06	1 05:46 (1) 21:49	3 06:20 (4) 20:53	11 07:07 (3)	19:41	18:32	16:38	16:25
22	08:36	07:42	06:38	06:27	06:51 (3) 05:33	06:06 (4) 05:14	05:46 (1) 05:41	06:14 (4) 06:31	06:58 (3)	07:23	08:15	08:12	08:48
	17:04	18:03	18:54	20:48	11 07:02 (3) 21:38	12 06:24 (2) 22:06	1 05:47 (1) 21:48	16 06:34 (2) 20:51	10 07:08 (3)	19:39	18:30	16:37	16:25
23	08:35	07:40	06:36	06:25	06:49 (3) 05:31	05:14	05:46 (1) 05:42	06:13 (4) 06:32	07:00 (3)	07:24	08:17	08:13	08:48
	17:06	18:05	18:56	20:50	12 07:01 (3) 21:40	22:06	1 05:47 (1) 21:46	24 06:37 (2) 20:49	8 07:08 (3)	19:37	18:28	16:36	16:26
24	08:34	07:38	06:34	06:23	06:47 (3) 05:30	05:15	05:46 (1) 05:44	06:14 (4) 06:34	07:01 (3)	07:26	08:19	08:15	08:49
	17:08	18:06	18:57	20:52	13 07:00 (3) 21:41	22:06	1 05:47 (1) 21:45	24 06:38 (2) 20:47	7 07:08 (3)	19:34	18:26	16:34	16:27
25	08:32	07:36	06:31	06:21	06:49 (3) 05:29	05:15	05:47 (1) 05:45	06:15 (4) 06:36	07:03 (3)	07:28	07:21	08:17	08:49
	17:10	18:08	18:59	20:54	9 06:58 (3) 21:42	22:06	1 05:48 (1) 21:43	24 06:39 (2) 20:45	5 07:08 (3)	19:32	17:24	16:33	16:27
26	08:31	07:34	06:29	06:19	05:28	05:16	05:47	06:17 (4) 06:37	07:04 (3)	07:30	07:22	08:18	08:50
	17:11	18:10	19:01	20:55	21:44	22:06	21:42	24 06:41 (2) 20:42	2 07:06 (3)	19:29	17:22	16:32	16:28
27	08:30	07:32	06:27	06:16	05:27	05:16	05:48	06:18 (4) 06:39		07:31	07:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	22:06	21:41	23 06:41 (2) 20:40		19:27	17:20	16:31	16:29
28	08:28	07:29	06:24	06:14	05:26	05:16	05:50	06:20 (2) 06:41		07:33	07:26	08:21	08:50
	17:15	18:14	19:04	20:59	21:46	22:06	21:39	22 06:42 (2) 20:38		19:25	17:18	16:30	16:29
29	08:27		07:22	06:12	05:24	05:17	05:51	06:21 (2) 06:42		07:35	07:28	08:23	08:50
	17:17		20:06	21:01	21:48	22:06	21:37	21 06:42 (2) 20:36		19:22	17:16	16:30	16:30
30	08:25		07:19	06:10	05:23	05:18	05:53	06:22 (2) 06:44		07:36	07:30	08:24	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20 06:42 (2) 20:33		19:20	17:14	16:29	16:31
31	08:24		07:17		05:22		05:54	06:24 (2) 06:46			07:32		08:50
	17:21		20:10		21:50		21:34	19 06:43 (2) 20:31			17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240
Total, worst case				79	324	9	220	185				
Sun reduction				0.35	0.37	0.30	0.26	0.30				
Oper. time red.				1.00	1.00	1.00	1.00	1.00				
Wind dir. red.				0.68	0.66	0.63	0.66	0.67				
Total reduction				0.24	0.24	0.19	0.17	0.20				
Total, real				19	79	2	38	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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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: BV - H74

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:08	05:21	05:18	05:56	06:47	07:38	07:33	08:26
	16:33	17:22	18:16	20:11	21:04	21:51	22:05	21:32	20:29	19:17	17:10	16:28
2	08:50	08:20	07:25	07:12	06:06	05:21	05:19	05:57	06:49	07:40	07:35	08:27
	16:34	17:24	18:17	20:13	21:06	21:52	22:05	21:31	20:26	19:15	17:08	16:27
3	08:50	08:19	07:22	07:10	06:04	05:20	05:20	05:59	06:51	07:41	07:37	08:29
	16:36	17:26	18:19	20:15	21:07	21:53	22:05	21:29	20:24	19:13	17:06	16:27
4	08:49	08:17	07:20	07:08	06:02	05:19	05:20	06:01	06:52	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09	21:55	22:04	21:27	20:22	19:10	17:04	16:26
5	08:49	08:15	07:18	07:05	06:00	05:18	05:21	06:02	06:54	07:45	07:41	08:31
	16:38	17:30	18:23	20:18	21:11	21:56	22:04	21:25	20:19	19:08	17:02	16:25
6	08:49	08:13	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:39	17:32	18:25	20:20	21:12	21:57	22:03	21:23	20:17	19:06	17:00	16:25
7	08:48	08:12	07:13	07:01	05:57	05:17	05:23	06:06	06:57	07:48	07:44	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:03	16:59	16:25
8	08:48	08:10	07:11	06:58	05:55	05:16	05:24	06:07	06:59	07:50	07:46	08:35
	16:42	17:36	18:29	20:24	21:16	21:58	22:02	21:20	20:12	19:01	16:57	16:24
9	08:47	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48	08:37
	16:43	17:38	18:30	20:25	21:18	21:59	22:01	21:18	20:10	18:59	16:55	16:24
10	08:47	08:06	07:06	06:54	05:51	05:15	05:26	06:10	07:02	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	22:00	21:16	20:07	18:56	16:54	16:24
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	16:51	17:47	18:39	20:34	21:26	22:03	21:57	21:08	19:58	18:47	16:47	16:23
15	08:43	07:57	06:55	06:42	05:43	05:14	05:32	06:19	07:11	08:02	07:59	08:43
	16:52	17:49	18:41	20:36	21:27	22:03	21:56	21:06	19:56	18:45	16:46	16:23
16	08:42	07:55	06:52	06:40	05:41	05:14	05:33	06:20	07:12	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:53	18:43	16:44	16:23
17	08:41	07:53	06:50	06:38	05:40	05:14	05:34	06:22	07:14	08:06	08:03	08:44
	16:56	17:53	18:45	20:39	21:30	22:04	21:54	21:02	19:51	18:41	16:43	16:24
18	08:40	07:51	06:48	06:36	05:38	05:14	05:35	06:24	07:16	08:08	08:04	08:45
	16:57	17:55	18:47	20:41	21:32	22:05	21:53	21:00	19:48	18:39	16:42	16:24
19	08:39	07:48	06:45	06:33	05:37	05:14	05:37	06:25	07:18	08:10	08:06	08:46
	16:59	17:57	18:48	20:43	21:34	22:05	21:51	20:57	19:46	18:36	16:40	16:24
20	08:38	07:46	06:43	06:31	05:35	05:14	05:38	06:27	07:19	08:11	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:55	19:44	18:34	16:39	16:24
21	08:37	07:44	06:41	06:29	05:34	05:14	05:39	06:29	07:21	08:13	08:10	08:47
	17:02	18:01	18:52	20:46	21:37	22:06	21:49	20:53	19:41	18:32	16:38	16:25
22	08:36	07:42	06:38	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:11	08:48
	17:04	18:03	18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:25
23	08:35	07:40	06:36	06:25	05:31	05:14	05:42	06:32	07:24	08:17	08:13	08:48
	17:06	18:04	18:55	20:50	21:39	22:06	21:46	20:49	19:36	18:28	16:35	16:26
24	08:33	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:06	18:57	20:52	21:41	22:06	21:45	20:47	19:34	18:26	16:34	16:26
25	08:32	07:36	06:31	06:20	05:29	05:15	05:45	06:36	07:28	07:20	08:16	08:49
	17:09	18:08	18:59	20:53	21:42	22:06	21:43	20:44	19:32	17:24	16:33	16:27
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	17:15	18:14	19:04	20:59	21:46	22:06	21:39	20:38	19:25	17:18	16:30	16:29
29	08:26		07:22	06:12	05:24	05:17	05:51	06:42	07:34	07:28	08:23	08:50
	17:17		20:06	21:00	21:48	22:06	21:37	20:35	19:22	17:16	16:29	16:30
30	08:25		07:19	06:10	05:23	05:17	05:53	06:44	07:36	07:30	08:24	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	17:14	16:29	16:31
31	08:23		07:17		05:22		05:54	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240
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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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: BW - H75

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:08	05:22	05:18	05:56	06:47	07:38	07:33	08:26
	16:33	17:23	18:16	20:11	21:04	21:51	22:05	21:32	20:29	19:18	17:10	16:28
2	08:50	08:20	07:25	07:12	06:06	05:21	05:19	05:58	06:49	07:40	07:35	08:27
	16:35	17:24	18:18	20:13	21:06	21:52	22:05	21:31	20:26	19:15	17:08	16:27
3	08:50	08:19	07:23	07:10	06:04	05:20	05:20	05:59	06:51	07:41	07:37	08:29
	16:36	17:26	18:19	20:15	21:07	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:02	05:19	05:20	06:01	06:52	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09	21:55	22:04	21:27	20:22	19:10	17:04	16:26
5	08:49	08:15	07:18	07:05	06:01	05:18	05:21	06:02	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:18	21:11	21:56	22:04	21:25	20:19	19:08	17:02	16:26
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:39	17:32	18:25	20:20	21:13	21:57	22:03	21:23	20:17	19:06	17:01	16:25
7	08:49	08:12	07:13	07:01	05:57	05:17	05:23	06:06	06:57	07:48	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:03	16:59	16:25
8	08:48	08:10	07:11	06:58	05:55	05:17	05:24	06:07	06:59	07:50	07:46	08:35
	16:42	17:36	18:29	20:24	21:16	21:58	22:02	21:20	20:12	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48	08:37
	16:43	17:38	18:30	20:25	21:18	21:59	22:01	21:18	20:10	18:59	16:55	16:24
10	08:47	08:06	07:07	06:54	05:51	05:16	05:26	06:11	07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	22:00	21:16	20:08	18:57	16:54	16:24
11	08:46	08:04	07:04	06:51	05:50	05:15	05:27	06:12	07:04	07:55	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:54	16:52	16:24
12	08:46	08:03	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:50	16:23
13	08:45	08:01	07:00	06:47	05:46	05:14	05:29	06:16	07:08	07:59	07:56	08:41
	16:49	17:46	18:38	20:32	21:24	22:02	21:58	21:10	20:00	18:50	16:49	16:23
14	08:44	07:59	06:57	06:45	05:45	05:14	05:31	06:17	07:09	08:01	07:57	08:42
	16:51	17:47	18:39	20:34	21:26	22:03	21:57	21:08	19:58	18:47	16:47	16:23
15	08:43	07:57	06:55	06:42	05:43	05:14	05:32	06:19	07:11	08:02	07:59	08:43
	16:52	17:49	18:41	20:36	21:27	22:04	21:56	21:06	19:56	18:45	16:46	16:23
16	08:42	07:55	06:53	06:40	05:41	05:14	05:33	06:21	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:53	18:43	16:44	16:23
17	08:41	07:53	06:50	06:38	05:40	05:14	05:34	06:22	07:14	08:06	08:03	08:45
	16:56	17:53	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43	16:24
18	08:40	07:51	06:48	06:36	05:38	05:14	05:36	06:24	07:16	08:08	08:05	08:45
	16:57	17:55	18:47	20:41	21:32	22:05	21:53	21:00	19:48	18:39	16:42	16:24
19	08:39	07:49	06:45	06:33	05:37	05:14	05:37	06:26	07:18	08:10	08:06	08:46
	16:59	17:57	18:48	20:43	21:34	22:05	21:51	20:58	19:46	18:36	16:40	16:24
20	08:38	07:46	06:43	06:31	05:36	05:14	05:38	06:27	07:19	08:11	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:55	19:44	18:34	16:39	16:24
21	08:37	07:44	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:13	08:10	08:47
	17:02	18:01	18:52	20:47	21:37	22:06	21:49	20:53	19:41	18:32	16:38	16:25
22	08:36	07:42	06:38	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:11	08:48
	17:04	18:03	18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:25
23	08:35	07:40	06:36	06:25	05:31	05:14	05:42	06:32	07:24	08:17	08:13	08:48
	17:06	18:05	18:55	20:50	21:39	22:06	21:46	20:49	19:37	18:28	16:35	16:26
24	08:33	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:06	18:57	20:52	21:41	22:06	21:45	20:47	19:34	18:26	16:34	16:26
25	08:32	07:36	06:31	06:21	05:29	05:15	05:45	06:36	07:28	07:21	08:16	08:49
	17:10	18:08	18:59	20:54	21:42	22:06	21:43	20:44	19:32	17:24	16:33	16:27
26	08:31	07:34	06:29	06:18	05:28	05:15	05:47	06:37	07:29	07:22	08:18	08:49
	17:11	18:10	19:01	20:55	21:44	22:06	21:42	20:42	19:29	17:22	16:32	16:28
27	08:29	07:31	06:27	06:16	05:27	05:16	05:48	06:39	07:31	07:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	22:06	21:40	20:40	19:27	17:20	16:31	16:29
28	08:28	07:29	06:24	06:14	05:25	05:16	05:50	06:41	07:33	07:26	08:21	08:50
	17:15	18:14	19:04	20:59	21:46	22:06	21:39	20:38	19:25	17:18	16:30	16:29
29	08:27		07:22	06:12	05:24	05:17	05:51	06:42	07:35	07:28	08:23	08:50
	17:17		20:06	21:00	21:48	22:06	21:37	20:35	19:22	17:16	16:30	16:30
30	08:25		07:19	06:10	05:23	05:18	05:53	06:44	07:36	07:30	08:24	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	17:14	16:29	16:31
31	08:23		07:17		05:22		05:54	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240
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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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: BX - H76

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January		February		March		April		May	June
1	08:50	09:36 (2)	08:22	08:49 (4)	07:27	17:30 (8)	07:15		06:08	05:21
	16:33 9	09:45 (2)	17:23 29	16:52 (6)	18:16 15	17:45 (8)	20:11		21:04	21:51
2	08:50	09:37 (2)	08:20	08:47 (4)	07:25	17:30 (8)	07:12		06:06	05:21
	16:34 7	09:44 (2)	17:24 29	16:54 (6)	18:18 15	17:45 (8)	20:13		21:06	21:53
3	08:50	09:39 (2)	08:19	08:45 (4)	07:23	17:29 (8)	07:10		06:04	05:20
	16:36 4	09:43 (2)	17:26 23	16:55 (6)	18:19 16	17:45 (8)	20:15		21:08	21:54
4	08:50		08:17	08:44 (4)	07:20	17:29 (8)	07:08		06:02	05:19
	16:37		17:28 26	16:57 (6)	18:21 16	17:45 (8)	20:17		21:09	21:55
5	08:49		08:15	08:42 (4)	07:18	17:30 (8)	07:05		06:01	05:18
	16:38		17:30 28	16:58 (6)	18:23 14	17:44 (8)	20:19		21:11	21:56
6	08:49	09:21 (3)	08:14	08:43 (4)	07:16	17:30 (8)	07:03		05:59	05:18
	16:39 1	09:22 (3)	17:32 25	16:58 (6)	18:25 12	17:42 (8)	20:20		21:13	21:57
7	08:49	09:20 (3)	08:12	08:45 (4)	07:14	17:32 (8)	07:01		05:57	05:17
	16:41 2	09:22 (3)	17:34 20	16:57 (6)	18:27 9	17:41 (8)	20:22		21:14	21:58
8	08:48	09:19 (3)	08:10	16:45 (6)	07:11		06:58		05:55	05:16
	16:42 3	09:22 (3)	17:36 12	16:57 (6)	18:29		20:24		21:16	21:59
9	08:48	09:19 (3)	08:08	16:46 (6)	07:09		06:56		05:53	05:16
	16:43 4	09:23 (3)	17:38 14	17:00 (7)	18:30		20:26		21:18	22:00
10	08:47	09:18 (3)	08:06	16:48 (6)	07:07		06:54		05:51	05:15
	16:45 5	09:23 (3)	17:40 14	17:02 (7)	18:32		20:27		21:19	22:00
11	08:47	09:17 (3)	08:05	16:48 (7)	07:04		06:51		05:50	05:15
	16:46 6	09:23 (3)	17:42 15	17:03 (7)	18:34		20:29		21:21	22:01
12	08:46	09:16 (3)	08:03	16:47 (7)	07:02		06:49		05:48	05:15
	16:48 7	09:23 (3)	17:44 17	17:04 (7)	18:36		20:31		21:23	22:02
13	08:45	09:15 (3)	08:01	16:46 (7)	07:00		06:47		05:46	05:14
	16:49 8	09:23 (3)	17:46 19	17:05 (7)	18:38		20:33		21:24	22:03
14	08:44	09:14 (3)	07:59	16:46 (7)	06:57	18:13 (5)	06:45	20:05 (10)	05:45	05:14
	16:51 9	09:23 (3)	17:47 20	17:06 (7)	18:40 1	18:14 (5)	20:34 2	20:07 (10)	21:26	22:03
15	08:43	09:13 (3)	07:57	16:46 (7)	06:55	18:10 (5)	06:42	20:04 (10)	05:43	05:14
	16:52 10	09:23 (3)	17:49 20	17:06 (7)	18:41 5	18:15 (5)	20:36 5	20:09 (10)	21:28	22:04
16	08:43	09:12 (1)	07:55	16:46 (7)	06:53	18:09 (5)	06:40	20:03 (10)	05:41	05:14
	16:54 10	09:22 (3)	17:51 20	17:06 (7)	18:43 8	18:17 (5)	20:38 8	20:11 (10)	21:29	22:04
17	08:42	09:11 (1)	07:53	16:46 (7)	06:50	18:08 (5)	06:38	20:03 (10)	05:40	05:14
	16:56 11	09:22 (3)	17:53 20	17:06 (7)	18:45 11	18:19 (5)	20:40 10	20:13 (10)	21:31	22:05
18	08:41	09:10 (1)	07:51	16:46 (7)	06:48	18:08 (5)	06:36	20:02 (10)	05:38	05:14
	16:57 11	09:21 (3)	17:55 20	17:06 (7)	18:47 11	18:19 (5)	20:41 11	20:13 (10)	21:32	22:05
19	08:40	09:09 (1)	07:49	16:46 (7)	06:46	18:08 (5)	06:33	20:03 (10)	05:37	05:14
	16:59 8	09:17 (1)	17:57 18	17:04 (7)	18:48 10	18:18 (5)	20:43 9	20:12 (10)	21:34	22:05
20	08:38	09:07 (1)	07:47	16:47 (7)	06:43	18:09 (5)	06:31	20:05 (10)	05:35	05:14
	17:01 10	09:17 (1)	17:59 16	17:03 (7)	18:50 7	18:16 (5)	20:45 5	20:10 (10)	21:35	22:06
21	08:37	09:06 (1)	07:44	16:49 (7)	06:41		06:29		05:34	05:14
	17:02 12	09:18 (1)	18:01 13	17:02 (7)	18:52		20:47		21:37	22:06
22	08:36	09:05 (1)	07:42	16:51 (7)	06:38		06:27		05:33	05:14
	17:04 13	09:18 (1)	18:03 9	17:00 (7)	18:54		20:48		21:38	22:06
23	08:35	09:03 (1)	07:40		06:36		06:25		05:31	05:14
	17:06 15	09:18 (1)	18:05		18:56		20:50		21:40	22:06
24	08:34	09:02 (1)	07:38		06:34		06:23		05:30	05:15
	17:08 17	09:19 (1)	18:06		18:57		20:52		21:41	22:07
25	08:32	09:00 (1)	07:36		06:31		06:21		05:29	05:15
	17:10 18	09:18 (1)	18:08		18:59		20:54		21:42	22:07
26	08:31	08:59 (1)	07:34	17:36 (8)	06:29		06:18		05:28	05:15
	17:11 20	09:19 (1)	18:10 4	17:40 (8)	19:01		20:55		21:44	22:07
27	08:30	08:57 (1)	07:32	17:33 (8)	06:27		06:16		05:27	05:16
	17:13 21	09:18 (1)	18:12 10	17:43 (8)	19:03		20:57		21:45	22:06
28	08:28	08:56 (1)	07:29	17:31 (8)	06:24		06:14		05:25	05:16
	17:15 23	09:19 (1)	18:14 13	17:44 (8)	19:04		20:59		21:47	22:06
29	08:27	08:54 (4)			07:22		06:12		05:24	05:17
	17:17 24	09:18 (1)			20:06		21:01		21:48	22:06
30	08:25	08:52 (4)			07:19		06:10		05:23	05:18
	17:19 24	09:17 (1)			20:08		21:02		21:49	22:06
31	08:24	08:51 (4)			07:17				05:22	
	17:21 27	16:50 (6)			20:10				21:50	
Potential sun hours	255		276		367		418		489	503
Total, worst case	339		454		150		50			
Sun reduction	0.16		0.21		0.24		0.35			
Oper. time red.	1.00		1.00		1.00		1.00			
Wind dir. red.	0.66		0.65		0.68		0.69			
Total reduction	0.10		0.13		0.16		0.24			
Total, real	35		61		25		12			

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)

Licensed user:
Jennings O'Donovan
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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: BX - H76

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	July	August			September			October			November			December		
1	05:18	05:56			06:47			07:38			07:34		16:17 (6)	08:26		08:59 (3)
	22:06	21:32			20:29			19:18			17:10	14	16:31 (7)	16:28	6	09:05 (3)
2	05:19	05:58			06:49			07:40			07:35		16:15 (6)	08:28		09:01 (3)
	22:05	21:31			20:26			19:15			17:08	14	16:29 (7)	16:27	5	09:06 (3)
3	05:20	05:59			06:51			07:42			07:37		16:14 (6)	08:29		09:02 (3)
	22:05	21:29			20:24			19:13			17:06	13	16:27 (6)	16:27	4	09:06 (3)
4	05:20	06:01			06:52			07:43			07:39		08:15 (4)	08:30		09:04 (3)
	22:04	21:27			20:22			19:11			17:04	20	16:27 (6)	16:26	3	09:07 (3)
5	05:21	06:02			06:54			07:45			07:41		08:13 (4)	08:32		09:05 (3)
	22:04	21:25			20:19			19:08			17:02	24	16:27 (6)	16:25	2	09:07 (3)
6	05:22	06:04			06:56			07:47		18:09 (8)	07:43		08:12 (4)	08:33		09:07 (3)
	22:03	21:24			20:17			19:06	7	18:16 (8)	17:01	27	16:27 (6)	16:25	1	09:08 (3)
7	05:23	06:06			06:58			07:48		18:07 (8)	07:45		08:14 (4)	08:34		
	22:03	21:22			20:15			19:04	11	18:18 (8)	16:59	26	16:27 (6)	16:25		
8	05:24	06:07			06:59			07:50		18:05 (8)	07:47		08:16 (4)	08:36		
	22:02	21:20			20:12			19:01	14	18:19 (8)	16:57	23	16:26 (6)	16:24		
9	05:25	06:09			07:01			07:52		18:05 (8)	07:48		08:18 (4)	08:37		09:29 (2)
	22:01	21:18			20:10			18:59	15	18:20 (8)	16:55	30	16:24 (6)	16:24	3	09:32 (2)
10	05:26	06:11			07:03			07:54		18:04 (8)	07:50		08:20 (4)	08:38		09:27 (2)
	22:01	21:16			20:08			18:57	16	18:20 (8)	16:54	28	16:22 (6)	16:24	7	09:34 (2)
11	05:27	06:12			07:04			07:55		18:03 (8)	07:52		08:22 (4)	08:39		09:26 (2)
	22:00	21:14			20:05			18:54	16	18:19 (8)	16:52	27	16:21 (6)	16:23	9	09:35 (2)
12	05:28	06:14			07:06			07:57		18:03 (8)	07:54		08:24 (4)	08:40		09:26 (2)
	21:59	21:12			20:03			18:52	15	18:18 (8)	16:50	25	08:49 (1)	16:23	10	09:36 (2)
13	05:29	06:16			07:08			07:59		18:04 (8)	07:56		08:26 (4)	08:41		09:26 (2)
	21:58	21:10			20:01			18:50	14	18:18 (8)	16:49	24	08:50 (1)	16:23	11	09:37 (2)
14	05:30	06:17			07:09			08:01		18:05 (8)	07:58		08:28 (1)	08:42		09:26 (2)
	21:57	21:08			19:58			18:48	12	18:17 (8)	16:47	23	08:51 (1)	16:23	12	09:38 (2)
15	05:32	06:19			07:11			08:03		18:06 (8)	07:59		08:30 (1)	08:43		09:26 (2)
	21:56	21:06			19:56			18:45	9	18:15 (8)	16:46	21	08:51 (1)	16:23	13	09:39 (2)
16	05:33	06:21			07:13			08:04			08:01		08:32 (1)	08:44		09:26 (2)
	21:55	21:04			19:53			18:43			16:44	20	08:52 (1)	16:23	14	09:40 (2)
17	05:34	06:22			07:14			08:06			08:03		08:34 (1)	08:45		09:27 (2)
	21:54	21:02			19:51			18:41			16:43	18	08:52 (1)	16:24	13	09:40 (2)
18	05:35	06:24			07:16			08:08			08:05		08:36 (1)	08:45		09:26 (2)
	21:53	21:00			19:49			18:39			16:42	17	08:53 (1)	16:24	14	09:40 (2)
19	05:37	06:26			07:18			08:10			08:06		08:38 (1)	08:46		09:27 (2)
	21:52	20:58			19:46			18:36			16:40	15	08:53 (1)	16:24	14	09:41 (2)
20	05:38	06:27			07:19			08:12		17:21 (7)	08:08		08:40 (1)	08:47		09:28 (2)
	21:50	20:56			19:44			18:34	10	17:31 (7)	16:39	13	08:53 (1)	16:24	14	09:42 (2)
21	05:40	06:29			07:21			08:13		17:19 (7)	08:10		08:42 (1)	08:47		09:28 (2)
	21:49	20:53			19:41			18:32	14	17:33 (7)	16:38	12	08:54 (1)	16:25	14	09:42 (2)
22	05:41	06:31			07:23			08:15		17:17 (7)	08:12		08:43 (1)	08:48		09:29 (2)
	21:48	20:51			19:39			18:30	17	17:34 (7)	16:37	10	08:53 (1)	16:25	14	09:43 (2)
23	05:42	06:32		20:09 (10)	07:24		18:54 (5)	08:17		17:16 (7)	08:13		08:45 (1)	08:48		09:29 (2)
	21:46	20:49	6	20:15 (10)	19:37	6	19:00 (5)	18:28	19	17:35 (7)	16:35	8	08:53 (1)	16:26	14	09:43 (2)
24	05:44	06:34		20:07 (10)	07:26		18:52 (5)	08:19		17:16 (7)	08:15		08:47 (1)	08:49		09:29 (2)
	21:45	20:47	9	20:16 (10)	19:34	10	19:02 (5)	18:26	19	17:35 (7)	16:34	11	08:58 (3)	16:26	14	09:43 (2)
25	05:45	06:36		20:06 (10)	07:28		18:51 (5)	07:21		16:15 (7)	08:17		08:49 (1)	08:49		09:30 (2)
	21:44	20:45	10	20:16 (10)	19:32	10	19:01 (5)	17:24	20	16:35 (7)	16:33	11	09:00 (3)	16:27	14	09:44 (2)
26	05:47	06:37		20:05 (10)	07:30		18:50 (5)	07:22		16:15 (7)	08:18		08:51 (1)	08:50		09:31 (2)
	21:42	20:42	9	20:14 (10)	19:29	12	19:02 (5)	17:22	20	16:35 (7)	16:32	10	09:01 (3)	16:28	13	09:44 (2)
27	05:48	06:39		20:05 (10)	07:31		18:50 (5)	07:24		16:15 (7)	08:20		08:52 (1)	08:50		09:31 (2)
	21:41	20:40	7	20:12 (10)	19:27	10	19:00 (5)	17:20	20	16:35 (7)	16:31	10	09:02 (3)	16:29	14	09:45 (2)
28	05:50	06:41		20:06 (10)	07:33		18:50 (5)	07:26		16:15 (7)	08:21		08:54 (3)	08:50		09:32 (2)
	21:39	20:38	5	20:11 (10)	19:25	7	18:57 (5)	17:18	20	16:35 (7)	16:30	9	09:03 (3)	16:29	13	09:45 (2)
29	05:51	06:42		20:06 (10)	07:35		18:51 (5)	07:28		16:16 (7)	08:23		08:56 (3)	08:50		09:32 (2)
	21:37	20:36	2	20:08 (10)	19:22	4	18:55 (5)	17:16	19	16:35 (7)	16:30	8	09:04 (3)	16:30	13	09:45 (2)
30	05:53	06:44			07:36			07:30		16:16 (7)	08:25		08:57 (3)	08:50		09:33 (2)
	21:36	20:33			19:20			17:14	18	16:34 (7)	16:29	7	09:04 (3)	16:31	12	09:45 (2)
31	05:54	06:46						07:32		16:17 (7)				08:50		09:34 (2)
	21:34	20:31						17:12	16	16:33 (7)				16:32	11	09:45 (2)
Potential sun hours	506	456			381			330			263			240		
Total, worst case			48			59			341			518			301	
Sun reduction			0.30			0.28			0.24			0.19			0.14	
Oper. time red.			1.00			1.00			1.00			1.00			1.00	
Wind dir. red.			0.69			0.69			0.66			0.65			0.64	
Total reduction			0.20			0.19			0.16			0.12			0.09	
Total, real			10			11			53			63			26	

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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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: BY - H77

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January	February		March	April		May		June	
1	08:50	08:22		07:27	07:15		06:08		05:21	
	16:33	17:23		18:16	20:11		21:04	3	21:51	11
2	08:50	08:20		16:51 (7)	07:25		07:12		06:06	
	16:34	17:24	3	16:54 (7)	18:18		20:13		21:06	4
3	08:50	08:19		16:50 (7)	07:23		07:10		06:04	
	16:36	17:26	5	16:55 (7)	18:19		20:15		21:08	5
4	08:50	08:17		16:51 (7)	07:20		07:08		06:02	
	16:37	17:28	7	16:58 (7)	18:21		20:17		21:09	2
5	08:49	08:15		16:50 (7)	07:18		07:05		06:00	
	16:38	17:30	10	17:00 (7)	18:23		20:18		21:11	
6	08:49	08:14		16:50 (7)	07:16		07:03		05:59	
	16:39	17:32	12	17:02 (7)	18:25		20:20		21:13	
7	08:49	08:12		16:50 (7)	07:13		07:01		19:48 (12)	
	16:41	17:34	12	17:02 (7)	18:27		20:22	7	19:55 (12)	
8	08:48	08:10		16:51 (7)	07:11		06:58		19:46 (12)	
	16:42	17:36	11	17:02 (7)	18:29		20:24	11	19:57 (12)	
9	08:48	08:08		16:52 (7)	07:09		06:56		19:44 (12)	
	16:43	17:38	9	17:01 (7)	18:30		20:26	13	19:57 (12)	
10	08:47	08:06		16:54 (7)	07:07		06:54		19:43 (12)	
	16:45	17:40	5	16:59 (7)	18:32		20:27	15	19:58 (12)	
11	08:46	08:05			07:04		06:51		19:42 (12)	
	16:46	17:42			18:34		20:29	16	19:58 (12)	
12	08:46	08:03			07:02		06:49		19:42 (12)	
	16:48	17:44			18:36		20:31	16	19:58 (12)	
13	08:45	08:01			07:00		06:47		19:41 (12)	
	16:49	17:45			18:38		20:33	16	19:57 (12)	
14	08:44	07:59			06:57		06:45		19:42 (12)	
	16:51	17:47			18:39		20:34	15	19:57 (12)	
15	08:43	07:57			06:55		06:42		19:43 (12)	
	16:52	17:49			18:41		20:36	13	19:56 (12)	
16	08:43	07:55		17:21 (8)	06:53		06:40		19:44 (12)	
	16:54	17:51	2	17:23 (8)	18:43		20:38	10	19:54 (12)	
17	08:42	07:53		17:21 (8)	06:50		06:38		19:46 (12)	
	16:56	17:53	4	17:25 (8)	18:45		20:40	6	19:52 (12)	
18	08:41	07:51		17:21 (8)	06:48		06:36			
	16:57	17:55	7	17:28 (8)	18:47		20:41			
19	08:40	07:49		17:20 (8)	06:45		06:33			
	16:59	17:57	9	17:29 (8)	18:48		20:43			
20	08:38	07:47		17:21 (8)	06:43		06:31			
	17:01	17:59	8	17:29 (8)	18:50		20:45			
21	08:37	07:44		17:22 (8)	06:41		06:29			
	17:02	18:01	6	17:28 (8)	18:52		20:47			
22	08:36	07:42			06:38		06:27		20:17 (13)	
	17:04	18:03			18:54		20:48	3	20:20 (13)	
23	08:35	07:40			06:36		06:25		20:15 (13)	
	17:06	18:04			18:56		20:50	7	20:22 (13)	
24	08:34	07:38			06:34		06:23		20:14 (13)	
	17:08	18:06			18:57		20:52	10	20:24 (13)	
25	08:32	07:36			06:31		06:21		20:13 (13)	
	17:09	18:08			18:59		20:54	12	20:25 (13)	
26	08:31	07:34			06:29		06:18		20:13 (13)	
	17:11	18:10			19:01		20:55	13	20:26 (13)	
27	08:30	07:31			06:27		06:16		20:13 (13)	
	17:13	18:12			19:03		20:57	12	20:25 (13)	
28	08:28	07:29			06:24		06:14		20:13 (13)	
	17:15	18:14			19:04		20:59	12	20:25 (13)	
29	08:27				07:22		06:12		20:14 (13)	
	17:17				20:06		21:01	10	20:24 (13)	
30	08:25				07:19		06:10		20:15 (13)	
	17:19				20:08		21:02	7	20:22 (13)	
31	08:24				07:17					
	17:21				20:10					
Potential sun hours	255	276		367	418		489		503	
Total, worst case			110			224		158		67
Sun reduction			0.21			0.35		0.37		0.30
Oper. time red.			1.00			1.00		1.00		1.00
Wind dir. red.			0.65			0.69		0.67		0.66
Total reduction			0.13			0.24		0.25		0.20
Total, real			15			54		39		13

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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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: BY - H77

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	July			August			September			October			November			December
1	05:18			05:56			06:47		19:41 (12)	07:38			07:34		16:24 (7)	08:26
	22:06			21:32			20:29	16	19:57 (12)	19:18			17:10	5	16:29 (7)	16:28
2	05:19			05:58			06:49		19:42 (12)	07:40			07:35		16:22 (7)	08:28
	22:05			21:31			20:26	15	19:57 (12)	19:15			17:08	8	16:30 (7)	16:27
3	05:20		21:23 (15)	05:59			06:51		19:42 (12)	07:41			07:37		16:21 (7)	08:29
	22:05	3	21:26 (15)	21:29			20:24	13	19:55 (12)	19:13			17:06	10	16:31 (7)	16:27
4	05:20		21:23 (15)	06:01			06:52		19:43 (12)	07:43			07:39		16:20 (7)	08:30
	22:04	4	21:27 (15)	21:27			20:22	11	19:54 (12)	19:10			17:04	12	16:32 (7)	16:26
5	05:21		21:23 (15)	06:02			06:54		19:44 (12)	07:45			07:41		16:20 (7)	08:32
	22:04	5	21:28 (15)	21:25			20:19	7	19:51 (12)	19:08			17:02	12	16:32 (7)	16:25
6	05:22		21:21 (15)	06:04			06:56			07:47			07:43		16:20 (7)	08:33
	22:03	7	21:28 (15)	21:24			20:17			19:06			17:01	10	16:30 (7)	16:25
7	05:23		21:21 (15)	06:06			06:57			07:48			07:45		16:20 (7)	08:34
	22:03	8	21:29 (15)	21:22			20:15			19:03			16:59	8	16:28 (7)	16:25
8	05:24		21:21 (15)	06:07			06:59			07:50			07:47		16:21 (7)	08:36
	22:02	7	21:28 (15)	21:20			20:12			19:01			16:57	5	16:26 (7)	16:24
9	05:25		21:10 (14)	06:09		20:43 (16)	07:01			07:52			07:48		16:22 (7)	08:37
	22:01	9	21:28 (15)	21:18	4	20:47 (16)	20:10			18:59			16:55	2	16:24 (7)	16:24
10	05:26		21:08 (14)	06:11		20:42 (16)	07:03			07:54			07:50			08:38
	22:01	11	21:27 (15)	21:16	5	20:47 (16)	20:08			18:57			16:54			16:24
11	05:27		21:07 (14)	06:12		20:42 (16)	07:04			07:55			07:52			08:39
	22:00	13	21:26 (15)	21:14	3	20:45 (16)	20:05			18:54			16:52			16:23
12	05:28		21:07 (14)	06:14		20:25 (13)	07:06			07:57			07:54			08:40
	21:59	12	21:25 (15)	21:12	6	20:43 (16)	20:03			18:52			16:50			16:23
13	05:29		21:06 (14)	06:15		20:23 (13)	07:08			07:59			07:56			08:41
	21:58	14	21:25 (15)	21:10	8	20:31 (13)	20:00			18:50			16:49			16:23
14	05:30		21:06 (14)	06:17		20:21 (13)	07:09			08:01			07:58			08:42
	21:57	13	21:24 (15)	21:08	11	20:32 (13)	19:58			18:47			16:47			16:23
15	05:32		21:06 (14)	06:19		20:21 (13)	07:11			08:03			07:59			08:43
	21:56	14	21:24 (15)	21:06	11	20:32 (13)	19:56			18:45			16:46			16:23
16	05:33		21:06 (14)	06:20		20:19 (13)	07:13			08:04			08:01			08:44
	21:55	12	21:18 (14)	21:04	13	20:32 (13)	19:53			18:43			16:44			16:23
17	05:34		21:06 (14)	06:22		20:20 (13)	07:14			08:06			08:03			08:45
	21:54	12	21:18 (14)	21:02	12	20:32 (13)	19:51			18:41			16:43			16:24
18	05:35		21:05 (14)	06:24		20:20 (13)	07:16			08:08			08:05			08:45
	21:53	13	21:18 (14)	21:00	12	20:32 (13)	19:49			18:39			16:42			16:24
19	05:37		21:05 (14)	06:26		20:20 (13)	07:18			08:10			08:06			08:46
	21:52	13	21:18 (14)	20:58	9	20:29 (13)	19:46			18:36			16:40			16:24
20	05:38		21:06 (14)	06:27		20:21 (13)	07:19			08:12			08:08			08:47
	21:50	12	21:18 (14)	20:55	6	20:27 (13)	19:44			18:34			16:39			16:24
21	05:39		21:06 (14)	06:29		20:22 (13)	07:21			08:13		17:52 (8)	08:10			08:47
	21:49	11	21:17 (14)	20:53	3	20:25 (13)	19:41			18:32	7	17:59 (8)	16:38			16:25
22	05:41		21:06 (14)	06:31			07:23			08:15		17:51 (8)	08:12			08:48
	21:48	10	21:16 (14)	20:51			19:39			18:30	9	18:00 (8)	16:37			16:25
23	05:42		21:08 (14)	06:32			07:24			08:17		17:50 (8)	08:13			08:48
	21:46	7	21:15 (14)	20:49			19:37			18:28	8	17:58 (8)	16:35			16:26
24	05:44		21:08 (14)	06:34			07:26			08:19		17:50 (8)	08:15			08:49
	21:45	5	21:13 (14)	20:47			19:34			18:26	6	17:56 (8)	16:34			16:26
25	05:45		21:09 (14)	06:36			07:28			07:21		16:50 (8)	08:17			08:49
	21:44	3	21:12 (14)	20:45			19:32			17:24	4	16:54 (8)	16:33			16:27
26	05:47			06:37		19:48 (12)	07:29			07:22		16:51 (8)	08:18			08:50
	21:42			20:42	6	19:54 (12)	19:29			17:22	1	16:52 (8)	16:32			16:28
27	05:48			06:39		19:46 (12)	07:31			07:24			08:20			08:50
	21:41			20:40	10	19:56 (12)	19:27			17:20			16:31			16:28
28	05:50			06:41		19:43 (12)	07:33			07:26			08:21			08:50
	21:39			20:38	14	19:57 (12)	19:25			17:18			16:30			16:29
29	05:51			06:42		19:43 (12)	07:35			07:28			08:23			08:50
	21:37			20:36	14	19:57 (12)	19:22			17:16			16:29			16:30
30	05:53			06:44		19:42 (12)	07:36			07:30			08:25			08:50
	21:36			20:33	16	19:58 (12)	19:20			17:14			16:29			16:31
31	05:54			06:46		19:41 (12)				07:32						08:50
	21:34			20:31	16	19:57 (12)				17:12						16:32
Potential sun hours	506			456			381			330			263			240
Total, worst case		218			179			62			35			72		
Sun reduction		0.26			0.30			0.28			0.24			0.19		
Oper. time red.		1.00			1.00			1.00			1.00			1.00		
Wind dir. red.		0.67			0.69			0.69			0.66			0.64		
Total reduction		0.18			0.20			0.19			0.16			0.12		
Total, real		38			36			12			6			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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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: BZ - H78

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:08	06:33 (4) 05:22	05:18	05:56	06:25 (1) 06:47	07:38	07:34	08:26
	16:33	17:23	18:16	20:11	21:04	11 06:44 (4) 21:51	22:06	21:32	2 06:27 (1) 20:29	19:18	17:10	16:28
2	08:50	08:20	07:25	07:12	06:06	06:32 (4) 05:21	05:19	05:58	06:49 07:19 (3)	07:40	07:35	08:27
	16:35	17:24	18:18	20:13	21:06	11 06:43 (4) 21:53	22:05	21:31	9 07:28 (3) 20:26	19:15	17:08	16:27
3	08:50	08:19	07:23	07:10 07:33 (3)	06:04	06:35 (4) 05:20	05:20	05:59	06:51 07:17 (3)	07:42	07:37	08:29
	16:36	17:26	18:19	20:15 2 07:35 (3)	21:07	6 06:41 (4) 21:54	22:05	21:29	12 07:29 (3) 20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08 07:31 (3)	06:02	05:19	05:20	06:01	06:53 07:19 (3)	07:43	07:39	08:30
	16:37	17:28	18:21	20:17 5 07:36 (3)	21:09	21:55	22:04	21:27	11 07:30 (3) 20:22	19:11	17:04	16:26
5	08:49	08:15	07:18	07:05 07:29 (3)	06:01	05:18	05:21	06:02	06:54 07:20 (3)	07:45	07:41	08:32
	16:38	17:30	18:23	20:18 7 07:36 (3)	21:11	21:56	22:04	21:25	10 07:30 (3) 20:19	19:08	17:02	16:26
6	08:49	08:14	07:16	07:03 07:26 (3)	05:59	05:18	05:22	06:04	06:56 07:22 (3)	07:47	07:43	08:33
	16:39	17:32	18:25	20:20 9 07:35 (3)	21:13	21:57	22:03	21:24	9 07:31 (3) 20:17	19:06	17:01	16:25
7	08:49	08:12	07:14	07:01 07:24 (3)	05:57	05:17	05:23	06:06	06:58 07:24 (3)	07:48	07:45	08:34
	16:41	17:34	18:27	20:22 10 07:34 (3)	21:14	21:58	22:03	21:22	7 07:31 (3) 20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:58 07:22 (3)	05:55	05:17	05:24	06:07	06:59 07:25 (3)	07:50	07:47	08:36
	16:42	17:36	18:29	20:24 11 07:33 (3)	21:16	21:59	22:02	21:20	5 07:30 (3) 20:12	19:01	16:57	16:24
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	16:43	17:38	18:30	20:26 12 07:31 (3)	21:18	21:59	22:01	21:18	3 07:30 (3) 20:10	18:59	16:55	16:24
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	16:45	17:40	18:32	20:27 9 07:29 (3)	21:19	22:00	22:01	21:16	7 06:50 (4) 20:08	18:57	16:54	16:24
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	16:46	17:42	18:34	20:29	21:21	22:01	22:00	21:14	12 06:53 (4) 20:05	18:54	16:52	16:24
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	16:48	17:44	18:36	20:31	21:23	3 06:17 (1) 22:02	21:59	21:12	11 06:53 (4) 20:03	18:52	16:51	16:23
13	08:45	08:01	07:00	06:47 07:10 (2)	05:46	06:13 (1) 05:14	05:29 06:13 (1)	06:16	06:44 (4) 07:08	07:59	07:56	08:41
	16:49	17:46	18:38	20:33 2 07:12 (2)	21:24	5 06:18 (1) 22:02	21:58 6 06:19 (1)	21:10	10 06:54 (4) 20:01	18:50	16:49	16:23
14	08:44	07:59	06:57	06:45 07:08 (2)	05:45	06:11 (1) 05:14	05:31 06:12 (1)	06:17	06:45 (4) 07:09	08:01	07:57	08:42
	16:51	17:47	18:40	20:34 5 07:13 (2)	21:26	6 06:17 (1) 22:03	21:57 10 06:22 (1)	21:08	9 06:54 (4) 19:58	18:48	16:47	16:23
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	16:52	17:49	18:41	20:36 8 07:14 (2)	21:27	8 06:18 (1) 22:04	21:56 12 06:23 (1)	21:06	8 06:55 (4) 19:56	18:45	16:46	16:23
16	08:42	07:55	06:53	06:40 07:04 (2)	05:42	06:08 (1) 05:14	05:33 06:10 (1)	06:21	06:48 (4) 07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38 10 07:14 (2)	21:29	10 06:18 (1) 22:04	21:55 14 06:24 (1)	21:04	11 07:09 (2) 19:53	18:43	16:44	16:23
17	08:42	07:53	06:50	06:38 07:02 (2)	05:40	06:07 (1) 05:14	05:34 06:09 (1)	06:22	06:50 (4) 07:14	08:06	08:03	08:45
	16:56	17:53	18:45	20:40 12 07:14 (2)	21:31	11 06:18 (1) 22:05	21:54 15 06:24 (1)	21:02	16 07:13 (2) 19:51	18:41	16:43	16:24
18	08:41	07:51	06:48	06:36 06:59 (2)	05:38	06:06 (1) 05:14	05:36 06:08 (1)	06:24	06:52 (4) 07:16	08:08	08:05	08:45
	16:57	17:55	18:47	20:41 14 07:13 (2)	21:32	12 06:18 (1) 22:05	21:53 17 06:25 (1)	21:00	18 07:15 (2) 19:49	18:39	16:42	16:24
19	08:40	07:49	06:46	06:34 06:57 (2)	05:37	06:04 (1) 05:14	05:37 06:08 (1)	06:26	06:57 (2) 07:18	08:10	08:06	08:46
	16:59	17:57	18:48	20:43 16 07:13 (2)	21:34	14 06:18 (1) 22:05	21:52 19 06:27 (1)	20:58	18 07:15 (2) 19:46	18:36	16:40	16:24
20	08:38	07:47	06:43	06:31 06:55 (2)	05:36	06:03 (1) 05:14	05:38 06:09 (1)	06:27	06:56 (2) 07:19	08:12	08:08	08:47
	17:01	17:59	18:50	20:45 18 07:13 (2)	21:35	15 06:18 (1) 22:06	21:50 18 06:27 (1)	20:55	21 07:17 (2) 19:44	18:34	16:39	16:25
21	08:37	07:44	06:41	06:29 06:53 (2)	05:34	06:02 (1) 05:14	05:40 06:10 (1)	06:29	06:56 (2) 07:21	08:13	08:10	08:47
	17:02	18:01	18:52	20:47 19 07:12 (2)	21:37	16 06:18 (1) 22:06	21:49 17 06:27 (1)	20:53	20 07:16 (2) 19:41	18:32	16:38	16:25
22	08:36	07:42	06:38	06:27 06:51 (2)	05:33	06:01 (1) 05:14	05:41 06:11 (1)	06:31	06:58 (2) 07:23	08:15	08:12	08:48
	17:04	18:03	18:54	20:48 21 07:12 (2)	21:38	17 06:18 (1) 22:06	21:48 16 06:27 (1)	20:51	19 07:17 (2) 19:39	18:30	16:37	16:25
23	08:35	07:40	06:36	06:25 06:51 (2)	05:31	06:00 (1) 05:14	05:42 06:13 (1)	06:32	07:00 (2) 07:24	08:17	08:13	08:48
	17:06	18:05	18:56	20:50 20 07:11 (2)	21:40	18 06:18 (1) 22:06	21:46 15 06:28 (1)	20:49	18 07:18 (2) 19:37	18:28	16:36	16:26
24	08:34	07:38	06:34	06:23 06:47 (4)	05:30	05:58 (1) 05:15	05:44 06:14 (1)	06:34	07:01 (2) 07:26	08:19	08:15	08:49
	17:08	18:06	18:57	20:52 18 07:09 (2)	21:41	18 06:16 (1) 22:06	21:45 14 06:28 (1)	20:47	16 07:17 (2) 19:34	18:26	16:34	16:26
25	08:32	07:36	06:31	06:21 06:45 (4)	05:29	05:58 (1) 05:15	05:45 06:15 (1)	06:36	07:03 (2) 07:28	07:21	08:17	08:49
	17:10	18:08	18:59	20:54 18 07:08 (2)	21:42	18 06:16 (1) 22:06	21:44 13 06:28 (1)	20:45	14 07:17 (2) 19:32	17:24	16:33	16:27
26	08:31	07:34	06:29	06:19 06:43 (4)	05:28	05:59 (1) 05:16	05:47 06:17 (1)	06:37	07:04 (2) 07:30	07:22	08:18	08:50
	17:11	18:10	19:01	20:55 16 07:06 (2)	21:44	16 06:15 (1) 22:06	21:42 12 06:29 (1)	20:42	12 07:16 (2) 19:29	17:22	16:32	16:28
27	08:30	07:32	06:27	06:16 06:41 (4)	05:27	06:00 (1) 05:16	05:48 06:18 (1)	06:39	07:06 (2) 07:31	07:24	08:20	08:50
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28	08:28	07:29	06:24	06:14 06:39 (4)	05:26	06:01 (1) 05:16	05:50 06:20 (1)	06:41	07:08 (2) 07:33	07:26	08:21	08:50
	17:15	18:14	19:04	20:59 8 06:47 (4)	21:46	13 06:14 (1) 22:06	21:39 9 06:29 (1)	20:38	8 07:16 (2) 19:25	17:18	16:30	16:29
29	08:27		07:22	06:12 06:37 (4)	05:24	06:02 (1) 05:17	05:51 06:21 (1)	06:42	07:09 (2) 07:35	07:28	08:23	08:50
	17:17		20:06	21:01 10 06:47 (4)	21:48	11 06:13 (1) 22:06	21:37 7 06:28 (1)	20:36	5 07:14 (2) 19:22	17:16	16:30	16:30
30	08:25		07:19	06:10 06:35 (4)	05:23	06:04 (1) 05:18	05:53 06:22 (1)	06:44	07:11 (2) 07:36	07:30	08:25	08:50
	17:19		20:08	21:02 11 06:46 (4)	21:49	8 06:12 (1) 22:06	21:36 6 06:28 (1)	20:33	2 07:13 (2) 19:20	17:14	16:29	16:31
31	08:24		07:17		05:22	06:07 (1)	05:54 06:24 (1)	06:46		07:32		08:50
	17:21		20:10		21:50	3 06:10 (1)	21:34 4 06:28 (1)	20:31		17:12		16:32
Potential sun hours	256	276	367	418	489	503	506	456	381	330	263	240
Total, worst case				298	265		234	267	66			
Sun reduction				0.35	0.37		0.26	0.30	0.28			
Oper. time red.				1.00	1.00		1.00	1.00	1.00			
Wind dir. red.				0.68	0.65		0.65	0.68	0.69			
Total reduction				0.24	0.24		0.17	0.20	0.19			
Total, real				71	64		40	53	13			

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)

Licensed user:
Jennings O'Donovan
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
abyrne / abyrne@jodireland.com

Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: CA - H79

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50 16:33	08:22 17:23	07:27 18:16	07:15 20:11 20	07:38 (2) 07:58 (2) 16	06:08 06:38 (1)	05:22 21:51	05:18 22:06	05:56 21:32	06:47 20:29 7	07:14 (4) 07:21 (4)	07:38 19:18	07:34 17:10	08:26 16:28
2	08:50 16:35	08:20 17:24	07:25 18:18	07:12 20:13 20	07:37 (2) 07:57 (2)	06:06 06:40 (1) 21:06 12 06:52 (1)	05:21 21:53	05:19 22:05	05:58 21:31	06:49 20:26 5	07:16 (4) 07:21 (4)	07:40 19:15	07:35 17:08	08:27 16:27
3	08:50 16:36	08:19 17:26	07:23 18:19	07:10 20:15 18	07:37 (2) 07:55 (2)	06:04 06:43 (1) 21:08 7 06:50 (1)	05:20 21:54	05:20 22:05	05:59 21:29	06:51 20:24 3	07:17 (4) 07:20 (4)	07:42 19:13	07:37 17:06	08:29 16:27
4	08:50 16:37	08:17 17:28	07:20 18:21	07:08 20:17 16	07:38 (2) 07:54 (2)	06:02 21:09	05:19 21:55	05:20 22:04	06:01 21:27	06:53 20:22		07:43 19:11	07:39 17:04	08:30 16:26
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10	08:47 16:45	08:06 17:40	07:07 18:32	06:54 20:27 5	07:17 (4) 05:51 07:22 (4) 21:19	05:16 22:00	05:26 22:01	06:11 21:16 9	06:50 (1) 07:03 06:59 (1) 20:08 20	07:29 (2) 07:49 (2)	07:54 18:57	07:50 16:54	08:38 16:24
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15	08:43 16:52	07:57 17:49	06:55 18:41	06:42 20:36 12	07:06 (4) 05:43 07:18 (4) 21:27	05:14 22:04	05:32 21:56	06:19 21:06 18	06:47 (1) 07:11 07:05 (1) 19:56 13	07:37 (2) 07:50 (2)	08:03 18:45	07:59 16:46	08:43 16:23
16	08:43 16:54	07:55 17:51	06:53 18:43	06:40 20:38 9	07:07 (4) 05:42 07:16 (4) 21:29	05:14 22:04	05:33 21:55	06:21 21:04 17	06:48 (1) 07:13 07:05 (1) 19:53 10	07:38 (2) 07:48 (2)	08:04 18:43	08:01 16:44	08:44 16:23
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19	08:40 16:59	07:49 17:57	06:46 18:48 1	07:09 (3) 07:10 (3)	06:34 20:43	05:37 21:34	05:14 22:05	05:37 21:52	06:26 20:58 12	06:53 (1) 07:18 07:05 (1) 19:46 11	07:43 (2) 07:54 (3)	08:10 18:36	08:06 16:40	08:46 16:24
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27	08:30 17:13	07:32 18:12	06:27 19:03 10	06:50 (2) 07:00 (2)	06:16 20:57 17	06:41 (1) 06:58 (1) 21:45	05:27 22:06	05:48 21:41	06:39 20:40 9	07:09 (4) 07:31 07:18 (4) 19:27		07:24 17:20	08:20 16:31	08:50 16:29
28	08:28 17:15	07:29 18:14	06:24 19:04 12	06:47 (2) 06:59 (2)	06:14 20:59 18	06:39 (1) 06:57 (1) 21:46	05:25 22:06	05:16 21:39	05:50 20:38 12	07:08 (4) 07:33 07:20 (4) 19:25		07:26 17:18	08:21 16:30	08:50 16:29
29	08:27 17:17		07:22 20:06 15	07:45 (2) 08:00 (2)	06:12 21:01 19	06:37 (1) 06:56 (1) 21:48	05:24 22:06	05:17 21:37	05:51 20:36 11	07:09 (4) 07:35 07:20 (4) 19:22		07:28 17:16	08:23 16:30	08:50 16:30
30	08:25 17:19		07:19 20:08 17	07:43 (2) 08:00 (2)	06:10 21:02 18	06:37 (1) 06:55 (1) 21:49	05:23 22:06	05:18 21:36	05:53 20:33 10	07:11 (4) 07:36 07:21 (4) 19:20		07:30 17:14	08:25 16:29	08:50 16:31
31	08:24 17:21		07:17 20:10 18	07:40 (2) 07:58 (2)		05:22 21:50		05:54 21:34	06:46 20:31 9	07:12 (4) 07:21 (4)		07:32 17:12		08:50 16:32
Potential sun hours	256	276	367	418	489	503	506	456	381			330	263	240
Total, worst case			135	290	35			225	237					
Sun reduction			0.24	0.35	0.37			0.30	0.28					
Oper. time red.			1.00	1.00	1.00			1.00	1.00					
Wind dir. red.			0.69	0.68	0.67			0.68	0.69					
Total reduction			0.17	0.24	0.25			0.20	0.20					
Total, real			23	70	9			45	47					

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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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: CB - H80

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:08	05:22	05:18	05:56	06:47	07:38	07:33	08:26
	16:33	17:23	18:16	20:11	21:04	21:51	22:06	21:32	20:29	19:18	17:10	16:28
2	08:50	08:20	07:25	07:12	06:06	05:21	05:19	05:58	06:49	07:40	07:35	08:27
	16:35	17:24	18:18	20:13	21:06	21:52	22:05	21:31	20:26	19:15	17:08	16:27
3	08:50	08:19	07:23	07:10	06:04	05:20	05:20	05:59	06:51	07:41	07:37	08:29
	16:36	17:26	18:19	20:15	21:07	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:02	05:19	05:20	06:01	06:52	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09	21:55	22:04	21:27	20:22	19:11	17:04	16:26
5	08:49	08:15	07:18	07:05	06:01	05:18	05:21	06:02	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:18	21:11	21:56	22:04	21:25	20:19	19:08	17:02	16:26
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:39	17:32	18:25	20:20	21:13	21:57	22:03	21:24	20:17	19:06	17:01	16:25
7	08:49	08:12	07:13	07:01	05:57	05:17	05:23	06:06	06:58	07:48	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:58	05:55	05:17	05:24	06:07	06:59	07:50	07:46	08:35
	16:42	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:12	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48	08:37
	16:43	17:38	18:30	20:25	21:18	21:59	22:01	21:18	20:10	18:59	16:55	16:24
10	08:47	08:06	07:07	06:54	05:51	05:16	05:26	06:11	07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	22:01	21:16	20:08	18:57	16:54	16:24
11	08:46	08:04	07:04	06:51	05:50	05:15	05:27	06:12	07:04	07:55	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:54	16:52	16:24
12	08:46	08:03	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:51	16:23
13	08:45	08:01	07:00	06:47	05:46	05:14	05:29	06:16	07:08	07:59	07:56	08:41
	16:49	17:46	18:38	20:33	21:24	22:02	21:58	21:10	20:00	18:50	16:49	16:23
14	08:44	07:59	06:57	06:45	05:45	05:14	05:31	06:17	07:09	08:01	07:57	08:42
	16:51	17:47	18:39	20:34	21:26	22:03	21:57	21:08	19:58	18:48	16:47	16:23
15	08:43	07:57	06:55	06:42	05:43	05:14	05:32	06:19	07:11	08:02	07:59	08:43
	16:52	17:49	18:41	20:36	21:27	22:04	21:56	21:06	19:56	18:45	16:46	16:23
16	08:42	07:55	06:53	06:40	05:41	05:14	05:33	06:21	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:53	18:43	16:44	16:23
17	08:41	07:53	06:50	06:38	05:40	05:14	05:34	06:22	07:14	08:06	08:03	08:45
	16:56	17:53	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43	16:24
18	08:40	07:51	06:48	06:36	05:38	05:14	05:36	06:24	07:16	08:08	08:05	08:45
	16:57	17:55	18:47	20:41	21:32	22:05	21:53	21:00	19:49	18:39	16:42	16:24
19	08:39	07:49	06:45	06:34	05:37	05:14	05:37	06:26	07:18	08:10	08:06	08:46
	16:59	17:57	18:48	20:43	21:34	22:05	21:51	20:58	19:46	18:36	16:40	16:24
20	08:38	07:46	06:43	06:31	05:36	05:14	05:38	06:27	07:19	08:11	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:55	19:44	18:34	16:39	16:25
21	08:37	07:44	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:13	08:10	08:47
	17:02	18:01	18:52	20:47	21:37	22:06	21:49	20:53	19:41	18:32	16:38	16:25
22	08:36	07:42	06:38	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:11	08:48
	17:04	18:03	18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:25
23	08:35	07:40	06:36	06:25	05:31	05:14	05:42	06:32	07:24	08:17	08:13	08:48
	17:06	18:05	18:56	20:50	21:40	22:06	21:46	20:49	19:37	18:28	16:35	16:26
24	08:34	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:06	18:57	20:52	21:41	22:06	21:45	20:47	19:34	18:26	16:34	16:26
25	08:32	07:36	06:31	06:21	05:29	05:15	05:45	06:36	07:28	07:21	08:17	08:49
	17:10	18:08	18:59	20:54	21:42	22:06	21:43	20:44	19:32	17:24	16:33	16:27
26	08:31	07:34	06:29	06:18	05:28	05:16	05:47	06:37	07:29	07:22	08:18	08:49
	17:11	18:10	19:01	20:55	21:44	22:06	21:42	20:42	19:29	17:22	16:32	16:28
27	08:29	07:31	06:27	06:16	05:27	05:16	05:48	06:39	07:31	07:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	22:06	21:40	20:40	19:27	17:20	16:31	16:29
28	08:28	07:29	06:24	06:14	05:26	05:16	05:50	06:41	07:33	07:26	08:21	08:50
	17:15	18:14	19:04	20:59	21:46	22:06	21:39	20:38	19:25	17:18	16:30	16:29
29	08:27		07:22	06:12	05:24	05:17	05:51	06:42	07:35	07:28	08:23	08:50
	17:17		20:06	21:01	21:48	22:06	21:37	20:35	19:22	17:16	16:30	16:30
30	08:25		07:19	06:10	05:23	05:18	05:53	06:44	07:36	07:30	08:24	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	17:14	16:29	16:31
31	08:24		07:17		05:22		05:54	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240
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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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: CC - H81

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January			February			March	April	May	June	July	August	September	October	November			December		
1	08:50		15:33 (4)	08:22		16:38 (1)	07:27	07:15	06:08	05:21	05:18	05:56	06:47	07:38	07:33			08:26		
	16:33	18	15:58 (2)	17:22	7	16:45 (1)	18:16	20:11	21:04	21:51	22:06	21:32	20:29	19:17	17:10			16:28		
2	08:50		15:34 (4)	08:20			07:25	07:12	06:06	05:20	05:19	05:57	06:49	07:40	07:35			08:27		
	16:34	15	15:58 (2)	17:24			18:17	20:13	21:06	21:52	22:05	21:31	20:26	19:15	17:08			16:27		
3	08:50		15:50 (2)	08:19			07:22	07:10	06:04	05:20	05:19	05:59	06:51	07:41	07:37			08:29		
	16:35	10	16:00 (2)	17:26			18:19	20:15	21:07	21:54	22:05	21:29	20:24	19:13	17:06			16:26		
4	08:50		15:51 (2)	08:17			07:20	07:08	06:02	05:19	05:20	06:01	06:52	07:43	07:39			08:30		
	16:37	10	16:01 (2)	17:28			18:21	20:17	21:09	21:55	22:04	21:27	20:22	19:10	17:04			16:26		
5	08:49		15:52 (2)	08:15			07:18	07:05	06:00	05:18	05:21	06:02	06:54	07:45	07:41			08:32		15:42 (2)
	16:38	9	16:01 (2)	17:30			18:23	20:18	21:11	21:56	22:04	21:25	20:19	19:08	17:02			16:25	1	15:43 (2)
6	08:49		15:54 (2)	08:14			07:16	07:03	05:59	05:17	05:22	06:04	06:56	07:47	07:43			08:33		15:39 (2)
	16:39	7	16:01 (2)	17:32			18:25	20:20	21:13	21:57	22:03	21:23	20:17	19:06	17:00			16:25	7	15:46 (2)
7	08:49		15:56 (2)	08:12			07:13	07:01	05:57	05:17	05:23	06:05	06:57	07:48	07:45			08:34		15:39 (2)
	16:40	2	15:58 (2)	17:34			18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:03	16:59			16:24	9	15:48 (2)
8	08:48			08:10			07:11	06:58	05:55	05:16	05:24	06:07	06:59	07:50	07:46			08:35		15:38 (2)
	16:42			17:36			18:29	20:24	21:16	21:59	22:02	21:20	20:12	19:01	16:57			16:24	11	15:49 (2)
9	08:48			08:08			07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48			08:37		15:38 (2)
	16:43			17:38			18:30	20:25	21:18	21:59	22:01	21:18	20:10	18:59	16:55			16:24	10	15:48 (2)
10	08:47			08:06			07:06	06:54	05:51	05:15	05:26	06:10	07:02	07:54	07:50		16:09 (1)	08:38		15:25 (4)
	16:45			17:40			18:32	20:27	21:19	22:00	22:01	21:16	20:08	18:56	16:54	7	16:16 (1)	16:23	13	15:48 (2)
11	08:46			08:04			07:04	06:51	05:50	05:15	05:27	06:12	07:04	07:55	07:52		16:06 (1)	08:39		15:23 (4)
	16:46			17:42			18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:54	16:52	12	16:18 (1)	16:23	18	15:48 (2)
12	08:46			08:03			07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54		16:05 (1)	08:40		15:23 (4)
	16:48			17:43			18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:50	14	16:19 (1)	16:23	19	15:48 (2)
13	08:45			08:01			06:59	06:47	05:46	05:14	05:29	06:15	07:07	07:59	07:56		16:04 (1)	08:41		15:22 (4)
	16:49			17:45			18:38	20:32	21:24	22:02	21:58	21:10	20:00	18:50	16:49	13	16:17 (1)	16:23	19	15:47 (2)
14	08:44			07:59			06:57	06:45	05:44	05:14	05:30	06:17	07:09	08:01	07:57		16:03 (1)	08:42		15:22 (4)
	16:51			17:47			18:39	20:34	21:26	22:03	21:57	21:08	19:58	18:47	16:47	13	16:16 (1)	16:23	20	15:47 (2)
15	08:43			07:57			06:55	06:42	05:43	05:14	05:32	06:19	07:11	08:02	07:59		16:03 (1)	08:43		15:22 (4)
	16:52			17:49			18:41	20:36	21:27	22:04	21:56	21:06	19:56	18:45	16:46	11	16:14 (1)	16:23	21	15:47 (2)
16	08:42			07:55			06:52	06:40	05:41	05:14	05:33	06:20	07:12	08:04	08:01		16:03 (1)	08:44		15:23 (4)
	16:54			17:51			18:43	20:38	21:29	22:04	21:55	21:04	19:53	18:43	16:44	9	16:12 (1)	16:23	21	15:48 (2)
17	08:41			07:53			06:50	06:38	05:40	05:14	05:34	06:22	07:14	08:06	08:03		16:03 (1)	08:45		15:22 (4)
	16:55			17:53			18:45	20:39	21:31	22:05	21:54	21:02	19:51	18:41	16:43	8	16:11 (1)	16:23	22	15:47 (2)
18	08:40			07:51			06:48	06:36	05:38	05:14	05:35	06:24	07:16	08:08	08:05		16:03 (1)	08:45		15:22 (4)
	16:57			17:55			18:47	20:41	21:32	22:05	21:53	21:00	19:48	18:39	16:42	6	16:09 (1)	16:24	22	15:47 (2)
19	08:39			07:49			06:45	06:33	05:37	05:14	05:37	06:25	07:18	08:10	08:06		16:03 (1)	08:46		15:23 (4)
	16:59			17:57			18:48	20:43	21:34	22:05	21:51	20:58	19:46	18:36	16:40	5	16:08 (1)	16:24	23	15:48 (2)
20	08:38			07:46			06:43	06:31	05:35	05:14	05:38	06:27	07:19	08:11	08:08		16:03 (1)	08:47		15:23 (4)
	17:01			17:59			18:50	20:45	21:35	22:06	21:50	20:55	19:44	18:34	16:39	4	16:07 (1)	16:24	23	15:48 (2)
21	08:37		16:28 (1)	07:44			06:41	06:29	05:34	05:14	05:39	06:29	07:21	08:13	08:10		16:03 (1)	08:47		15:24 (4)
	17:02	1	16:29 (1)	18:01			18:52	20:47	21:37	22:06	21:49	20:53	19:41	18:32	16:38	1	16:04 (1)	16:25	22	15:48 (2)
22	08:36		16:28 (1)	07:42			06:38	06:27	05:33	05:14	05:41	06:30	07:23	08:15	08:11			08:48		15:24 (4)
	17:04	4	16:32 (1)	18:02			18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:36			16:25	22	15:48 (2)
23	08:35		16:28 (1)	07:40			06:36	06:25	05:31	05:14	05:42	06:32	07:24	08:17	08:13			08:48		15:25 (4)
	17:06	5	16:33 (1)	18:04			18:55	20:50	21:40	22:06	21:46	20:49	19:36	18:28	16:35			16:26	23	15:50 (2)
24	08:34		16:29 (1)	07:38			06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15			08:49		15:25 (4)
	17:08	6	16:35 (1)	18:06			18:57	20:52	21:41	22:06	21:45	20:47	19:34	18:26	16:34			16:26	23	15:50 (2)
25	08:32		16:29 (1)	07:36			06:31	06:20	05:29	05:15	05:45	06:36	07:28	07:21	08:17			08:49		15:26 (4)
	17:09	8	16:37 (1)	18:08			18:59	20:54	21:42	22:06	21:43	20:44	19:32	17:24	16:33			16:27	22	15:51 (2)
26	08:31		16:30 (1)	07:34			06:29	06:18	05:28	05:15	05:47	06:37	07:29	07:22	08:18			08:49		15:27 (4)
	17:11	9	16:39 (1)	18:10			19:01	20:55	21:44	22:06	21:42	20:42	19:29	17:22	16:32			16:28	22	15:52 (2)
27	08:29		16:30 (1)	07:31			06:26	06:16	05:26	05:16	05:48	06:39	07:31	07:24	08:20			08:50		15:27 (4)
	17:13	11	16:41 (1)	18:12			19:03	20:57	21:45	22:06	21:40	20:40	19:27	17:19	16:31			16:28	22	15:52 (2)
28	08:28		16:32 (1)	07:29			06:24	06:14	05:25	05:16	05:50	06:41	07:33	07:26	08:21			08:50		15:28 (4)
	17:15	12	16:44 (1)	18:14			19:04	20:59	21:46	22:06	21:39	20:38	19:25	17:17	16:30			16:29	21	15:53 (2)
29	08:27		16:32 (1)				07:22	06:12	05:24	05:17	05:51	06:42	07:35	07:28	08:23			08:50		15:29 (4)
	17:17	13	16:45 (1)				20:06	21:00	21:48	22:06	21:37	20:35	19:22	17:15	16:29			16:30	20	15:54 (2)
30	08:25		16:33 (1)				07:19	06:10	05:23	05:17	05:53	06:44	07:36	07:30	08:24			08:50		15:30 (4)
	17:19	14	16:47 (1)				20:08	21:02	21:49	22:06	21:36	20:33	19:20	17:13	16:29			16:31	20	15:55 (2)
31	08:24		16:36 (1)				07:17		05:22		05:54	06:46		07:32				08:50		15:31 (4)
	17:21	11	16:47 (1)				20:10		21:50		21:34	20:31		17:12				16:32	19	15:56 (2)
Potential sun hours	255			276			367	418	489	503	506	456	381	330	263			240		
Total, worst case		165			7											103			495	
Sun reduction		0.16			0.21											0.19			0.14	
Oper. time red.		1.00			1.00											1.00			1.00	
Wind dir. red.		0.63			0.63											0.63			0.61	
Total reduction		0.10			0.13											0.12			0.08	
Total, real		16			1											12			42	

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)

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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: CD - H82

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:08	05:22	05:18	05:56	06:47	07:38	07:33	08:26
	16:33	17:23	18:16	20:11	21:04	21:51	22:05	21:32	20:29	19:18	17:10	16:28
2	08:50	08:20	07:25	07:12	06:06	05:21	05:19	05:58	06:49	07:40	07:35	08:27
	16:35	17:24	18:18	20:13	21:06	21:52	22:05	21:31	20:26	19:15	17:08	16:27
3	08:50	08:19	07:23	07:10	06:04	05:20	05:20	05:59	06:51	07:41	07:37	08:29
	16:36	17:26	18:19	20:15	21:07	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:02	05:19	05:20	06:01	06:52	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09	21:55	22:04	21:27	20:22	19:10	17:04	16:26
5	08:49	08:15	07:18	07:05	06:01	05:18	05:21	06:02	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:18	21:11	21:56	22:04	21:25	20:19	19:08	17:02	16:26
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:39	17:32	18:25	20:20	21:13	21:57	22:03	21:23	20:17	19:06	17:01	16:25
7	08:49	08:12	07:13	07:01	05:57	05:17	05:23	06:06	06:58	07:48	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:58	05:55	05:17	05:24	06:07	06:59	07:50	07:46	08:35
	16:42	17:36	18:29	20:24	21:16	21:58	22:02	21:20	20:12	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48	08:37
	16:43	17:38	18:30	20:25	21:18	21:59	22:01	21:18	20:10	18:59	16:55	16:24
10	08:47	08:06	07:07	06:54	05:51	05:16	05:26	06:11	07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	22:00	21:16	20:08	18:57	16:54	16:24
11	08:46	08:04	07:04	06:51	05:50	05:15	05:27	06:12	07:04	07:55	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:54	16:52	16:24
12	08:46	08:03	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:50	16:23
13	08:45	08:01	07:00	06:47	05:46	05:14	05:29	06:16	07:08	07:59	07:56	08:41
	16:49	17:46	18:38	20:32	21:24	22:02	21:58	21:10	20:00	18:50	16:49	16:23
14	08:44	07:59	06:57	06:45	05:45	05:14	05:31	06:17	07:09	08:01	07:57	08:42
	16:51	17:47	18:39	20:34	21:26	22:03	21:57	21:08	19:58	18:48	16:47	16:23
15	08:43	07:57	06:55	06:42	05:43	05:14	05:32	06:19	07:11	08:02	07:59	08:43
	16:52	17:49	18:41	20:36	21:27	22:04	21:56	21:06	19:56	18:45	16:46	16:23
16	08:42	07:55	06:53	06:40	05:41	05:14	05:33	06:21	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:53	18:43	16:44	16:23
17	08:41	07:53	06:50	06:38	05:40	05:14	05:34	06:22	07:14	08:06	08:03	08:45
	16:56	17:53	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43	16:24
18	08:40	07:51	06:48	06:36	05:38	05:14	05:36	06:24	07:16	08:08	08:05	08:45
	16:57	17:55	18:47	20:41	21:32	22:05	21:53	21:00	19:49	18:39	16:42	16:24
19	08:39	07:49	06:45	06:33	05:37	05:14	05:37	06:26	07:18	08:10	08:06	08:46
	16:59	17:57	18:48	20:43	21:34	22:05	21:51	20:58	19:46	18:36	16:40	16:24
20	08:38	07:46	06:43	06:31	05:36	05:14	05:38	06:27	07:19	08:11	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:55	19:44	18:34	16:39	16:24
21	08:37	07:44	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:13	08:10	08:47
	17:02	18:01	18:52	20:47	21:37	22:06	21:49	20:53	19:41	18:32	16:38	16:25
22	08:36	07:42	06:38	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:11	08:48
	17:04	18:03	18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:25
23	08:35	07:40	06:36	06:25	05:31	05:14	05:42	06:32	07:24	08:17	08:13	08:48
	17:06	18:05	18:56	20:50	21:40	22:06	21:46	20:49	19:37	18:28	16:35	16:26
24	08:34	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:06	18:57	20:52	21:41	22:06	21:45	20:47	19:34	18:26	16:34	16:26
25	08:32	07:36	06:31	06:21	05:29	05:15	05:45	06:36	07:28	07:21	08:17	08:49
	17:10	18:08	18:59	20:54	21:42	22:06	21:43	20:44	19:32	17:24	16:33	16:27
26	08:31	07:34	06:29	06:18	05:28	05:16	05:47	06:37	07:29	07:22	08:18	08:49
	17:11	18:10	19:01	20:55	21:44	22:06	21:42	20:42	19:29	17:22	16:32	16:28
27	08:29	07:31	06:27	06:16	05:27	05:16	05:48	06:39	07:31	07:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	22:06	21:40	20:40	19:27	17:20	16:31	16:29
28	08:28	07:29	06:24	06:14	05:25	05:16	05:50	06:41	07:33	07:26	08:21	08:50
	17:15	18:14	19:04	20:59	21:46	22:06	21:39	20:38	19:25	17:18	16:30	16:29
29	08:27		07:22	06:12	05:24	05:17	05:51	06:42	07:35	07:28	08:23	08:50
	17:17		20:06	21:00	21:48	22:06	21:37	20:35	19:22	17:16	16:30	16:30
30	08:25		07:19	06:10	05:23	05:18	05:53	06:44	07:36	07:30	08:24	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	17:14	16:29	16:31
31	08:24		07:17		05:22		05:54	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240
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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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: CE - H83

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January			February			March	April	May	June	July	August	September	October	November			December		
1	08:50		15:38 (4)	08:22		16:40 (1)	07:27	07:15	06:08	05:21	05:18	05:56	06:47	07:38	07:33			08:26		15:45 (2)
	16:33	20	15:58 (2)	17:22	12	16:52 (1)	18:16	20:11	21:04	21:51	22:06	21:32	20:29	19:17	17:10			16:28	7	15:52 (2)
2	08:50		15:38 (4)	08:20		16:42 (1)	07:25	07:12	06:06	05:20	05:19	05:57	06:49	07:40	07:35			08:27		15:32 (4)
	16:34	20	15:58 (2)	17:24	12	16:54 (1)	18:17	20:13	21:06	21:52	22:05	21:31	20:26	19:15	17:08			16:27	14	15:53 (2)
3	08:50		15:39 (4)	08:19		16:43 (1)	07:22	07:10	06:04	05:20	05:19	05:59	06:51	07:41	07:37			08:29		15:30 (4)
	16:35	21	16:00 (2)	17:26	11	16:54 (1)	18:19	20:15	21:07	21:54	22:05	21:29	20:24	19:13	17:06			16:26	18	15:52 (2)
4	08:50		15:41 (4)	08:17		16:46 (1)	07:20	07:08	06:02	05:19	05:20	06:01	06:52	07:43	07:39			08:30		15:30 (4)
	16:37	20	16:01 (2)	17:28	4	16:50 (1)	18:21	20:17	21:09	21:55	22:04	21:27	20:22	19:10	17:04			16:26	18	15:51 (2)
5	08:49		15:41 (4)	08:15			07:18	07:05	06:00	05:18	05:21	06:02	06:54	07:45	07:41			08:32		15:29 (4)
	16:38	21	16:02 (2)	17:30			18:23	20:18	21:11	21:56	22:04	21:25	20:19	19:08	17:02			16:25	20	15:50 (2)
6	08:49		15:43 (4)	08:14			07:16	07:03	05:59	05:17	05:22	06:04	06:56	07:47	07:43			08:33		15:28 (4)
	16:39	21	16:04 (2)	17:32			18:25	20:20	21:13	21:57	22:03	21:23	20:17	19:06	17:00			16:25	21	15:49 (2)
7	08:49		15:43 (4)	08:12			07:13	07:01	05:57	05:17	05:23	06:05	06:57	07:48	07:45		16:17 (1)	08:34		15:28 (4)
	16:40	21	16:05 (2)	17:34			18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:03	16:59	5	16:22 (1)	16:24	21	15:49 (2)
8	08:48		15:44 (4)	08:10			07:11	06:58	05:55	05:16	05:24	06:07	06:59	07:50	07:46		16:14 (1)	08:35		15:28 (4)
	16:42	20	16:06 (2)	17:36			18:28	20:24	21:16	21:59	22:02	21:20	20:12	19:01	16:57	11	16:25 (1)	16:24	21	15:49 (2)
9	08:48		15:47 (4)	08:08			07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48		16:12 (1)	08:37		15:27 (4)
	16:43	18	16:09 (2)	17:38			18:30	20:25	21:18	21:59	22:01	21:18	20:10	18:59	16:55	12	16:24 (1)	16:24	21	15:48 (2)
10	08:47		15:49 (4)	08:06			07:06	06:54	05:51	05:15	05:26	06:10	07:02	07:54	07:50		16:11 (1)	08:38		15:28 (4)
	16:45	15	16:10 (2)	17:40			18:32	20:27	21:19	22:00	22:01	21:16	20:07	18:56	16:54	11	16:22 (1)	16:23	20	15:48 (2)
11	08:46		16:03 (2)	08:04			07:04	06:51	05:50	05:15	05:27	06:12	07:04	07:55	07:52		16:10 (1)	08:39		15:28 (4)
	16:46	7	16:10 (2)	17:42			18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:54	16:52	11	16:21 (1)	16:23	20	15:48 (2)
12	08:46		16:05 (2)	08:03			07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54		16:10 (1)	08:40		15:28 (4)
	16:48	4	16:09 (2)	17:43			18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:50	9	16:19 (1)	16:23	20	15:48 (2)
13	08:45			08:01			06:59	06:47	05:46	05:14	05:29	06:15	07:07	07:59	07:56		16:10 (1)	08:41		15:29 (4)
	16:49			17:45			18:38	20:32	21:24	22:02	21:58	21:10	20:00	18:50	16:49	7	16:17 (1)	16:23	18	15:47 (2)
14	08:44			07:59			06:57	06:45	05:44	05:14	05:30	06:17	07:09	08:01	07:57		16:10 (1)	08:42		15:29 (4)
	16:51			17:47			18:39	20:34	21:26	22:03	21:57	21:08	19:58	18:47	16:47	6	16:16 (1)	16:23	18	15:47 (2)
15	08:43			07:57			06:55	06:42	05:43	05:14	05:32	06:19	07:11	08:02	07:59		16:10 (1)	08:43		15:29 (4)
	16:52			17:49			18:41	20:36	21:27	22:04	21:56	21:06	19:56	18:45	16:46	4	16:14 (1)	16:23	18	15:47 (2)
16	08:42			07:55			06:52	06:40	05:41	05:14	05:33	06:20	07:12	08:04	08:01		16:10 (1)	08:44		15:30 (4)
	16:54			17:51			18:43	20:38	21:29	22:04	21:55	21:04	19:53	18:43	16:44	2	16:12 (1)	16:23	18	15:48 (2)
17	08:41			07:53			06:50	06:38	05:40	05:14	05:34	06:22	07:14	08:06	08:03		16:10 (1)	08:45		15:29 (4)
	16:55			17:53			18:45	20:39	21:31	22:05	21:54	21:02	19:51	18:41	16:43	1	16:11 (1)	16:23	18	15:47 (2)
18	08:40			07:51			06:48	06:36	05:38	05:14	05:35	06:24	07:16	08:08	08:05			08:45		15:30 (4)
	16:57			17:55			18:47	20:41	21:32	22:05	21:53	21:00	19:48	18:39	16:42			16:24	17	15:47 (2)
19	08:39			07:49			06:45	06:33	05:37	05:14	05:37	06:25	07:18	08:10	08:06			08:46		15:31 (4)
	16:59			17:57			18:48	20:43	21:34	22:05	21:51	20:58	19:46	18:36	16:40			16:24	17	15:48 (2)
20	08:38			07:46			06:43	06:31	05:35	05:14	05:38	06:27	07:19	08:11	08:08			08:47		15:30 (4)
	17:01			17:59			18:50	20:45	21:35	22:06	21:50	20:55	19:44	18:34	16:39			16:24	18	15:48 (2)
21	08:37			07:44			06:41	06:29	05:34	05:14	05:39	06:29	07:21	08:13	08:10			08:47		15:31 (4)
	17:02			18:01			18:52	20:46	21:37	22:06	21:49	20:53	19:41	18:32	16:38			16:25	17	15:48 (4)
22	08:36			07:42			06:38	06:27	05:33	05:14	05:41	06:30	07:23	08:15	08:11			08:48		15:31 (4)
	17:04			18:02			18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:36			16:25	17	15:48 (4)
23	08:35			07:40			06:36	06:25	05:31	05:14	05:42	06:32	07:24	08:17	08:13			08:48		15:32 (4)
	17:06			18:04			18:55	20:50	21:40	22:06	21:46	20:49	19:36	18:28	16:35			16:26	18	15:50 (2)
24	08:34			07:38			06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15			08:49		15:32 (4)
	17:08			18:06			18:57	20:52	21:41	22:06	21:45	20:47	19:34	18:26	16:34			16:26	18	15:50 (2)
25	08:32		16:36 (1)	07:36			06:31	06:20	05:29	05:15	05:45	06:36	07:28	07:21	08:17			08:49		15:34 (4)
	17:09	1	16:37 (1)	18:08			18:59	20:54	21:42	22:06	21:43	20:44	19:32	17:24	16:33			16:27	17	15:51 (2)
26	08:31		16:37 (1)	07:34			06:29	06:18	05:28	05:15	05:47	06:37	07:29	07:22	08:18			08:49		15:34 (4)
	17:11	2	16:39 (1)	18:10			19:01	20:55	21:44	22:06	21:42	20:42	19:29	17:22	16:32			16:28	18	15:52 (2)
27	08:29		16:37 (1)	07:31			06:26	06:16	05:26	05:16	05:48	06:39	07:31	07:24	08:20			08:50		15:34 (4)
	17:13	4	16:41 (1)	18:12			19:02	20:57	21:45	22:06	21:40	20:40	19:27	17:19	16:31			16:28	18	15:52 (2)
28	08:28		16:38 (1)	07:29			06:24	06:14	05:25	05:16	05:50	06:41	07:33	07:26	08:21			08:50		15:35 (4)
	17:15	6	16:44 (1)	18:14			19:04	20:59	21:46	22:06	21:39	20:38	19:25	17:17	16:30			16:29	18	15:53 (2)
29	08:27		16:38 (1)				07:22	06:12	05:24	05:17	05:51	06:42	07:34	07:28	08:23			08:50		15:36 (4)
	17:17	7	16:45 (1)				20:06	21:00	21:48	22:06	21:37	20:35	19:22	17:15	16:29			16:30	18	15:54 (2)
30	08:25		16:38 (1)				07:19	06:10	05:23	05:17	05:53	06:44	07:36	07:30	08:24		15:46 (2)	08:50		15:36 (4)
	17:19	9	16:47 (1)				20:08	21:02	21:49	22:06	21:36	20:33	19:20	17:13	16:29	4	15:50 (2)	16:31	19	15:55 (2)
31	08:24		16:40 (1)				07:17		05:22		05:54	06:46		07:32				08:50		15:37 (4)
	17:21	10	16:50 (1)				20:10		21:50		21:34	20:31		17:12				16:32	19	15:56 (2)
Potential sun hours	255			276			367	418	489	503	506	456	381	330	263			240		
Total, worst case		247			39											83			560	
Sun reduction		0.16			0.21											0.19			0.14	
Oper. time red.		1.00			1.00											1.00			1.00	
Wind dir. red.		0.62			0.63											0.63			0.62	
Total reduction		0.10			0.13											0.12			0.08	
Total, real		24			5											10			47	

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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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: CF - H84

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January			February			March			April			May			June		
1	08:50		09:23 (1)	08:22		08:59 (4)	07:27			07:15			06:08			05:21		20:49 (12)
	16:33	7	09:30 (3)	17:23	16	16:48 (6)	18:16			20:11			21:04			21:51	18	21:18 (16)
2	08:50		09:22 (1)	08:20		16:36 (6)	07:25			07:12			06:06			05:21		20:48 (12)
	16:34	7	09:29 (3)	17:24	13	16:49 (7)	18:18			20:13			21:06			21:53	21	21:19 (16)
3	08:50		09:22 (1)	08:19		16:35 (7)	07:23			07:10			06:04			05:20		20:47 (12)
	16:36	8	09:30 (3)	17:26	15	16:50 (7)	18:19			20:15			21:08			21:54	23	21:20 (16)
4	08:50		09:22 (1)	08:17		16:35 (7)	07:20			07:08			06:02			05:19		20:47 (12)
	16:37	8	09:30 (3)	17:28	16	16:51 (7)	18:21			20:17			21:09			21:55	25	21:21 (16)
5	08:49		09:21 (1)	08:15		16:34 (7)	07:18			07:05			06:01			05:18		20:47 (12)
	16:38	9	09:30 (3)	17:30	18	16:52 (7)	18:23			20:19			21:11			21:56	27	21:22 (16)
6	08:49		09:21 (1)	08:14		16:34 (7)	07:16			07:03			05:59			05:18		20:47 (12)
	16:39	9	09:30 (3)	17:32	18	16:52 (7)	18:25			20:20			21:13			21:57	28	21:23 (16)
7	08:49		09:20 (1)	08:12		16:34 (7)	07:14			07:01			05:57			05:17		20:46 (12)
	16:41	10	09:30 (3)	17:34	19	16:53 (7)	18:27			20:22			21:14			21:58	30	21:24 (16)
8	08:48		09:19 (1)	08:10		16:34 (7)	07:11			06:58		19:55 (10)	05:55			05:16		20:47 (12)
	16:42	10	09:29 (3)	17:36	19	16:53 (7)	18:29			20:24	3	19:58 (10)	21:16			21:59	30	21:25 (16)
9	08:48		09:19 (1)	08:08		16:34 (7)	07:09		18:01 (5)	06:56		19:53 (10)	05:53			05:16		20:46 (12)
	16:43	10	09:29 (1)	17:38	18	16:52 (7)	18:30	3	18:04 (5)	20:26	5	19:58 (10)	21:18			22:00	32	21:25 (16)
10	08:47		09:18 (1)	08:06		16:35 (7)	07:07		18:00 (5)	06:54		19:53 (10)	05:51			05:15		20:46 (12)
	16:45	12	09:30 (1)	17:40	17	16:52 (7)	18:32	6	18:06 (5)	20:27	7	20:00 (10)	21:19			22:00	33	21:26 (16)
11	08:47		09:17 (1)	08:05		16:35 (7)	07:04		18:00 (5)	06:51		19:53 (10)	05:50			05:15		20:47 (12)
	16:46	13	09:30 (1)	17:42	16	16:51 (7)	18:34	8	18:08 (5)	20:29	9	20:02 (10)	21:21			22:01	31	21:26 (16)
12	08:46		09:16 (1)	08:03		16:36 (7)	07:02		17:59 (5)	06:49		19:53 (10)	05:48			05:15		20:46 (12)
	16:48	14	09:30 (1)	17:44	14	16:50 (7)	18:36	11	18:10 (5)	20:31	9	20:02 (10)	21:23			22:02	32	21:25 (16)
13	08:45		09:15 (1)	08:01		16:38 (7)	07:00		17:59 (5)	06:47		19:54 (10)	05:46			05:14		20:46 (12)
	16:49	15	09:30 (1)	17:45	11	16:49 (7)	18:38	10	18:09 (5)	20:33	6	20:00 (10)	21:24			22:03	32	21:26 (16)
14	08:44		09:14 (1)	07:59		16:41 (7)	06:57		18:00 (5)	06:45			05:45			05:14		20:47 (12)
	16:51	17	09:31 (1)	17:47	6	16:47 (7)	18:40	8	18:08 (5)	20:34			21:26			22:03	31	21:26 (16)
15	08:43		09:13 (1)	07:57			06:55		18:02 (5)	06:42			05:43			05:14		20:47 (12)
	16:52	18	09:31 (1)	17:49			18:41	3	18:05 (5)	20:36			21:28			22:04	31	21:26 (16)
16	08:43		09:12 (1)	07:55			06:53			06:40			05:41			05:14		20:47 (12)
	16:54	19	09:31 (1)	17:51			18:43			20:38			21:29			22:04	31	21:26 (16)
17	08:42		09:11 (1)	07:53			06:50			06:38			05:40			05:14		20:47 (12)
	16:56	20	09:31 (1)	17:53			18:45			20:40			21:31			22:05	31	21:26 (16)
18	08:41		09:10 (1)	07:51			06:48			06:36			05:38			05:14		20:47 (12)
	16:57	21	09:31 (1)	17:55			18:47			20:41			21:32			22:05	31	21:26 (16)
19	08:40		09:10 (1)	07:49		17:25 (8)	06:46			06:33			05:37			05:14		20:47 (12)
	16:59	21	09:31 (1)	17:57	3	17:28 (8)	18:48			20:43			21:34			22:05	31	21:26 (16)
20	08:38		09:10 (1)	07:47		17:22 (8)	06:43			06:31			05:35			05:14		20:47 (12)
	17:01	20	09:30 (1)	17:59	9	17:31 (8)	18:50			20:45			21:35			22:06	30	21:26 (16)
21	08:37		09:06 (4)	07:44		17:20 (8)	06:41			06:29			05:34			05:14		20:48 (12)
	17:02	19	09:30 (1)	18:01	12	17:32 (8)	18:52			20:47			21:37			22:06	29	21:26 (16)
22	08:36		09:05 (4)	07:42		17:20 (8)	06:38			06:27			05:33			05:14		20:49 (12)
	17:04	20	09:30 (1)	18:03	13	17:33 (8)	18:54			20:48			21:38			22:06	29	21:27 (16)
23	08:35		09:03 (4)	07:40		17:19 (8)	06:36			06:25			05:31			05:14		20:48 (12)
	17:06	20	09:29 (1)	18:05	15	17:34 (8)	18:56			20:50			21:40			22:06	30	21:27 (16)
24	08:34		09:02 (4)	07:38		17:18 (8)	06:34			06:23			05:30			05:15		20:48 (12)
	17:08	18	09:28 (1)	18:06	15	17:33 (8)	18:57			20:52			21:41			22:07	31	21:27 (16)
25	08:32		09:00 (4)	07:36		17:19 (8)	06:31			06:21			05:29			05:15		20:49 (12)
	17:10	14	09:25 (1)	18:08	14	17:33 (8)	18:59			20:54			21:42			22:07	31	21:28 (16)
26	08:31		08:59 (4)	07:34		17:19 (8)	06:29			06:18			05:28			05:15		20:49 (12)
	17:11	11	16:39 (6)	18:10	14	17:33 (8)	19:01			20:55			21:44			22:07	31	21:28 (16)
27	08:30		08:57 (4)	07:32		17:20 (8)	06:27			06:16			05:27			05:16		20:49 (12)
	17:13	16	16:41 (6)	18:12	12	17:32 (8)	19:03			20:57			21:45			22:06	31	21:28 (16)
28	08:28		08:56 (4)	07:29		17:21 (8)	06:24			06:14			05:25			05:16		20:50 (12)
	17:15	20	16:44 (6)	18:14	8	17:29 (8)	19:04			20:59			21:47			22:06	31	21:29 (16)
29	08:27		08:54 (4)				07:22			06:12			05:24		20:52 (12)	05:17		20:50 (12)
	17:17	23	16:45 (6)				20:06			21:01			21:48	7	20:59 (12)	22:06	33	21:30 (16)
30	08:25		08:53 (4)				07:19			06:10			05:23		20:50 (12)	05:18		20:50 (12)
	17:19	25	16:47 (6)				20:08			21:02			21:49	12	21:16 (16)	22:06	31	21:29 (16)
31	08:24		08:56 (4)				07:17						05:22		20:50 (12)			
	17:21	22	16:48 (6)				20:10						21:50	15	21:18 (16)			
Potential sun hours	255			276			367			418			489			503		
Total, worst case		476			331			49			39			34			885	
Sun reduction		0.16			0.21			0.24			0.35			0.37			0.30	
Oper. time red.		1.00			1.00			1.00			1.00			1.00			1.00	
Wind dir. red.		0.65			0.64			0.68			0.69			0.67			0.67	
Total reduction		0.10			0.13			0.17			0.24			0.24			0.20	
Total, real		49			44			8			9			8			175	

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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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: CF - H84

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	July		August		September		October		November		December	
1	05:18		20:51 (12)	05:56		06:47		19:52 (10)	07:38		18:39 (5)	07:34		16:04 (7)	08:26		08:59 (1)
	22:06	32	21:30 (16)	21:32		20:29	9	20:01 (10)	19:18	10	18:49 (5)	17:10	18	16:22 (7)	16:28	13	09:12 (1)
2	05:19		20:51 (12)	05:58		06:49		19:52 (10)	07:40		18:37 (5)	07:35		16:04 (7)	08:28		09:01 (1)
	22:05	32	21:30 (16)	21:31		20:26	7	19:59 (10)	19:15	10	18:47 (5)	17:08	18	16:22 (7)	16:27	12	09:13 (1)
3	05:20		20:51 (12)	05:59		06:51		19:51 (10)	07:42		18:38 (5)	07:37		16:04 (7)	08:29		09:02 (1)
	22:05	31	21:30 (16)	21:29		20:24	5	19:56 (10)	19:13	7	18:45 (5)	17:06	18	16:22 (7)	16:27	10	09:12 (1)
4	05:20		20:52 (12)	06:01		06:52		19:52 (10)	07:43		18:39 (5)	07:39		16:04 (7)	08:30		09:04 (1)
	22:04	31	21:31 (16)	21:27		20:22	3	19:55 (10)	19:11	4	18:43 (5)	17:04	18	16:22 (7)	16:26	10	09:14 (3)
5	05:21		20:53 (12)	06:02		06:54			07:45		18:40 (5)	07:41		16:04 (7)	08:32		09:05 (1)
	22:04	30	21:30 (16)	21:25		20:19			19:08	1	18:41 (5)	17:02	18	16:22 (7)	16:25	10	09:15 (3)
6	05:22		20:53 (12)	06:04		06:56			07:47			07:43		16:04 (7)	08:33		09:07 (1)
	22:03	30	21:30 (16)	21:24		20:17			19:06			17:01	18	16:22 (7)	16:25	9	09:16 (3)
7	05:23		20:53 (12)	06:06		06:58			07:48			07:45		16:05 (7)	08:34		09:08 (1)
	22:03	28	21:29 (16)	21:22		20:15			19:04			16:59	16	16:21 (7)	16:25	9	09:17 (3)
8	05:24		20:54 (12)	06:07		06:59			07:50			07:47		16:06 (7)	08:36		09:09 (1)
	22:02	25	21:28 (16)	21:20		20:12			19:01			16:57	14	16:20 (7)	16:24	8	09:17 (3)
9	05:25		20:54 (12)	06:09		07:01			07:52			07:48		16:06 (6)	08:37		09:11 (1)
	22:01	25	21:28 (16)	21:18		20:10			18:59			16:55	13	16:19 (6)	16:24	8	09:19 (3)
10	05:26		20:55 (12)	06:11		07:03			07:54			07:50		08:29 (4)	08:38		09:12 (1)
	22:01	23	21:27 (16)	21:16		20:08			18:57			16:54	17	16:19 (6)	16:24	7	09:19 (3)
11	05:27		20:56 (12)	06:12		07:04			07:55			07:52		08:26 (4)	08:39		09:13 (1)
	22:00	19	21:26 (16)	21:14		20:05			18:54			16:52	23	16:19 (6)	16:23	7	09:20 (3)
12	05:28		20:57 (12)	06:14		07:06			07:57			07:54		08:25 (4)	08:40		09:14 (1)
	21:59	16	21:25 (16)	21:12		20:03			18:52			16:50	26	16:19 (6)	16:23	6	09:20 (3)
13	05:29		20:58 (12)	06:16		07:08			07:59		17:56 (8)	07:56		08:26 (4)	08:41		09:15 (3)
	21:58	14	21:25 (16)	21:10		20:01			18:50	5	18:01 (8)	16:49	23	16:17 (6)	16:23	6	09:21 (3)
14	05:30		20:59 (12)	06:17		07:09			08:01		17:54 (8)	07:58		08:28 (4)	08:42		09:16 (3)
	21:57	10	21:24 (16)	21:08		19:58			18:48	9	18:03 (8)	16:47	20	16:16 (6)	16:23	5	09:21 (3)
15	05:32		21:03 (12)	06:19		07:11			08:03		17:52 (8)	07:59		08:30 (4)	08:43		09:17 (3)
	21:56	4	21:07 (12)	21:06		19:56			18:45	12	18:04 (8)	16:46	16	16:14 (6)	16:23	5	09:22 (3)
16	05:33			06:21		07:13			08:04		17:51 (8)	08:01		08:32 (4)	08:44		09:18 (3)
	21:55			21:04		19:53			18:43	14	18:05 (8)	16:44	11	16:12 (6)	16:23	5	09:23 (3)
17	05:34			06:22		07:14			08:06		17:51 (8)	08:03		08:34 (4)	08:45		09:19 (3)
	21:54			21:02		19:51			18:41	14	18:05 (8)	16:43	15	08:59 (1)	16:24	4	09:23 (3)
18	05:35			06:24		07:16			08:08		17:50 (8)	08:05		08:36 (4)	08:45		09:19 (3)
	21:53			21:00		19:49			18:39	14	18:04 (8)	16:42	18	09:02 (1)	16:24	4	09:23 (3)
19	05:37			06:26		07:18			08:10		17:50 (8)	08:06		08:38 (4)	08:46		09:20 (3)
	21:52			20:58		19:46			18:36	14	18:04 (8)	16:40	20	09:04 (1)	16:24	4	09:24 (3)
20	05:38			06:27		07:19			08:12		17:50 (8)	08:08		08:40 (4)	08:47		09:21 (3)
	21:50			20:56		19:44			18:34	13	18:03 (8)	16:39	20	09:05 (1)	16:24	4	09:25 (3)
21	05:40			06:29		07:21			08:13		17:51 (8)	08:10		08:42 (4)	08:47		09:21 (3)
	21:49			20:53		19:41			18:32	11	18:02 (8)	16:38	19	09:06 (1)	16:25	4	09:25 (3)
22	05:41			06:31		07:23			08:15		17:53 (8)	08:12		08:46 (1)	08:48		09:22 (3)
	21:48			20:51		19:39			18:30	8	18:01 (8)	16:37	20	09:06 (1)	16:25	4	09:26 (3)
23	05:42			06:32		07:24			08:17			08:13		08:46 (1)	08:48		09:22 (3)
	21:46			20:49		19:37			18:28			16:35	22	09:08 (1)	16:26	4	09:26 (3)
24	05:44			06:34		07:26			08:19			08:15		08:47 (1)	08:49		09:22 (3)
	21:45			20:47		19:34			18:26			16:34	21	09:08 (1)	16:26	4	09:26 (3)
25	05:45			06:36		07:28			07:21			08:17		08:49 (1)	08:49		09:23 (3)
	21:44			20:45		19:32			17:24			16:33	20	09:09 (1)	16:27	4	09:27 (3)
26	05:47			06:37		07:30			07:22			08:18		08:51 (1)	08:50		09:23 (3)
	21:42			20:42		19:29			17:22			16:32	19	09:10 (1)	16:28	4	09:27 (3)
27	05:48			06:39		07:31			07:24			08:20		08:52 (1)	08:50		09:23 (3)
	21:41			20:40		19:27			17:20			16:31	18	09:10 (1)	16:28	4	09:27 (3)
28	05:50			06:41		07:33			07:26		16:09 (7)	08:21		08:54 (1)	08:50		09:23 (3)
	21:39			20:38		19:25			17:18	8	16:17 (7)	16:30	17	09:11 (1)	16:29	5	09:28 (3)
29	05:51			06:42		07:35		18:41 (5)	07:28		16:07 (7)	08:23		08:56 (1)	08:50		09:23 (3)
	21:37			20:36		19:22	6	18:47 (5)	17:16	12	16:19 (7)	16:30	15	09:11 (1)	16:30	5	09:28 (3)
30	05:53			06:44	19:55 (10)	07:36		18:39 (5)	07:30		16:06 (7)	08:25		08:58 (1)	08:50		09:23 (3)
	21:36			20:33	6 20:01 (10)	19:20	10	18:49 (5)	17:14	14	16:20 (7)	16:29	14	09:12 (1)	16:31	6	09:29 (3)
31	05:54			06:46	19:52 (10)				07:32		16:05 (7)				08:50		09:23 (1)
	21:34			20:31	9 20:01 (10)				17:12	16	16:21 (7)				16:32	6	09:29 (3)
Potential sun hours	506			456		381			330			263			240		
Total, worst case		350			15		40			196			545			196	
Sun reduction		0.26			0.30		0.28			0.24			0.19			0.14	
Oper. time red.		1.00			1.00		1.00			1.00			1.00			1.00	
Wind dir. red.		0.67			0.69		0.68			0.66			0.65			0.65	
Total reduction		0.18			0.20		0.19			0.16			0.12			0.09	
Total, real		62			3		8			31			65			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)

Licensed user:
Jennings O'Donovan
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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: CG - H85

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January	February	March	April		May		June	July		August		September	October	November	December
1	08:50	08:22	07:27	07:15		06:08	06:39 (3)	05:22	05:18		05:56	06:25 (2)	06:47	07:38	07:34	08:26
	16:33	17:23	18:16	20:11		21:04 4	06:43 (3)	21:51	22:06		21:32 4	06:29 (2)	20:29	19:18	17:10	16:28
2	08:50	08:20	07:25	07:12		06:06		05:21	05:19		05:58	06:27 (2)	06:49	07:40	07:35	08:27
	16:35	17:25	18:18	20:13		21:06		21:53	22:05		21:31 2	06:29 (2)	20:26	19:15	17:08	16:27
3	08:50	08:19	07:23	07:10		06:04		05:20	05:20		05:59		06:51	07:42	07:37	08:29
	16:36	17:26	18:19	20:15		21:07		21:54	22:05		21:29		20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08		06:02		05:19	05:21		06:01		06:53	07:43	07:39	08:30
	16:37	17:28	18:21	20:17		21:09		21:55	22:04		21:27		20:22	19:11	17:04	16:26
5	08:49	08:15	07:18	07:05		06:01		05:18	05:21		06:02		06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:18		21:11		21:56	22:04		21:25		20:19	19:08	17:02	16:26
6	08:49	08:14	07:16	07:03		05:59		05:18	05:22		06:04		06:56	07:47	07:43	08:33
	16:39	17:32	18:25	20:20		21:13		21:57	22:03		21:24		20:17	19:06	17:01	16:25
7	08:49	08:12	07:14	07:01		05:57		05:17	05:23		06:06		06:58	07:48	07:45	08:34
	16:41	17:34	18:27	20:22		21:14		21:58	22:03		21:22		20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:58		05:55		05:17	05:24		06:07		06:59	07:50	07:46	08:35
	16:42	17:36	18:29	20:24		21:16		21:59	22:02		21:20		20:12	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56		05:53		05:16	05:25		06:09		07:01	07:52	07:48	08:37
	16:43	17:38	18:30	20:26		21:18		21:59	22:01		21:18		20:10	18:59	16:55	16:24
10	08:47	08:06	07:07	06:54		05:51	06:18 (2)	05:16	05:26		06:11		07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:27		21:19 1	06:19 (2)	22:00	22:01		21:16		20:08	18:57	16:54	16:24
11	08:46	08:05	07:04	06:52		05:50	06:16 (2)	05:15	05:27		06:12		07:04	07:55	07:52	08:39
	16:46	17:42	18:34	20:29		21:21 3	06:19 (2)	22:01	22:00		21:14		20:05	18:54	16:52	16:24
12	08:46	08:03	07:02	06:49		05:48	06:14 (2)	05:15	05:28		06:14	06:46 (3)	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31		21:23 5	06:19 (2)	22:02	21:59		21:12 7	06:53 (3)	20:03	18:52	16:51	16:23
13	08:45	08:01	07:00	06:47		05:46	06:13 (2)	05:14	05:29	06:14 (2)	06:16	06:44 (3)	07:08	07:59	07:56	08:41
	16:49	17:46	18:38	20:33		21:24 7	06:20 (2)	22:02	21:58 6	06:20 (2)	21:10 11	06:55 (3)	20:01	18:50	16:49	16:23
14	08:44	07:59	06:57	06:45		05:45	06:11 (2)	05:14	05:31	06:13 (2)	06:17	06:45 (3)	07:09	08:01	07:57	08:42
	16:51	17:47	18:40	20:34		21:26 8	06:19 (2)	22:03	21:57 10	06:23 (2)	21:08 11	06:56 (3)	19:58	18:48	16:47	16:23
15	08:43	07:57	06:55	06:42		05:43	06:10 (2)	05:14	05:32	06:08 (4)	06:19	06:47 (3)	07:11	08:03	07:59	08:43
	16:52	17:49	18:41	20:36		21:27 10	06:20 (2)	22:04	21:56 16	06:24 (2)	21:06 10	06:57 (3)	19:56	18:45	16:46	16:23
16	08:42	07:55	06:53	06:40		05:42	06:08 (2)	05:14	05:33	06:06 (4)	06:21	06:48 (3)	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38		21:29 12	06:20 (2)	22:04	21:55 19	06:25 (2)	21:04 9	06:57 (3)	19:53	18:43	16:45	16:23
17	08:42	07:53	06:50	06:38		05:40	06:07 (2)	05:14	05:34	06:05 (4)	06:22	06:50 (3)	07:14	08:06	08:03	08:45
	16:56	17:53	18:45	20:40		21:31 13	06:20 (2)	22:05	21:54 21	06:26 (2)	21:02 8	06:58 (3)	19:51	18:41	16:43	16:24
18	08:41	07:51	06:48	06:36		05:38	06:06 (2)	05:14	05:36	06:06 (4)	06:24	06:52 (3)	07:16	08:08	08:05	08:45
	16:57	17:55	18:47	20:41		21:32 14	06:20 (2)	22:05	21:53 21	06:27 (2)	21:00 6	06:58 (3)	19:49	18:39	16:42	16:24
19	08:40	07:49	06:46	06:34		05:37	06:04 (2)	05:14	05:37	06:08 (4)	06:26	06:53 (3)	07:18	08:10	08:06	08:46
	16:59	17:57	18:48	20:43		21:34 15	06:19 (2)	22:05	21:52 20	06:28 (2)	20:58 4	06:57 (3)	19:46	18:37	16:40	16:24
20	08:38	07:47	06:43	06:31		05:36	06:03 (2)	05:14	05:38	06:09 (2)	06:27	06:55 (3)	07:19	08:12	08:08	08:47
	17:01	17:59	18:50	20:45		21:35 17	06:20 (2)	22:06	21:50 20	06:29 (2)	20:55 2	06:57 (3)	19:44	18:34	16:39	16:25
21	08:37	07:44	06:41	06:29		05:34	06:02 (2)	05:14	05:40	06:10 (2)	06:29		07:21	08:13	08:10	08:47
	17:02	18:01	18:52	20:47		21:37 18	06:20 (2)	22:06	21:49 19	06:29 (2)	20:53		19:41	18:32	16:38	16:25
22	08:36	07:42	06:38	06:27	06:51 (3)	05:33	06:01 (2)	05:14	05:41	06:11 (2)	06:31		07:23	08:15	08:12	08:48
	17:04	18:03	18:54	20:48 1	06:52 (3)	21:38 18	06:19 (2)	22:06	21:48 18	06:29 (2)	20:51		19:39	18:30	16:37	16:25
23	08:35	07:40	06:36	06:25	06:49 (3)	05:31	06:00 (2)	05:14	05:42	06:13 (2)	06:32		07:24	08:17	08:13	08:48
	17:06	18:05	18:56	20:50 3	06:52 (3)	21:40 19	06:19 (2)	22:06	21:46 17	06:30 (2)	20:49		19:37	18:28	16:36	16:26
24	08:34	07:38	06:34	06:23	06:47 (3)	05:30	05:58 (2)	05:15	05:44	06:14 (2)	06:34		07:26	08:19	08:15	08:49
	17:08	18:06	18:57	20:52 5	06:52 (3)	21:41 20	06:18 (2)	22:06	21:45 16	06:30 (2)	20:47		19:34	18:26	16:34	16:27
25	08:32	07:36	06:31	06:21	06:45 (3)	05:29	05:57 (4)	05:15	05:45	06:15 (2)	06:36		07:28	07:21	08:17	08:49
	17:10	18:08	18:59	20:54 7	06:52 (3)	21:42 20	06:17 (2)	22:06	21:43 15	06:30 (2)	20:45		19:32	17:24	16:33	16:27
26	08:31	07:34	06:29	06:19	06:43 (3)	05:28	05:56 (4)	05:16	05:47	06:17 (2)	06:37		07:30	07:22	08:18	08:50
	17:11	18:10	19:01	20:55 8	06:51 (3)	21:44 21	06:17 (2)	22:06	21:42 14	06:31 (2)	20:42		19:29	17:22	16:32	16:28
27	08:30	07:32	06:27	06:16	06:41 (3)	05:27	05:56 (4)	05:16	05:48	06:18 (2)	06:39		07:31	07:24	08:20	08:50
	17:13	18:12	19:03	20:57 9	06:50 (3)	21:45 20	06:16 (2)	22:06	21:41 12	06:30 (2)	20:40		19:27	17:20	16:31	16:29
28	08:28	07:29	06:24	06:14	06:39 (3)	05:26	05:57 (4)	05:16	05:50	06:20 (2)	06:41		07:33	07:26	08:21	08:50
	17:15	18:14	19:04	20:59 10	06:49 (3)	21:46 18	06:15 (2)	22:06	21:39 11	06:31 (2)	20:38		19:25	17:18	16:30	16:29
29	08:27		07:22	06:12	06:37 (3)	05:24	06:03 (2)	05:17	05:51	06:21 (2)	06:42		07:35	07:28	08:23	08:50
	17:17		20:06	21:01 11	06:48 (3)	21:48 11	06:14 (2)	22:06	21:37 9	06:30 (2)	20:36		19:22	17:16	16:30	16:30
30	08:25		07:19	06:10	06:36 (3)	05:23	06:05 (2)	05:18	05:53	06:22 (2)	06:44		07:36	07:30	08:24	08:50
	17:19		20:08	21:02 10	06:46 (3)	21:49 9	06:14 (2)	22:06	21:36 8	06:30 (2)	20:33		19:20	17:14	16:29	16:31
31	08:24		07:17			05:22	06:08 (2)		05:54	06:24 (2)	06:46			07:32		08:50
	17:21		20:10			21:50 3	06:11 (2)		21:34 6	06:30 (2)	20:31			17:12		16:32
Potential sun hours	256	276	367	418		488		503	506		456		381	330	263	240
Total, worst case				64		286			278		74					
Sun reduction				0.35		0.37			0.26		0.30					
Oper. time red.				1.00		1.00			1.00		1.00					
Wind dir. red.				0.67		0.65			0.65		0.67					
Total reduction				0.24		0.24			0.17		0.20					
Total, real				15		69			48		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)

Licensed user:
Jennings O'Donovan
Finisklin Business Park
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+353719161416
abyrne / abyrne@jodireland.com

Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: CH - H86

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:08	05:22	05:18	05:56	06:47	07:38	07:33	08:26
	16:33	17:23	18:16	20:11	21:04	21:51	22:05	21:32	20:29	19:18	17:10	16:28
2	08:50	08:20	07:25	07:12	06:06	05:21	05:19	05:58	06:49	07:40	07:35	08:27
	16:35	17:24	18:18	20:13	21:06	21:52	22:05	21:31	20:26	19:15	17:08	16:27
3	08:50	08:19	07:23	07:10	06:04	05:20	05:20	05:59	06:51	07:41	07:37	08:29
	16:36	17:26	18:19	20:15	21:07	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:02	05:19	05:20	06:01	06:52	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09	21:55	22:04	21:27	20:22	19:10	17:04	16:26
5	08:49	08:15	07:18	07:05	06:01	05:18	05:21	06:02	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:18	21:11	21:56	22:04	21:25	20:19	19:08	17:02	16:26
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:39	17:32	18:25	20:20	21:13	21:57	22:03	21:23	20:17	19:06	17:01	16:25
7	08:49	08:12	07:13	07:01	05:57	05:17	05:23	06:06	06:58	07:48	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:03	16:59	16:25
8	08:48	08:10	07:11	06:58	05:55	05:17	05:24	06:07	06:59	07:50	07:46	08:35
	16:42	17:36	18:29	20:24	21:16	21:58	22:02	21:20	20:12	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48	08:37
	16:43	17:38	18:30	20:25	21:18	21:59	22:01	21:18	20:10	18:59	16:55	16:24
10	08:47	08:06	07:07	06:54	05:51	05:16	05:26	06:11	07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	22:00	21:16	20:08	18:57	16:54	16:24
11	08:46	08:04	07:04	06:51	05:50	05:15	05:27	06:12	07:04	07:55	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:54	16:52	16:24
12	08:46	08:03	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:50	16:23
13	08:45	08:01	07:00	06:47	05:46	05:14	05:29	06:16	07:08	07:59	07:56	08:41
	16:49	17:46	18:38	20:32	21:24	22:02	21:58	21:10	20:00	18:50	16:49	16:23
14	08:44	07:59	06:57	06:45	05:45	05:14	05:31	06:17	07:09	08:01	07:57	08:42
	16:51	17:47	18:39	20:34	21:26	22:03	21:57	21:08	19:58	18:48	16:47	16:23
15	08:43	07:57	06:55	06:42	05:43	05:14	05:32	06:19	07:11	08:02	07:59	08:43
	16:52	17:49	18:41	20:36	21:27	22:04	21:56	21:06	19:56	18:45	16:46	16:23
16	08:42	07:55	06:53	06:40	05:41	05:14	05:33	06:21	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:53	18:43	16:44	16:23
17	08:41	07:53	06:50	06:38	05:40	05:14	05:34	06:22	07:14	08:06	08:03	08:45
	16:56	17:53	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43	16:24
18	08:40	07:51	06:48	06:36	05:38	05:14	05:36	06:24	07:16	08:08	08:05	08:45
	16:57	17:55	18:47	20:41	21:32	22:05	21:53	21:00	19:49	18:39	16:42	16:24
19	08:39	07:49	06:45	06:33	05:37	05:14	05:37	06:26	07:18	08:10	08:06	08:46
	16:59	17:57	18:48	20:43	21:34	22:05	21:51	20:58	19:46	18:36	16:40	16:24
20	08:38	07:46	06:43	06:31	05:36	05:14	05:38	06:27	07:19	08:11	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:55	19:44	18:34	16:39	16:24
21	08:37	07:44	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:13	08:10	08:47
	17:02	18:01	18:52	20:47	21:37	22:06	21:49	20:53	19:41	18:32	16:38	16:25
22	08:36	07:42	06:38	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:11	08:48
	17:04	18:03	18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:25
23	08:35	07:40	06:36	06:25	05:31	05:14	05:42	06:32	07:24	08:17	08:13	08:48
	17:06	18:05	18:56	20:50	21:40	22:06	21:46	20:49	19:37	18:28	16:35	16:26
24	08:34	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:06	18:57	20:52	21:41	22:06	21:45	20:47	19:34	18:26	16:34	16:26
25	08:32	07:36	06:31	06:21	05:29	05:15	05:45	06:36	07:28	07:21	08:16	08:49
	17:10	18:08	18:59	20:54	21:42	22:06	21:43	20:44	19:32	17:24	16:33	16:27
26	08:31	07:34	06:29	06:18	05:28	05:16	05:47	06:37	07:29	07:22	08:18	08:49
	17:11	18:10	19:01	20:55	21:44	22:06	21:42	20:42	19:29	17:22	16:32	16:28
27	08:29	07:31	06:27	06:16	05:27	05:16	05:48	06:39	07:31	07:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	22:06	21:40	20:40	19:27	17:20	16:31	16:29
28	08:28	07:29	06:24	06:14	05:25	05:16	05:50	06:41	07:33	07:26	08:21	08:50
	17:15	18:14	19:04	20:59	21:46	22:06	21:39	20:38	19:25	17:18	16:30	16:29
29	08:27		07:22	06:12	05:24	05:17	05:51	06:42	07:35	07:28	08:23	08:50
	17:17		20:06	21:00	21:48	22:06	21:37	20:35	19:22	17:16	16:30	16:30
30	08:25		07:19	06:10	05:23	05:18	05:53	06:44	07:36	07:30	08:24	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	17:14	16:29	16:31
31	08:24		07:17		05:22		05:54	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240
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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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: CI - H87

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January			February			March			April			May			June		
1	08:50		09:23 (1)	08:22		16:18 (7)	07:27			07:15			06:08			05:21		20:25 (12)
	16:33	8	09:31 (1)	17:23	17	16:35 (7)	18:16			20:11			21:04			21:51	38	21:18 (16)
2	08:50		09:22 (1)	08:20		16:18 (7)	07:25			07:12			06:06			05:21		20:24 (12)
	16:34	9	09:31 (1)	17:24	17	16:35 (7)	18:18			20:13			21:06			21:53	41	21:18 (16)
3	08:50		09:22 (1)	08:19		16:18 (7)	07:23			07:10			06:04			05:20		20:24 (12)
	16:36	10	09:32 (1)	17:26	16	16:34 (7)	18:19			20:15			21:08			21:54	40	21:17 (16)
4	08:50		09:22 (1)	08:17		16:20 (7)	07:20		17:54 (5)	07:08		19:47 (10)	06:02			05:19		20:25 (12)
	16:37	10	09:32 (1)	17:28	14	16:34 (7)	18:21	1	17:55 (5)	20:17	4	19:51 (10)	21:09			21:55	40	21:17 (16)
5	08:49		09:21 (1)	08:15		16:22 (7)	07:18		17:52 (5)	07:05		19:46 (10)	06:01			05:18		20:25 (12)
	16:38	11	09:32 (1)	17:30	11	16:33 (7)	18:23	5	17:57 (5)	20:19	7	19:53 (10)	21:11			21:56	41	21:17 (16)
6	08:49		09:21 (1)	08:14		16:24 (7)	07:16		17:51 (5)	07:03		19:45 (10)	05:59			05:18		20:26 (12)
	16:39	12	09:33 (1)	17:32	7	16:31 (7)	18:25	7	17:58 (5)	20:20	9	19:54 (10)	21:13			21:57	40	21:17 (16)
7	08:49		09:20 (1)	08:12			07:14		17:51 (5)	07:01		19:45 (10)	05:57			05:17		20:26 (12)
	16:41	13	09:33 (1)	17:34			18:27	9	18:00 (5)	20:22	11	19:56 (10)	21:14			21:58	40	21:17 (13)
8	08:48		09:19 (1)	08:10			07:11		17:51 (5)	06:58		19:46 (10)	05:55			05:16		20:26 (12)
	16:42	14	09:33 (1)	17:36			18:29	10	18:01 (5)	20:24	9	19:55 (10)	21:16			21:59	42	21:18 (13)
9	08:48		09:19 (1)	08:08			07:09		17:51 (5)	06:56		19:47 (10)	05:53			05:16		20:26 (12)
	16:43	15	09:34 (1)	17:38			18:30	9	18:00 (5)	20:26	5	19:52 (10)	21:18			22:00	41	21:18 (13)
10	08:47		09:18 (1)	08:06			07:07		17:52 (5)	06:54			05:51			05:15		20:27 (12)
	16:45	16	09:34 (1)	17:40			18:32	6	17:58 (5)	20:27			21:19			22:00	42	21:19 (13)
11	08:47		09:17 (1)	08:05			07:04			06:51			05:50			05:15		20:27 (12)
	16:46	17	09:34 (1)	17:42			18:34			20:29			21:21			22:01	44	21:27 (17)
12	08:46		09:16 (1)	08:03			07:02			06:49			05:48			05:15		20:27 (12)
	16:48	18	09:34 (1)	17:44			18:36			20:31			21:23			22:02	42	21:27 (17)
13	08:45		09:15 (1)	08:01		17:10 (8)	07:00			06:47			05:46			05:14		20:27 (12)
	16:49	19	09:34 (1)	17:45	7	17:17 (8)	18:38			20:33			21:24			22:03	45	21:28 (17)
14	08:44		09:14 (1)	07:59		17:08 (8)	06:57			06:45			05:45			05:14		20:28 (12)
	16:51	20	09:34 (1)	17:47	11	17:19 (8)	18:40			20:34			21:26			22:03	45	21:29 (17)
15	08:43		09:15 (1)	07:57		17:07 (8)	06:55			06:42			05:43			05:14		20:28 (12)
	16:52	19	09:34 (1)	17:49	13	17:20 (8)	18:41			20:36			21:28			22:04	45	21:29 (17)
16	08:43		09:16 (1)	07:55		17:07 (8)	06:53			06:40			05:41		20:33 (12)	05:14		20:28 (12)
	16:54	18	09:34 (1)	17:51	14	17:21 (8)	18:43			20:38			21:29	6	20:39 (12)	22:04	45	21:30 (17)
17	08:42		09:17 (1)	07:53		17:07 (8)	06:50			06:38			05:40		20:31 (12)	05:14		20:29 (12)
	16:56	17	09:34 (1)	17:53	14	17:21 (8)	18:45			20:40			21:31	11	20:42 (12)	22:05	45	21:30 (17)
18	08:41		09:10 (4)	07:51		17:07 (8)	06:48			06:36			05:38		20:30 (12)	05:14		20:29 (12)
	16:57	16	09:33 (1)	17:55	14	17:21 (8)	18:47			20:41			21:32	14	20:44 (12)	22:05	45	21:31 (17)
19	08:40		09:09 (4)	07:49		17:06 (8)	06:46			06:33			05:37		20:28 (12)	05:14		20:29 (12)
	16:59	17	16:26 (6)	17:57	14	17:20 (8)	18:48			20:43			21:34	17	20:45 (12)	22:06	46	21:31 (17)
20	08:38		09:07 (4)	07:47		17:07 (8)	06:43			06:31			05:35		20:27 (12)	05:14		20:29 (12)
	17:01	17	16:27 (6)	17:59	13	17:20 (8)	18:50			20:45			21:35	19	20:46 (12)	22:06	46	21:31 (17)
21	08:37		09:06 (4)	07:44		17:08 (8)	06:41			06:29			05:34		20:27 (12)	05:14		20:29 (12)
	17:02	12	16:29 (6)	18:01	11	17:19 (8)	18:52			20:47			21:37	20	20:47 (12)	22:06	46	21:31 (17)
22	08:36		09:05 (4)	07:42		17:10 (8)	06:38			06:27			05:33		20:26 (12)	05:14		20:30 (12)
	17:04	18	16:32 (6)	18:03	7	17:17 (8)	18:54			20:48			21:38	22	20:48 (12)	22:06	46	21:32 (17)
23	08:35		09:03 (4)	07:40			06:36			06:25			05:31		20:25 (12)	05:14		20:30 (12)
	17:06	23	16:33 (6)	18:05			18:56			20:50			21:40	23	20:48 (12)	22:06	46	21:32 (17)
24	08:34		09:02 (4)	07:38			06:34			06:23			05:30		20:25 (12)	05:15		20:30 (12)
	17:08	27	16:35 (6)	18:06			18:57			20:52			21:41	26	21:09 (16)	22:07	45	21:32 (17)
25	08:32		09:00 (4)	07:36			06:31			06:21			05:29		20:24 (12)	05:15		20:31 (12)
	17:10	29	16:35 (6)	18:08			18:59			20:54			21:42	28	21:10 (16)	22:07	46	21:33 (17)
26	08:31		08:59 (4)	07:34			06:29			06:18			05:28		20:24 (12)	05:15		20:31 (12)
	17:11	31	16:36 (6)	18:10			19:01			20:55			21:44	30	21:11 (16)	22:07	45	21:32 (17)
27	08:30		08:59 (4)	07:32			06:27			06:16			05:27		20:24 (12)	05:16		20:30 (12)
	17:13	29	16:35 (6)	18:12			19:03			20:57			21:45	32	21:12 (16)	22:06	45	21:32 (17)
28	08:28		09:01 (4)	07:29			06:24			06:14			05:25		20:24 (12)	05:16		20:31 (12)
	17:15	26	16:35 (6)	18:14			19:04			20:59			21:47	34	21:14 (16)	22:06	44	21:32 (17)
29	08:27		16:17 (7)				07:22			06:12			05:24		20:24 (12)	05:17		20:31 (12)
	17:17	18	16:35 (7)				20:06			21:01			21:48	36	21:15 (16)	22:06	45	21:32 (17)
30	08:25		16:16 (7)				07:19			06:10			05:23		20:24 (12)	05:18		20:31 (12)
	17:19	19	16:35 (7)				20:08			21:02			21:49	37	21:16 (16)	22:06	44	21:32 (17)
31	08:24		16:17 (7)				07:17						05:22		20:25 (12)			
	17:21	19	16:36 (7)				20:10						21:50	37	21:18 (16)			
Potential sun hours	255			276			367			418			489			503		
Total, worst case		547			200			47			45			392			1305	
Sun reduction		0.16			0.21			0.24			0.35			0.37			0.30	
Oper. time red.		1.00			1.00			1.00			1.00			1.00			1.00	
Wind dir. red.		0.64			0.65			0.68			0.69			0.68			0.67	
Total reduction		0.10			0.13			0.16			0.24			0.25			0.20	
Total, real		55			27			8			11			97			260	

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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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: CI - H87

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	July			August	September			October			November			December		
1	05:18		20:31 (12)	05:56	06:47			07:38			07:34			08:26		08:59 (1)
	22:06	45	21:32 (17)	21:32	20:29			19:18			17:10			16:28	17	09:16 (1)
2	05:19		20:31 (12)	05:58	06:49			07:40			07:35			08:28		09:01 (1)
	22:05	43	21:31 (17)	21:31	20:26			19:15			17:08			16:27	16	09:17 (1)
3	05:20		20:31 (12)	05:59	06:51		19:45 (10)	07:42		18:32 (5)	07:37			08:29		09:02 (1)
	22:05	42	21:31 (17)	21:29	20:24	5	19:50 (10)	19:13	3	18:35 (5)	17:06			16:27	15	09:17 (1)
4	05:20		20:32 (12)	06:01	06:52		19:43 (10)	07:43		18:29 (5)	07:39			08:30		09:04 (1)
	22:04	41	21:24 (13)	21:27	20:22	9	19:52 (10)	19:11	8	18:37 (5)	17:04			16:26	14	09:18 (1)
5	05:21		20:32 (12)	06:02	06:54		19:42 (10)	07:45		18:28 (5)	07:41		15:53 (7)	08:32		09:05 (1)
	22:04	41	21:24 (13)	21:25	20:19	10	19:52 (10)	19:08	10	18:38 (5)	17:02	8	16:01 (7)	16:25	13	09:18 (1)
6	05:22		20:32 (12)	06:04	06:56		19:41 (10)	07:47		18:27 (5)	07:43		15:51 (7)	08:33		09:07 (1)
	22:03	41	21:24 (13)	21:24	20:17	9	19:50 (10)	19:06	10	18:37 (5)	17:01	12	16:03 (7)	16:25	12	09:19 (1)
7	05:23		20:31 (12)	06:06	06:58		19:42 (10)	07:48		18:27 (5)	07:45		15:50 (7)	08:34		09:08 (1)
	22:03	40	21:23 (16)	21:22	20:15	6	19:48 (10)	19:04	8	18:35 (5)	16:59	14	16:04 (7)	16:25	11	09:19 (1)
8	05:24		20:32 (12)	06:07	06:59		19:41 (10)	07:50		18:27 (5)	07:47		15:49 (7)	08:36		09:09 (1)
	22:02	41	21:24 (16)	21:20	20:12	4	19:45 (10)	19:01	6	18:33 (5)	16:57	16	16:05 (7)	16:24	11	09:20 (1)
9	05:25		20:32 (12)	06:09	07:01			07:52		18:28 (5)	07:48		15:49 (7)	08:37		09:11 (1)
	22:01	40	21:24 (16)	21:18	20:10			18:59	3	18:31 (5)	16:55	17	16:06 (7)	16:24	10	09:21 (1)
10	05:26		20:32 (12)	06:11	07:03			07:54			07:50		15:48 (7)	08:38		09:12 (1)
	22:01	40	21:25 (16)	21:16	20:08			18:57			16:54	18	16:06 (7)	16:24	9	09:21 (1)
11	05:27		20:32 (12)	06:12	07:04			07:55			07:52		15:48 (7)	08:39		09:13 (1)
	22:00	39	21:25 (16)	21:14	20:05			18:54			16:52	19	16:07 (7)	16:23	8	09:21 (1)
12	05:28		20:32 (12)	06:14	07:06			07:57			07:54		15:48 (7)	08:40		09:14 (1)
	21:59	37	21:25 (16)	21:12	20:03			18:52			16:50	19	16:07 (7)	16:23	7	09:21 (1)
13	05:29		20:32 (12)	06:16	07:08			07:59			07:56		15:49 (7)	08:41		09:15 (1)
	21:58	37	21:25 (16)	21:10	20:01			18:50			16:49	18	16:07 (7)	16:23	7	09:22 (1)
14	05:30		20:32 (12)	06:17	07:09			08:01			07:58		08:33 (4)	08:42		09:16 (1)
	21:57	36	21:24 (16)	21:08	19:58			18:48			16:47	26	16:07 (6)	16:23	6	09:22 (1)
15	05:32		20:33 (12)	06:19	07:11			08:03			07:59		08:31 (4)	08:43		09:17 (1)
	21:56	35	21:24 (16)	21:06	19:56			18:45			16:46	30	16:08 (6)	16:23	6	09:23 (1)
16	05:33		20:34 (12)	06:21	07:13			08:04			08:01		08:32 (4)	08:44		09:18 (1)
	21:55	32	21:22 (16)	21:04	19:53			18:43			16:44	31	16:09 (6)	16:23	5	09:23 (1)
17	05:34		20:34 (12)	06:22	07:14			08:06			08:03		08:34 (4)	08:45		09:19 (1)
	21:54	30	21:21 (16)	21:02	19:51			18:41			16:43	29	16:09 (6)	16:24	5	09:24 (1)
18	05:35		20:34 (12)	06:24	07:16			08:08			08:05		08:36 (4)	08:45		09:19 (1)
	21:53	29	21:20 (16)	21:00	19:49			18:39			16:42	27	16:09 (6)	16:24	4	09:23 (1)
19	05:37		20:34 (12)	06:26	07:18			08:10			08:06		08:38 (4)	08:46		09:20 (1)
	21:52	28	21:19 (16)	20:58	19:46			18:36			16:40	23	16:08 (6)	16:24	4	09:24 (1)
20	05:38		20:35 (12)	06:27	07:19			08:12		17:40 (8)	08:08		08:40 (4)	08:47		09:21 (1)
	21:50	24	20:59 (12)	20:56	19:44			18:34	8	17:48 (8)	16:39	18	16:07 (6)	16:24	4	09:25 (1)
21	05:40		20:36 (12)	06:29	07:21			08:13		17:38 (8)	08:10		08:42 (4)	08:47		09:21 (1)
	21:49	22	20:58 (12)	20:53	19:41			18:32	12	17:50 (8)	16:38	12	16:05 (6)	16:25	4	09:25 (1)
22	05:41		20:36 (12)	06:31	07:23			08:15		17:37 (8)	08:12		08:43 (4)	08:48		09:22 (1)
	21:48	21	20:57 (12)	20:51	19:39			18:30	13	17:50 (8)	16:37	16	16:03 (6)	16:25	4	09:26 (1)
23	05:42		20:37 (12)	06:32	07:24			08:17		17:36 (8)	08:13		08:45 (4)	08:48		09:22 (1)
	21:46	20	20:57 (12)	20:49	19:37			18:28	15	17:51 (8)	16:35	17	16:02 (6)	16:26	4	09:26 (1)
24	05:44		20:38 (12)	06:34	07:26			08:19		17:36 (8)	08:15		08:47 (4)	08:49		09:22 (1)
	21:45	18	20:56 (12)	20:47	19:34			18:26	15	17:51 (8)	16:34	16	09:10 (1)	16:26	4	09:26 (1)
25	05:45		20:39 (12)	06:36	07:28			07:21		16:36 (8)	08:17		08:55 (1)	08:49		09:23 (1)
	21:44	16	20:55 (12)	20:45	19:32			17:24	15	16:51 (8)	16:33	17	09:12 (1)	16:27	4	09:27 (1)
26	05:47		20:41 (12)	06:37	07:30			07:22		16:37 (8)	08:18		08:55 (1)	08:50		09:23 (1)
	21:42	13	20:54 (12)	20:42	19:29			17:22	13	16:50 (8)	16:32	18	09:13 (1)	16:28	5	09:28 (1)
27	05:48		20:42 (12)	06:39	07:31			07:24		16:37 (8)	08:20		08:54 (1)	08:50		09:23 (1)
	21:41	10	20:52 (12)	20:40	19:27			17:20	13	16:50 (8)	16:31	19	09:13 (1)	16:28	5	09:28 (1)
28	05:50			06:41	07:33			07:26		16:38 (8)	08:21		08:54 (1)	08:50		09:23 (1)
	21:39			20:38	19:25			17:18	10	16:48 (8)	16:30	20	09:14 (1)	16:29	5	09:28 (1)
29	05:51			06:42	07:35			07:28		16:40 (8)	08:23		08:56 (1)	08:50		09:23 (1)
	21:37			20:36	19:22			17:16	6	16:46 (8)	16:30	19	09:15 (1)	16:30	6	09:29 (1)
30	05:53			06:44	07:36			07:30			08:25		08:58 (1)	08:50		09:23 (1)
	21:36			20:33	19:20			17:14			16:29	18	09:16 (1)	16:31	7	09:30 (1)
31	05:54			06:46				07:32						08:50		09:23 (1)
	21:34			20:31				17:12						16:32	7	09:30 (1)
Potential sun hours	506			456	381			330			263			240		
Total, worst case		861				43			168			497			239	
Sun reduction		0.26				0.28			0.24			0.19			0.14	
Oper. time red.		1.00				1.00			1.00			1.00			1.00	
Wind dir. red.		0.68				0.69			0.66			0.64			0.65	
Total reduction		0.18				0.19			0.16			0.12			0.09	
Total, real		153				8			26			59			21	

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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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: CJ - H88

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:08	06:38 (3)	05:22	05:56	06:25 (2)	06:47	07:38	07:34	08:26
	16:33	17:23	18:16	20:11	21:04	4 06:42 (3)	21:51	22:06	21:32	4 06:29 (2)	20:29	19:18	17:10	16:28
2	08:50	08:20	07:25	07:12	06:06		05:21	05:19	05:58	06:27 (2)	06:49	07:40	07:35	08:27
	16:35	17:25	18:18	20:13	21:06		21:53	22:05	21:31	2 06:29 (2)	20:26	19:15	17:08	16:27
3	08:50	08:19	07:23	07:10	06:04		05:20	05:20	05:59		06:51	07:42	07:37	08:29
	16:36	17:26	18:19	20:15	21:07		21:54	22:05	21:29		20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:03		05:19	05:21	06:01		06:53	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09		21:55	22:04	21:27		20:22	19:11	17:04	16:26
5	08:49	08:15	07:18	07:05	06:01		05:18	05:21	06:02		06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:18	21:11		21:56	22:04	21:25		20:19	19:08	17:02	16:26
6	08:49	08:14	07:16	07:03	05:59		05:18	05:22	06:04		06:56	07:47	07:43	08:33
	16:39	17:32	18:25	20:20	21:13		21:57	22:03	21:24		20:17	19:06	17:01	16:25
7	08:49	08:12	07:14	07:01	05:57		05:17	05:23	06:06		06:58	07:48	07:45	08:34
	16:41	17:34	18:27	20:22	21:14		21:58	22:03	21:22		20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:58	05:55		05:17	05:24	06:07		06:59	07:50	07:47	08:36
	16:42	17:36	18:29	20:24	21:16		21:59	22:02	21:20		20:12	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	05:53		05:16	05:25	06:09		07:01	07:52	07:48	08:37
	16:43	17:38	18:30	20:26	21:18		21:59	22:01	21:18		20:10	18:59	16:55	16:24
10	08:47	08:06	07:07	06:54	05:51	06:18 (2)	05:16	05:26	06:11		07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	1 06:19 (2)	22:00	22:01	21:16		20:08	18:57	16:54	16:24
11	08:46	08:05	07:04	06:52	05:50	06:16 (2)	05:15	05:27	06:12		07:04	07:55	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	3 06:19 (2)	22:01	22:00	21:14		20:05	18:54	16:52	16:24
12	08:46	08:03	07:02	06:49	05:48	06:14 (2)	05:15	05:28	06:14	06:45 (3)	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	5 06:19 (2)	22:02	21:59	21:12	7 06:52 (3)	20:03	18:52	16:51	16:23
13	08:45	08:01	07:00	06:47	05:46	06:13 (2)	05:15	05:29	06:16	06:44 (3)	07:08	07:59	07:56	08:41
	16:49	17:46	18:38	20:33	21:24	7 06:20 (2)	22:02	21:58	21:10	10 06:54 (3)	20:01	18:50	16:49	16:23
14	08:44	07:59	06:57	06:45	05:45	06:11 (2)	05:14	05:31	06:17	06:45 (3)	07:09	08:01	07:57	08:42
	16:51	17:47	18:40	20:34	21:26	8 06:19 (2)	22:03	21:57	21:08	10 06:55 (3)	19:58	18:48	16:47	16:23
15	08:43	07:57	06:55	06:42	05:43	06:10 (2)	05:14	05:32	06:15 (2)	06:19	06:47 (3)	07:11	08:03	07:59	08:43
	16:52	17:49	18:41	20:36	21:27	10 06:20 (2)	22:04	21:56	6 06:21 (2)	21:06	9 06:56 (3)	19:56	18:45	16:46	16:23
16	08:42	07:55	06:53	06:40	05:42	06:08 (2)	05:14	05:33	06:14 (2)	06:21	06:48 (3)	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	11 06:19 (2)	22:04	21:55	9 06:23 (2)	21:04	8 06:56 (3)	19:53	18:43	16:45	16:23
17	08:42	07:53	06:50	06:38	05:40	06:07 (2)	05:14	05:34	06:07 (4)	06:22	06:50 (3)	07:14	08:06	08:03	08:45
	16:56	17:53	18:45	20:40	21:31	13 06:20 (2)	22:05	21:54	17 06:24 (2)	21:02	7 06:57 (3)	19:51	18:41	16:43	16:24
18	08:41	07:51	06:48	06:36	05:38	06:06 (2)	05:14	05:36	06:06 (4)	06:24	06:52 (3)	07:16	08:08	08:05	08:45
	16:57	17:55	18:47	20:41	21:32	14 06:20 (2)	22:05	21:53	19 06:25 (2)	21:00	5 06:57 (3)	19:49	18:39	16:42	16:24
19	08:40	07:49	06:46	06:34	05:37	06:04 (2)	05:14	05:37	06:08 (4)	06:26	06:53 (3)	07:18	08:10	08:06	08:46
	16:59	17:57	18:48	20:43	21:34	15 06:19 (2)	22:05	21:52	19 06:27 (2)	20:58	3 06:56 (3)	19:46	18:37	16:40	16:24
20	08:38	07:47	06:43	06:31	05:36	06:03 (2)	05:14	05:38	06:09 (4)	06:27	06:55 (3)	07:19	08:12	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	16 06:19 (2)	22:06	21:50	19 06:28 (2)	20:55	1 06:56 (3)	19:44	18:34	16:39	16:25
21	08:37	07:44	06:41	06:29	05:34	06:02 (2)	05:14	05:40	06:10 (2)	06:29		07:21	08:13	08:10	08:47
	17:02	18:01	18:52	20:47	21:37	17 06:19 (2)	22:06	21:49	18 06:28 (2)	20:53		19:41	18:32	16:38	16:25
22	08:36	07:42	06:38	06:27	05:33	06:01 (2)	05:14	05:41	06:11 (2)	06:31		07:23	08:15	08:12	08:48
	17:04	18:03	18:54	20:48	21:38	18 06:19 (2)	22:06	21:48	17 06:28 (2)	20:51		19:39	18:30	16:37	16:25
23	08:35	07:40	06:36	06:25	06:49 (3) 05:31	06:00 (2)	05:14	05:42	06:13 (2)	06:32		07:24	08:17	08:13	08:48
	17:06	18:05	18:56	20:50	1 06:50 (3) 21:40	18 06:18 (2)	22:06	21:46	16 06:29 (2)	20:49		19:37	18:28	16:36	16:26
24	08:34	07:38	06:34	06:23	06:47 (3) 05:30	05:58 (4)	05:15	05:44	06:14 (2)	06:34		07:26	08:19	08:15	08:49
	17:08	18:06	18:57	20:52	3 06:50 (3) 21:41	19 06:17 (2)	22:06	21:45	16 06:30 (2)	20:47		19:34	18:26	16:34	16:27
25	08:32	07:36	06:31	06:21	06:45 (3) 05:29	05:57 (4)	05:15	05:45	06:15 (2)	06:36		07:28	07:21	08:17	08:49
	17:10	18:08	18:59	20:54	5 06:50 (3) 21:42	19 06:16 (2)	22:06	21:43	15 06:30 (2)	20:45		19:32	17:24	16:33	16:27
26	08:31	07:34	06:29	06:19	06:43 (3) 05:28	05:57 (4)	05:16	05:47	06:17 (2)	06:37		07:30	07:22	08:18	08:50
	17:11	18:10	19:01	20:55	7 06:50 (3) 21:44	18 06:15 (2)	22:06	21:42	13 06:30 (2)	20:42		19:29	17:22	16:32	16:28
27	08:30	07:32	06:27	06:16	06:41 (3) 05:27	05:58 (4)	05:16	05:48	06:18 (2)	06:39		07:31	07:24	08:20	08:50
	17:13	18:12	19:03	20:57	8 06:49 (3) 21:45	16 06:14 (2)	22:06	21:41	12 06:30 (2)	20:40		19:27	17:20	16:31	16:29
28	08:28	07:29	06:24	06:14	06:39 (3) 05:26	06:05 (2)	05:16	05:50	06:20 (2)	06:41		07:33	07:26	08:21	08:50
	17:15	18:14	19:04	20:59	9 06:48 (3) 21:46	8 06:13 (2)	22:06	21:39	11 06:31 (2)	20:38		19:25	17:18	16:30	16:29
29	08:27		07:22	06:12	06:37 (3) 05:24	06:08 (2)	05:17	05:51	06:21 (2)	06:42		07:35	07:28	08:23	08:50
	17:17		20:06	21:01	10 06:47 (3) 21:48	2 06:10 (2)	22:06	21:37	9 06:30 (2)	20:36		19:22	17:16	16:30	16:30
30	08:25		07:19	06:10	06:35 (3) 05:23		05:18	05:53	06:22 (2)	06:44		07:36	07:30	08:25	08:50
	17:19		20:08	21:02	10 06:45 (3) 21:49		22:06	21:36	8 06:30 (2)	20:33		19:20	17:14	16:29	16:31
31	08:24		07:17		05:22			05:54	06:24 (2)	06:46			07:32		08:50
	17:21		20:10		21:50			21:34	6 06:30 (2)	20:31			17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240
Total, worst case				53	242		230	66				
Sun reduction				0.35	0.37		0.26	0.30				
Oper. time red.				1.00	1.00		1.00	1.00				
Wind dir. red.				0.67	0.65		0.65	0.67				
Total reduction				0.24	0.24		0.17	0.20				
Total, real				13	58		40	13				

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)

Licensed user:
Jennings O'Donovan
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
abyrne / abyrne@jodireland.com

Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar

Calculation: Expected Scenario (cumulative) Shadow receptor: CK - H90

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:08	05:21	21:10 (3)	05:18	21:19 (3)	05:56	06:47	07:38	07:33	08:26
	16:33	17:22	18:16	20:11	21:04	21:51	8 21:18 (3)	22:05	12 21:31 (3)	21:32	20:29	19:17	17:10	16:28
2	08:50	08:20	07:25	07:12	06:06	05:21	21:10 (3)	05:19	21:18 (3)	05:57	06:49	07:40	07:35	08:27
	16:34	17:24	18:17	20:13	21:06	21:52	9 21:19 (3)	22:05	13 21:31 (3)	21:31	20:26	19:15	17:08	16:27
3	08:50	08:19	07:22	07:10	06:04	05:20	21:10 (3)	05:20	21:18 (3)	05:59	06:51	07:41	07:37	08:29
	16:36	17:26	18:19	20:15	21:07	21:53	10 21:20 (3)	22:05	12 21:30 (3)	21:29	20:24	19:13	17:06	16:27
4	08:49	08:17	07:20	07:08	06:02	05:19	21:11 (3)	05:20	21:18 (3)	06:01	06:52	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09	21:55	10 21:21 (3)	22:04	12 21:30 (3)	21:27	20:22	19:10	17:04	16:26
5	08:49	08:15	07:18	07:05	06:00	05:18	21:11 (3)	05:21	21:19 (3)	06:02	06:54	07:45	07:41	08:31
	16:38	17:30	18:23	20:18	21:11	21:56	11 21:22 (3)	22:04	11 21:30 (3)	21:25	20:19	19:08	17:02	16:25
6	08:49	08:13	07:16	07:03	05:59	05:18	21:12 (3)	05:22	21:18 (3)	06:04	06:56	07:47	07:43	08:33
	16:39	17:32	18:25	20:20	21:12	21:57	11 21:23 (3)	22:03	11 21:29 (3)	21:23	20:17	19:06	17:00	16:25
7	08:48	08:12	07:13	07:01	05:57	05:17	21:12 (3)	05:23	21:18 (3)	06:06	06:57	07:48	07:44	08:34
	16:41	17:34	18:27	20:22	21:14	21:57	12 21:24 (3)	22:03	10 21:28 (3)	21:22	20:15	19:03	16:59	16:24
8	08:48	08:10	07:11	06:58	05:55	05:16	21:13 (3)	05:24	21:18 (3)	06:07	06:59	07:50	07:46	08:35
	16:42	17:36	18:28	20:24	21:16	21:58	12 21:25 (3)	22:02	10 21:28 (3)	21:20	20:12	19:01	16:57	16:24
9	08:47	08:08	07:09	06:56	05:53	05:16	21:13 (3)	05:25	21:18 (3)	06:09	07:01	07:52	07:48	08:37
	16:43	17:38	18:30	20:25	21:17	21:59	12 21:25 (3)	22:01	9 21:27 (3)	21:18	20:10	18:59	16:55	16:24
10	08:47	08:06	07:06	06:54	05:51	05:15	21:14 (3)	05:26	21:18 (3)	06:10	07:02	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	12 21:26 (3)	22:00	9 21:27 (3)	21:16	20:07	18:56	16:54	16:24
11	08:46	08:04	07:04	06:51	05:50	05:15	21:15 (3)	05:27	21:17 (3)	06:12	07:04	07:55	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01	12 21:27 (3)	22:00	9 21:26 (3)	21:14	20:05	18:54	16:52	16:23
12	08:46	08:02	07:02	06:49	05:48	05:15	21:14 (3)	05:28	21:17 (3)	06:14	07:06	07:57	07:54	08:40
	16:48	17:43	18:36	20:31	21:22	22:02	13 21:27 (3)	21:59	8 21:25 (3)	21:12	20:03	18:52	16:50	16:23
13	08:45	08:01	06:59	06:47	05:46	05:14	21:15 (3)	05:29	21:17 (3)	06:15	07:07	07:59	07:55	08:41
	16:49	17:45	18:38	20:32	21:24	22:02	13 21:28 (3)	21:58	7 21:24 (3)	21:10	20:00	18:50	16:49	16:23
14	08:44	07:59	06:57	06:45	05:45	05:14	21:16 (3)	05:30	21:17 (3)	06:17	07:09	08:01	07:57	08:42
	16:51	17:47	18:39	20:34	21:26	22:03	13 21:29 (3)	21:57	6 21:23 (3)	21:08	19:58	18:47	16:47	16:23
15	08:43	07:57	06:55	06:42	05:43	05:14	21:16 (3)	05:32	21:18 (3)	06:19	07:11	08:02	07:59	08:43
	16:52	17:49	18:41	20:36	21:27	22:03	13 21:29 (3)	21:56	5 21:23 (3)	21:06	19:56	18:45	16:46	16:23
16	08:42	07:55	06:52	06:40	05:41	05:14	21:17 (3)	05:33	21:18 (3)	06:20	07:12	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	13 21:30 (3)	21:55	4 21:22 (3)	21:04	19:53	18:43	16:44	16:23
17	08:41	07:53	06:50	06:38	05:40	20:57 (2)	05:14	21:17 (3)	05:34	21:18 (3)	06:22	07:14	08:06	08:03	08:44
	16:56	17:53	18:45	20:39	21:30	2 20:59 (2)	22:04	13 21:30 (3)	21:54	3 21:21 (3)	21:02	19:51	18:41	16:43	16:23
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	16:59	17:57	18:48	20:43	21:34	4 21:02 (2)	22:05	13 21:31 (3)	21:51	1 21:19 (3)	20:57	19:46	18:36	16:40	16:24
20	08:38	07:46	06:43	06:31	05:35	20:59 (2)	05:14	21:18 (3)	05:38		06:27	07:19	08:11	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	4 21:03 (2)	22:06	13 21:31 (3)	21:50		20:55	19:44	18:34	16:39	16:24
21	08:37	07:44	06:41	06:29	05:34	21:00 (2)	05:14	21:18 (3)	05:39	21:13 (2)	06:29	07:21	08:13	08:10	08:47
	17:02	18:01	18:52	20:46	21:37	5 21:05 (2)	22:06	13 21:31 (3)	21:49	4 21:17 (2)	20:53	19:41	18:32	16:38	16:25
22	08:36	07:42	06:38	06:27	05:33	21:02 (2)	05:14	21:19 (3)	05:41	21:11 (2)	06:30	07:23	08:15	08:11	08:48
	17:04	18:03	18:54	20:48	21:38	5 21:07 (2)	22:06	13 21:32 (3)	21:47	4 21:15 (2)	20:51	19:39	18:30	16:37	16:25
23	08:35	07:40	06:36	06:25	05:31	21:03 (2)	05:14	21:19 (3)	05:42	21:10 (2)	06:32	07:24	08:17	08:13	08:48
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25	08:32	07:36	06:31	06:20	05:29	21:08 (3)	05:15	21:18 (3)	05:45	21:08 (2)	06:36	07:28	07:20	08:16	08:49
	17:09	18:08	18:59	20:53	21:42	2 21:10 (3)	22:06	13 21:31 (3)	21:43	4 21:12 (2)	20:44	19:32	17:24	16:33	16:27
26	08:31	07:34	06:29	06:18	05:28	21:08 (3)	05:15	21:19 (3)	05:47	21:08 (2)	06:37	07:29	07:22	08:18	08:49
	17:11	18:10	19:01	20:55	21:44	3 21:11 (3)	22:06	13 21:32 (3)	21:42	3 21:11 (2)	20:42	19:29	17:22	16:32	16:28
27	08:29	07:31	06:26	06:16	05:26	21:08 (3)	05:16	21:18 (3)	05:48	21:08 (2)	06:39	07:31	07:24	08:20	08:50
	17:13	18:12	19:02	20:57	21:45	4 21:12 (3)	22:06	13 21:31 (3)	21:40	1 21:09 (2)	20:40	19:27	17:20	16:31	16:28
28	08:28	07:29	06:24	06:14	05:25	21:09 (3)	05:16	21:19 (3)	05:50		06:41	07:33	07:26	08:21	08:50
	17:15	18:14	19:04	20:59	21:46	4 21:13 (3)	22:06	13 21:32 (3)	21:39		20:38	19:25	17:17	16:30	16:29
29	08:26		07:22	06:12	05:24	21:09 (3)	05:17	21:18 (3)	05:51		06:42	07:34	07:28	08:23	08:50
	17:17		20:06	21:00	21:48	5 21:14 (3)	22:06	13 21:31 (3)	21:37		20:35	19:22	17:15	16:29	16:30
30	08:25		07:19	06:10	05:23	21:09 (3)	05:17	21:19 (3)	05:53		06:44	07:36	07:30	08:24	08:50
	17:19		20:08	21:02	21:49	6 21:15 (3)	22:06	12 21:31 (3)	21:36		20:33	19:20	17:14	16:29	16:31
31	08:23		07:17		05:22	21:10 (3)			05:54		06:46		07:32		08:50
	17:21		20:10		21:50	7 21:17 (3)			21:34		20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240
Total, worst case					58	367	179					
Sun reduction					0.37	0.30	0.26					
Oper. time red.					1.00	1.00	1.00					
Wind dir. red.					0.67	0.66	0.66					
Total reduction					0.24	0.20	0.18					
Total, real					14	72	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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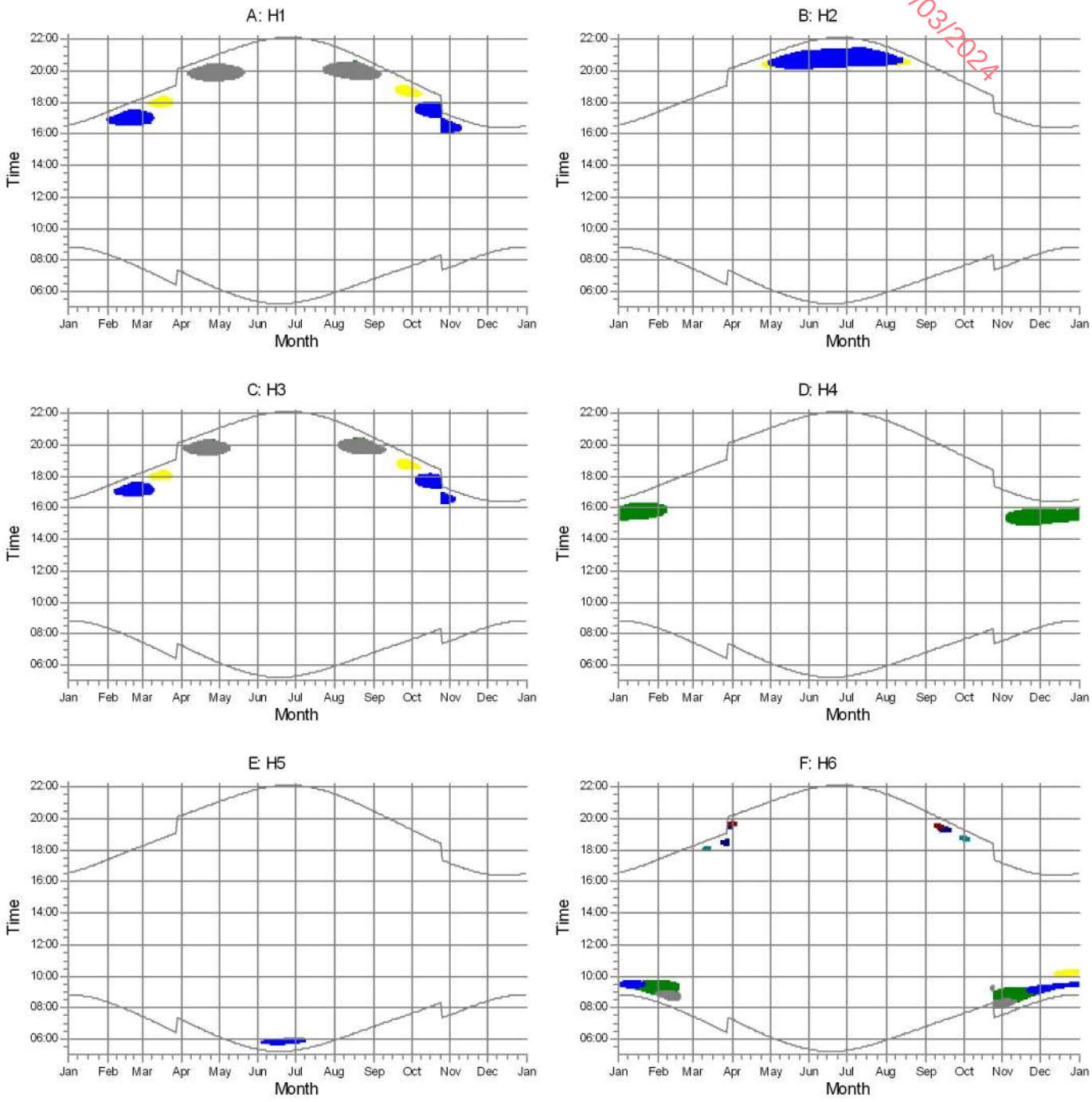
SHADOW - Calendar, graphical

Calculation: Expected Scenario (cumulative)



WTGs

1: T1	3: T3	6: Moanmore2	8: Moanmore4
2: T2	4: T4	7: Moanmore3	

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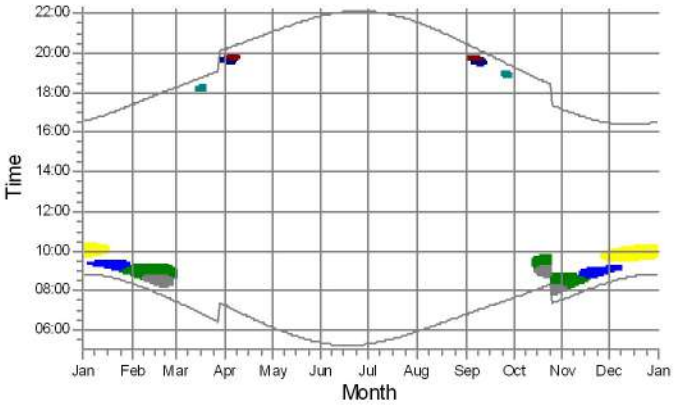
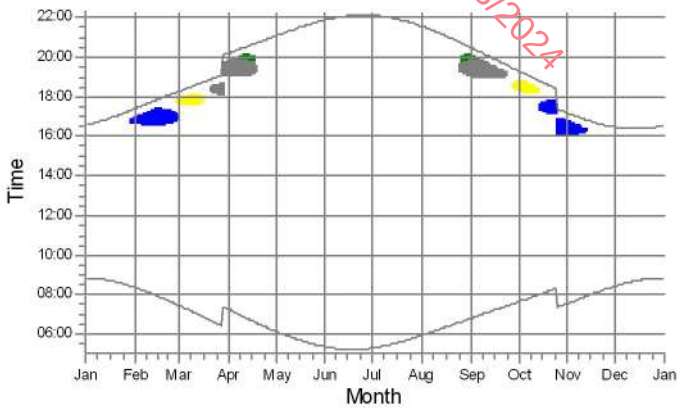
Calculation: Expected Scenario (cumulative)

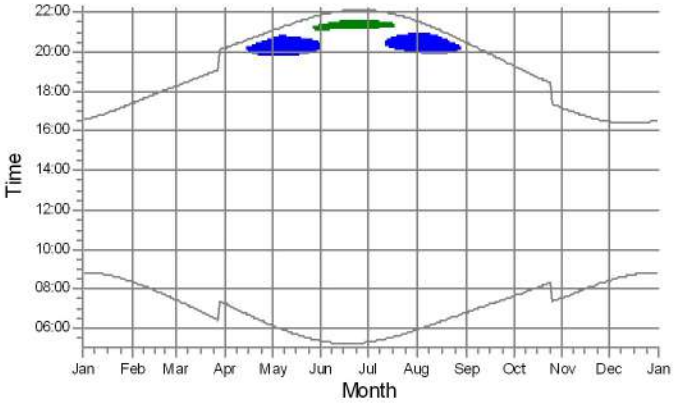
G: H7



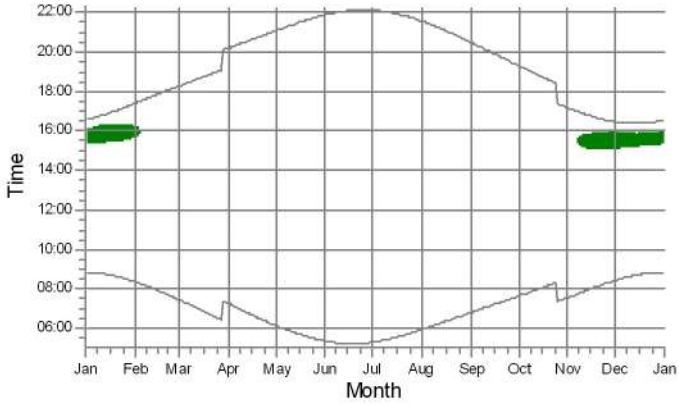
H: H8



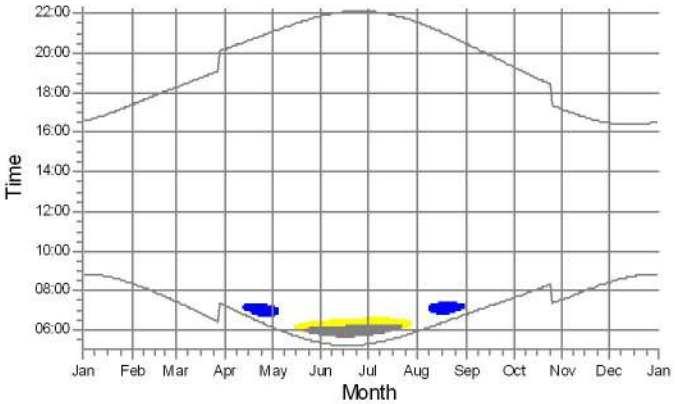
I: H9



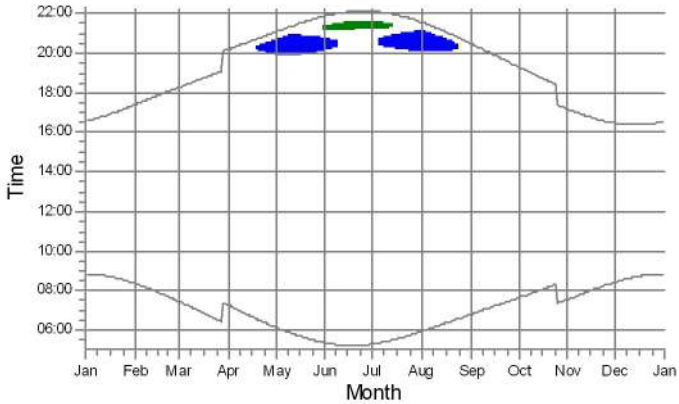
J: H10



K: H11



L: H12



WTGs

1: T1	3: T3	6: Moanmore2	8: Moanmore4
2: T2	4: T4	7: Moanmore3	

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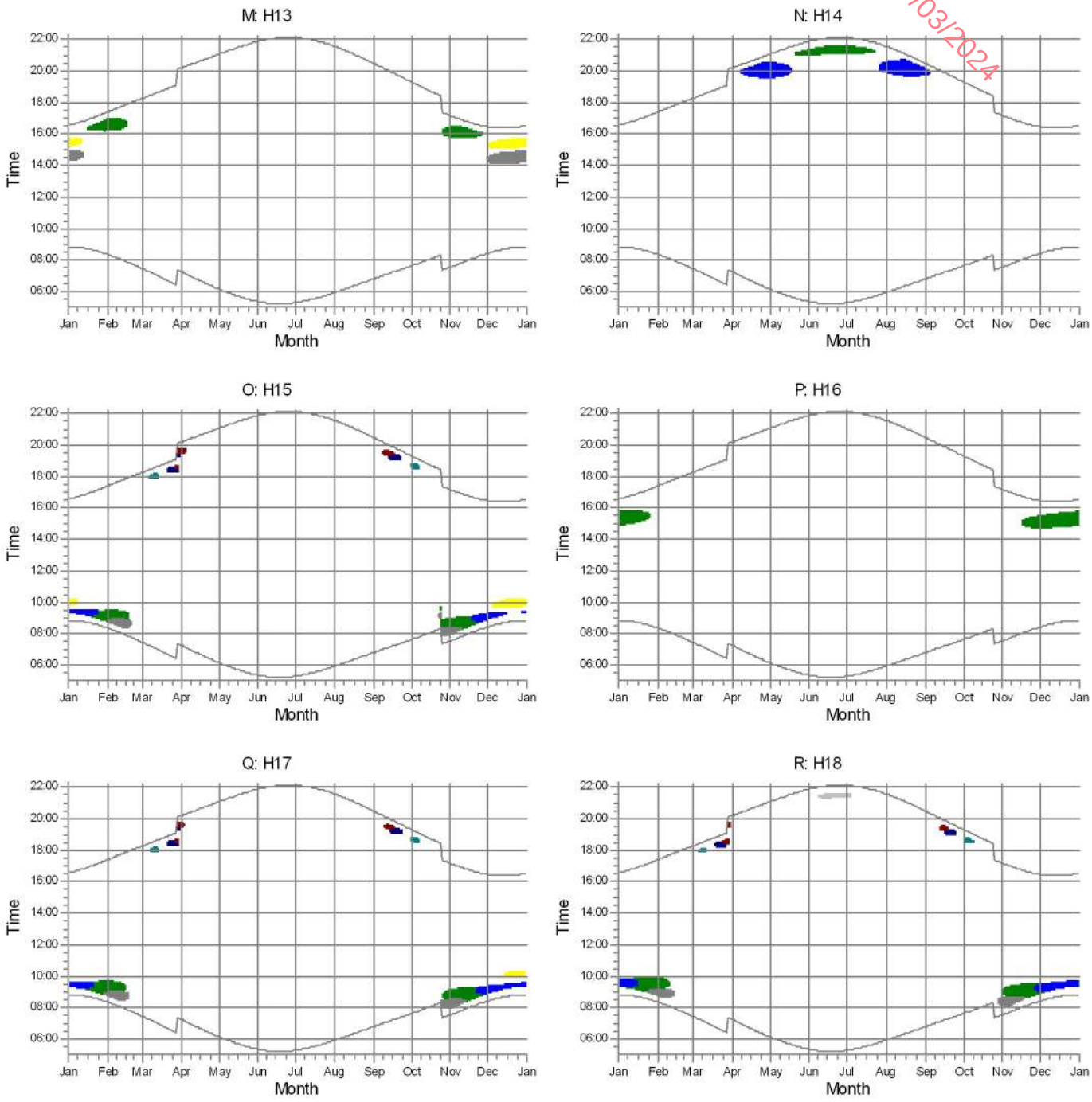
SHADOW - Calendar, graphical

Calculation: Expected Scenario (cumulative)



WTGs

1: T1	3: T3	6: Moanmore2	8: Moanmore4
2: T2	4: T4	7: Moanmore3	12: Tullabrack1

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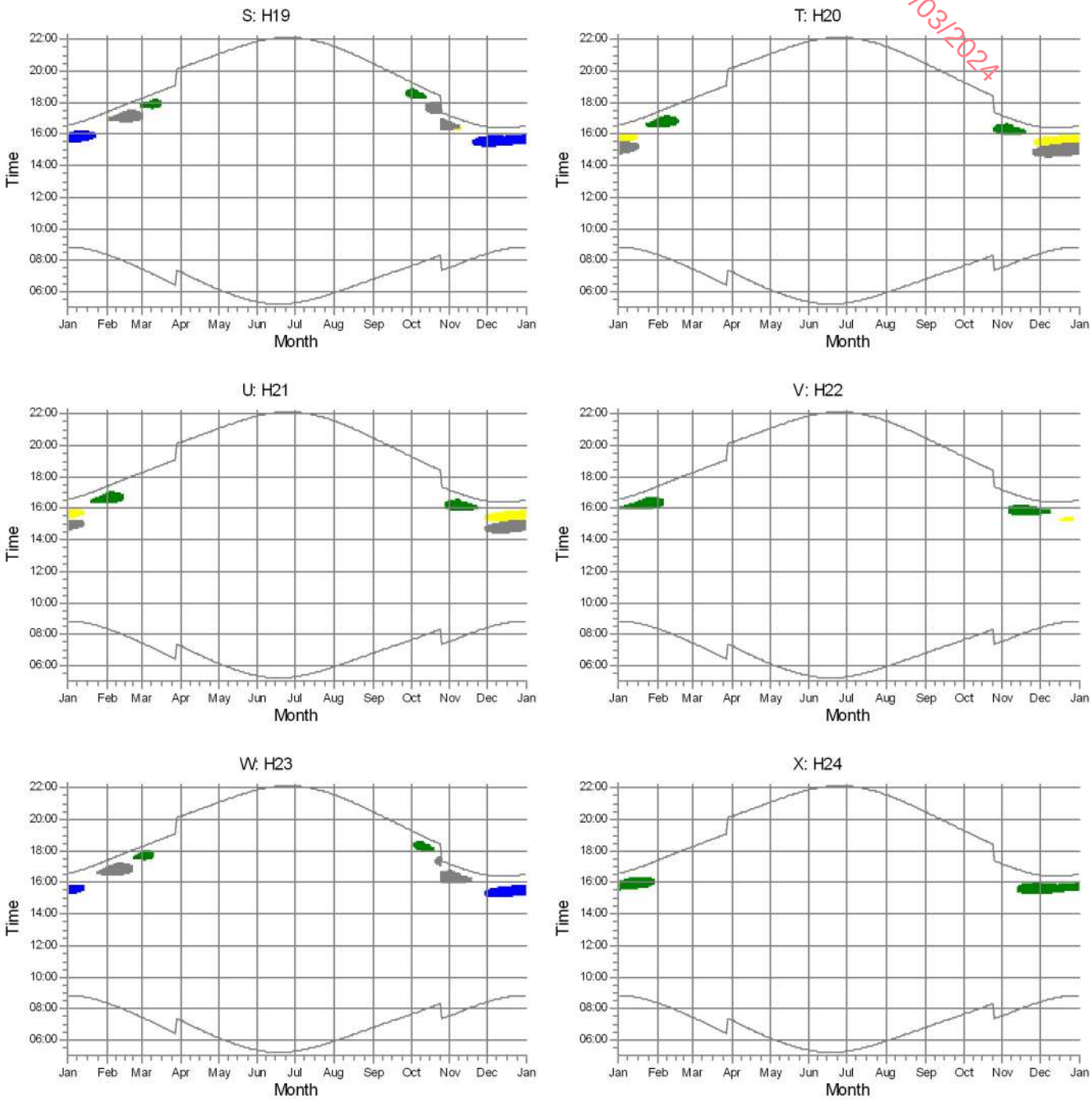
Calculated:
04/01/2024 11:44/3.6.361

SHADOW - Calendar, graphical

Calculation: Expected Scenario (cumulative)



WTGs

1: T1 2: T2 3: T3 4: T4

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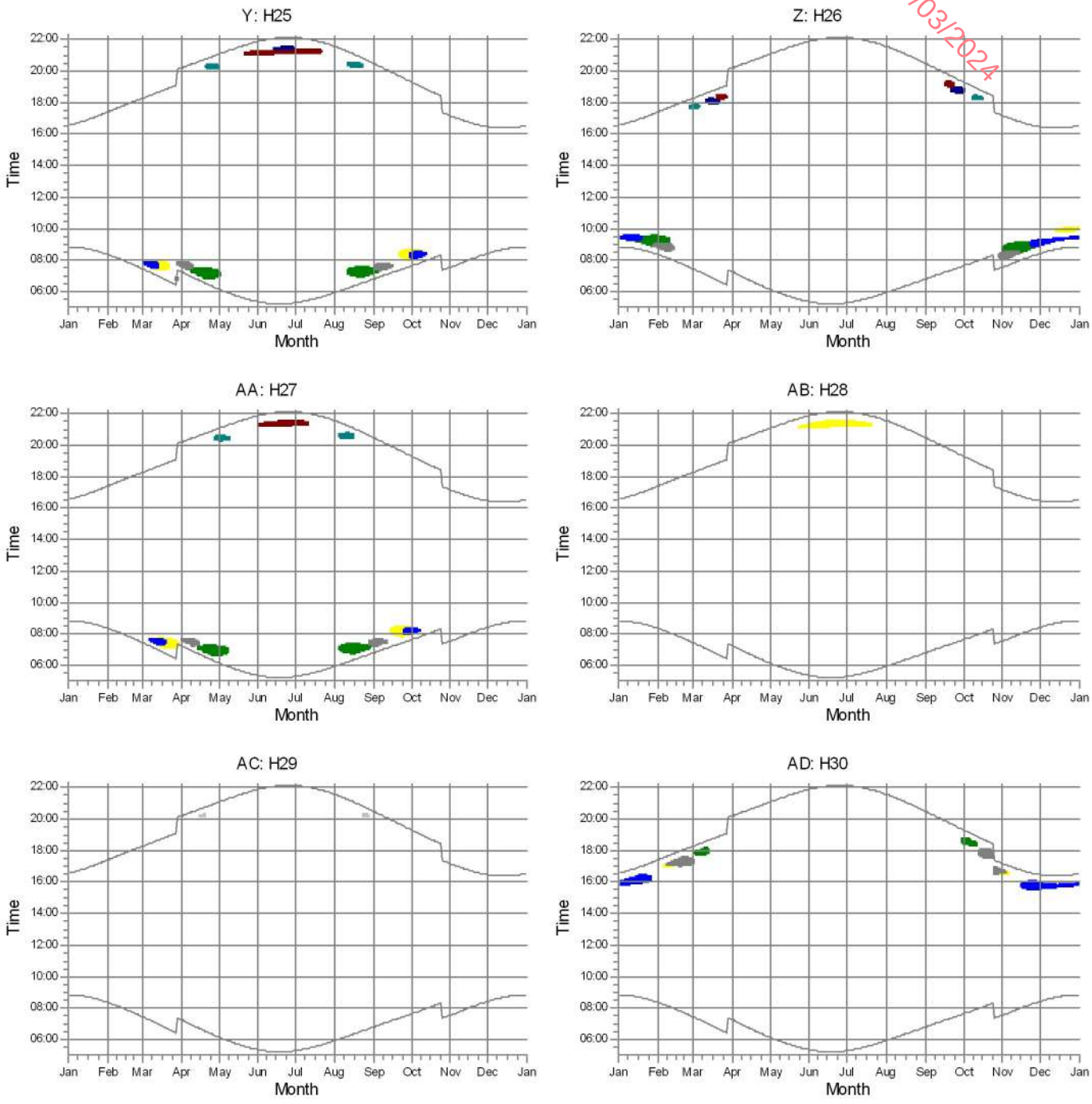
Calculated:
04/01/2024 11:44/3.6.361

SHADOW - Calendar, graphical

Calculation: Expected Scenario (cumulative)



WTGs

1: T1	3: T3	6: Moanmore2	8: Moanmore4
2: T2	4: T4	7: Moanmore3	12: Tullabrack1

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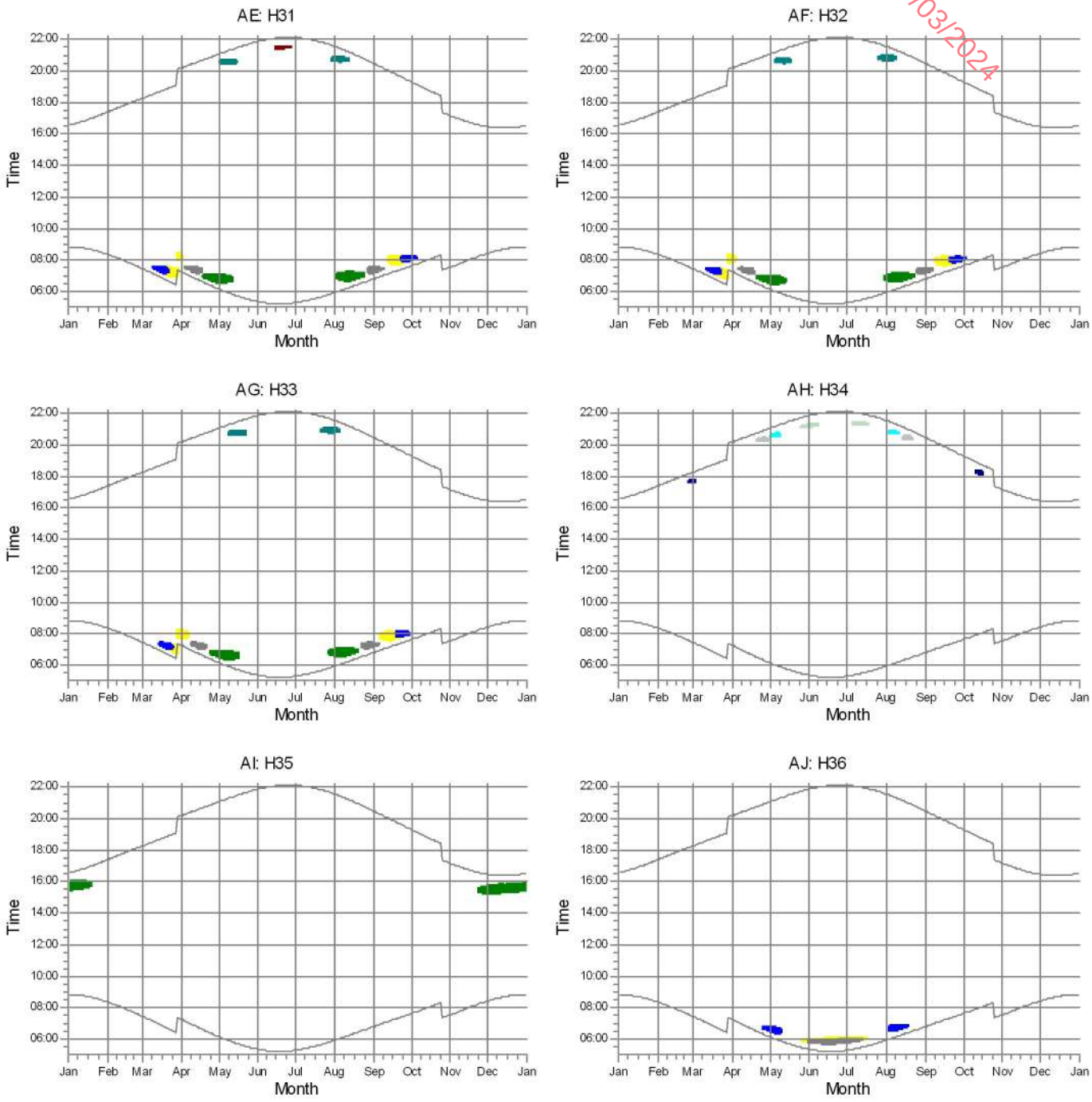
SHADOW - Calendar, graphical

Calculation: Expected Scenario (cumulative)



WTGs

1: T1	4: T4	8: Moanmore4	14: Tullabrack3
2: T2	6: Moanmore2	12: Tullabrack1	
3: T3	7: Moanmore3	13: Tullabrack2	

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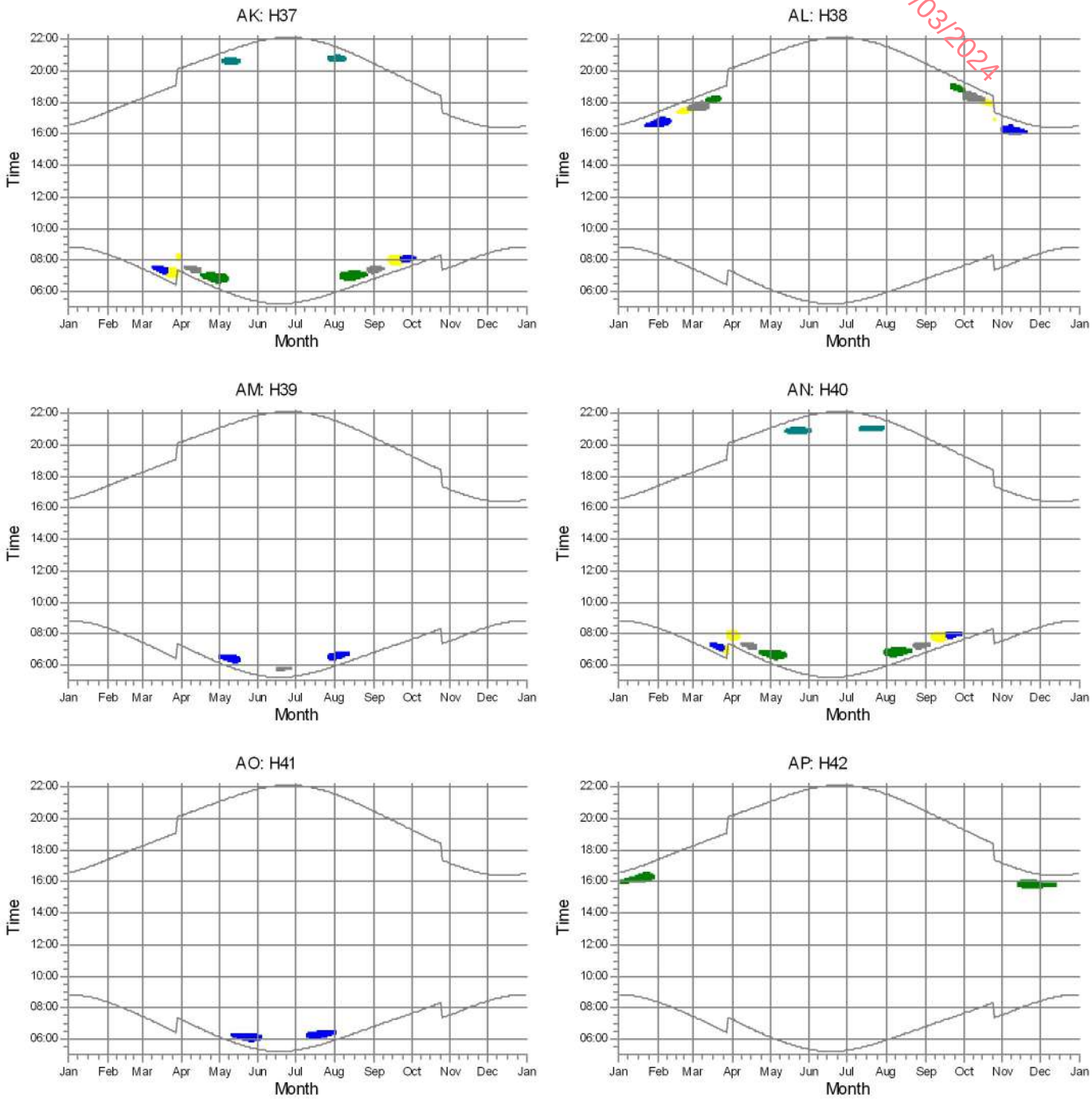
Calculation: Expected Scenario (cumulative)



WTGs

1: T1	3: T3	6: Moanmore2
2: T2	4: T4	

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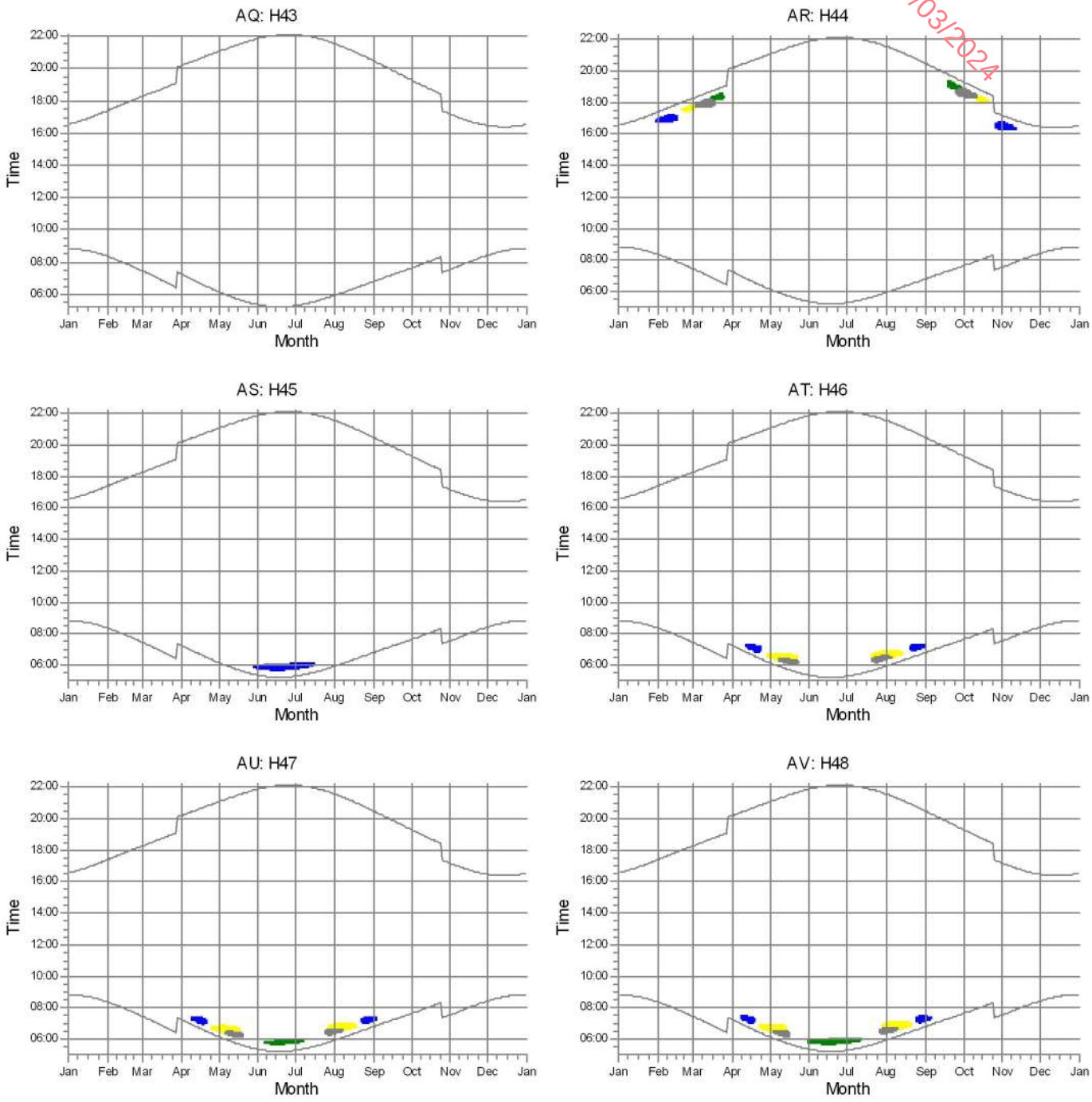
Calculation: Expected Scenario (cumulative)



WTGs

1: T1 2: T2 3: T3 4: T4

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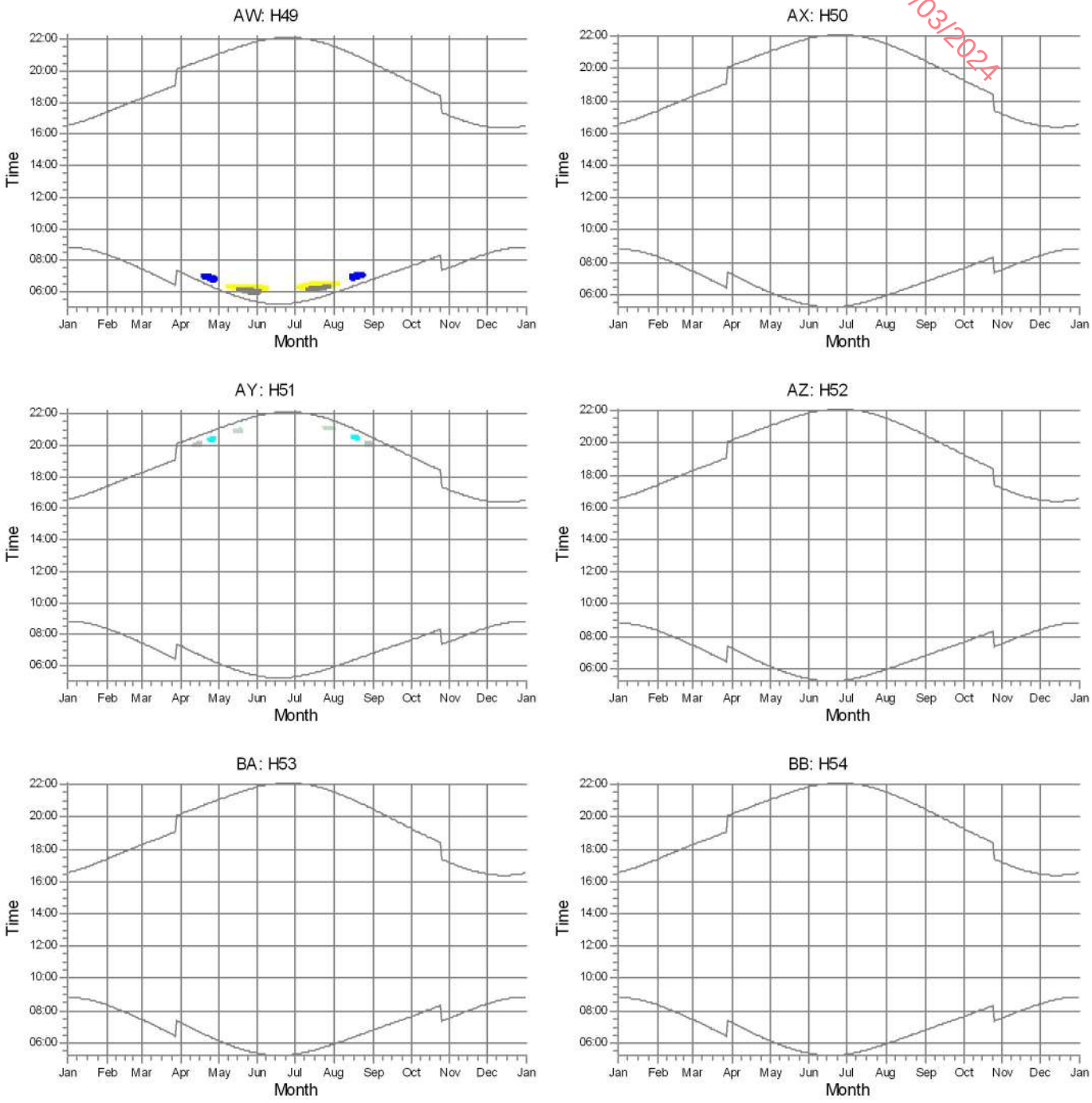
Calculation: Expected Scenario (cumulative)



WTGs

	2: T2		4: T4		13: Tullabrack2
	3: T3		12: Tullabrack1		14: Tullabrack3

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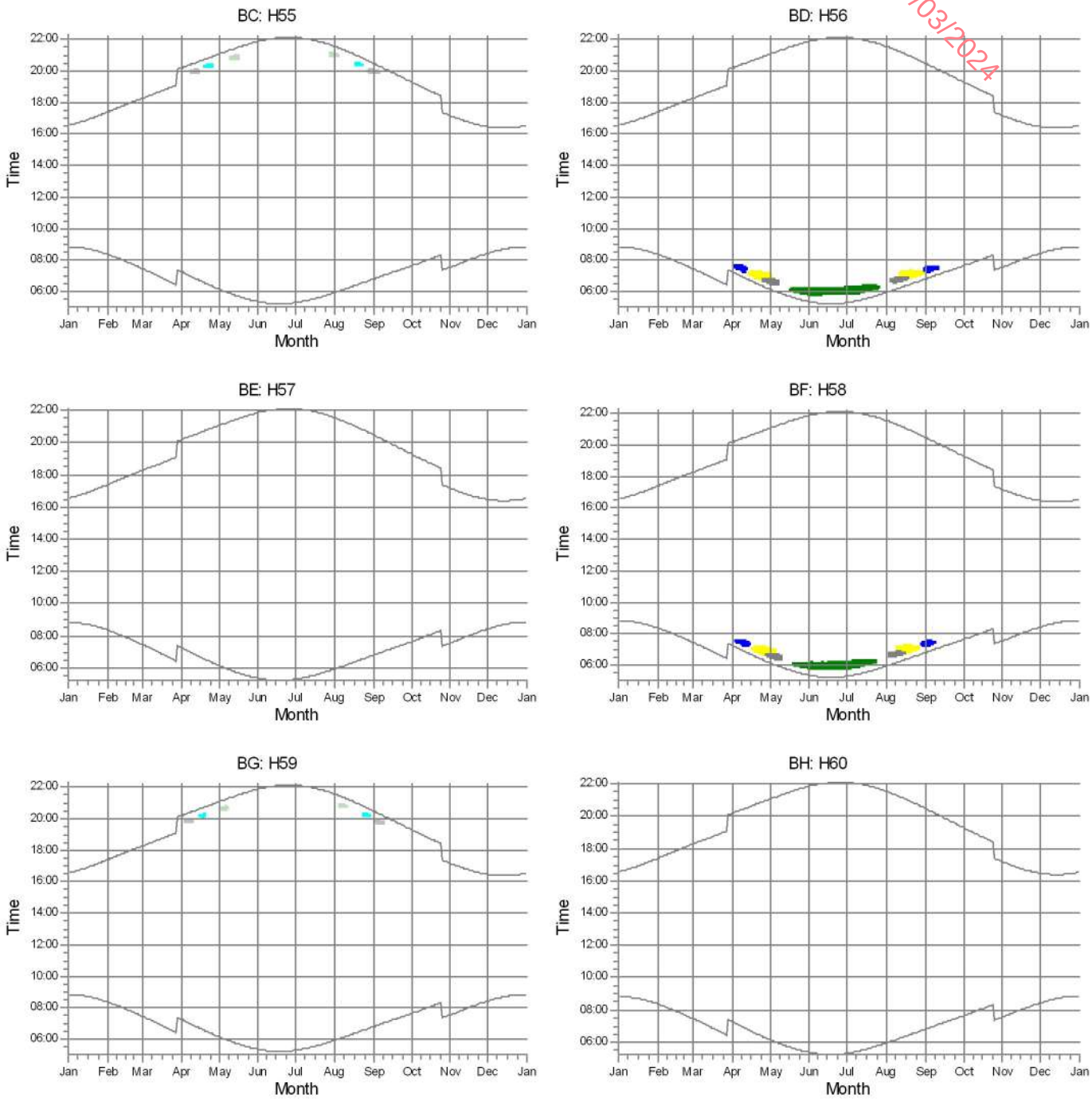
SHADOW - Calendar, graphical

Calculation: Expected Scenario (cumulative)



WTGs

1: T1	3: T3	12: Tullabrack1	14: Tullabrack3
2: T2	4: T4	13: Tullabrack2	

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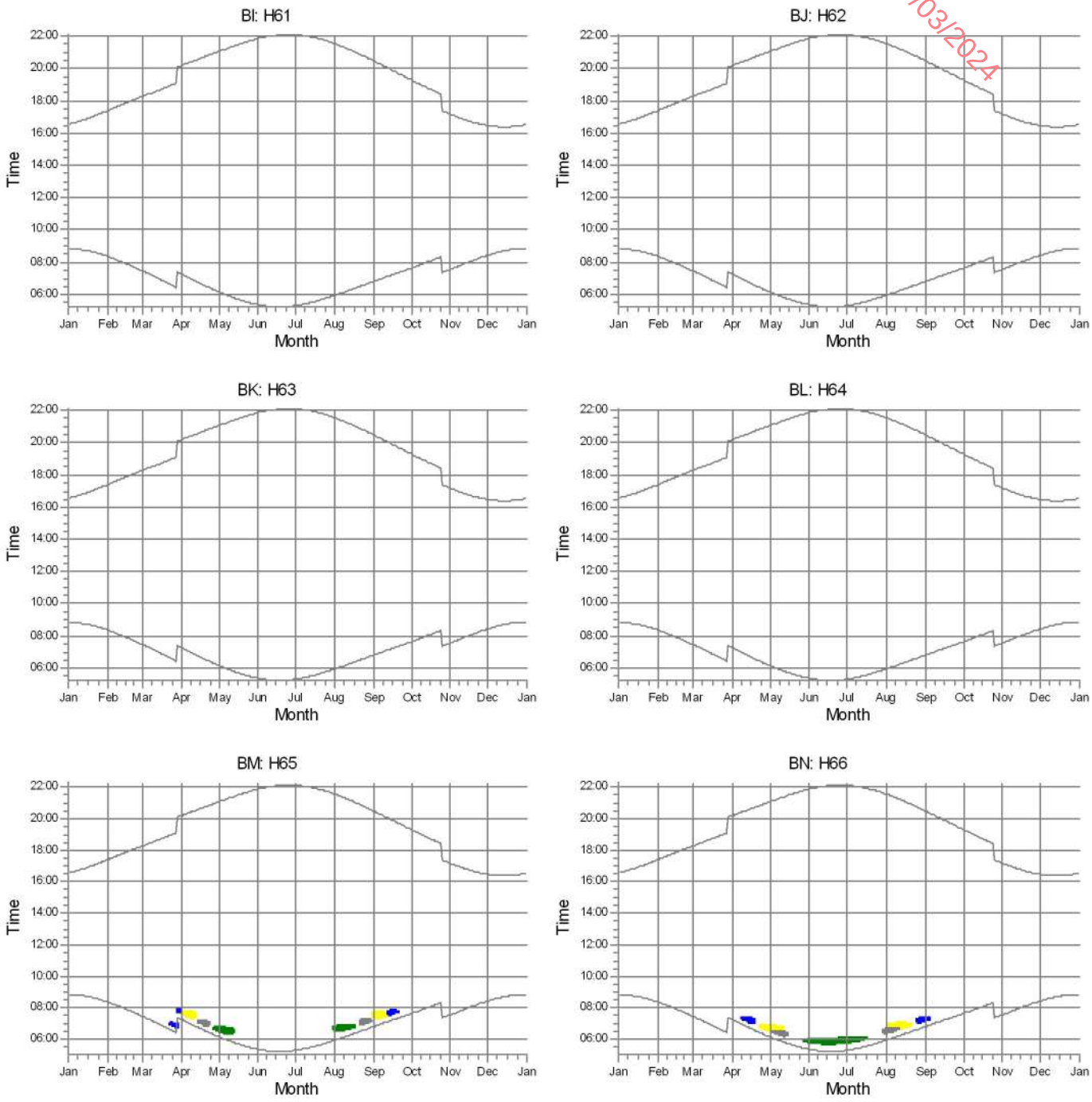
Calculation: Expected Scenario (cumulative)



WTGs

1: T1 2: T2 3: T3 4: T4

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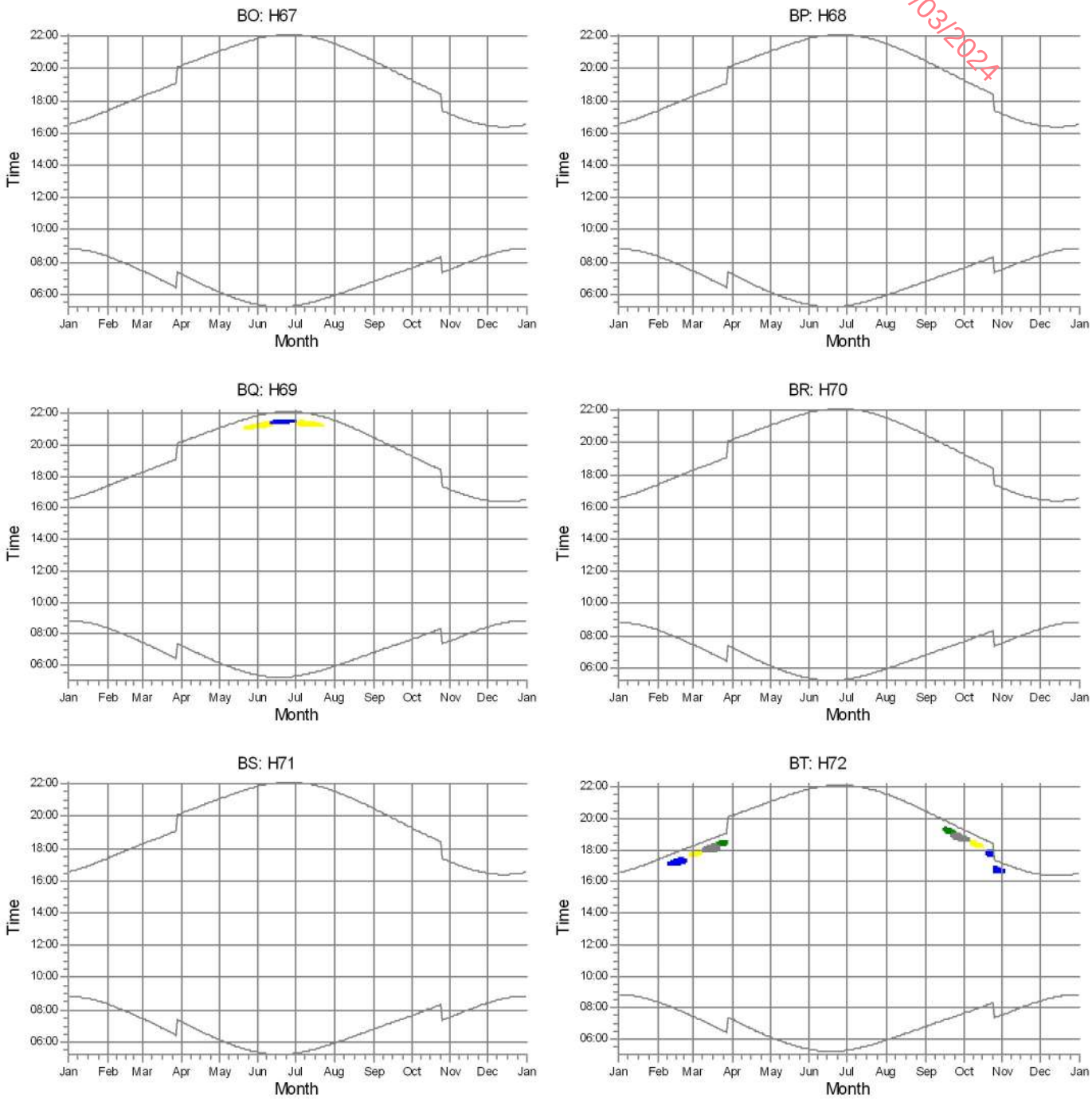
SHADOW - Calendar, graphical

Calculation: Expected Scenario (cumulative)



WTGs

1: T1 2: T2 3: T3 4: T4

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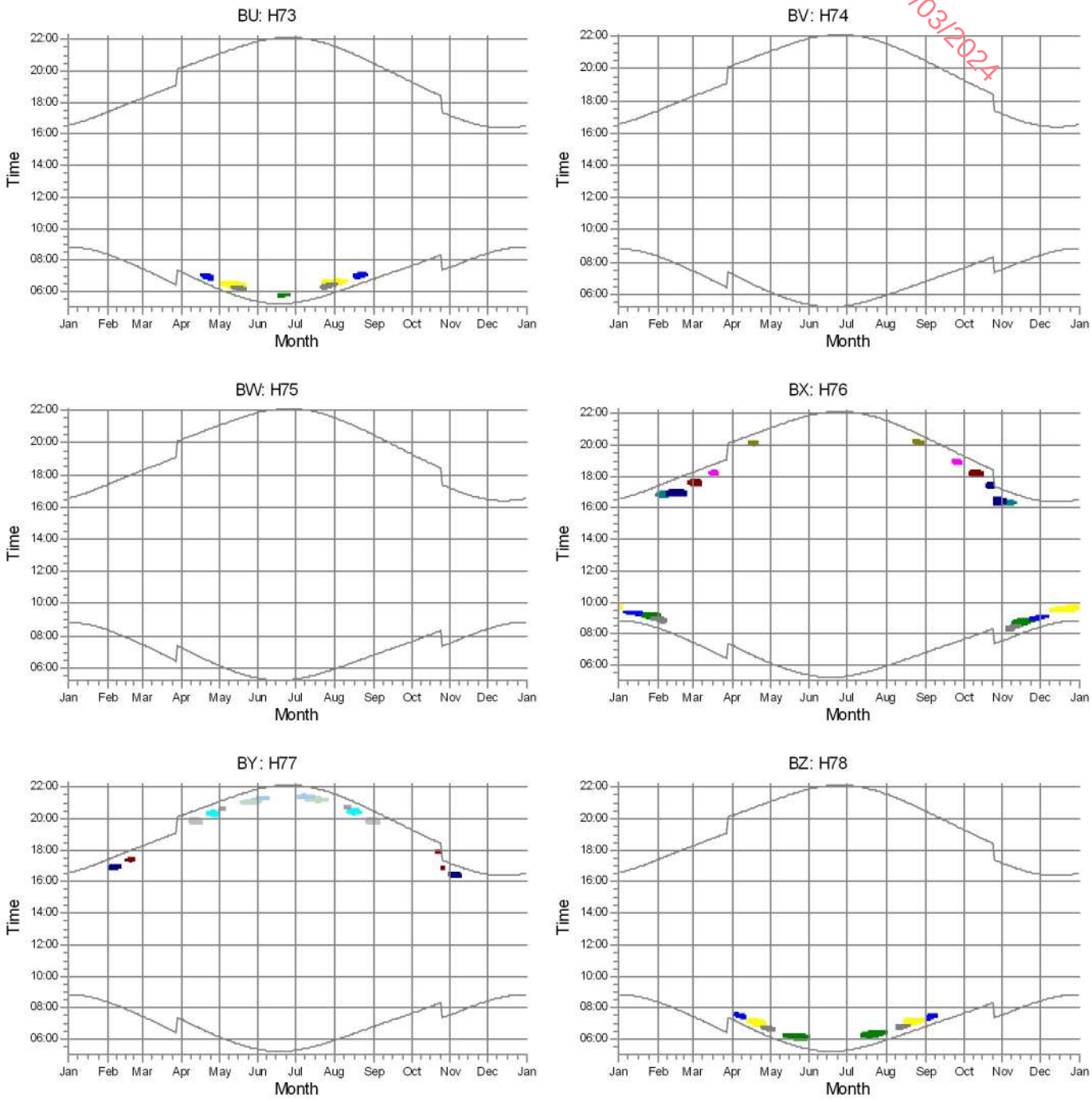
Calculation: Expected Scenario (cumulative)



WTGs

1: T1	5: Moanmore1	10: Moanmore6	15: Tullabrack4
2: T2	6: Moanmore2	12: Tullabrack1	16: Tullabrack5
3: T3	7: Moanmore3	13: Tullabrack2	
4: T4	8: Moanmore4	14: Tullabrack3	

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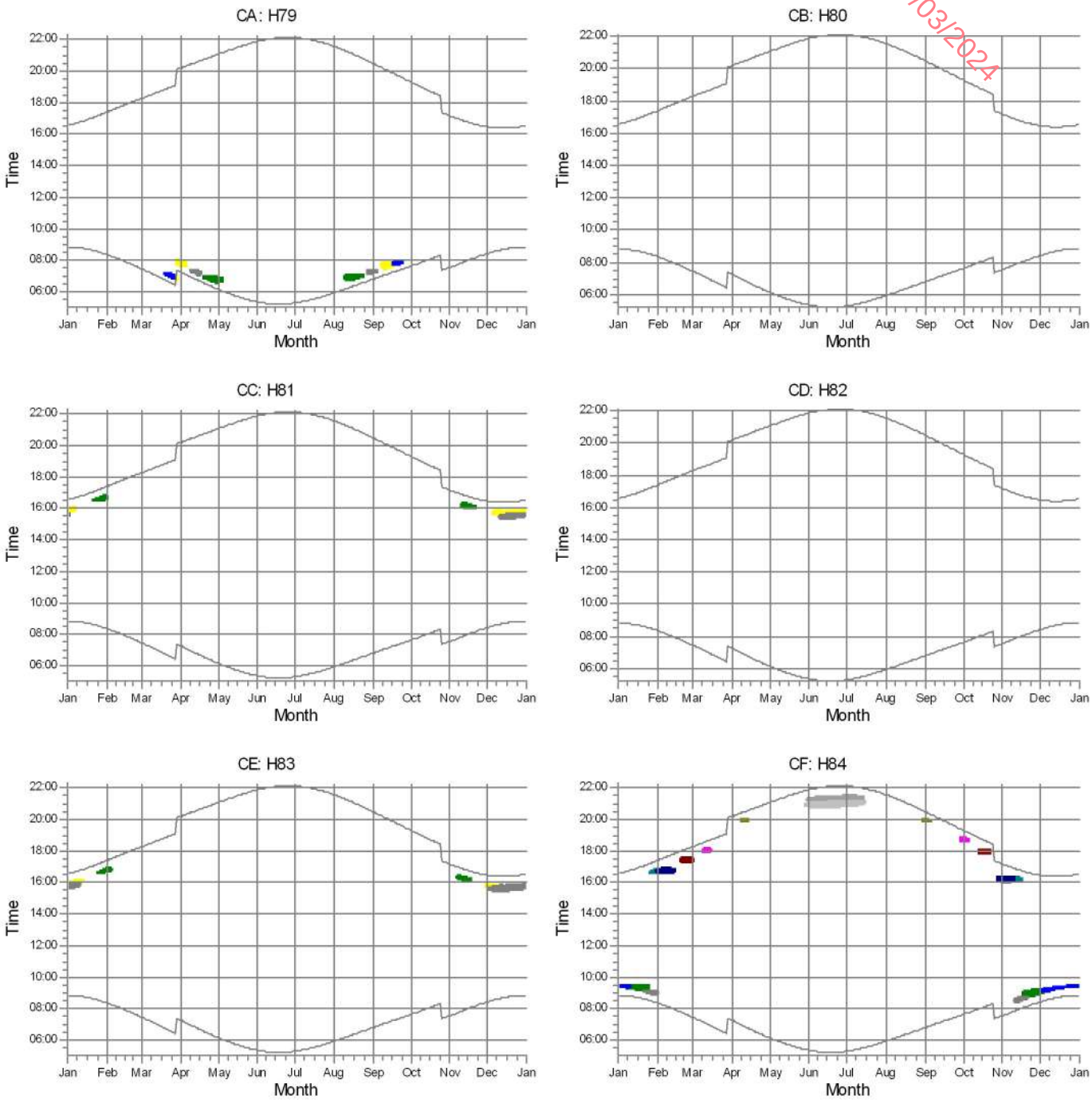
SHADOW - Calendar, graphical

Calculation: Expected Scenario (cumulative)



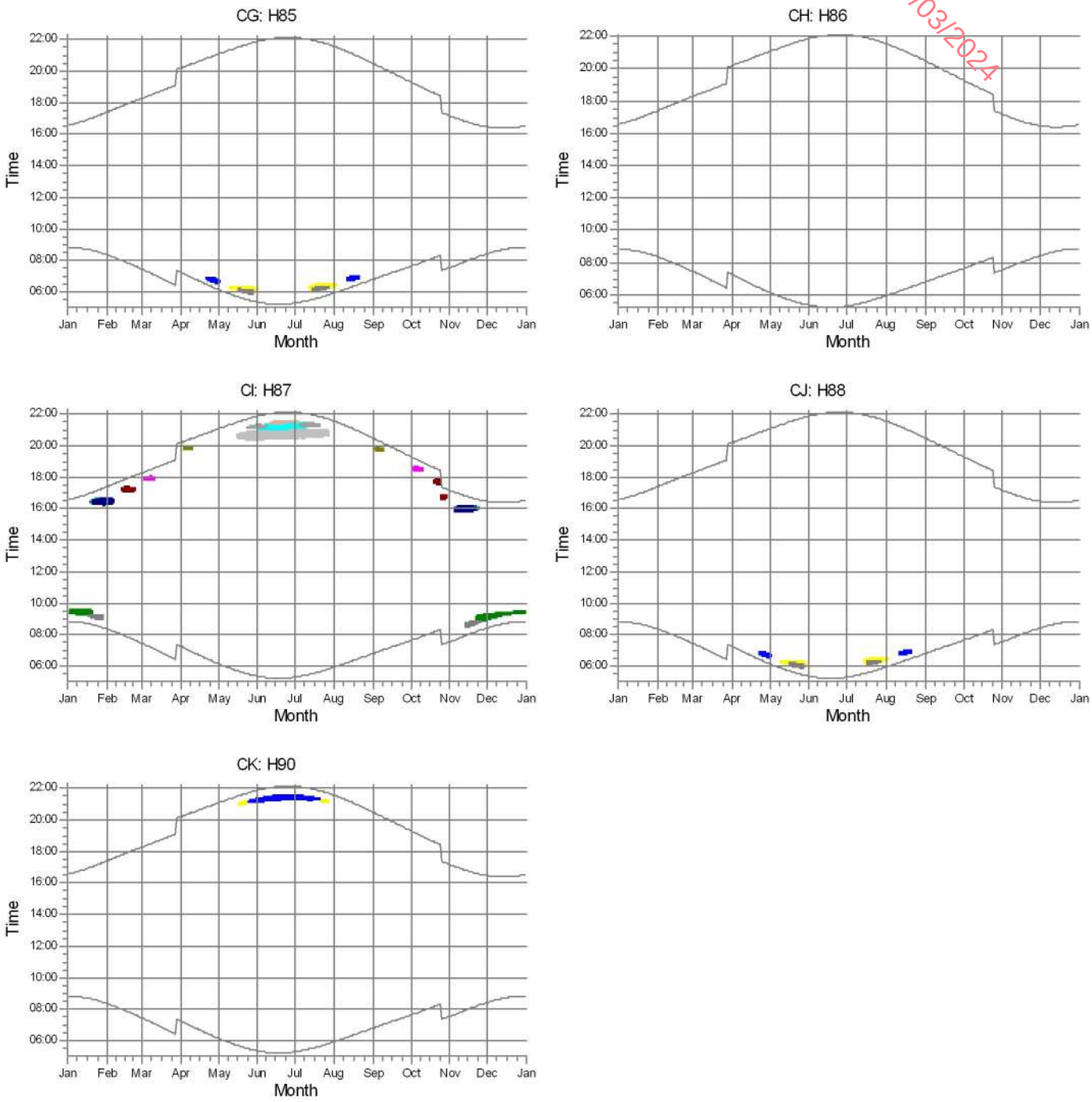
WTGs

1: T1	4: T4	7: Moanmore3	12: Tullabrack1
2: T2	5: Moanmore1	8: Moanmore4	13: Tullabrack2
3: T3	6: Moanmore2	10: Moanmore6	16: Tullabrack5

RECEIVED: 29/03/2024

SHADOW - Calendar, graphical

Calculation: Expected Scenario (cumulative)



WTGs

1: T1	5: Moanmore1	10: Moanmore6	17: Tullabrack6
2: T2	6: Moanmore2	12: Tullabrack1	
3: T3	7: Moanmore3	13: Tullabrack2	
4: T4	8: Moanmore4	16: Tullabrack5	

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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar per WTG

Calculation: Expected Scenario (cumulative) WTG: 1 - T1

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January	February	March	April	May	June
1	08:50 09:23-09:41/18 16:33 15:00-15:58/58	08:22 15:33-16:52/79 17:23 08:49-09:51/62	07:27 17:32-17:49/17 18:16 08:51-08:54/3	07:15 19:43-19:45/2 20:11	06:08 06:33-07:10/37 21:04 19:58-20:17/19	05:21 05:51-06:12/21 21:51 21:03-21:18/15
2	08:50 09:22-09:41/19 16:34 14:59-15:58/59	08:20 16:10-16:54/44 15:34-16:09/35 17:24 08:47-09:50/63	07:25 17:32-17:51/19 18:18	07:12 19:41-19:46/5 20:13	06:06 06:31-07:09/38 21:06 20:00-20:15/15	05:21 05:50-06:12/22 21:52 21:03-21:19/16
3	08:50 09:22-09:42/20 16:36 15:00-16:00/60	08:19 16:11-16:55/44 15:35-16:08/33 17:26 08:45-09:49/64	07:23 17:31-17:52/21 18:19	07:10 19:40-19:49/9 20:15	06:04 06:30-07:08/38 21:07 20:03-20:11/8	05:20 05:50-06:12/22 21:54 21:03-21:20/17
4	08:50 09:22-09:43/21 16:37 15:01-16:01/60	08:17 16:13-16:57/44 15:37-16:06/29 17:28 08:44-09:49/65	07:20 17:32-17:55/23 18:21	07:08 19:39-19:51/12 20:17	06:02 06:28-07:07/39 21:09	05:19 05:49-06:12/23 21:55 21:04-21:21/17
5	08:49 09:21-09:43/22 16:38 15:01-16:02/61	08:15 08:42-09:47/65 15:40-16:05/25 17:30 16:17-17:00/43	07:18 17:33-17:57/24 18:23	07:05 19:38-19:52/14 20:18	06:00 06:26-07:05/39 21:11	05:18 05:48-06:11/23 21:56 21:04-21:22/18
6	08:49 09:21-09:44/23 16:39 15:03-16:04/61	08:14 08:40-09:46/66 15:43-16:03/20 17:32 16:19-17:02/43	07:16 17:33-17:58/25 18:25	07:03 19:37-19:54/17 20:20	05:59 06:24-07:03/39 21:13	05:18 05:48-06:12/24 21:57 21:05-21:23/18
7	08:49 09:20-09:44/24 16:41 15:03-16:05/62	08:12 08:38-09:44/66 15:47-15:59/12 17:34 16:20-17:04/44	07:13 17:34-18:00/26 18:27	07:01 19:37-19:56/19 20:22	05:57 06:23-07:01/38 21:14	05:17 05:47-06:11/24 21:58 21:04-21:24/20
8	08:48 09:19-09:45/26 16:42 15:03-16:06/63	08:10 08:36-09:41/65 17:36 16:20-17:04/44	07:11 17:36-18:03/27 18:29	06:58 19:36-19:57/21 20:24	05:55 06:23-06:58/35 21:16	05:16 05:47-06:11/24 21:59 21:05-21:25/20
9	08:48 09:19-09:46/27 16:43 15:04-16:09/65	08:08 08:34-09:38/64 17:38 16:21-17:03/42	07:09 17:38-18:04/26 18:30	06:56 07:19-07:23/4 20:25 19:36-19:58/22	05:53 06:23-06:56/33 21:18	05:16 05:46-06:11/25 21:59 21:05-21:25/20
10	08:47 09:18-09:47/29 16:45 15:05-16:10/65	08:06 16:22-17:02/40 17:40 08:32-09:37/65	07:07 17:44-18:06/22 18:32	06:54 07:17-07:24/7 20:27 19:36-20:00/24	05:51 06:25-06:54/29 21:19	05:15 05:46-06:11/25 22:00 21:06-21:26/20
11	08:46 09:17-09:47/30 16:46 15:05-16:11/66	08:04 16:23-17:02/39 17:42 08:30-09:36/66	07:04 17:45-18:08/23 18:34	06:51 07:15-07:26/11 20:29 19:37-20:02/25	05:50 06:26-06:52/26 21:21	05:15 05:46-06:11/25 22:01 21:06-21:27/21
12	08:46 09:16-09:48/32 16:48 15:06-16:13/67	08:03 16:25-17:01/36 17:44 08:30-09:35/65	07:02 17:45-18:10/25 18:36	06:49 07:13-07:27/14 20:31 19:36-20:03/27	05:48 06:14-06:17/3 21:23 06:26-06:49/23	05:15 05:45-06:10/25 22:02 21:06-21:27/21
13	08:45 09:15-09:48/33 16:49 15:07-16:14/67	08:01 16:27-16:59/32 17:45 08:30-09:34/64	07:00 18:07-18:12/5 18:38 17:46-18:06/20	06:47 07:10-07:27/17 20:33 19:37-20:05/28	05:46 06:13-06:18/5 21:24 06:28-06:48/20	05:14 05:45-06:11/26 22:02 21:06-21:28/22
14	08:44 09:14-09:49/35 16:51 15:08-16:16/68	07:59 16:29-16:58/29 17:47 08:30-09:32/62	06:57 18:06-18:13/7 18:39 17:47-18:03/16	06:45 07:08-07:27/19 20:34 19:38-20:07/29	05:45 06:11-06:17/6 21:26 06:29-06:46/17	05:14 05:45-06:11/26 22:03 21:07-21:29/22
15	08:43 09:13-09:49/36 16:52 15:09-16:18/69	07:57 16:33-16:55/22 17:49 08:30-09:30/60	06:55 18:06-18:15/9 18:41 17:50-18:01/11	06:42 07:06-07:28/22 20:36 19:40-20:09/29	05:43 06:10-06:18/8 21:27 06:31-06:45/14	05:14 05:45-06:11/26 22:04 21:07-21:29/22
16	08:42 09:12-09:50/38 16:54 15:10-16:20/70	07:55 16:47-16:50/3 17:51 08:31-09:27/56	06:53 18:06-18:17/11 18:43	06:40 07:04-07:28/24 20:38 19:41-20:11/30	05:41 06:08-06:18/10 21:29 06:33-06:42/9	05:14 05:45-06:11/26 22:04 21:08-21:30/22
17	08:42 09:11-09:50/39 16:56 15:11-16:22/71	07:53 08:31-09:21/50 17:53	06:50 18:05-18:19/14 18:45	06:38 07:02-07:28/26 20:40 19:43-20:12/29	05:40 06:07-06:18/11 21:31	05:14 05:45-06:11/26 22:05 21:08-21:30/22
18	08:41 09:10-09:51/41 16:57 15:13-16:24/71	07:51 08:31-09:18/47 17:55	06:48 18:06-18:21/15 18:47	06:36 06:59-07:27/28 20:41 19:50-20:13/23	05:38 06:06-06:18/12 21:32	05:14 05:45-06:11/26 22:05 21:08-21:31/23
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22	08:36 09:05-09:53/48 17:04 15:19-16:32/73	07:42 08:34-09:14/40 18:03	06:38 18:12-18:27/15 18:54	06:27 06:51-07:26/35 20:48 19:51-20:20/29	05:33 06:01-06:18/17 21:38 21:04-21:07/3	05:14 05:46-06:12/26 22:06 21:09-21:32/23
23	08:35 09:03-09:52/49 17:06 15:22-16:33/71	07:40 17:35-17:37/2 18:04 08:35-09:13/38	06:36 18:15-18:30/15 18:55	06:25 06:49-07:25/36 20:50 19:52-20:22/30	05:31 05:59-06:18/19 21:40 21:03-21:07/4	05:14 05:46-06:12/26 22:06 21:09-21:32/23
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25	08:32 09:00-09:52/52 17:10 15:26-16:37/71	07:36 17:33-17:41/8 18:08 08:37-09:09/32	06:31 18:21-18:33/12 18:59	06:21 06:45-07:23/38 20:54 19:53-20:25/32	05:29 05:57-06:16/19 21:42 21:03-21:10/7	05:15 05:47-06:13/26 22:06 21:10-21:32/22
26	08:31 15:27-16:39/72 17:11 08:59-09:53/54	07:34 17:33-17:43/10 18:10 08:39-09:07/28	06:29 18:23-18:35/12 19:01	06:18 06:43-07:22/39 20:55 19:54-20:24/30	05:28 05:56-06:15/19 21:44 21:03-21:11/8	05:15 05:47-06:13/26 22:06 21:10-21:32/22
27	08:30 15:27-16:41/74 17:13 08:57-09:52/55	07:31 17:32-17:45/13 18:12 08:41-09:05/24	06:26 18:25-18:31/6 19:03	06:16 06:41-07:21/40 20:57 19:54-20:23/29	05:27 05:55-06:15/20 21:45 21:03-21:12/9	05:16 05:48-06:14/26 22:06 21:09-21:31/22
28	08:28 15:29-16:44/75 17:15 08:56-09:53/57	07:29 17:32-17:47/15 18:14 08:44-09:01/17	06:24 19:04	06:14 06:39-07:19/40 20:59 19:55-20:22/27	05:25 05:54-06:14/20 21:46 21:03-21:13/10	05:16 05:48-06:14/26 22:06 21:10-21:32/22
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30	08:25 15:30-16:47/77 17:19 08:52-09:52/60		07:19 20:08	06:10 06:35-07:14/39 21:02 19:57-20:19/22	05:23 05:53-06:12/19 21:49 21:03-21:15/12	05:17 05:49-06:15/26 22:06 21:10-21:31/21
31	08:24 15:32-16:50/78 17:21 08:51-09:52/61		07:17 20:10		05:22 05:52-06:12/20 21:50 21:03-21:17/14	
Potential sun hours	256	276	367	418	489	503
Sum of minutes with flicker	3306	2297	514	1311	890	1375

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

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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar per WTG

Calculation: Expected Scenario (cumulative) WTG: 1 - T1

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	July	August	September	October	November	December
1	05:18 05:50-06:15/25	05:56 06:25-06:27/2	06:47 07:14-07:25/11	07:38 18:24-18:49/25	07:33 15:51-16:32/41	08:26 08:59-09:29/30
	22:06 21:10-21:32/22	21:32 06:36-07:00/24	20:29 19:36-20:01/25	19:18	17:10 08:02-09:07/65	16:28 14:48-15:53/65
2	05:19 05:50-06:15/25	05:58 06:36-07:03/27	06:49 07:16-07:23/7	07:40 18:23-18:47/24	07:35 08:04-09:08/64	08:27 09:01-09:30/29
	22:05 21:10-21:31/21	21:31	20:26 19:34-19:58/24	19:15	17:08 15:51-16:33/42	16:27 14:48-15:53/65
3	05:20 05:51-06:16/25	05:59 06:34-07:04/30	06:51 07:17-07:21/4	07:41 18:22-18:45/23	07:37 08:06-09:11/65	08:29 09:02-09:29/27
	22:05 21:10-21:31/21	21:29	20:24 19:34-19:56/22	19:13	17:06 15:50-16:33/43	16:27 14:48-15:52/64
4	05:20 05:52-06:17/25	06:01 06:33-07:07/34	06:52 19:34-19:55/21	07:43 18:18-18:43/25	07:39 08:08-09:14/66 15:16-15:29/13	08:30 09:04-09:30/26
	22:04 21:11-21:30/19	21:27	20:22	19:10	17:04 15:49-16:34/45	16:26 14:48-15:52/64
5	05:21 05:53-06:17/24	06:02 06:32-07:08/36	06:54 19:33-19:52/19	07:45 18:14-18:40/26	07:41 08:10-09:16/66 15:12-15:33/21	08:32 09:05-09:30/25
	22:04 21:11-21:30/19	21:25	20:19	19:08	17:02 15:49-16:32/43	16:25 14:48-15:50/62
6	05:22 05:54-06:18/24	06:04 06:33-07:11/38	06:56 19:33-19:50/17	07:47 18:11-18:37/26	07:43 08:12-09:17/65 15:10-15:35/25	08:33 09:07-09:30/23
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7	05:23 05:54-06:17/23	06:06 06:34-07:13/39	06:57 19:33-19:47/14	07:48 18:10-18:35/25	07:45 15:44-16:28/44 15:08-15:37/29	08:34 09:08-09:30/22
	22:03 21:10-21:28/18	21:22	20:15	19:03	16:59 08:14-09:19/65	16:25 14:49-15:49/60
8	05:24 05:55-06:18/23	06:07 06:36-07:15/39	06:59 19:33-19:45/12	07:50 18:08-18:33/25	07:46 15:42-16:26/44 15:06-15:39/33	08:35 09:09-09:30/21
	22:02 21:10-21:28/18	21:20	20:12	19:01	16:57 08:16-09:20/64	16:24 14:48-15:49/61
9	05:25 05:56-06:18/22	06:09 06:37-07:16/39	07:01 19:34-19:43/9	07:52 18:07-18:31/24	07:48 15:05-16:24/79	08:37 09:10-09:30/20
	22:01 21:11-21:27/16	21:18	20:10	18:59	16:55 08:18-09:21/63	16:24 14:48-15:48/60
10	05:26 05:57-06:19/22	06:11 06:39-07:17/38	07:03 19:34-19:40/6	07:54 18:06-18:28/22	07:50 15:04-16:22/78	08:38 09:12-09:31/19
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11	05:27 05:58-06:19/21	06:12 06:41-07:19/38	07:04 19:35-19:38/3	07:55 18:05-18:26/21	07:52 15:03-16:21/78	08:39 09:13-09:31/18
	22:00 21:11-21:26/15	21:14 20:08-20:24/16	20:05	18:54	16:52 08:22-09:23/61	16:23 14:50-15:48/58
12	05:28 05:59-06:20/21	06:14 06:42-07:20/38	07:06	07:57 18:05-18:23/18	07:54 15:02-16:19/77	08:40 09:14-09:31/17
	21:59 21:11-21:25/14	21:12 20:06-20:26/20	20:03	18:52	16:50 08:24-09:23/59	16:23 14:50-15:48/58
13	05:29 06:00-06:20/20	06:15 06:44-07:24/40	07:08	07:59 18:05-18:21/16	07:56 15:01-16:17/76	08:41 09:15-09:31/16
	21:58 21:11-21:24/13	21:10 20:05-20:28/23	20:00	18:50 09:20-09:31/11	16:49 08:26-09:24/58	16:23 14:50-15:47/57
14	05:30 06:02-06:22/20	06:17 06:45-07:25/40	07:09	08:01 18:05-18:19/14	07:57 15:01-16:16/75	08:42 09:16-09:31/15
	21:57 21:11-21:23/12	21:08 20:03-20:28/25	19:58	18:47 09:15-09:36/21	16:47 08:28-09:25/57	16:23 14:51-15:47/56
15	05:32 06:03-06:23/20	06:19 06:47-07:27/40	07:11	08:02 18:05-18:17/12	07:59 15:00-16:14/74	08:43 09:17-09:32/15
	21:56 21:12-21:23/11	21:06 20:02-20:30/28	19:56	18:45 09:13-09:38/25	16:46 08:30-09:25/55	16:23 14:51-15:47/56
16	05:33 06:04-06:24/20	06:20 06:48-07:28/40	07:13 19:16-19:20/4	08:04 18:05-18:15/10	08:01 15:00-16:12/72	08:44 09:18-09:32/14
	21:55 21:12-21:22/10	21:04 20:01-20:30/29	19:53	18:43 09:10-09:40/30	16:44 08:32-09:26/54	16:23 14:52-15:48/56
17	05:34 06:05-06:24/19	06:22 06:50-07:29/39	07:14 19:12-19:23/11	08:06 18:05-18:12/7	08:03 08:34-09:26/52	08:45 09:19-09:33/14
	21:54 21:12-21:21/9	21:02 20:00-20:31/31	19:51	18:41 09:09-09:42/33	16:43 15:00-16:11/71	16:24 14:51-15:47/56
18	05:35 06:06-06:25/19	06:24 06:52-07:30/38	07:16 19:09-19:21/12	08:08 18:06-18:09/3	08:05 08:36-09:27/51	08:45 09:19-09:32/13
	21:53 21:12-21:20/8	21:00 19:59-20:30/31	19:49	18:39 09:06-09:43/37	16:42 14:59-16:09/70	16:24 14:52-15:47/55
19	05:37 06:07-06:27/20	06:26 06:53-07:30/37	07:18 19:04-19:19/15	08:10 09:05-09:44/39	08:06 08:38-09:27/49	08:46 09:20-09:33/13
	21:51 21:12-21:19/7	20:58 19:58-20:29/31	19:46	18:36	16:40 14:57-16:08/71	16:24 14:53-15:48/55
20	05:38 06:09-06:27/18	06:27 06:55-07:31/36	07:19 19:02-19:17/15	08:11 09:04-09:45/41	08:08 08:40-09:28/48	08:47 09:21-09:34/13
	21:50 21:14-21:18/4	20:55 19:57-20:27/30	19:44	18:34	16:39 14:55-16:07/72	16:24 14:53-15:48/55
21	05:40 06:10-06:27/17	06:29 06:56-07:30/34	07:21 18:59-19:13/14	08:13 09:03-09:46/43	08:10 08:42-09:28/46	08:47 09:21-09:34/13
	21:49 21:14-21:17/3	20:53 19:56-20:25/29	19:41	18:32	16:38 14:52-16:04/72	16:25 14:54-15:48/54
22	05:41 06:11-06:27/16	06:31 06:58-07:31/33	07:23 18:55-19:11/16	08:15 09:02-09:47/45	08:12 08:43-09:27/44	08:48 09:22-09:35/13
	21:48 21:14-21:15/1	20:51 19:55-20:23/28	19:39	18:30	16:37 14:51-16:03/72	16:25 14:55-15:49/54
23	05:42 06:13-06:28/15	06:32 07:00-07:31/31	07:24 18:53-19:09/16	08:17 09:01-09:47/46	08:13 08:45-09:28/43	08:48 09:22-09:35/13
	21:46	20:49 19:54-20:20/26	19:37	18:28	16:35 14:50-16:02/72	16:26 14:55-15:50/55
24	05:44 06:14-06:28/14	06:34 07:01-07:31/30	07:26 18:50-19:06/16	08:19 09:01-09:48/47	08:15 08:47-09:28/41	08:49 09:22-09:35/13
	21:45	20:47 19:54-20:19/25	19:34	18:26	16:34 14:50-16:01/71	16:26 14:55-15:50/55
25	05:45 06:15-06:28/13	06:36 07:03-07:31/28	07:28 18:49-19:04/15	07:21 08:00-08:53/53	08:17 08:49-09:29/40	08:49 09:23-09:36/13
	21:43	20:44 19:54-20:17/23	19:32	17:24	16:33 14:49-16:00/71	16:27 14:56-15:51/55
26	05:47 06:17-06:29/12	06:37 07:04-07:30/26	07:29 18:48-19:02/14	07:22 16:14-16:22/8	08:18 08:51-09:29/38	08:49 09:23-09:36/13
	21:42	20:42 19:45-20:14/29	19:29	17:22 08:00-08:57/57	16:32 14:49-15:59/70	16:28 14:56-15:52/56
27	05:48 06:18-06:28/10	06:39 07:06-07:30/24	07:31 18:48-19:00/12	07:24 16:02-16:26/24	08:20 08:52-09:28/36	08:50 09:23-09:37/14
	21:40 06:46-06:50/4	20:40 19:43-20:12/29	19:27	17:20 08:00-09:00/60	16:31 14:48-15:57/69	16:28 14:57-15:52/55
28	05:50 06:20-06:29/9	06:41 07:08-07:29/21	07:33 18:46-18:57/11	07:26 15:58-16:28/30	08:21 08:54-09:29/35	08:50 09:23-09:37/14
	21:39 06:43-06:54/11	20:38 19:40-20:10/30	19:25 18:33-18:39/6	17:18 07:59-09:02/63	16:30 14:48-15:56/68	16:29 14:57-15:53/56
29	05:51 06:21-06:28/7	06:42 07:09-07:28/19	07:35 18:46-18:55/9	07:28 15:56-16:29/33	08:23 08:56-09:29/33	08:50 09:23-09:38/15
	21:37 06:41-06:56/15	20:35 19:39-20:08/29	19:22 18:29-18:43/14	17:16 07:59-09:04/65	16:29 14:48-15:56/68	16:30 14:58-15:54/56
30	05:53 06:22-06:28/6	06:44 07:11-07:27/16	07:36 18:46-18:52/6	07:30 15:54-16:30/36	08:24 08:57-09:29/32	08:50 09:23-09:39/16
	21:36 06:39-06:57/18	20:33 19:38-20:06/28	19:20 18:27-18:45/18	17:14 07:59-09:05/66	16:29 14:47-15:54/67	16:31 14:58-15:55/57
31	05:54 06:24-06:28/4	06:46 07:12-07:26/14		07:32 15:53-16:31/38		08:50 09:23-09:40/17
	21:34 06:38-06:59/21	20:31 19:36-20:03/27		17:12 08:00-09:06/66		16:32 14:59-15:56/57
Potential sun hours	506	456	381	330	263	240
Sum of minutes with flicker	924	1586	418	1363	3636	2336

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

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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar per WTG

Calculation: Expected Scenario (cumulative) WTG: 2 - T2

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January	February	March	April	May	June
1	08:50 15:18-15:58/40	08:22 16:39-16:52/13	07:27 17:35-17:49/14	07:15 07:38-08:15/37	06:08 06:33-07:02/29	05:21 21:07-21:18/11
	16:33 09:36-10:18/42	17:23	18:16	20:11	21:04 20:07-20:35/28	21:51 05:51-06:24/33
2	08:50 15:18-15:58/40 09:45-10:17/32	08:20 16:39-16:54/15	07:25 17:38-17:51/13	07:12 07:36-08:12/36	06:06 06:31-07:00/29	05:21 21:07-21:19/12
	16:34 09:37-09:44/7	17:24	18:18 07:49-07:53/4	20:13	21:06 20:08-20:36/28	21:52 05:50-06:24/34
3	08:50 15:20-16:00/40 09:46-10:18/32	08:19 16:39-16:55/16	07:23 17:42-17:52/10	07:10 07:33-08:09/36	06:04 06:30-06:59/29	05:20 21:07-21:20/13
	16:36 09:39-09:43/4	17:26	18:19 07:46-07:54/8	20:15	21:07 20:09-20:38/29	21:54 05:49-06:24/35
4	08:50 15:21-16:01/40	08:17 16:39-16:57/18	07:20 17:41-17:55/14	07:08 07:31-08:08/37	06:02 06:28-06:56/28	05:19 21:08-21:21/13
	16:37 09:48-10:18/30	17:28	18:21 07:44-07:55/11	20:17	21:09 20:11-20:40/29	21:55 05:49-06:25/36
5	08:49 15:21-16:02/41	08:15 16:41-17:00/19	07:18 17:41-17:57/16	07:05 07:29-08:06/37	06:01 06:26-06:54/28	05:18 21:08-21:22/14
	16:38 09:48-10:18/30	17:30	18:23 07:42-07:57/15	20:18	21:11 20:12-20:41/29	21:56 05:48-06:25/37
6	08:49 15:23-16:04/41	08:14 16:41-17:02/21	07:16 17:40-17:58/18	07:03 07:26-08:02/36	05:59 06:24-06:53/29	05:18 21:09-21:23/14
	16:39 09:49-10:18/29	17:32	18:25 07:39-07:57/18	20:20	21:13 20:15-20:43/28	21:57 05:48-06:26/38
7	08:49 15:24-16:05/41	08:12 16:42-17:04/22	07:13 07:37-07:57/20	07:01 07:24-07:45/21	05:57 06:23-06:53/30	05:17 21:08-21:24/16
	16:41 09:50-10:18/28	17:34	18:27 07:40-18:00/20	20:22	21:14 20:16-20:44/28	21:58 05:47-06:26/39
8	08:48 15:58-16:06/8 09:50-10:17/27	08:10 16:44-17:06/22	07:11 07:35-07:58/23	06:58 07:22-07:45/23	05:55 06:21-06:52/31	05:16 21:09-21:25/16
	16:42 15:25-15:57/32	17:36	18:29 17:41-18:03/22	20:24	21:16 20:17-20:46/29	21:59 05:47-06:27/40
9	08:48 16:00-16:09/9 09:52-10:18/26	08:08 16:45-17:08/23	07:09 07:32-07:58/26	06:56 07:22-07:43/21	05:53 06:19-06:50/31	05:16 21:09-21:25/16
	16:43 15:27-15:58/31	17:38	18:30 17:40-18:04/24	20:25	21:18 20:17-20:47/30	21:59 05:46-06:26/40
10	08:47 16:01-16:10/9 09:53-10:17/24	08:06 16:48-17:10/22	07:07 07:30-07:58/28	06:54 07:23-07:41/18	05:51 06:18-06:50/32	05:15 21:09-21:26/17
	16:45 15:29-15:57/28	17:40	18:32 17:41-18:06/25	20:27	21:19 20:18-20:48/30	22:00 05:46-06:27/41
11	08:46 16:03-16:10/7 09:54-10:17/23	08:04 16:53-17:13/20	07:04 07:28-07:58/30	06:51 07:25-07:40/15	05:50 06:16-06:48/32	05:15 21:10-21:27/17
	16:46 15:37-15:57/20	17:42	18:34 17:42-18:08/26	20:29	21:21 20:19-20:48/29	22:01 05:46-06:28/42
12	08:46 16:05-16:09/4 09:55-10:16/21	08:03 16:53-17:15/22	07:02 07:25-07:57/32	06:49 07:27-07:37/10	05:48 06:14-06:46/32	05:15 05:45-06:27/42
	16:48 15:40-15:56/16	17:44	18:36 17:42-18:10/28	20:31	21:23 20:19-20:47/28	22:02 21:10-21:27/17
13	08:45 15:41-15:55/14	08:01 16:55-17:17/22	07:00 07:23-07:57/34	06:47 07:10-07:12/2	05:46 06:13-06:44/31	05:14 05:45-06:28/43
	16:49 09:56-10:15/19	17:45	18:38 17:43-18:12/29	20:33 20:03-20:05/2	21:24 20:20-20:47/27	22:02 21:10-21:28/18
14	08:44 15:43-15:54/11	07:59 16:56-17:19/23	06:57 07:21-07:57/36	06:45 07:08-07:13/5	05:45 06:11-06:43/32	05:14 05:45-06:28/43
	16:51 09:58-10:14/16	17:47	18:39 17:45-18:13/28	20:34 20:02-20:07/5	21:26 20:21-20:45/24	22:03 21:11-21:29/18
15	08:43 15:46-15:53/7	07:57 16:58-17:19/21	06:55 07:18-07:55/37	06:42 07:06-07:14/8	05:43 06:10-06:42/32	05:14 05:45-06:28/43
	16:52 10:00-10:12/12	17:49	18:41 17:47-18:15/28	20:36 20:01-20:09/8	21:27 20:22-20:45/23	22:04 21:11-21:29/18
16	08:42 10:04-10:09/5	07:55 17:06-17:17/11	06:53 07:16-07:54/38	06:40 07:04-07:14/10	05:41 06:08-06:39/31	05:14 05:45-06:29/44
	16:54	17:51	18:43 17:48-18:17/29	20:38 20:00-20:11/11	21:29 20:23-20:43/20	22:04 21:11-21:30/19
17	08:41	07:53 17:23-17:25/2	06:50 07:13-07:52/39	06:38 07:02-07:14/12	05:40 20:57-20:59/2 20:25-20:42/17	05:14 05:45-06:29/44
	16:56	17:53	18:45 17:47-18:19/32	20:40 19:59-20:12/13	21:31 06:07-06:38/31	22:05 21:12-21:30/18
18	08:40	07:51 17:22-17:27/5	06:48 07:11-07:51/40	06:36 06:59-07:13/14	05:38 20:58-21:01/3 20:27-20:41/14	05:14 05:45-06:29/44
	16:57	17:55	18:47 17:48-18:18/30	20:41 19:58-20:13/15	21:32 06:06-06:37/31	22:05 21:12-21:31/19
19	08:39	07:49 17:22-17:29/7	06:45 07:09-07:49/40	06:33 06:57-07:13/16	05:37 20:58-21:02/4 20:29-20:38/9	05:14 05:45-06:29/44
	16:59	17:57	18:48 17:49-18:17/28	20:43 19:58-20:15/17	21:34 06:04-06:35/31	22:05 21:12-21:31/19
20	08:38	07:46 17:22-17:31/9	06:43 07:06-07:46/40	06:31 06:55-07:14/19	05:35 20:59-21:03/4	05:14 05:45-06:29/44
	17:01	17:59	18:50 17:49-18:15/26	20:45 19:58-20:17/19	21:35 06:03-06:34/31	22:06 21:12-21:31/19
21	08:37	07:44 17:22-17:33/11	06:41 07:04-07:43/39	06:29 06:53-07:14/21	05:34 21:00-21:05/5	05:14 05:45-06:29/44
	17:02	18:01	18:52 17:51-18:14/23	20:47 19:58-20:19/21	21:37 06:02-06:33/31	22:06 21:12-21:31/19
22	08:36	07:42 17:23-17:35/12	06:38 07:02-07:39/37	06:27 06:51-07:13/22	05:33 21:02-21:07/5	05:14 05:46-06:30/44
	17:04	18:03	18:54 17:52-18:11/19	20:48 19:58-20:20/22	21:38 06:01-06:31/30	22:06 21:13-21:32/19
23	08:35	07:40 17:23-17:37/14	06:36 06:59-07:37/38	06:25 06:49-07:13/24	05:31 21:03-21:07/4	05:14 05:46-06:30/44
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24	08:34	07:38 17:24-17:39/15	06:34 06:57-07:36/39	06:23 06:47-07:12/25	05:30 05:58-06:25/27	05:15 05:46-06:30/44
	17:08	18:06	18:57 17:59-18:04/5	20:52 19:58-20:24/26	21:41 21:04-21:08/4	22:06 21:13-21:32/19
25	08:32	07:36 17:26-17:41/15	06:31 06:54-07:34/40	06:21 06:45-07:12/27	05:29 05:57-06:25/28	05:15 05:47-06:31/44
	17:10	18:08	18:59	20:54 19:59-20:25/26	21:42 21:04-21:10/6	22:06 21:14-21:32/18
26	08:31	07:34 17:28-17:43/15	06:29 06:52-07:32/40	06:18 06:43-07:11/28	05:28 05:56-06:24/28	05:15 05:47-06:31/44
	17:11	18:10	19:01	20:55 19:59-20:27/28	21:44 21:05-21:11/6	22:06 21:13-21:32/19
27	08:29 16:39-16:41/2	07:31 17:32-17:45/13	06:27 06:50-07:30/40	06:16 06:41-07:10/29	05:27 05:55-06:24/29	05:16 05:47-06:31/44
	17:13	18:12	19:03	20:57 20:00-20:29/29	21:45 21:05-21:12/7	22:06 21:13-21:31/18
28	08:28 16:39-16:44/5	07:29 17:33-17:47/14	06:24 06:47-07:25/38	06:14 06:39-07:08/29	05:25 05:54-06:24/30	05:16 05:48-06:31/43
	17:15	18:14	19:04	20:59 20:01-20:30/29	21:46 21:05-21:13/8	22:06 21:14-21:32/18
29	08:27 16:38-16:45/7		07:22 07:45-08:23/38	06:12 06:37-07:07/30	05:24 05:53-06:23/30	05:17 05:49-06:32/43
	17:17		20:06	21:01 20:03-20:32/29	21:48 21:06-21:14/8	22:06 21:13-21:31/18
30	08:25 16:38-16:47/9		07:19 07:43-08:21/38	06:10 06:35-07:05/30	05:23 05:52-06:24/32	05:18 05:49-06:31/42
	17:19		20:08	21:02 20:04-20:33/29	21:49 21:06-21:15/9	22:06 21:14-21:31/17
31	08:24 16:39-16:50/11		07:17 07:40-08:18/38		05:22 05:52-06:24/32	
	17:21		20:10		21:50 21:07-21:17/10	
Potential sun hours	256	276	367	418	489	503
Sum of minutes with flicker	920	442	1466	1031	1497	1750

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

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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar per WTG

Calculation: Expected Scenario (cumulative) WTG: 2 - T2

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	July	August	September	October	November	December
1	05:18 05:50-06:32/42	05:56 06:25-06:57/32	06:47 07:24-07:39/15	07:38 08:04-08:37/33	07:33 16:17-16:40/23	08:26 15:45-15:52/7 09:36-09:59/23
	22:06 21:14-21:31/17	21:32 20:29-20:58/29	20:29	19:18 18:21-18:49/28	17:10	16:28 15:20-15:39/19
2	05:19 21:14-21:31/17	05:58 06:27-06:59/32	06:49 07:22-07:40/18	07:40 08:05-08:36/31	07:35 16:15-16:38/23	08:27 15:44-15:53/9 09:36-10:00/24
	22:05 05:50-06:31/41	21:31 20:29-20:59/30	20:26	19:15 18:20-18:47/27	17:08	16:27 15:13-15:40/27
3	05:20 21:14-21:30/16	05:59 06:28-07:00/32	06:51 07:20-07:41/21	07:41 08:07-08:36/29	07:37 16:13-16:36/23	08:29 15:43-15:52/9 09:35-10:01/26
	22:05 05:51-06:32/41	21:29 20:28-20:58/30	20:24	19:13 18:19-18:45/26	17:06	16:27 15:11-15:41/30
4	05:20 21:14-21:30/16	06:01 06:30-07:01/31	06:52 07:19-07:42/23	07:43 08:09-08:36/27	07:39 16:12-16:34/22	08:30 15:44-15:51/7 09:35-10:02/27
	22:04 05:52-06:32/40	21:27 20:28-20:57/29	20:22	19:10 18:18-18:43/25	17:04	16:26 15:10-15:42/32
5	05:21 21:15-21:30/15	06:02 06:31-07:01/30	06:54 07:20-07:41/21	07:45 08:11-08:35/24	07:41 16:11-16:32/21	08:32 15:09-15:50/41
	22:04 05:53-06:32/39	21:25 20:27-20:55/28	20:19	19:08 18:17-18:40/23	17:02	16:25 09:35-10:03/28
6	05:22 21:14-21:29/15	06:04 06:33-07:02/29	06:56 07:22-07:58/36	07:47 08:12-08:34/22	07:43 16:10-16:30/20	08:33 15:08-15:49/41
	22:03 05:54-06:32/38	21:24 20:26-20:54/28	20:17	19:06 18:16-18:37/21	17:01	16:25 09:35-10:04/29
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	22:03 05:54-06:32/38	21:22 20:23-20:52/29	20:15	19:03 18:16-18:35/19	16:59	16:25 09:35-10:05/30
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	21:34 20:30-20:57/27	20:31		17:12		16:32 09:34-10:17/43
Potential sun hours	506	456	381	330	263	240
Sum of minutes with flicker	1421	1407	1331	738	349	2472

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

Licensed user:
Jennings O'Donovan
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
abyrne / abyrne@jodireland.com

Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar per WTG

Calculation: Expected Scenario (cumulative) WTG: 3 - T3

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January	February	March	April	May	June
1	08:50 09:23-09:42/19 16:33 15:19-15:57/38	08:22 16:32-16:52/20 17:22	07:27 16:38-17:32/54 18:16	07:15 20:11	06:08 06:33-06:45/12 06:49-07:07/18 21:04 19:38-20:35/57	05:21 20:13-21:18/65 06:02-06:13/11 21:51 05:51-05:56/5
2	08:50 09:22-09:42/20 16:34 15:20-15:58/38	08:20 16:32-16:54/22 17:24	07:25 07:49-07:51/2 18:18 16:40-17:31/51	07:12 07:35-07:37/2 20:13	06:06 06:31-06:45/14 06:50-07:05/15 21:06 19:38-20:36/58	05:21 20:13-21:19/66 06:03-06:11/8 21:52 05:50-05:57/7
3	08:50 09:22-09:42/20 16:36 15:21-16:00/39	08:19 16:33-16:55/22 17:26	07:23 07:46-07:51/5 18:19 16:40-17:29/49	07:10 07:33-07:37/4 20:15	06:04 06:30-06:45/15 06:54-07:02/8 21:07 19:38-20:38/60	05:20 20:13-21:20/67 06:07-06:09/2 21:54 05:50-05:57/7
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31	08:24 16:32-16:50/18 17:21		07:17 07:45-07:53/8 20:10		05:22 20:13-21:17/64 06:01-06:14/13 21:50 05:52-05:56/4	
Potential sun hours	256	276	367	418	489	503
Sum of minutes with flicker	1634	1182	827	1297	2551	2541

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

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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar per WTG

Calculation: Expected Scenario (cumulative) WTG: 3 - T3

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	July	August	September	October	November	December
1	05:18 20:20-21:31/71	05:56 06:25-06:43/18	06:47 07:14-07:30/16	07:38 08:04-08:25/21	07:33 16:07-16:40/33	08:26 08:59-09:25/26
	22:06 05:50-06:03/13	21:32 19:57-21:02/65	20:29 19:49-20:01/12	19:18	17:10	16:28 15:12-15:54/42
2	05:19 20:20-21:31/71	05:58 06:27-06:44/17	06:49 07:16-07:32/16	07:40 08:05-08:26/21	07:35 16:08-16:38/30	08:27 09:01-09:26/25
	22:05 05:50-06:03/13	21:31 19:56-21:00/64	20:26 19:50-19:58/8	19:15	17:08	16:27 15:12-15:53/41
3	05:20 20:20-21:30/70	05:59 06:28-06:45/17	06:51 07:17-07:32/15	07:41 08:07-08:27/20	07:37 16:08-16:36/28	08:29 09:02-09:26/24
	22:05 05:51-06:03/12	21:29 19:54-20:58/64	20:24 19:52-19:56/4	19:13	17:06	16:27 15:11-15:52/41
4	05:20 20:20-21:30/70	06:01 06:30-06:49/19	06:52 07:19-07:33/14	07:43 08:09-08:28/19	07:39 16:06-16:34/28	08:30 09:04-09:28/24
	22:04 05:52-06:04/12	21:27 19:53-20:57/64	20:22	19:10	17:04	16:26 15:11-15:52/41
5	05:21 20:21-21:30/69	06:02 06:31-06:50/19	06:54 07:20-07:33/13	07:45 08:11-08:28/17	07:41 16:05-16:32/27	08:32 09:05-09:28/23
	22:04 05:53-06:04/11	21:25 19:52-20:55/63	20:19	19:08 17:30-17:53/23	17:02	16:25 15:10-15:50/40
6	05:22 20:20-21:29/69	06:04 06:33-06:52/19	06:56 07:22-07:33/11	07:47 08:12-08:28/16	07:43 16:04-16:30/26	08:33 09:07-09:29/22
	22:03 05:54-06:04/10	21:23 19:51-20:54/63	20:17	19:06 17:25-17:57/32	17:00	16:25 15:09-15:49/40
7	05:23 20:20-21:28/68	06:06 06:34-06:52/18	06:57 07:24-07:33/9	07:48 08:14-08:28/14	07:45 16:04-16:28/24	08:34 09:08-09:30/22
	22:03 05:54-06:04/10	21:22 19:50-20:52/62	20:15	19:03 17:22-17:59/37	16:59	16:25 15:10-15:49/39
8	05:24 20:20-21:28/68	06:07 06:36-06:53/17	06:59 07:25-07:32/7	07:50 08:16-08:28/12	07:46 16:03-16:26/23	08:35 09:09-09:30/21
	22:02 05:55-06:04/9	21:20 19:49-20:50/61	20:12	19:01 17:20-18:01/41	16:57	16:24 15:09-15:49/40
9	05:25 20:20-21:27/67	06:09 06:37-06:53/16	07:01 07:27-07:32/5	07:52 08:18-08:27/9	07:48 16:03-16:24/21	08:37 09:10-09:30/20
	22:01 05:56-06:04/8	21:18 19:48-20:48/60	20:10	18:59 17:18-18:02/44	16:55	16:24 15:09-15:48/39
10	05:26 20:20-21:27/67 06:12-06:17/5	06:11 06:39-06:54/15 07:01-07:12/11	07:02 07:28-07:30/2	07:54 08:20-08:27/7	07:50 16:03-16:22/19	08:38 09:12-09:32/20
	22:01 05:57-06:04/7	21:16 19:48-20:47/59	20:08	18:57 17:15-18:03/48	16:54	16:24 15:10-15:48/38
11	05:27 20:21-21:26/65 06:10-06:19/9	06:12 06:41-06:55/14 06:59-07:15/16	07:04	07:55 08:21-08:25/4	07:52 16:03-16:21/18	08:39 09:13-09:32/19
	22:00 05:58-06:04/6	21:14 19:47-20:44/57	20:05	18:54 17:13-18:04/51	16:52	16:23 15:10-15:48/38
12	05:28 20:21-21:25/64 06:09-06:21/12	06:14 06:42-06:54/12 06:57-07:16/19	07:06 07:38-07:45/7	07:57 08:23-08:24/1	07:54 16:03-16:19/16	08:40 09:14-09:33/19
	21:59 05:59-06:04/5	21:12 19:46-20:43/57	20:03	18:52 17:12-18:04/52	16:50	16:23 15:10-15:48/38
13	05:29 20:21-21:24/63 06:08-06:22/14	06:15 06:44-06:55/11 06:56-07:18/22	07:08 07:34-07:46/12	07:59 17:11-18:05/54	07:56 16:03-16:17/14	08:41 09:15-09:33/18
	21:58 06:00-06:04/4	21:10 19:46-20:41/55	20:00	18:50	16:49 08:50-08:53/3	16:23 15:10-15:47/37
14	05:30 20:20-21:23/63 06:08-06:24/16	06:17 06:45-07:18/33	07:09 07:35-07:48/13	08:01 17:10-18:06/56	07:57 16:04-16:16/12	08:42 09:16-09:34/18
	21:57 06:02-06:04/2	21:08 19:45-20:39/54	19:58	18:47	16:47 08:46-08:57/11	16:23 15:11-15:47/36
15	05:32 20:19-21:23/64 06:07-06:25/18	06:19 06:47-07:19/32	07:11 07:37-07:49/12	08:02 17:09-18:06/57	07:59 16:04-16:14/10	08:43 09:17-09:34/17
	21:56 06:03-06:04/1	21:06 19:45-20:37/52	19:56	18:45	16:46 08:45-08:59/14	16:23 15:11-15:47/36
16	05:33 20:17-21:22/65	06:20 06:48-07:19/31	07:13 07:38-07:48/10	08:04 17:08-18:07/59	08:01 16:05-16:12/7 08:43-09:01/18	08:44 09:18-09:35/17
	21:55 06:07-06:25/18	21:04 19:44-20:35/51	19:53	18:43	16:44 15:43-15:50/7	16:23 15:12-15:48/36
17	05:34 20:15-21:21/66	06:22 06:50-07:20/30	07:14 07:40-07:52/12	08:06 17:07-18:06/59	08:03 16:05-16:11/6 08:43-09:02/19	08:45 09:19-09:36/17
	21:54 06:06-06:26/20	21:02 19:44-20:33/49	19:51	18:41	16:43 15:40-15:53/13	16:24 15:11-15:47/36
18	05:35 20:14-21:20/66	06:24 06:52-07:21/29	07:16 07:42-07:59/17	08:08 17:06-18:06/60	08:05 16:06-16:09/3 08:42-09:03/21	08:45 09:19-09:35/16
	21:53 06:06-06:26/20	21:00 19:43-20:31/48	19:48	18:39	16:42 15:39-15:55/16	16:24 15:12-15:47/35
19	05:37 20:13-21:19/66	06:26 06:53-07:20/27	07:18 07:43-08:02/19	08:10 17:06-18:06/60	08:06 16:07-16:08/1 08:42-09:04/22	08:46 09:20-09:36/16
	21:51 06:07-06:27/20	20:58 19:44-20:29/45	19:46	18:36	16:40 15:38-15:57/19	16:24 15:13-15:48/35
20	05:38 06:09-06:28/19	06:27 06:55-07:21/26	07:19 07:45-08:05/20	08:11 17:06-18:05/59	08:08 15:37-15:58/21 08:42-09:05/23	08:47 09:21-09:37/16
	21:50 20:12-21:18/66	20:55 19:44-20:27/43	19:44	18:34	16:39 15:28-15:32/4	16:24 15:12-15:48/36
21	05:40 06:10-06:28/18	06:29 06:56-07:20/24	07:21 07:47-08:06/19	08:13 17:05-18:03/58	08:10 15:24-15:58/34	08:47 09:21-09:37/16
	21:49 20:11-21:17/66	20:53 19:43-20:25/42	19:41	18:32	16:38 08:42-09:08/26	16:25 15:13-15:49/36
22	05:41 06:11-06:28/17	06:31 06:58-07:20/22	07:23 07:48-08:08/20	08:15 17:05-18:01/56	08:11 15:22-15:59/37	08:48 09:22-09:38/16
	21:48 20:10-21:15/65	20:51 19:44-20:23/39	19:39	18:30	16:37 08:43-09:11/28	16:25 15:13-15:48/35
23	05:42 06:13-06:29/16	06:32 07:00-07:20/20	07:24 07:50-08:10/20	08:17 17:05-17:59/54	08:13 15:21-16:00/39	08:48 09:22-09:38/16
	21:46 20:09-21:15/66	20:49 19:43-20:20/37	19:37	18:28	16:35 08:45-09:13/28	16:26 15:14-15:50/36
24	05:44 06:14-06:29/15	06:34 07:01-07:19/18	07:26 07:52-08:12/20	08:19 17:05-17:56/51	08:15 08:47-09:14/27	08:49 09:22-09:38/16
	21:45 20:08-21:13/65	20:47 19:44-20:19/35	19:34	18:26	16:34 15:20-16:01/41	16:26 15:14-15:50/36
25	05:45 06:15-06:29/14	06:36 07:03-07:20/17	07:28 07:53-08:13/20	07:21 16:05-16:54/49	08:17 08:49-09:16/27	08:49 09:23-09:39/16
	21:43 20:07-21:12/65	20:44 19:44-20:17/33	19:32	17:24	16:33 15:20-16:00/40	16:27 15:15-15:50/35
26	05:47 06:17-06:29/12	06:37 07:04-07:21/17	07:29 07:55-08:16/21	07:22 16:05-16:52/47	08:18 08:51-09:17/26	08:49 09:23-09:39/16
	21:42 20:07-21:11/64	20:42 19:44-20:14/30	19:29	17:22	16:32 15:19-15:59/40	16:28 15:16-15:52/36
27	05:48 06:18-06:36/18	06:39 07:06-07:23/17	07:31 07:57-08:18/21	07:24 16:06-16:50/44	08:20 08:52-09:18/26	08:50 09:23-09:40/17
	21:40 20:06-21:09/63	20:40 19:45-20:12/27	19:27	17:20	16:31 15:18-15:57/39	16:28 15:16-15:52/36
28	05:50 06:20-06:39/19	06:41 07:08-07:24/16	07:33 07:58-08:18/20	07:26 16:06-16:48/42	08:21 08:54-09:20/26	08:50 09:23-09:40/17
	21:39 20:04-21:07/63	20:38 19:45-20:10/25	19:25	17:18	16:30 15:18-15:56/38	16:29 15:17-15:53/36
29	05:51 06:21-06:40/19	06:42 07:09-07:24/15	07:35 08:00-08:19/19	07:28 16:07-16:46/39	08:23 08:56-09:22/26	08:50 09:23-09:40/17
	21:37 20:02-21:06/64	20:35 19:46-20:08/22	19:22	17:16	16:29 15:16-15:56/40	16:30 15:17-15:54/37
30	05:53 06:22-06:41/19	06:44 07:11-07:27/16	07:36 08:02-08:22/20	07:30 16:07-16:44/37	08:24 08:57-09:23/26	08:50 09:23-09:41/18
	21:36 20:00-21:05/65	20:33 19:47-20:06/19	19:20	17:14	16:29 15:13-15:54/41	16:31 15:18-15:55/37
31	05:54 06:24-06:42/18	06:46 07:12-07:28/16		07:32 16:07-16:42/35		08:50 09:23-09:41/18
	21:34 19:59-21:04/65	20:31 19:47-20:03/16		17:12		16:32 15:19-15:56/37
Potential sun hours	506	456	381	330	263	240
Sum of minutes with flicker	2528	2147	454	1465	1212	1744

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

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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar per WTG

Calculation: Expected Scenario (cumulative) WTG: 4 - T4

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January		February		March		April		May		June	
1	08:50	15:33-15:58/25	08:22	08:49-09:07/18	07:27	17:34-17:49/15	07:15	07:38-07:51/13	06:08	06:33-06:44/11	05:21	05:51-06:06/15
	16:33	14:21-15:25/64	17:22	16:32-16:52/20	18:16	17:06-17:11/5	20:11	19:07-19:45/38	21:04	19:26-20:21/55	21:51	
2	08:50	15:34-15:57/23	08:20	08:47-09:07/20	07:25	17:34-17:51/17	07:12	07:35-07:50/15	06:06	06:31-06:43/12	05:21	05:50-06:05/15
	16:34	14:21-15:24/63	17:24	16:31-16:54/23	18:18		20:13	19:06-19:46/40	21:06	19:26-20:20/54	21:52	
3	08:50	15:39-15:58/19	08:19	08:45-09:07/22	07:23	17:33-17:52/19	07:10	07:33-07:50/17	06:04	06:30-06:44/14	05:20	05:49-06:05/16
	16:36	14:22-15:24/62	17:26	16:31-16:55/24	18:19		20:15	19:06-19:49/43	21:07	19:26-20:20/54	21:54	
4	08:50	15:41-15:58/17	08:17	08:44-09:08/24	07:20	17:33-17:55/22	07:08	07:31-07:50/19	06:02	06:28-06:43/15	05:19	05:49-06:06/17
	16:37	14:24-15:25/61	17:28	16:31-16:57/26	18:21		20:17	19:06-19:51/45	21:09	19:28-20:20/52	21:55	
5	08:49	15:41-15:58/17	08:15	08:42-09:08/26	07:18	17:33-17:57/24	07:05	07:29-07:49/20	06:00	06:26-06:41/15	05:18	05:48-06:06/18
	16:38	14:24-15:25/61	17:30	16:31-17:00/29	18:23		20:18	19:05-19:52/47	21:11	19:28-20:19/51	21:56	
6	08:49	15:43-15:58/15	08:14	08:40-09:07/27	07:16	17:33-17:58/25	07:03	07:26-07:48/22	05:59	06:24-06:40/16	05:18	05:48-06:07/19
	16:39	14:26-15:25/59	17:32	16:31-17:02/31	18:25		20:20	19:05-19:54/49	21:13	19:28-20:18/50	21:57	
7	08:49	15:43-15:57/14	08:12	08:38-09:07/29	07:13	17:33-18:00/27	07:01	07:24-07:46/22	05:57	06:23-06:38/15	05:17	05:47-06:06/19
	16:41	14:27-15:25/58	17:34	16:31-17:04/33	18:27		20:22	19:05-19:56/51	21:14	19:29-20:17/48	21:58	
8	08:48	15:44-15:56/12	08:10	08:36-09:06/30	07:11	17:34-18:03/29	06:58	07:22-07:45/23	05:55	06:21-06:36/15	05:16	05:47-06:07/20
	16:42	14:28-15:24/56	17:36	16:31-17:06/35	18:29		20:24	19:05-19:58/53	21:16	19:30-20:17/47	21:59	
9	08:48	15:47-15:56/9 14:31-14:50/19	08:08	16:32-17:08/36	07:09	17:34-18:04/30	06:56	07:19-07:41/22	05:53	06:19-06:34/15	05:16	05:46-06:07/21
	16:43	14:51-15:25/34	17:38	08:34-09:05/31	18:30		20:25	19:05-19:58/53	21:18	19:31-20:15/44	21:59	
10	08:47	15:49-15:55/6 14:33-14:48/15	08:06	16:32-17:10/38	07:07	17:36-18:06/30	06:54	07:17-07:38/21	05:51	06:18-06:31/13	05:15	05:46-06:07/21
	16:45	14:53-15:24/31	17:40	08:32-09:04/32	18:32		20:27	19:06-20:00/54	21:19	19:31-20:14/43	22:00	
11	08:46	14:55-15:23/28	08:04	16:32-17:13/41	07:04	17:38-18:08/30	06:51	07:15-07:37/22	05:50	06:16-06:30/14	05:15	05:46-06:08/22
	16:46	14:36-14:46/10	17:42	08:30-09:03/33	18:34		20:29	19:07-20:02/55	21:21	19:33-20:14/41	22:01	
12	08:46	14:59-15:23/24	08:03	16:33-17:15/42	07:02	17:39-18:10/31	06:49	07:13-07:35/22	05:48	06:14-06:29/15	05:15	05:45-06:07/22
	16:48		17:44	08:28-09:01/33	18:36		20:31	19:07-20:03/56	21:23	19:33-20:12/39	22:02	
13	08:45	15:00-15:22/22	08:01	16:33-17:17/44	07:00	17:44-18:12/28	06:47	07:10-07:32/22	05:46	06:13-06:28/15	05:14	05:45-06:07/22
	16:49		17:45	08:26-08:58/32	18:38		20:32	19:08-20:05/57	21:24	19:35-20:12/37	22:02	
14	08:44	15:02-15:21/19	07:59	16:34-17:19/45	06:57	17:46-18:13/27	06:45	07:08-07:29/21	05:45	06:11-06:27/16	05:14	05:45-06:08/23
	16:51		17:47	08:24-08:56/32	18:39		20:34	19:09-20:07/58	21:26	19:36-20:10/34	22:03	
15	08:43	15:04-15:19/15	07:57	16:35-17:21/46	06:55	17:48-18:15/27	06:42	07:06-07:27/21	05:43	06:10-06:26/16	05:14	05:45-06:08/23
	16:52		17:49	08:22-08:55/33	18:41		20:36	19:11-20:09/58	21:27	19:38-20:09/31	22:04	
16	08:42	15:07-15:17/10	07:55	16:36-17:23/47	06:52	17:50-18:17/27	06:40	07:04-07:25/21	05:41	06:08-06:24/16	05:14	05:45-06:08/23
	16:54		17:51	08:20-08:54/34	18:43		20:38	19:13-20:11/58	21:29	19:39-20:07/28	22:04	
17	08:41		07:53	16:38-17:25/47	06:50	17:52-18:19/27	06:38	07:02-07:22/20	05:40	06:07-06:23/16	05:14	05:45-06:09/24
	16:56		17:53	08:18-08:52/34	18:45		20:40	19:14-20:12/58	21:31	19:41-20:06/25	22:05	
18	08:40	09:10-09:11/1	07:51	16:39-17:27/48	06:48	18:00-18:20/20	06:36	06:59-07:19/20	05:38	06:06-06:22/16	05:14	05:45-06:09/24
	16:57		17:55	08:16-08:50/34	18:47		20:41	19:17-20:13/56	21:32	19:44-20:04/20	22:05	
19	08:39	09:09-09:12/3	07:49	16:41-17:29/48	06:45	18:01-18:19/18	06:33	06:57-07:17/20	05:37	06:04-06:19/15	05:14	05:45-06:09/24
	16:59		17:57	08:13-08:42/29	18:48		20:43	19:25-20:15/50	21:34	19:46-20:00/14	22:05	
20	08:38	09:07-09:11/4	07:46	16:44-17:31/47	06:43	18:02-18:16/14	06:31	06:55-07:14/19	05:35	06:03-06:18/15	05:14	05:45-06:09/24
	17:01		17:59	08:13-08:42/29	18:50		20:45	19:25-20:17/52	21:35	19:52-19:55/3	22:06	
21	08:37	09:06-09:12/6	07:44	16:51-17:33/42	06:41	18:06-18:13/7	06:29	06:55-07:06/11	05:34	06:02-06:17/15	05:14	05:45-06:09/24
	17:02		18:01	08:14-08:41/27	18:52	18:23-18:26/3	20:47	19:25-20:19/54	21:37		22:06	
22	08:36	09:05-09:12/7	07:42	16:52-17:35/43	06:38	18:19-18:27/8	06:27	06:57-07:04/7	05:33	06:01-06:16/15	05:14	05:46-06:10/24
	17:04		18:03	08:15-08:41/26	18:54		20:48	19:25-20:20/55	21:38		22:06	
23	08:35	09:03-09:12/9	07:40	16:52-17:33/41	06:36	18:17-18:30/13	06:25	19:25-20:22/57	05:31	05:59-06:13/14	05:14	05:46-06:10/24
	17:06		18:04	08:16-08:40/24	18:55		20:50		21:40		22:06	
24	08:34	09:02-09:12/10	07:38	16:53-17:32/39	06:34	18:16-18:32/16	06:23	06:47-06:48/1	05:30	05:58-06:10/12	05:15	05:46-06:10/24
	17:08		18:06	08:16-08:37/21	18:57		20:52	19:25-20:24/59	21:41		22:06	
25	08:32	09:00-09:11/11	07:36	17:38-17:41/3 08:18-08:35/17	06:31	18:13-18:33/20	06:21	06:45-06:48/3	05:29	05:57-06:10/13	05:15	05:47-06:11/24
	17:09	16:36-16:37/1	18:08	16:54-17:31/37	18:59		20:54	19:26-20:23/57	21:42		22:06	
26	08:31	08:59-09:11/12	07:34	17:37-17:43/6 08:21-08:32/11	06:29	18:12-18:35/23	06:18	06:43-06:48/5	05:28	05:56-06:09/13	05:15	05:47-06:10/23
	17:11	16:36-16:39/3	18:10	16:56-17:30/34	19:01		20:55	19:26-20:23/57	21:44		22:06	
27	08:29	08:57-09:10/13	07:31	17:35-17:45/10	06:26	18:10-18:36/26	06:16	06:41-06:48/7	05:26	05:55-06:09/14	05:16	05:47-06:10/23
	17:13	16:34-16:41/7	18:12	16:57-17:27/30	19:03		20:57	19:26-20:23/57	21:45		22:06	
28	08:28	08:56-09:09/13	07:29	17:34-17:47/13	06:24	06:47-06:50/3	06:14	06:39-06:47/8	05:25	05:54-06:08/14	05:16	05:48-06:11/23
	17:15	16:34-16:44/10	18:14	17:00-17:24/24	19:04	18:09-18:38/29	20:59	19:26-20:23/57	21:46		22:06	
29	08:27	08:54-09:07/13			07:22	07:45-07:51/6	06:12	06:37-06:47/10	05:24	05:53-06:08/15	05:17	05:49-06:12/23
	17:17	16:33-16:45/12			20:06	19:09-19:40/31	21:01	19:26-20:22/56	21:48		22:06	
30	08:25	08:52-09:06/14			07:19	07:43-07:52/9	06:10	06:35-06:46/11	05:23	05:52-06:08/16	05:17	05:49-06:11/22
	17:19	16:32-16:47/15			20:08	19:07-19:41/34	21:02	19:26-20:22/56	21:49		22:06	
31	08:24	08:51-09:07/16			07:17	07:40-07:51/11			05:22	05:52-06:07/15		
	17:21	16:33-16:50/17			20:10	19:07-19:43/36			21:50			
Potential sun hours	256		276		367		418		489		503	
Sum of minutes with flicker		1065		1780		767		2061		1221		646

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

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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar per WTG

Calculation: Expected Scenario (cumulative) WTG: 4 - T4

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	July	August	September	October	November	December
1	05:18 05:50-06:12/22 22:06	05:56 06:25-06:39/14 21:32 19:43-20:23/40	06:47 07:14-07:36/22 20:29 19:06-20:01/55	07:38 18:20-18:49/29 19:18	07:33 16:01-16:40/39 17:10 08:02-08:34/32	08:26 14:37-15:05/28 16:28 14:18-14:28/10
2	05:19 05:50-06:11/21 22:05	05:57 06:27-06:40/13 21:31 19:43-20:25/42	06:49 07:16-07:37/21 20:26 19:04-19:58/54	07:40 18:17-18:47/30 19:15	07:35 16:01-16:38/37 17:08 08:04-08:35/31	08:27 15:32-15:37/5 14:16-14:31/15 16:27 14:36-15:07/31
3	05:20 05:51-06:12/21 22:05	05:59 06:28-06:41/13 21:29 19:41-20:25/44	06:51 07:17-07:39/22 20:24 19:03-19:56/53	07:41 18:15-18:45/30 19:13	07:37 08:06-08:36/30 17:06 16:01-16:36/35	08:29 15:30-15:39/9 14:14-14:33/19 16:27 14:34-15:08/34
4	05:20 05:52-06:12/20 22:04	06:01 06:30-06:45/15 21:27 19:41-20:26/45	06:52 07:19-07:42/23 20:22 19:03-19:55/52	07:43 18:13-18:43/30 19:10	07:39 08:08-08:37/29 17:04 16:01-16:34/33	08:30 15:30-15:41/11 16:26 14:14-15:09/55
5	05:21 05:53-06:13/20 22:04	06:02 06:31-06:46/15 21:25 19:39-20:26/47	06:54 07:20-07:42/22 20:19 19:01-19:52/51	07:45 18:11-18:40/29 19:08	07:41 08:10-08:37/27 17:02 16:01-16:32/31	08:32 15:29-15:42/13 16:25 14:12-15:10/58
6	05:22 05:54-06:13/19 22:03	06:04 06:33-06:48/15 21:24 19:39-20:28/49	06:56 07:22-07:44/22 20:17 19:01-19:50/49	07:47 18:10-18:37/27 19:06	07:43 08:12-08:38/26 17:00 16:01-16:30/29	08:33 15:28-15:43/15 16:25 14:11-15:10/59
7	05:23 05:54-06:12/18 22:03	06:06 06:34-06:49/15 21:22 19:37-20:28/51	06:57 07:24-07:44/20 20:15 19:00-19:47/47	07:48 18:09-18:35/26 19:03	07:45 08:14-08:38/24 16:59 16:02-16:28/26	08:34 15:28-15:45/17 16:25 14:12-15:12/60
8	05:24 05:55-06:13/18 22:02	06:07 06:36-06:51/15 21:20 19:37-20:29/52	06:59 07:25-07:44/19 20:12 19:00-19:45/45	07:50 18:09-18:33/24 19:01	07:46 08:16-08:38/22 16:57 16:02-16:26/24	08:35 15:28-15:45/17 16:24 14:11-15:12/61
9	05:25 05:56-06:13/17 22:01	06:09 06:38-06:52/14 21:18 19:36-20:28/52	07:01 07:27-07:44/17 20:10 19:00-19:43/43	07:52 18:08-18:31/23 18:59	07:48 08:18-08:38/20 16:55 16:02-16:24/22	08:37 15:27-15:46/19 16:24 14:10-15:13/63
10	05:26 05:57-06:13/16 22:01	06:10 06:39-06:52/13 21:16 19:36-20:29/53	07:02 07:28-07:44/16 20:08 18:59-19:40/41	07:54 18:07-18:28/21 18:57	07:50 08:20-08:38/18 16:54 16:03-16:22/19	08:38 15:25-15:47/22 16:24 14:11-15:14/63
11	05:27 05:58-06:13/15 22:00	06:12 06:41-06:53/12 21:14 19:34-20:29/55	07:04 07:30-07:44/14 20:05 18:59-19:38/39	07:55 18:07-18:26/19 18:54	07:52 08:22-08:38/16 16:52 16:04-16:21/17	08:39 15:23-15:48/25 16:23 14:11-15:15/64
12	05:28 05:59-06:14/15 21:59	06:14 06:42-06:53/11 21:12 19:34-20:30/56	07:06 07:32-07:43/11 20:03 18:59-19:36/37	07:57 18:07-18:23/16 18:52	07:54 08:24-08:38/14 16:50 16:04-16:19/15	08:40 15:23-15:48/25 16:23 14:11-15:15/64
13	05:29 06:00-06:15/15 21:58	06:15 06:44-06:54/10 21:10 19:34-20:30/56	07:08 07:33-07:42/9 20:00 18:59-19:33/34	07:59 18:07-18:21/14 17:36-17:47/11 18:50 17:51-17:52/1	07:56 08:26-08:39/13 16:49 16:05-16:17/12	08:41 15:22-15:47/25 16:23 14:11-15:16/65
14	05:30 06:02-06:17/15 21:57	06:17 06:45-06:54/9 21:08 19:33-20:30/57	07:09 07:35-07:41/6 19:58 18:59-19:31/32	08:01 18:08-18:19/11 18:47 17:32-17:58/26	07:57 08:28-08:41/13 16:47 16:06-16:16/10	08:42 15:22-15:47/25 16:23 14:11-15:16/65
15	05:32 06:03-06:18/15 21:56	06:19 06:47-06:55/8 21:06 19:33-20:30/57	07:11 07:37-07:40/3 19:56 19:00-19:29/29	08:02 18:08-18:17/9 08:57-09:01/4 18:45 17:30-18:01/31	07:59 08:30-08:43/13 16:46 16:07-16:14/7	08:43 15:22-15:47/25 16:23 14:11-15:17/66
16	05:33 06:04-06:18/14 21:55	06:20 06:48-06:54/6 21:04 19:32-20:30/58	07:13 18:59-19:26/27 19:53	08:04 18:09-18:15/6 08:52-09:06/14 18:43 17:28-18:02/34	08:01 08:32-08:44/12 16:44 16:09-16:12/3	08:44 15:23-15:48/25 16:23 14:12-15:18/66
17	05:34 06:05-06:19/14 21:54	06:22 06:50-06:54/4 21:02 19:32-20:30/58	07:14 19:00-19:24/24 19:51	08:06 18:09-18:12/3 08:50-09:08/18 18:41 17:25-18:03/38	08:03 08:34-08:45/11 16:43 16:10-16:11/1	08:45 15:22-15:47/25 16:24 14:11-15:18/67
18	05:35 06:06-06:19/13 21:53	06:24 06:52-06:54/2 21:00 19:31-20:29/58	07:16 19:00-19:21/21 19:48	08:08 17:24-18:04/40 18:39 08:47-09:09/22	08:05 08:36-08:46/10 16:42	08:45 15:22-15:47/25 16:24 14:12-15:18/66
19	05:37 06:07-06:19/12 21:51	06:25 19:31-20:29/58 20:58	07:18 19:02-19:19/17 19:46	08:10 17:23-18:04/41 18:36 08:46-09:10/24	08:06 08:38-08:47/9 16:40	08:46 15:23-15:48/25 16:24 14:12-15:19/67
20	05:38 06:09-06:20/11 21:50	06:27 19:31-20:27/56 20:55	07:19 19:03-19:17/14 19:44	08:11 17:22-18:05/43 18:34 08:45-09:11/26	08:08 08:40-08:47/7 16:39	08:47 15:23-15:48/25 16:24 14:12-15:19/67
21	05:39 06:10-06:25/15 21:49	06:29 07:01-07:09/8 20:53 19:30-20:25/55	07:21 19:04-19:13/9 19:41	08:13 17:18-18:03/45 18:32 08:44-09:12/28	08:10 08:42-08:48/6 16:38	08:47 15:24-15:48/24 16:25 14:13-15:20/67
22	05:41 06:11-06:26/15 21:48	06:31 06:59-07:11/12 20:51 19:30-20:23/53	07:23 18:53-18:55/2 19:39 19:06-19:11/5	08:15 17:13-18:01/48 18:30 08:43-09:12/29	08:12 08:43-08:47/4 16:37	08:48 15:24-15:48/24 16:25 14:13-15:20/67
23	05:42 06:13-06:28/15 21:46	06:32 07:00-07:20/20 20:49 19:29-20:20/51	07:24 18:48-19:00/12 19:37	08:17 17:11-17:59/48 18:28 08:44-09:16/32	08:13 08:45-08:48/3 16:35	08:48 15:25-15:50/25 16:26 14:14-15:21/67
24	05:44 06:14-06:29/15 21:45 19:59-20:09/10	06:34 07:01-07:21/20 20:47 19:29-20:19/50	07:26 18:44-19:01/17 19:34	08:19 17:08-17:56/48 18:26 08:46-09:20/34	08:15 08:47-08:48/1 16:34	08:49 15:25-15:50/25 16:26 14:14-15:21/67
25	05:45 06:15-06:30/15 21:43 19:55-20:12/17	06:36 07:03-07:23/20 20:44 19:21-20:17/56	07:28 18:43-19:02/19 19:32	07:21 16:07-16:54/47 17:24 07:48-08:22/34	08:17 16:33	08:49 15:26-15:51/25 16:27 14:15-15:22/67
26	05:47 06:17-06:33/16 21:42 19:53-20:15/22	06:37 07:04-07:24/20 20:42 19:17-20:14/57	07:29 18:37-19:02/25 19:29	07:22 16:06-16:52/46 17:22 07:50-08:24/34	08:18 14:47-14:56/9 16:32	08:49 15:27-15:52/25 16:28 14:16-15:22/66
27	05:48 06:18-06:34/16 21:40 19:51-20:17/26	06:39 07:06-07:27/21 20:40 19:15-20:12/57	07:31 18:33-19:00/27 19:27	07:24 16:04-16:50/46 17:20 07:52-08:25/33	08:20 14:43-14:58/15 16:31	08:50 15:27-15:52/25 16:28 14:16-15:23/67
28	05:50 06:20-06:36/16 21:39 19:49-20:18/29	06:41 07:08-07:29/21 20:38 19:12-20:10/58	07:33 18:29-18:57/28 19:25	07:26 16:04-16:48/44 17:18 07:54-08:26/32	08:21 14:42-15:01/19 16:30	08:50 15:28-15:53/25 16:29 14:17-15:23/66
29	05:51 06:21-06:37/16 21:37 19:48-20:20/32	06:42 07:09-07:30/21 20:35 19:10-20:08/58	07:35 18:28-18:55/27 19:22	07:28 16:03-16:46/43 17:16 07:56-08:29/33	08:23 14:41-15:03/22 16:29	08:50 15:29-15:54/25 16:30 14:18-15:23/65
30	05:53 06:22-06:38/16 21:36 19:46-20:21/35	06:44 07:11-07:33/22 20:33 19:09-20:06/57	07:36 18:26-18:52/26 19:20	07:30 16:02-16:44/42 17:14 07:58-08:31/33	08:24 14:40-15:04/24 16:29	08:50 15:30-15:55/25 16:31 14:18-15:24/66
31	05:54 06:24-06:39/15 21:34 19:45-20:23/38	06:46 07:12-07:34/22 20:31 19:07-20:03/56		07:32 16:02-16:42/40 17:12 08:00-08:33/33		08:50 15:31-15:56/25 16:32 14:19-15:24/65
Potential sun hours	506	456	381	330	263	240
Sum of minutes with flicker	710	2063	1208	1572	840	2594

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

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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar per WTG

Calculation: Expected Scenario (cumulative) WTG: 5 - Moanmore1

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:08	05:22	05:18	05:56	06:48	18:39-18:49/10	07:34	08:26
	16:33	17:23	18:16	20:12	21:04	21:52	22:06	21:33	20:29	19:18	17:10	16:28
2	08:50	08:21	07:25	07:12	06:06	05:21	05:19	05:58	06:49	18:37-18:47/10	07:36	08:28
	16:35	17:25	18:18	20:13	21:06	21:53	22:05	21:31	20:26	19:15	17:08	16:27
3	08:50	08:19	07:23	07:10	06:04	05:20	05:20	05:59	06:51	18:32-18:35/3	07:37	08:29
	16:36	17:26	18:20	20:15	21:08	21:54	22:05	21:29	20:24	19:13	18:38-18:45/7	17:06	16:27
4	08:50	08:17	07:20 17:54-17:55/1	07:08	06:03	05:19	05:20	06:01	06:53	18:29-18:37/8	07:39	08:30
	16:37	17:28	18:21	20:17	21:09	21:55	22:05	21:27	20:22	19:11	18:39-18:43/4	17:04	16:26
5	08:50	08:16	07:18 17:52-17:57/5	07:05	06:01	05:18	05:21	06:02	06:54	18:28-18:38/10	07:41	08:32
	16:38	17:30	18:23	20:19	21:11	21:56	22:04	21:26	20:19	19:08	18:40-18:41/1	17:02	16:26
6	08:49	08:14	07:16 17:51-17:58/7	07:03	05:59	05:18	05:22	06:04	06:56	18:27-18:37/10	07:43	08:33
	16:39	17:32	18:25	20:20	21:13	21:57	22:04	21:24	20:17	19:06	17:01	16:25
7	08:49	08:12	07:14 17:51-18:00/9	07:01	05:57	05:17	05:23	06:06	06:58	18:27-18:35/8	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:04	16:59	16:25
8	08:48	08:10	07:11 17:51-18:01/10	06:58	05:55	05:17	05:24	06:07	06:59	18:27-18:33/6	07:47	08:36
	16:42	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:12	19:01	16:57	16:24
9	08:48	08:08	07:09 17:51-18:00/9	06:56	05:53	05:16	05:25	06:09	07:01	18:28-18:31/3	07:48	08:37
	16:43	17:38	18:31 18:01-18:04/3	20:26	21:18	22:00	22:02	21:18	20:10	18:59	16:55	16:24
10	08:47	08:07	07:07 17:52-17:58/6	06:54	05:51	05:16	05:26	06:11	07:03	07:54	07:50	08:38
	16:45	17:40	18:32 18:00-18:06/6	20:27	21:19	22:00	22:01	21:16	20:08	18:57	16:54	16:24
11	08:47	08:05	07:04 18:00-18:08/8	06:52	05:50	05:15	05:27	06:12	07:04	07:56	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:54	16:52	16:24
12	08:46	08:03	07:02 17:59-18:10/11	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:51	16:23
13	08:45	08:01	07:00 17:59-18:09/10	06:47	05:46	05:14	05:29	06:16	07:08	07:59	07:56	08:41
	16:49	17:46	18:38	20:33	21:24	22:03	21:58	21:10	20:01	18:50	16:49	16:23
14	08:44	07:59	06:57 18:00-18:08/8	06:45	05:45	05:14	05:31	06:17	07:09	08:01	07:58	08:42
	16:51	17:48	18:40 18:13-18:14/1	20:34	21:26	22:03	21:57	21:08	19:58	18:48	16:47	16:23
15	08:44	07:57	06:55 18:02-18:05/3	06:42	05:43	05:14	05:32	06:19	07:11	08:03	07:59	08:43
	16:52	17:49	18:41 18:10-18:15/5	20:36	21:28	22:04	21:56	21:06	19:56	18:45	16:46	16:23
16	08:43	07:55	06:53 18:09-18:17/8	06:40	05:42	05:14	05:33	06:21	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:53	18:43	16:45	16:23
17	08:42	07:53	06:50 18:08-18:19/11	06:38	05:40	05:14	05:34	06:22	07:14	08:06	08:03	08:45
	16:56	17:53	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43	16:24
18	08:41	07:51	06:48 18:08-18:19/11	06:36	05:38	05:14	05:36	06:24	07:16	08:08	08:05	08:46
	16:57	17:55	18:47	20:41	21:32	22:05	21:53	21:00	19:49	18:39	16:42	16:24
19	08:40	07:49	06:46 18:08-18:18/10	06:34	05:37	05:14	05:37	06:26	07:18	08:10	08:07	08:46
	16:59	17:57	18:49	20:43	21:34	22:06	21:52	20:58	19:46	18:37	16:40	16:24
20	08:39	07:47	06:43 18:09-18:16/7	06:31	05:36	05:14	05:38	06:27	07:19	08:12	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:56	19:44	18:34	16:39	16:25
21	08:37	07:45	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:13	08:10	08:48
	17:03	18:01	18:52	20:47	21:37	22:06	21:49	20:53	19:41	18:32	16:38	16:25
22	08:36	07:42	06:38	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:12	08:48
	17:04	18:03	18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:25
23	08:35	07:40	06:36	06:25	05:31	05:14	05:42	06:32	07:25 18:54-19:00/6	08:17	08:13	08:49
	17:06	18:05	18:56	20:50	21:40	22:07	21:46	20:49	19:37	18:28	16:36	16:26
24	08:34	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26 18:52-19:02/10	08:19	08:15	08:49
	17:08	18:06	18:57	20:52	21:41	22:07	21:45	20:47	19:34	18:26	16:34	16:27
25	08:32	07:36	06:31	06:21	05:29	05:15	05:45	06:36	07:28 18:51-19:01/10	07:21	08:17	08:49
	17:10	18:08	18:59	20:54	21:43	22:07	21:44	20:45	19:32	17:24	16:33	16:27
26	08:31	07:34	06:29	06:19	05:28	05:16	05:47	06:37	07:30 18:50-19:02/12	07:23	08:18	08:50
	17:11	18:10	19:01	20:55	21:44	22:07	21:42	20:42	19:30	17:22	16:32	16:28
27	08:30	07:32	06:27	06:16	05:27	05:16	05:48	06:39	07:31 18:50-19:00/10	07:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	22:07	21:41	20:40	19:27	17:20	16:31	16:29
28	08:28	07:29	06:24	06:14	05:26	05:16	05:50	06:41	07:33 18:50-18:57/7	07:26	08:22	08:50
	17:15	18:14	19:04	20:59	21:47	22:06	21:39	20:38	19:25	17:18	16:30	16:29
29	08:27		07:22	06:12	05:24	05:17	05:51	06:42	07:35 18:41-18:47/6	07:28	08:23	08:50
	17:17		20:06	21:01	21:48	22:06	21:38	20:36	19:22 18:51-18:55/4	17:16	16:30	16:30
30	08:25		07:20	06:10	05:23	05:18	05:53	06:44	07:36 18:39-18:49/10	07:30	08:25	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	17:14	16:29	16:31
31	08:24		07:17		05:22		05:54	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	255	276	367	418	489	503	506	456	381	330	263	240
Sum of minutes with flicker	0	0	149	0	0	0	0	0	75	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

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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar per WTG

Calculation: Expected Scenario (cumulative) WTG: 6 - Moanmore2

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January		February		March		April		May		June	
1	08:50		08:22	16:35-16:52/17	07:27	17:40-17:49/9	07:15		06:08	20:19-20:33/14	05:22	20:51-20:57/6
	16:33		17:23		18:16		20:12		21:04		21:51	
2	08:50		08:20	16:36-16:54/18	07:25	17:40-17:51/11	07:12		06:06	20:19-20:36/17	05:21	
	16:35		17:25		18:18		20:13		21:06		21:53	
3	08:50		08:19	16:36-16:55/19	07:23	17:39-17:50/11	07:10		06:04	20:20-20:39/19	05:20	
	16:36		17:26		18:20		20:15		21:08		21:54	
4	08:50		08:17	16:39-16:57/18	07:20	17:41-17:49/8	07:08		06:03	20:20-20:40/20	05:19	
	16:37		17:28		18:21		20:17		21:09		21:55	
5	08:49		08:15	16:41-16:58/17	07:18	17:44-17:46/2	07:05		06:01	20:20-20:41/21	05:18	
	16:38		17:30		18:23		20:19		21:11		21:56	
6	08:49		08:14	16:44-16:58/14	07:16	17:56-17:58/2	07:03		05:59	20:20-20:43/23	05:18	
	16:39		17:32		18:25		20:20		21:13		21:57	
7	08:49		08:12	16:44-16:57/13	07:14	17:55-18:00/5	07:01		05:57	20:22-20:45/23	05:17	
	16:41		17:34		18:27		20:22		21:14		21:58	
8	08:48		08:10	16:45-16:57/12	07:11	17:55-18:03/8	06:58		05:55	20:23-20:46/23	05:17	
	16:42		17:36		18:29		20:24		21:16		21:59	
9	08:48		08:08	16:46-16:56/10	07:09	17:55-18:04/9	06:56		05:53	20:27-20:47/20	05:16	
	16:43		17:38		18:31		20:26		21:18		22:00	
10	08:47		08:06	16:48-16:54/6	07:07	17:56-18:06/10	06:54		05:51	20:28-20:50/22	05:16	
	16:45		17:40		18:32		20:27		21:19		22:00	
11	08:47		08:05		07:04	17:57-18:08/11	06:52		05:50	20:28-20:51/23	05:15	
	16:46		17:42		18:34		20:29		21:21		22:01	
12	08:46		08:03		07:02	17:58-18:10/12	06:49		05:48	20:28-20:51/23	05:15	
	16:48		17:44		18:36		20:31		21:23		22:02	
13	08:45		08:01		07:00	18:02-18:10/8	06:47		05:46	20:30-20:52/22	05:14	
	16:49		17:46		18:38		20:33		21:24		22:03	
14	08:44		07:59		06:57	18:11-18:14/3	06:45		05:45	20:31-20:54/23	05:14	
	16:51		17:47		18:40	18:04-18:09/5	20:34		21:26		22:03	
15	08:43		07:57		06:55	18:09-18:15/6	06:42		05:43	20:32-20:57/25	05:14	
	16:52		17:49		18:41		20:36		21:28		22:04	
16	08:43		07:55		06:53	18:09-18:17/8	06:40		05:42	20:33-20:58/25	05:14	
	16:54		17:51		18:43		20:38		21:29		22:04	
17	08:42		07:53		06:50	18:08-18:19/11	06:38		05:40	20:36-20:59/23	05:14	
	16:56		17:53		18:45		20:40		21:31		22:05	
18	08:41		07:51		06:48	18:09-18:18/9	06:36		05:38	20:39-21:00/21	05:14	
	16:57		17:55		18:47		20:41		21:32		22:05	
19	08:40	16:24-16:26/2	07:49		06:46	18:11-18:16/5	06:34		05:37	20:39-21:00/21	05:14	
	16:59		17:57		18:49		20:43		21:34		22:06	
20	08:39	16:23-16:27/4	07:47		06:43		06:31		05:36	20:40-21:00/20	05:14	
	17:01		17:59		18:50		20:45		21:35		22:06	
21	08:37	16:23-16:29/6	07:45		06:41		06:29	20:14-20:19/5	05:34	20:41-21:01/20	05:14	
	17:02		18:01		18:52		20:47		21:37		22:06	
22	08:36	16:23-16:32/9	07:42		06:38		06:27	20:12-20:20/8	05:33	20:43-21:01/18	05:14	
	17:04		18:03		18:54		20:48		21:38		22:06	
23	08:35	16:22-16:33/11	07:40		06:36		06:25	20:11-20:22/11	05:31	20:45-21:00/15	05:14	
	17:06		18:05		18:56		20:50		21:40		22:06	
24	08:34	16:23-16:35/12	07:38		06:34		06:23	20:10-20:23/13	05:30	20:45-21:00/15	05:15	
	17:08		18:06		18:57		20:52		21:41		22:07	
25	08:32	16:22-16:35/13	07:36		06:31		06:21	20:09-20:23/14	05:29	20:46-21:00/14	05:15	
	17:10		18:08		18:59		20:54		21:43		22:07	
26	08:31	16:23-16:36/13	07:34		06:29		06:19	20:09-20:23/14	05:28	20:46-21:00/14	05:16	
	17:11	16:37-16:39/2	18:10		19:01		20:55		21:44		22:07	
27	08:30	16:24-16:35/11	07:32	17:42-17:46/4	06:27		06:16	20:09-20:23/14	05:27	20:47-21:00/13	05:16	
	17:13	16:36-16:41/5	18:12		19:03		20:57		21:45		22:07	
28	08:28	16:25-16:35/10	07:29	17:40-17:47/7	06:24		06:14	20:23-20:30/7	05:26	20:47-20:59/12	05:16	
	17:15	16:36-16:44/8	18:14		19:04		20:59	20:10-20:22/12	21:47		22:06	
29	08:27	16:26-16:34/8			07:22		06:12	20:10-20:32/22	05:24	20:48-20:59/11	05:17	
	17:17	16:35-16:45/10			20:06		21:01		21:48		22:06	
30	08:25	16:28-16:32/4			07:20		06:10	20:20-20:33/13	05:23	20:49-20:59/10	05:18	
	17:19	16:35-16:47/12			20:08		21:02	20:12-20:19/7	21:49		22:06	
31	08:24	16:35-16:50/15			07:17				05:22	20:50-20:58/8		
	17:21				20:10				21:50			
Potential sun hours	256		276		367		418		489		503	
Sum of minutes with flicker		155		155		153		140		578		6

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

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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar per WTG

Calculation: Expected Scenario (cumulative) WTG: 6 - Moanmore2

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	July	August	September	October	November	December
1	05:18	05:56 20:38-21:01/23	06:48	07:38 18:39-18:50/11	07:34 16:17-16:24/7	08:26
	22:06	21:33	20:29	19:18	17:10	16:28
2	05:19	05:58 20:38-21:00/22	06:49	07:40 18:36-18:47/11	07:35 16:15-16:26/11	08:28
	22:05	21:31	20:26	19:15	17:08	16:27
3	05:20	05:59 20:37-20:58/21	06:51	07:42 18:35-18:45/10	07:37 16:14-16:27/13	08:29
	22:05	21:29	20:24	19:13	17:06	16:27
4	05:20	06:01 20:37-20:57/20	06:53	07:43 18:33-18:43/10	07:39 16:14-16:27/13	08:30
	22:05	21:27	20:22	19:11	17:04	16:26
5	05:21	06:02 20:32-20:55/23	06:54	07:45 18:33-18:41/8	07:41 16:14-16:27/13	08:32
	22:04	21:25	20:19	19:08	17:02	16:26
6	05:22	06:04 20:31-20:54/23	06:56	07:47 18:31-18:37/6	07:43 16:10-16:27/17	08:33
	22:03	21:24	20:17	19:06	17:01	16:25
7	05:23	06:06 20:29-20:52/23	06:58	07:49 18:31-18:35/4	07:45 16:08-16:27/19	08:34
	22:03	21:22	20:15	19:04	16:59	16:25
8	05:24	06:07 20:29-20:50/21	06:59	07:50 18:32-18:33/1	07:47 16:07-16:26/19	08:36
	22:02	21:20	20:12	19:01	16:57	16:24
9	05:25	06:09 20:28-20:48/20	07:01	07:52 18:17-18:23/6	07:48 16:06-16:24/18	08:37
	22:01	21:18	20:10	18:59	16:55	16:24
10	05:26	06:11 20:28-20:47/19	07:03	07:54 18:15-18:24/9	07:50 16:06-16:22/16	08:38
	22:01	21:16	20:08	18:57	16:54	16:24
11	05:27 21:00-21:04/4	06:12 20:28-20:45/17	07:04	07:56 18:13-18:24/11	07:52 16:06-16:21/15	08:39
	22:00	21:14	20:05	18:54	16:52	16:24
12	05:28 20:58-21:05/7	06:14 20:28-20:42/14	07:06	07:57 18:13-18:23/10	07:54 16:00-16:04/4	08:40
	21:59	21:12 20:22-20:26/4	20:03	18:52	16:51 16:06-16:19/13	16:23
13	05:29 20:57-21:06/9	06:16 20:29-20:41/12	07:08	07:59 18:13-18:21/8	07:56 15:58-16:06/8	08:41
	21:58	21:10 20:20-20:28/8	20:01	18:50	16:49 16:07-16:17/10	16:23
14	05:31 20:58-21:08/10	06:17 20:18-20:39/21	07:09	08:01 18:13-18:19/6	07:58 15:57-16:07/10	08:42
	21:57	21:08	19:58	18:48	16:47 16:08-16:16/8	16:23
15	05:32 20:57-21:09/12	06:19 20:31-20:37/6	07:11	08:03 18:14-18:17/3	07:59 15:56-16:08/12	08:43
	21:56	21:06 20:17-20:30/13	19:56	18:45	16:46 16:09-16:14/5	16:23
16	05:33 20:56-21:09/13	06:21 20:16-20:29/13	07:13	08:04	08:01 15:56-16:09/13	08:44
	21:55	21:04	19:53	18:43	16:45 16:10-16:12/2	16:23
17	05:34 20:56-21:09/13	06:22 20:16-20:30/14	07:14	08:06	08:03 15:56-16:09/13	08:45
	21:54	21:02	19:51	18:41	16:43	16:24
18	05:36 20:55-21:10/15	06:24 20:16-20:30/14	07:16	08:08	08:05 15:57-16:09/12	08:46
	21:53	21:00	19:49	18:39	16:42	16:24
19	05:37 20:55-21:10/15	06:26 20:16-20:29/13	07:18	08:10	08:06 15:57-16:08/11	08:46
	21:52	20:58	19:46	18:37	16:40	16:24
20	05:38 20:56-21:11/15	06:27 20:17-20:27/10	07:19	08:12	08:08 15:58-16:07/9	08:47
	21:50	20:56	19:44	18:34	16:39	16:25
21	05:40 20:53-21:11/18	06:29 20:17-20:25/8	07:21	08:13	08:10 15:59-16:05/6	08:47
	21:49	20:53	19:41	18:32	16:38	16:25
22	05:41 20:51-21:10/19	06:31 20:19-20:23/4	07:23	08:15	08:12 15:59-16:03/4	08:48
	21:48	20:51	19:39	18:30	16:37	16:25
23	05:42 20:51-21:11/20	06:32	07:24	08:17	08:13 16:00-16:02/2	08:49
	21:46	20:49	19:37	18:28	16:36	16:26
24	05:44 20:50-21:11/21	06:34	07:26 18:56-18:59/3	08:19	08:15	08:49
	21:45	20:47	19:34	18:26	16:34	16:27
25	05:45 20:49-21:10/21	06:36	07:28 18:52-19:00/8	07:21	08:17	08:49
	21:44	20:45	19:32	17:24	16:33	16:27
26	05:47 20:48-21:10/22	06:37	07:30 18:51-19:01/10	07:23	08:18	08:50
	21:42	20:42	19:30	17:22	16:32	16:28
27	05:48 20:45-21:09/24	06:39	07:31 18:51-19:00/9	07:24	08:20	08:50
	21:41	20:40	19:27	17:20	16:31	16:29
28	05:50 20:43-21:08/25	06:41	07:33 18:50-18:57/7	07:26	08:22	08:50
	21:39	20:38	19:25	17:18	16:30	16:29
29	05:51 20:42-21:06/24	06:42	07:35 18:50-18:55/5	07:28	08:23	08:50
	21:37	20:36	19:22 18:45-18:47/2	17:16	16:30	16:30
30	05:53 20:41-21:02/21	06:44	07:36 18:42-18:50/8	07:30	08:25	08:50
	21:36	20:33	19:20	17:14	16:29	16:31
31	05:54 20:40-21:02/22	06:46		07:32		08:50
	21:34	20:31		17:12		16:32
Potential sun hours	506	456	381	330	263	240
Sum of minutes with flicker	350	386	52	114	303	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

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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar per WTG

Calculation: Expected Scenario (cumulative) WTG: 7 - Moanmore3

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January		February		March		April		May	June	
1	08:50		08:22	16:18-16:35/17	07:27	17:39-17:48/9	07:15	19:34-19:45/11	06:08	05:22	
	16:33		17:23	16:38-16:47/9	18:16		20:11		21:04	21:51	
2	08:50		08:20	16:18-16:35/17 16:51-16:54/3	07:25	17:41-17:47/6	07:12	19:33-19:46/13	06:06	05:21	
	16:35		17:24	16:36-16:49/13	18:18		20:13		21:06	21:53	
3	08:50		08:19	16:18-16:34/16	07:23		07:10	19:32-19:46/14	06:04	05:20	
	16:36		17:26	16:35-16:55/20	18:19		20:15		21:08	21:54	
4	08:50		08:17	16:20-16:34/14	07:20		07:08	19:33-19:46/13	06:02	05:19	
	16:37		17:28	16:35-16:58/23	18:21		20:17		21:09	21:55	
5	08:49		08:15	16:22-16:33/11	07:18		07:05	19:32-19:45/13	06:01	05:18	
	16:38		17:30	16:34-17:00/26	18:23		20:19		21:11	21:56	
6	08:49		08:14	16:24-16:31/7	07:16		07:03	19:33-19:44/11	05:59	05:18	
	16:39		17:32	16:34-17:02/28	18:25		20:20		21:13	21:57	
7	08:49		08:12	16:34-17:02/28	07:14		07:01	19:35-19:42/7	05:57	05:17	
	16:41		17:34		18:27		20:22		21:14	21:58	
8	08:48		08:10	16:34-17:02/28	07:11		06:58		05:55	05:16	
	16:42		17:36		18:29		20:24		21:16	21:59	
9	08:48		08:08	16:34-17:01/27	07:09		06:56		05:53	05:16	
	16:43		17:38		18:31		20:26		21:18	22:00	
10	08:47		08:06	16:35-17:02/27	07:07		06:54		05:51	05:16	
	16:45		17:40		18:32		20:27		21:19	22:00	
11	08:47		08:05	16:35-17:03/28	07:04		06:52		05:50	05:15	
	16:46		17:42		18:34		20:29		21:21	22:01	
12	08:46		08:03	16:36-17:04/28	07:02	18:03-18:09/6	06:49		05:48	05:15	
	16:48		17:44		18:36		20:31		21:23	22:02	
13	08:45		08:01	16:38-17:05/27	07:00	18:01-18:11/10	06:47		05:46	05:14	
	16:49		17:46		18:38		20:33		21:24	22:03	
14	08:44		07:59	16:41-17:06/25	06:57	18:00-18:13/13	06:45		05:45	05:14	21:22-21:25/3
	16:51		17:47		18:40		20:34		21:26	22:03	
15	08:43		07:57	16:46-17:06/20	06:55	17:58-18:13/15	06:42		05:43	05:14	21:21-21:26/5
	16:52		17:49		18:41		20:36		21:28	22:04	
16	08:43		07:55	16:46-17:06/20	06:53	17:58-18:13/15	06:40		05:41	05:14	21:21-21:27/6
	16:54		17:51		18:43		20:38		21:29	22:04	
17	08:42		07:53	16:46-17:06/20	06:50	17:57-18:12/15	06:38		05:40	05:14	21:21-21:28/7
	16:56		17:53		18:45		20:40		21:31	22:05	
18	08:41		07:51	16:46-17:06/20	06:48	17:57-18:12/15	06:36		05:38	05:14	21:21-21:28/7
	16:57		17:55		18:47		20:41		21:32	22:05	
19	08:40		07:49	16:46-17:04/18	06:46	17:58-18:12/14	06:34		05:37	05:14	21:21-21:28/7
	16:59		17:57		18:49	18:20-18:23/3	20:43		21:34	22:06	
20	08:38		07:47	16:47-17:03/16	06:43	17:58-18:10/12	06:31		05:36	05:14	21:21-21:29/8
	17:01		17:59		18:50	18:17-18:24/7	20:45		21:35	22:06	
21	08:37		07:44	16:49-17:02/13	06:41	18:01-18:08/7	06:29		05:34	05:14	21:21-21:29/8
	17:02		18:01		18:52	18:16-18:26/10	20:47		21:37	22:06	
22	08:36	16:21-16:28/7	07:42	16:51-17:00/9	06:38	18:15-18:27/12	06:27		05:33	05:14	21:22-21:30/8
	17:04		18:03		18:54		20:48		21:38	22:06	
23	08:35	16:19-16:29/10	07:40		06:36	18:15-18:30/15	06:25		05:31	05:14	21:22-21:29/7
	17:06		18:05		18:56		20:50		21:40	22:06	
24	08:34	16:18-16:31/13	07:38		06:34	18:15-18:32/17	06:23		05:30	05:15	21:22-21:29/7
	17:08		18:06		18:57		20:52		21:41	22:07	
25	08:32	16:17-16:32/15	07:36	17:40-17:41/1	06:31	18:15-18:33/18	06:21		05:29	05:15	21:23-21:30/7
	17:10		18:08		18:59		20:54		21:43	22:07	
26	08:31	16:17-16:33/16	07:34	17:39-17:43/4	06:29	18:16-18:35/19	06:19		05:28	05:15	21:23-21:29/6
	17:11		18:10		19:01		20:55		21:44	22:07	
27	08:30	16:17-16:34/17	07:32	17:39-17:45/6	06:27	18:18-18:37/19	06:16		05:27	05:16	21:23-21:29/6
	17:13		18:12		19:03		20:57		21:45	22:07	
28	08:28	16:17-16:35/18	07:29	17:38-17:47/9	06:24	18:18-18:36/18	06:14		05:25	05:16	21:24-21:29/5
	17:15		18:14		19:04		20:59		21:47	22:06	
29	08:27	16:17-16:35/18			07:22	19:19-19:35/16	06:12		05:24	05:17	21:26-21:28/2
	17:17				20:06		21:01		21:48	22:06	
30	08:25	16:16-16:35/19			07:20	19:21-19:33/12	06:10		05:23	05:18	
	17:19				20:08	19:38-19:41/3	21:02		21:49	22:06	
31	08:24	16:17-16:36/19			07:17	19:36-19:43/7			05:22		
	17:21	16:41-16:44/3			20:10	19:24-19:32/8			21:50		
Potential sun hours	256		276		367		418		489	503	
Sum of minutes with flicker		155		578		321		82		0	99

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

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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar per WTG

Calculation: Expected Scenario (cumulative) WTG: 7 - Moanmore3

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	July	August	September	October	November	December
1	05:18	05:56	06:47	07:38 18:42-18:50/8	07:34 16:04-16:31/27	08:26
	22:06	21:33	20:29	19:18	17:10	16:28
2	05:19	05:58	06:49	07:40	07:35 16:04-16:30/26	08:28
	22:05	21:31	20:26	19:15	17:08	16:27
3	05:20	05:59	06:51	07:42	07:37 16:04-16:31/27	08:29
	22:05	21:29	20:24	19:13	17:06	16:27
4	05:20	06:01	06:53	07:43	07:39 16:04-16:32/28	08:30
	22:05	21:27	20:22	19:11	17:04	16:26
5	05:21	06:02	06:54 19:31-19:38/7	07:45	07:41 15:53-16:01/8	08:32
	22:04	21:25	20:19	19:08	17:02 16:04-16:32/28	16:26
6	05:22	06:04	06:56 19:29-19:40/11	07:47	07:43 15:51-16:03/12	08:33
	22:03	21:24	20:17	19:06	17:01 16:04-16:30/26	16:25
7	05:23	06:06	06:58 19:28-19:41/13	07:49	07:45 15:50-16:04/14	08:34
	22:03	21:22	20:15	19:04	16:59 16:05-16:28/23	16:25
8	05:24	06:07	06:59 19:27-19:40/13	07:50	07:47 15:49-16:05/16 16:21-16:26/5	08:36
	22:02	21:20	20:12	19:01	16:57 16:06-16:20/14	16:24
9	05:25	06:09	07:01 19:27-19:40/13	07:52	07:48 15:49-16:06/17 16:22-16:24/2	08:37
	22:01	21:18	20:10	18:59	16:55 16:07-16:19/12	16:24
10	05:26	06:11	07:03 19:26-19:39/13	07:54	07:50 15:48-16:06/18	08:38
	22:01	21:16	20:08	18:57	16:54 16:09-16:18/9	16:24
11	05:27	06:12	07:04 19:26-19:38/12	07:56 18:16-18:18/2	07:52 15:48-16:07/19	08:39
	22:00	21:14	20:05	18:54	16:52	16:23
12	05:28	06:14	07:06 19:28-19:36/8	07:57 18:13-18:21/8	07:54 15:48-16:07/19	08:40
	21:59	21:12	20:03 19:17-19:24/7	18:52	16:51	16:23
13	05:29	06:16	07:08 19:11-19:24/13	07:59 18:12-18:21/9	07:56 15:49-16:07/18	08:41
	21:58	21:10	20:01 19:29-19:33/4	18:50	16:49	16:23
14	05:31	06:17	07:09 19:10-19:25/15	08:01 18:11-18:19/8	07:58 15:49-16:07/18	08:42
	21:57	21:08	19:58	18:48	16:47	16:23
15	05:32	06:19	07:11 19:09-19:26/17	08:03 18:11-18:17/6	07:59 15:50-16:07/17	08:43
	21:56	21:06	19:56	18:45	16:46	16:23
16	05:33	06:21	07:13 19:07-19:25/18	08:04 18:11-18:15/4	08:01 15:50-16:06/16	08:44
	21:55	21:04	19:53	18:43	16:44	16:23
17	05:34	06:22	07:14 19:05-19:24/19	08:06	08:03 15:51-16:06/15	08:45
	21:54	21:02	19:51	18:41	16:43	16:24
18	05:36	06:24	07:16 19:03-19:22/19	08:08	08:05 15:52-16:05/13	08:45
	21:53	21:00	19:49	18:39	16:42	16:24
19	05:37	06:26	07:18 19:02-19:19/17	08:10	08:06 15:54-16:04/10	08:46
	21:52	20:58	19:46	18:37	16:40	16:24
20	05:38	06:27	07:19 19:01-19:17/16	08:12 17:21-17:31/10	08:08 15:56-16:03/7	08:47
	21:50	20:56	19:44	18:34	16:39	16:24
21	05:40	06:29	07:21 19:01-19:14/13	08:13 17:19-17:33/14	08:10	08:47
	21:49	20:53	19:41	18:32	16:38	16:25
22	05:41	06:31	07:23 18:46-18:51/5	08:15 17:17-17:34/17	08:12	08:48
	21:48	20:51	19:39 19:00-19:11/11	18:30	16:37	16:25
23	05:42	06:32	07:24 18:44-18:54/10	08:17 17:16-17:35/19	08:13	08:48
	21:46	20:49	19:37 19:01-19:09/8	18:28	16:35	16:26
24	05:44	06:34	07:26 18:42-18:55/13	08:19 17:16-17:35/19	08:15	08:49
	21:45	20:47	19:34 19:03-19:07/4	18:26	16:34	16:26
25	05:45	06:36	07:28 18:40-18:55/15	07:21 16:15-16:35/20	08:17	08:49
	21:44	20:45	19:32	17:24	16:33	16:27
26	05:47	06:37	07:30 18:40-18:55/15	07:23 16:15-16:35/20	08:18	08:50
	21:42	20:42	19:29	17:22	16:32	16:28
27	05:48	06:39	07:31 18:40-18:55/15	07:24 16:15-16:35/20	08:20	08:50
	21:41	20:40	19:27	17:20	16:31	16:29
28	05:50	06:41	07:33 18:39-18:54/15	07:26 16:09-16:35/26	08:22	08:50
	21:39	20:38	19:25	17:18	16:30	16:29
29	05:51	06:42	07:35 18:39-18:53/14	07:28 16:07-16:35/28	08:23	08:50
	21:37	20:36	19:22	17:16	16:30	16:30
30	05:53	06:44	07:36 18:40-18:52/12	07:30 16:06-16:34/28	08:25	08:50
	21:36	20:33	19:20	17:14	16:29	16:31
31	05:54	06:46		07:32 16:05-16:33/28		08:50
	21:34	20:31		17:12		16:32
Potential sun hours	506	456	381	330	263	240
Sum of minutes with flicker	0	0	385	294	464	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

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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar per WTG

Calculation: Expected Scenario (cumulative) WTG: 8 - Moanmore4

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January	February		March		April		May		June	
1	08:50	08:22		07:27	17:30-17:45/15	07:15	19:33-19:45/12	06:08		05:22	21:01-21:14/13
	16:33	17:23		18:16		20:12		21:04		21:51	
2	08:50	08:21		07:25	17:30-17:45/15	07:12	19:33-19:44/11	06:06		05:21	21:17-21:19/2
	16:35	17:25		18:18		20:13		21:06		21:53	21:01-21:14/13
3	08:50	08:19		07:23	17:29-17:45/16	07:10	19:36-19:43/7	06:04		05:20	21:15-21:20/5
	16:36	17:26		18:20		20:15	19:46-19:49/3	21:08		21:54	21:01-21:14/13
4	08:50	08:17		07:20	17:29-17:45/16	07:08	19:45-19:51/6	06:02		05:19	21:02-21:21/19
	16:37	17:28		18:21		20:17		21:09		21:55	
5	08:49	08:15		07:18	17:30-17:44/14	07:05	19:43-19:52/9	06:01		05:18	21:02-21:22/20
	16:38	17:30		18:23		20:19		21:11		21:56	
6	08:49	08:14		07:16	17:30-17:42/12	07:03	19:43-19:54/11	05:59		05:18	21:03-21:23/20
	16:39	17:32		18:25		20:20		21:13		21:57	
7	08:49	08:12		07:14	17:32-17:41/9	07:01	19:43-19:54/11	05:57		05:17	21:03-21:24/21
	16:41	17:34		18:27		20:22		21:14		21:58	
8	08:48	08:10		07:11		06:58	19:44-19:53/9	05:55		05:17	21:04-21:25/21
	16:42	17:36		18:29		20:24		21:16		21:59	
9	08:48	08:08		07:09		06:56	19:45-19:50/5	05:53		05:16	21:04-21:25/21
	16:43	17:38		18:31		20:26		21:18		22:00	
10	08:47	08:06		07:07		06:54		05:51		05:16	21:05-21:26/21
	16:45	17:40		18:32		20:27		21:19		22:00	
11	08:47	08:05		07:04		06:52		05:50		05:15	21:15-21:27/12
	16:46	17:42		18:34		20:29		21:21		22:01	21:05-21:14/9
12	08:46	08:03		07:02		06:49		05:48		05:15	21:14-21:27/13
	16:48	17:44		18:36		20:31		21:23		22:02	21:05-21:13/8
13	08:45	08:01	17:10-17:17/7	07:00		06:47		05:46		05:14	21:14-21:27/13
	16:49	17:46		18:38		20:33		21:24		22:03	21:06-21:13/7
14	08:44	07:59	17:08-17:19/11	06:57		06:45		05:45		05:14	21:14-21:28/14
	16:51	17:47		18:40		20:34		21:26		22:03	21:07-21:13/6
15	08:43	07:57	17:07-17:20/13	06:55		06:42		05:43		05:14	21:15-21:29/14
	16:52	17:49		18:41		20:36		21:28		22:04	21:08-21:13/5
16	08:43	07:55	17:07-17:23/16	06:53		06:40		05:42		05:14	21:15-21:30/15
	16:54	17:51		18:43		20:38		21:29		22:04	21:08-21:13/5
17	08:42	07:53	17:07-17:25/18	06:50		06:38		05:40		05:14	21:15-21:30/15
	16:56	17:53		18:45		20:40		21:31		22:05	21:09-21:13/4
18	08:41	07:51	17:07-17:28/21	06:48		06:36		05:38		05:14	21:15-21:31/16
	16:57	17:55		18:47		20:41		21:32		22:05	21:10-21:12/2
19	08:40	07:49	17:06-17:29/23	06:46		06:34		05:37		05:14	21:15-21:31/16
	16:59	17:57		18:49		20:43		21:34		22:06	21:10-21:12/2
20	08:39	07:47	17:07-17:20/13	06:43	18:20-18:24/4	06:31		05:36		05:14	21:16-21:31/15
	17:01	17:59	17:21-17:31/10	18:50		20:45		21:35		22:06	21:11-21:12/1
21	08:37	07:45	17:08-17:19/11	06:41	18:19-18:26/7	06:29		05:34		05:14	21:16-21:31/15
	17:02	18:01	17:20-17:32/12	18:52		20:47		21:37		22:06	
22	08:36	07:42	17:10-17:17/7	06:38	18:17-18:27/10	06:27		05:33	21:05-21:07/2	05:14	21:17-21:32/15
	17:04	18:03	17:20-17:33/13	18:54		20:48		21:38		22:06	
23	08:35	07:40	17:19-17:34/15	06:36	18:17-18:29/12	06:25		05:31	21:02-21:07/5	05:14	21:16-21:32/16
	17:06	18:05		18:56		20:50		21:40		22:06	21:11-21:13/2
24	08:34	07:38	17:18-17:33/15	06:34	18:17-18:29/12	06:23		05:30	21:02-21:09/7	05:15	21:16-21:32/16
	17:08	18:06		18:57		20:52		21:41		22:07	21:11-21:13/2
25	08:32	07:36	17:19-17:33/14	06:31	18:17-18:27/10	06:21		05:29	21:01-21:10/9	05:15	21:17-21:32/15
	17:10	18:08		18:59	18:31-18:33/2	20:54		21:43		22:07	21:11-21:14/3
26	08:31	07:34	17:19-17:33/14	06:29	18:18-18:26/8	06:19		05:28	21:01-21:11/10	05:15	21:17-21:32/15
	17:11	18:10	17:36-17:40/4	19:01	18:30-18:35/5	20:55		21:44		22:07	21:11-21:15/4
27	08:30	07:32	17:20-17:32/12	06:27	18:22-18:23/1	06:16		05:27	21:01-21:12/11	05:16	21:17-21:31/14
	17:13	18:12	17:33-17:43/10	19:03	18:29-18:37/8	20:57		21:45		22:07	21:10-21:15/5
28	08:28	07:29	17:21-17:29/8	06:24	18:28-18:38/10	06:14		05:25	21:00-21:13/13	05:16	21:18-21:31/13
	17:15	18:14	17:31-17:44/13	19:04		20:59		21:47		22:06	21:10-21:16/6
29	08:27			07:22	19:29-19:40/11	06:12		05:24	21:00-21:13/13	05:17	21:18-21:31/13
	17:17			20:06		21:01		21:48		22:06	21:10-21:17/7
30	08:25			07:20	19:29-19:42/13	06:10		05:23	21:00-21:14/14	05:18	21:18-21:31/13
	17:19			20:08		21:02		21:49		22:06	21:10-21:17/7
31	08:24			07:17	19:32-19:43/11			05:22	21:01-21:15/14		
	17:21			20:10				21:50			
Potential sun hours	255	276		367		418		489		503	
Sum of minutes with flicker	0	280		221		84		98		562	

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

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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar per WTG

Calculation: Expected Scenario (cumulative) WTG: 8 - Moanmore4

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	July		August	September		October		November	December
1	05:18	21:19-21:31/12	05:56	06:48		07:38		07:34	08:26
	22:06	21:10-21:18/8	21:33	20:29		19:18		17:10	16:28
2	05:19	21:09-21:31/22	05:58	06:49		07:40		07:35	08:28
	22:05		21:31	20:26		19:15		17:08	16:27
3	05:20	21:09-21:31/22	05:59	06:51	19:43-19:48/5	07:42		07:37	08:29
	22:05		21:29	20:24		19:13		17:06	16:27
4	05:20	21:20-21:30/10	06:01	06:53	19:41-19:50/9	07:43		07:39	08:30
	22:05	21:09-21:19/10	21:27	20:22		19:11		17:04	16:26
5	05:21	21:09-21:30/21	06:02	06:54	19:40-19:50/10	07:45		07:41	08:32
	22:04		21:26	20:19		19:08		17:02	16:26
6	05:22	21:09-21:30/21	06:04	06:56	19:39-19:50/11	07:47	18:09-18:16/7	07:43	08:33
	22:03		21:24	20:17		19:06		17:01	16:25
7	05:23	21:21-21:28/7	06:06	06:58	19:39-19:48/9	07:49	18:07-18:18/11	07:45	08:34
	22:03	21:08-21:20/12	21:22	20:15		19:04		16:59	16:25
8	05:24	21:08-21:28/20	06:07	06:59	19:39-19:45/6	07:50	18:05-18:19/14	07:47	08:36
	22:02		21:20	20:12		19:01		16:57	16:24
9	05:25	21:22-21:27/5	06:09	07:01	19:30-19:37/7	07:52	18:05-18:20/15	07:48	08:37
	22:01	21:08-21:21/13	21:18	20:10	19:40-19:43/3	18:59		16:55	16:24
10	05:26	21:23-21:27/4	06:11	07:03	19:26-19:37/11	07:54	18:04-18:20/16	07:50	08:38
	22:01	21:08-21:22/14	21:16	20:08		18:57		16:54	16:24
11	05:27	21:08-21:22/14	06:12	07:04	19:25-19:38/13	07:56	18:03-18:19/16	07:52	08:39
	22:00		21:14	20:05		18:54		16:52	16:24
12	05:28	21:08-21:22/14	06:14	07:06	19:24-19:36/12	07:57	18:03-18:18/15	07:54	08:40
	21:59		21:12	20:03		18:52		16:51	16:23
13	05:29	21:09-21:22/13	06:16	07:08	19:21-19:33/12	07:59	17:56-18:01/5	07:56	08:41
	21:58		21:10	20:01		18:50	18:04-18:18/14	16:49	16:23
14	05:31	21:10-21:23/13	06:17	07:09	19:20-19:31/11	08:01	17:54-18:03/9	07:58	08:42
	21:57		21:08	19:58		18:48	18:05-18:17/12	16:47	16:23
15	05:32	21:10-21:23/13	06:19	07:11	19:19-19:29/10	08:03	17:52-18:04/12	07:59	08:43
	21:56		21:06	19:56		18:45	18:06-18:15/9	16:46	16:23
16	05:33	21:10-21:22/12	06:21	07:13	19:18-19:26/8	08:04	17:51-18:05/14	08:01	08:44
	21:55		21:04	19:53		18:43		16:45	16:23
17	05:34	21:10-21:21/11	06:22	07:14	19:07-19:14/7	08:06	17:51-18:05/14	08:03	08:45
	21:54		21:02	19:51	19:18-19:24/6	18:41		16:43	16:24
18	05:36	21:10-21:20/10	06:24	07:16	19:05-19:16/11	08:08	17:50-18:04/14	08:05	08:46
	21:53		21:00	19:49	19:19-19:22/3	18:39		16:42	16:24
19	05:37	21:11-21:19/8	06:26	07:18	19:04-19:15/11	08:10	17:50-18:04/14	08:06	08:46
	21:52		20:58	19:46		18:37		16:40	16:24
20	05:38	21:12-21:18/6	06:27	07:19	19:03-19:16/13	08:12	17:40-17:48/8	08:08	08:47
	21:50		20:56	19:44		18:34	17:50-18:03/13	16:39	16:24
21	05:40	21:13-21:17/4	06:29	07:21	19:03-19:14/11	08:13	17:38-17:50/12	08:10	08:47
	21:49		20:53	19:41		18:32	17:51-18:02/11	16:38	16:25
22	05:41		06:31	07:23	19:03-19:11/8	08:15	17:37-17:50/13	08:12	08:48
	21:48		20:51	19:39		18:30	17:51-18:01/10	16:37	16:25
23	05:42		06:32	07:24	19:04-19:09/5	08:17	17:36-17:58/22	08:13	08:49
	21:46		20:49	19:37		18:28		16:36	16:26
24	05:44		06:34	07:26		08:19	17:36-17:56/20	08:15	08:49
	21:45		20:47	19:34		18:26		16:34	16:26
25	05:45		06:36	07:28		07:21	16:36-16:54/18	08:17	08:49
	21:44		20:45	19:32		17:24		16:33	16:27
26	05:47		06:37	07:30		07:23	16:37-16:50/13	08:18	08:50
	21:42		20:42	19:30		17:22	16:51-16:52/1	16:32	16:28
27	05:48		06:39	07:31		07:24	16:37-16:50/13	08:20	08:50
	21:41		20:40	19:27		17:20		16:31	16:29
28	05:50		06:41	07:33		07:26	16:38-16:48/10	08:22	08:50
	21:39		20:38	19:25		17:18		16:30	16:29
29	05:51		06:42	07:35		07:28	16:40-16:46/6	08:23	08:50
	21:37		20:36	19:22		17:16		16:30	16:30
30	05:53		06:44	07:36		07:30		08:25	08:50
	21:36		20:33	19:20		17:14		16:29	16:31
31	05:54		06:46			07:32			08:50
	21:34		20:31			17:12			16:32
Potential sun hours	506		456	381		330		263	240
Sum of minutes with flicker		319	0		212		381	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

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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar per WTG

Calculation: Expected Scenario (cumulative) WTG: 9 - Moanmore5

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:08	05:22	05:18	05:56	06:48	07:38	07:34	08:26
	16:33	17:23	18:16	20:12	21:04	21:52	22:06	21:33	20:29	19:18	17:10	16:28
2	08:50	08:21	07:25	07:12	06:06	05:21	05:19	05:58	06:49	07:40	07:36	08:28
	16:35	17:25	18:18	20:13	21:06	21:53	22:05	21:31	20:26	19:15	17:08	16:27
3	08:50	08:19	07:23	07:10	06:04	05:20	05:20	05:59	06:51	07:42	07:37	08:29
	16:36	17:26	18:20	20:15	21:08	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:03	05:19	05:20	06:01	06:53	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09	21:55	22:05	21:27	20:22	19:11	17:04	16:26
5	08:50	08:16	07:18	07:05	06:01	05:18	05:21	06:02	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:19	21:11	21:56	22:04	21:26	20:20	19:08	17:02	16:26
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:39	17:32	18:25	20:20	21:13	21:57	22:04	21:24	20:17	19:06	17:01	16:25
7	08:49	08:12	07:14	07:01	05:57	05:17	05:23	06:06	06:58	07:49	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:58	05:55	05:17	05:24	06:07	06:59	07:50	07:47	08:36
	16:42	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:12	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48	08:37
	16:43	17:38	18:31	20:26	21:18	22:00	22:02	21:18	20:10	18:59	16:55	16:24
10	08:47	08:07	07:07	06:54	05:52	05:16	05:26	06:11	07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	22:01	21:16	20:08	18:57	16:54	16:24
11	08:47	08:05	07:04	06:52	05:50	05:15	05:27	06:12	07:04	07:56	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:54	16:52	16:24
12	08:46	08:03	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:51	16:23
13	08:45	08:01	07:00	06:47	05:46	05:14	05:29	06:16	07:08	07:59	07:56	08:41
	16:49	17:46	18:38	20:33	21:24	22:03	21:58	21:10	20:01	18:50	16:49	16:23
14	08:44	07:59	06:57	06:45	05:45	05:14	05:31	06:17	07:09	08:01	07:58	08:42
	16:51	17:48	18:40	20:34	21:26	22:03	21:57	21:08	19:58	18:48	16:47	16:23
15	08:44	07:57	06:55	06:42	05:43	05:14	05:32	06:19	07:11	08:03	07:59	08:43
	16:52	17:49	18:41	20:36	21:28	22:04	21:56	21:06	19:56	18:45	16:46	16:23
16	08:43	07:55	06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:53	18:43	16:45	16:23
17	08:42	07:53	06:50	06:38	05:40	05:14	05:34	06:22	07:14	08:06	08:03	08:45
	16:56	17:53	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43	16:24
18	08:41	07:51	06:48	06:36	05:38	05:14	05:36	06:24	07:16	08:08	08:05	08:46
	16:57	17:55	18:47	20:41	21:32	22:05	21:53	21:00	19:49	18:39	16:42	16:24
19	08:40	07:49	06:46	06:34	05:37	05:14	05:37	06:26	07:18	08:10	08:07	08:46
	16:59	17:57	18:49	20:43	21:34	22:06	21:52	20:58	19:46	18:37	16:40	16:24
20	08:39	07:47	06:43	06:31	05:36	05:14	05:38	06:27	07:19	08:12	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:56	19:44	18:34	16:39	16:25
21	08:37	07:45	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:13	08:10	08:48
	17:03	18:01	18:52	20:47	21:37	22:06	21:49	20:53	19:41	18:32	16:38	16:25
22	08:36	07:42	06:39	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:12	08:48
	17:04	18:03	18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:25
23	08:35	07:40	06:36	06:25	05:31	05:14	05:42	06:32	07:25	08:17	08:13	08:49
	17:06	18:05	18:56	20:50	21:40	22:07	21:46	20:49	19:37	18:28	16:36	16:26
24	08:34	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:07	18:57	20:52	21:41	22:07	21:45	20:47	19:34	18:26	16:34	16:27
25	08:32	07:36	06:31	06:21	05:29	05:15	05:45	06:36	07:28	07:21	08:17	08:49
	17:10	18:08	18:59	20:54	21:43	22:07	21:44	20:45	19:32	17:24	16:33	16:27
26	08:31	07:34	06:29	06:19	05:28	05:16	05:47	06:37	07:30	07:23	08:18	08:50
	17:11	18:10	19:01	20:55	21:44	22:07	21:42	20:42	19:30	17:22	16:32	16:28
27	08:30	07:32	06:27	06:16	05:27	05:16	05:48	06:39	07:31	07:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	22:07	21:41	20:40	19:27	17:20	16:31	16:29
28	08:28	07:29	06:24	06:14	05:26	05:16	05:50	06:41	07:33	07:26	08:22	08:50
	17:15	18:14	19:05	20:59	21:47	22:06	21:39	20:38	19:25	17:18	16:30	16:29
29	08:27		07:22	06:12	05:24	05:17	05:51	06:42	07:35	07:28	08:23	08:50
	17:17		20:06	21:01	21:48	22:06	21:38	20:36	19:22	17:16	16:30	16:30
30	08:25		07:20	06:10	05:23	05:18	05:53	06:44	07:36	07:30	08:25	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	17:14	16:29	16:31
31	08:24		07:17		05:22		05:54	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	255	276	367	418	489	503	506	456	381	330	263	240
Sum of minutes with flicker	0	0	0	0	0	0	0	0	0	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

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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar per WTG

Calculation: Expected Scenario (cumulative) WTG: 10 - Moanmore6

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January	February	March	April		May	June	July	August		September		October	November	December
1	08:50	08:22	07:27	07:15		06:08	05:22	05:18	05:56		06:48	19:52-20:01/9	07:38	07:34	08:26
	16:33	17:23	18:16	20:12		21:04	21:52	22:06	21:33		20:29		19:18	17:10	16:28
2	08:50	08:21	07:25	07:12		06:06	05:21	05:19	05:58		06:49	19:52-19:59/7	07:40	07:36	08:28
	16:35	17:25	18:18	20:13		21:06	21:53	22:05	21:31		20:26		19:15	17:08	16:27
3	08:50	08:19	07:23	07:10		06:04	05:20	05:20	05:59		06:51	19:45-19:50/5	07:42	07:37	08:29
	16:36	17:26	18:20	20:15		21:08	21:54	22:05	21:29		20:24	19:51-19:56/5	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	19:47-19:51/4	06:03	05:19	05:20	06:01		06:53	19:43-19:55/12	07:43	07:39	08:30
	16:37	17:28	18:21	20:17		21:09	21:55	22:05	21:27		20:22		19:11	17:04	16:26
5	08:50	08:16	07:18	07:05	19:46-19:53/7	06:01	05:18	05:21	06:02		06:54	19:42-19:52/10	07:45	07:41	08:32
	16:38	17:30	18:23	20:19		21:11	21:56	22:04	21:26		20:20		19:08	17:02	16:26
6	08:49	08:14	07:16	07:03	19:45-19:54/9	05:59	05:18	05:22	06:04		06:56	19:41-19:50/9	07:47	07:43	08:33
	16:39	17:32	18:25	20:20		21:13	21:57	22:04	21:24		20:17		19:06	17:01	16:25
7	08:49	08:12	07:14	07:01	19:45-19:56/11	05:57	05:17	05:23	06:06		06:58	19:42-19:48/6	07:49	07:45	08:34
	16:41	17:34	18:27	20:22		21:14	21:58	22:03	21:22		20:15		19:04	16:59	16:25
8	08:48	08:10	07:11	06:58	19:46-19:58/12	05:55	05:16	05:24	06:07		06:59	19:41-19:45/4	07:50	07:47	08:36
	16:42	17:36	18:29	20:24		21:16	21:59	22:02	21:20		20:12		19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	19:47-19:52/5	05:53	05:16	05:25	06:09		07:01		07:52	07:48	08:37
	16:43	17:38	18:31	20:26	19:53-19:58/5	21:18	22:00	22:02	21:18		20:10		18:59	16:55	16:24
10	08:47	08:07	07:07	06:54	19:53-20:00/7	05:51	05:16	05:26	06:11		07:03		07:54	07:50	08:38
	16:45	17:40	18:32	20:27		21:19	22:00	22:01	21:16		20:08		18:57	16:54	16:24
11	08:47	08:05	07:04	06:52	19:53-20:02/9	05:50	05:15	05:27	06:12		07:04		07:56	07:52	08:39
	16:46	17:42	18:34	20:29		21:21	22:01	22:00	21:14		20:05		18:54	16:52	16:24
12	08:46	08:03	07:02	06:49	19:53-20:02/9	05:48	05:15	05:28	06:14		07:06		07:57	07:54	08:40
	16:48	17:44	18:36	20:31		21:23	22:02	21:59	21:12		20:03		18:52	16:51	16:23
13	08:45	08:01	07:00	06:47	19:54-20:00/6	05:46	05:14	05:29	06:16		07:08		07:59	07:56	08:41
	16:49	17:46	18:38	20:33		21:24	22:03	21:58	21:10		20:01		18:50	16:49	16:23
14	08:44	07:59	06:57	06:45	20:05-20:07/2	05:45	05:14	05:31	06:17		07:09		08:01	07:58	08:42
	16:51	17:48	18:40	20:34		21:26	22:03	21:57	21:08		19:58		18:48	16:47	16:23
15	08:44	07:57	06:55	06:42	20:04-20:09/5	05:43	05:14	05:32	06:19		07:11		08:03	07:59	08:43
	16:52	17:49	18:41	20:36		21:28	22:04	21:56	21:06		19:56		18:45	16:46	16:23
16	08:43	07:55	06:53	06:40	20:03-20:11/8	05:42	05:14	05:33	06:21		07:13		08:04	08:01	08:44
	16:54	17:51	18:43	20:38		21:29	22:04	21:55	21:04		19:53		18:43	16:45	16:23
17	08:42	07:53	06:50	06:38	20:03-20:13/10	05:40	05:14	05:34	06:22		07:14		08:06	08:03	08:45
	16:56	17:53	18:45	20:40		21:31	22:05	21:54	21:02		19:51		18:41	16:43	16:24
18	08:41	07:51	06:48	06:36	20:02-20:13/11	05:38	05:14	05:36	06:24		07:16		08:08	08:05	08:46
	16:57	17:55	18:47	20:41		21:32	22:05	21:53	21:00		19:49		18:39	16:42	16:24
19	08:40	07:49	06:46	06:34	20:03-20:12/9	05:37	05:14	05:37	06:26		07:18		08:10	08:07	08:46
	16:59	17:57	18:49	20:43		21:34	22:06	21:52	20:58		19:46		18:37	16:40	16:24
20	08:39	07:47	06:43	06:31	20:05-20:10/5	05:36	05:14	05:38	06:27		07:19		08:12	08:08	08:47
	17:01	17:59	18:50	20:45		21:35	22:06	21:50	20:56		19:44		18:34	16:39	16:24
21	08:37	07:45	06:41	06:29		05:34	05:14	05:40	06:29		07:21		08:13	08:10	08:48
	17:02	18:01	18:52	20:47		21:37	22:06	21:49	20:53		19:41		18:32	16:38	16:25
22	08:36	07:42	06:38	06:27		05:33	05:14	05:41	06:31		07:23		08:15	08:12	08:48
	17:04	18:03	18:54	20:48		21:38	22:06	21:48	20:51		19:39		18:30	16:37	16:25
23	08:35	07:40	06:36	06:25		05:31	05:14	05:42	06:32	20:09-20:15/6	07:25		08:17	08:13	08:49
	17:06	18:05	18:56	20:50		21:40	22:07	21:46	20:49		19:37		18:28	16:36	16:26
24	08:34	07:38	06:34	06:23		05:30	05:15	05:44	06:34	20:07-20:16/9	07:26		08:19	08:15	08:49
	17:08	18:06	18:57	20:52		21:41	22:07	21:45	20:47		19:34		18:26	16:34	16:26
25	08:32	07:36	06:31	06:21		05:29	05:15	05:45	06:36	20:06-20:16/10	07:28		07:21	08:17	08:49
	17:10	18:08	18:59	20:54		21:43	22:07	21:44	20:45		19:32		17:24	16:33	16:27
26	08:31	07:34	06:29	06:19		05:28	05:15	05:47	06:37	20:05-20:14/9	07:30		07:23	08:18	08:50
	17:11	18:10	19:01	20:55		21:44	22:07	21:42	20:42		19:30		17:22	16:32	16:28
27	08:30	07:32	06:27	06:16		05:27	05:16	05:48	06:39	20:05-20:12/7	07:31		07:24	08:20	08:50
	17:13	18:12	19:03	20:57		21:45	22:07	21:41	20:40		19:27		17:20	16:31	16:29
28	08:28	07:29	06:24	06:14		05:25	05:16	05:50	06:41	20:06-20:11/5	07:33		07:26	08:22	08:50
	17:15	18:14	19:04	20:59		21:47	22:06	21:39	20:38		19:25		17:18	16:30	16:29
29	08:27		07:22	06:12		05:24	05:17	05:51	06:42	20:06-20:08/2	07:35		07:28	08:23	08:50
	17:17		20:06	21:01		21:48	22:06	21:38	20:36		19:22		17:16	16:30	16:30
30	08:25		07:20	06:10		05:23	05:18	05:53	06:44	19:55-20:01/6	07:36		07:30	08:25	08:50
	17:19		20:08	21:02		21:49	22:06	21:36	20:33		19:20		17:14	16:29	16:31
31	08:24		07:17			05:22		05:54	06:46	19:52-20:01/9			07:32		08:50
	17:21		20:10			21:50		21:34	20:31				17:12		16:32
Potential sun hours	255	276	367	418		489	503	506	456		381		330	263	240
Sum of minutes with flicker	0	0	0	134		0	0	0	63		67		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

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abyrne / abyrne@jodireland.com

Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar per WTG

Calculation: Expected Scenario (cumulative) WTG: 11 - Moanmore7

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:08	05:22	05:18	05:56	06:48	07:38	07:34	08:26
	16:33	17:23	18:16	20:12	21:04	21:52	22:06	21:33	20:29	19:18	17:10	16:28
2	08:50	08:21	07:25	07:12	06:06	05:21	05:19	05:58	06:49	07:40	07:36	08:28
	16:35	17:25	18:18	20:13	21:06	21:53	22:05	21:31	20:27	19:15	17:08	16:27
3	08:50	08:19	07:23	07:10	06:04	05:20	05:20	05:59	06:51	07:42	07:37	08:29
	16:36	17:26	18:20	20:15	21:08	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:03	05:19	05:20	06:01	06:53	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09	21:55	22:05	21:27	20:22	19:11	17:04	16:26
5	08:50	08:16	07:18	07:05	06:01	05:18	05:21	06:02	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:19	21:11	21:56	22:04	21:26	20:20	19:08	17:02	16:26
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:39	17:32	18:25	20:20	21:13	21:57	22:04	21:24	20:17	19:06	17:01	16:25
7	08:49	08:12	07:14	07:01	05:57	05:17	05:23	06:06	06:58	07:49	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:58	05:55	05:17	05:24	06:07	06:59	07:50	07:47	08:36
	16:42	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:12	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:49	08:37
	16:43	17:38	18:31	20:26	21:18	22:00	22:02	21:18	20:10	18:59	16:55	16:24
10	08:47	08:07	07:07	06:54	05:51	05:16	05:26	06:11	07:03	07:54	07:50	08:38
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11	08:47	08:05	07:04	06:52	05:50	05:15	05:27	06:12	07:04	07:56	07:52	08:39
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12	08:46	08:03	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54	08:40
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	16:49	17:46	18:38	20:33	21:24	22:03	21:58	21:10	20:01	18:50	16:49	16:23
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15	08:44	07:57	06:55	06:42	05:43	05:14	05:32	06:19	07:11	08:03	07:59	08:43
	16:52	17:49	18:41	20:36	21:28	22:04	21:56	21:06	19:56	18:45	16:46	16:23
16	08:43	07:55	06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:04	08:01	08:44
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	17:15	18:14	19:05	20:59	21:47	22:07	21:39	20:38	19:25	17:18	16:30	16:29
29	08:27		07:22	06:12	05:24	05:17	05:51	06:42	07:35	07:28	08:23	08:50
	17:17		20:06	21:01	21:48	22:06	21:38	20:36	19:22	17:16	16:30	16:30
30	08:25		07:20	06:10	05:23	05:18	05:53	06:44	07:36	07:30	08:25	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	17:14	16:29	16:31
31	08:24		07:17		05:22		05:54	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	255	276	367	418	489	503	506	456	381	330	263	240
Sum of minutes with flicker	0	0	0	0	0	0	0	0	0	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

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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar per WTG

Calculation: Expected Scenario (cumulative) WTG: 12 - Tullabrack1

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January	February	March	April		May		June	
1	08:50	08:22	07:27	07:15		06:08		05:21	20:25-21:03/38
	16:33	17:23	18:16	20:11		21:04		21:52	
2	08:50	08:21	07:25	07:12		06:06		05:21	20:24-21:04/40
	16:34	17:24	18:18	20:13		21:06		21:53	
3	08:50	08:19	07:23	07:10		06:04		05:20	20:24-21:04/40
	16:36	17:26	18:19	20:15		21:08		21:54	
4	08:50	08:17	07:20	07:08	19:49-19:51/2	06:02		05:19	20:25-21:06/41
	16:37	17:28	18:21	20:17		21:09		21:55	
5	08:50	08:15	07:18	07:05	19:47-19:52/5	06:01		05:18	20:25-21:06/41
	16:38	17:30	18:23	20:19		21:11		21:56	
6	08:49	08:14	07:16	07:03	19:47-19:54/7	05:59		05:18	20:26-21:07/41
	16:39	17:32	18:25	20:20		21:13		21:57	
7	08:49	08:12	07:14	07:01	19:47-19:56/9	05:57		05:17	20:26-21:07/41
	16:41	17:34	18:27	20:22		21:14		21:58	
8	08:48	08:10	07:11	06:58	19:46-19:58/12	05:55		05:16	20:26-21:08/42
	16:42	17:36	18:29	20:24		21:16		21:59	
9	08:48	08:08	07:09	06:56	19:44-19:58/14	05:53		05:16	20:26-21:08/42
	16:43	17:38	18:30	20:26		21:18		22:00	21:24-21:25/1
10	08:47	08:06	07:07	06:54	19:43-20:00/17	05:51		05:15	20:27-21:09/42
	16:45	17:40	18:32	20:27		21:19		22:00	21:24-21:26/2
11	08:47	08:05	07:04	06:52	19:42-20:02/20	05:50		05:15	20:27-21:09/42
	16:46	17:42	18:34	20:29		21:21		22:01	21:24-21:27/3
12	08:46	08:03	07:02	06:49	19:42-20:04/22	05:48		05:15	20:27-21:09/42
	16:48	17:44	18:36	20:31		21:23		22:02	21:23-21:27/4
13	08:45	08:01	07:00	06:47	19:41-20:05/24	05:46		05:14	20:27-21:09/42
	16:49	17:46	18:38	20:33		21:24		22:03	21:23-21:28/5
14	08:44	07:59	06:57	06:45	19:42-20:07/25	05:45		05:14	20:28-21:10/42
	16:51	17:47	18:40	20:34		21:26		22:03	21:23-21:29/6
15	08:43	07:57	06:55	06:42	19:43-19:56/13	05:43		05:14	20:28-21:10/42
	16:52	17:49	18:41	20:36	19:58-20:09/11	21:28		22:04	21:23-21:29/6
16	08:43	07:55	06:53	06:40	19:44-19:54/10 20:09-20:11/2	05:41	20:33-20:39/6	05:14	20:28-21:11/43
	16:54	17:51	18:43	20:38	19:58-20:08/10	21:29		22:04	21:23-21:30/7
17	08:42	07:53	06:50	06:38	19:46-19:52/6 20:09-20:13/4	05:40	20:31-20:42/11	05:14	20:29-21:11/42
	16:56	17:53	18:45	20:40	20:00-20:06/6	21:31		22:05	21:23-21:30/7
18	08:41	07:51	06:48	06:36	20:09-20:13/4	05:38	20:30-20:44/14	05:14	20:29-21:11/42
	16:57	17:55	18:47	20:41		21:32		22:05	21:24-21:31/7
19	08:40	07:49	06:46	06:34	20:10-20:15/5	05:37	20:28-20:45/17	05:14	20:29-21:11/42
	16:59	17:57	18:48	20:43		21:34		22:06	21:24-21:31/7
20	08:39	07:47	06:43	06:31		05:35	20:27-20:46/19	05:14	20:29-21:11/42
	17:01	17:59	18:50	20:45		21:35		22:06	21:24-21:31/7
21	08:37	07:45	06:41	06:29	20:18-20:19/1	05:34	20:27-20:47/20	05:14	20:29-21:11/42
	17:02	18:01	18:52	20:47		21:37		22:06	21:24-21:31/7
22	08:36	07:42	06:38	06:27	20:16-20:20/4	05:33	20:26-20:48/22	05:14	20:30-21:12/42
	17:04	18:03	18:54	20:48		21:38		22:06	21:25-21:32/7
23	08:35	07:40	06:36	06:25	20:15-20:22/7	05:31	20:25-20:48/23	05:14	20:30-21:12/42
	17:06	18:05	18:56	20:50		21:40		22:06	21:25-21:32/7
24	08:34	07:38	06:34	06:23	20:14-20:24/10	05:30	20:25-20:49/24	05:15	20:30-21:12/42
	17:08	18:06	18:57	20:52		21:41		22:07	21:25-21:32/7
25	08:32	07:36	06:31	06:21	20:14-20:25/11	05:29	20:24-20:49/25	05:15	20:31-21:13/42
	17:10	18:08	18:59	20:54		21:43		22:07	21:26-21:32/6
26	08:31	07:34	06:29	06:18	20:14-20:26/12	05:28	20:24-20:50/26	05:15	20:31-21:13/42
	17:11	18:10	19:01	20:55		21:44		22:07	21:25-21:32/7
27	08:30	07:32	06:27	06:16	20:14-20:25/11	05:27	20:24-20:50/26	05:16	20:30-21:12/42
	17:13	18:12	19:03	20:57		21:45		22:07	21:25-21:32/7
28	08:28	07:29	06:24	06:14	20:15-20:24/9	05:25	20:24-20:50/26	05:16	20:31-21:13/42
	17:15	18:14	19:04	20:59		21:47		22:06	21:26-21:32/6
29	08:27		07:22	06:12	20:16-20:22/6	05:24	20:24-20:51/27	05:17	20:31-21:14/43
	17:17		20:06	21:01		21:48	20:52-20:59/7	22:06	21:26-21:31/5
30	08:25		07:19	06:10		05:23	20:24-21:00/36	05:18	20:31-21:13/42
	17:19		20:08	21:02		21:49		22:06	21:27-21:31/4
31	08:24		07:17			05:22	20:25-21:02/37		
	17:21		20:10			21:50			
Potential sun hours	255	276	367	418		489		503	
Sum of minutes with flicker	0	0	0	299		366		1375	

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

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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar per WTG

Calculation: Expected Scenario (cumulative) WTG: 12 - Tullabrack1

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	July		August		September		October	November	December
1	05:18	20:31-21:14/43	05:56		06:47	19:41-20:01/20	07:38	07:34	08:26
	22:06	21:28-21:32/4	21:33		20:29		19:18	17:10	16:28
2	05:19	20:31-21:13/42	05:58		06:49	19:42-19:58/16	07:40	07:35	08:28
	22:05	21:28-21:31/3	21:31		20:26		19:15	17:08	16:27
3	05:20	20:31-21:13/42	05:59		06:51	19:42-19:57/15	07:42	07:37	08:29
	22:05	21:29-21:31/2	21:29		20:24		19:13	17:06	16:27
4	05:20	20:32-21:13/41	06:01		06:53	19:43-19:55/12	07:43	07:39	08:30
	22:05		21:27		20:22		19:11	17:04	16:26
5	05:21	20:32-21:14/42	06:02		06:54	19:43-19:52/9	07:45	07:41	08:32
	22:04		21:26		20:19		19:08	17:02	16:25
6	05:22	20:32-21:14/42	06:04		06:56	19:43-19:50/7	07:47	07:43	08:33
	22:03		21:24		20:17		19:06	17:01	16:25
7	05:23	20:31-21:13/42	06:06		06:58	19:43-19:48/5	07:49	07:45	08:34
	22:03		21:22		20:15		19:04	16:59	16:25
8	05:24	20:32-21:12/40	06:07		06:59	19:43-19:45/2	07:50	07:47	08:36
	22:02		21:20		20:12		19:01	16:57	16:24
9	05:25	20:32-21:12/40	06:09		07:01		07:52	07:48	08:37
	22:01		21:18		20:10		18:59	16:55	16:24
10	05:26	20:32-21:12/40	06:11		07:03		07:54	07:50	08:38
	22:01		21:16		20:08		18:57	16:54	16:24
11	05:27	20:32-21:11/39	06:12		07:04		07:56	07:52	08:39
	22:00		21:14		20:05		18:54	16:52	16:23
12	05:28	20:32-21:10/38	06:14		07:06		07:57	07:54	08:40
	21:59		21:12		20:03		18:52	16:50	16:23
13	05:29	20:32-21:09/37	06:16		07:08		07:59	07:56	08:41
	21:58		21:10		20:01		18:50	16:49	16:23
14	05:31	20:32-21:08/36	06:17	20:23-20:30/7	07:09		08:01	07:58	08:42
	21:57		21:08		19:58		18:48	16:47	16:23
15	05:32	20:33-21:00/27	06:19	20:22-20:32/10	07:11		08:03	07:59	08:43
	21:56	21:03-21:07/4	21:06		19:56		18:45	16:46	16:23
16	05:33	20:34-21:00/26	06:21	20:21-20:32/11	07:13		08:04	08:01	08:44
	21:55		21:04		19:53		18:43	16:44	16:23
17	05:34	20:34-20:59/25	06:22	20:20-20:33/13	07:14		08:06	08:03	08:45
	21:54		21:02		19:51		18:41	16:43	16:24
18	05:36	20:34-20:59/25	06:24	20:21-20:32/11	07:16		08:08	08:05	08:46
	21:53		21:00		19:49		18:39	16:42	16:24
19	05:37	20:34-20:59/25	06:26	20:20-20:29/9	07:18		08:10	08:06	08:46
	21:52		20:58		19:46		18:36	16:40	16:24
20	05:38	20:35-20:59/24	06:27	20:21-20:27/6	07:19		08:12	08:08	08:47
	21:50		20:56		19:44		18:34	16:39	16:24
21	05:40	20:36-20:58/22	06:29	20:21-20:25/4	07:21		08:13	08:10	08:47
	21:49		20:53		19:41		18:32	16:38	16:25
22	05:41	20:36-20:57/21	06:31		07:23		08:15	08:12	08:48
	21:48		20:51		19:39		18:30	16:37	16:25
23	05:42	20:37-20:57/20	06:32		07:24		08:17	08:13	08:49
	21:46		20:49		19:37		18:28	16:35	16:26
24	05:44	20:38-20:56/18	06:34	20:13-20:19/6	07:26		08:19	08:15	08:49
	21:45		20:47		19:34		18:26	16:34	16:26
25	05:45	20:39-20:55/16	06:36	20:12-20:17/5	07:28		07:21	08:17	08:49
	21:44		20:45		19:32		17:24	16:33	16:27
26	05:47	20:41-20:54/13	06:37	19:48-19:54/6 20:11-20:14/3	07:30		07:23	08:18	08:50
	21:42		20:42	20:01-20:08/7	19:29		17:22	16:32	16:28
27	05:48	20:42-20:52/10	06:39	19:46-19:56/10 20:11-20:12/1	07:31		07:24	08:20	08:50
	21:41		20:40	20:00-20:10/10	19:27		17:20	16:31	16:29
28	05:50		06:41	19:43-19:57/14	07:33		07:26	08:22	08:50
	21:39		20:38	19:58-20:10/12	19:25		17:18	16:30	16:29
29	05:51		06:42	19:43-20:08/25	07:35		07:28	08:23	08:50
	21:37		20:36		19:22		17:16	16:30	16:30
30	05:53		06:44	19:42-20:06/24	07:36		07:30	08:25	08:50
	21:36		20:33		19:20		17:14	16:29	16:31
31	05:54		06:46	19:41-20:03/22			07:32		08:50
	21:34		20:31				17:12		16:32
Potential sun hours	506		456		381		330	263	240
Sum of minutes with flicker		849		216		86	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

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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar per WTG

Calculation: Expected Scenario (cumulative) WTG: 13 - Tullabrack2

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:08	05:21 21:07-21:12/5	05:18 21:07-21:24/17	05:56	06:47	07:38	07:34	08:26
	16:33	17:23	18:16	20:12	21:04	21:52	22:06	21:33	20:29	19:18	17:10	16:28
2	08:50	08:21	07:25	07:12	06:06 20:35-20:36/1	05:21 21:05-21:13/8	05:19 21:07-21:23/16	05:58	06:49	07:40	07:35	08:28
	16:34	17:24	18:18	20:13	21:06	21:53	22:05	21:31	20:26	19:15	17:08	16:27
3	08:50	08:19	07:23	07:10	06:04 20:34-20:38/4	05:20 21:04-21:14/10	05:20 21:08-21:23/15	05:59	06:51	07:42	07:37	08:29
	16:36	17:26	18:19	20:15	21:08	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:02 20:35-20:40/5	05:19 21:04-21:16/12	05:20 21:09-21:24/15	06:01 20:48-20:51/3	06:53	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09	21:55	22:05	21:27	20:22	19:11	17:04	16:26
5	08:50	08:15	07:18	07:05	06:01 20:34-20:41/7	05:18 21:03-21:16/13	05:21 21:09-21:24/15	06:02 20:45-20:52/7	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:19	21:11	21:56	22:04	21:26	20:19	19:08	17:02	16:25
6	08:49	08:14	07:16	07:03	05:59 20:34-20:43/9	05:18 21:04-21:17/13	05:22 21:10-21:24/14	06:04 20:45-20:53/8	06:56	07:47	07:43	08:33
	16:39	17:32	18:25	20:20	21:13	21:57	22:04	21:24	20:17	19:06	17:01	16:25
7	08:49	08:12	07:14	07:01	05:57 20:34-20:43/9	05:17 21:03-21:17/14	05:23 21:10-21:23/13	06:06 20:43-20:52/9	06:58	07:49	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:58	05:55 20:36-20:42/6	05:16 21:03-21:18/15	05:24 21:10-21:22/12	06:07 20:44-20:50/6	06:59	07:50	07:47	08:36
	16:42	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:12	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	05:53	05:16 21:03-21:18/15	05:25 21:11-21:22/11	06:09 20:43-20:48/5	07:01	07:52	07:48	08:37
	16:43	17:38	18:31	20:26	21:18	22:00	22:02	21:18	20:10	18:59	16:55	16:24
10	08:47	08:06	07:07	06:54	05:51	05:15 21:03-21:19/16	05:26 21:12-21:21/9	06:11 20:44-20:47/3	07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	22:01	21:16	20:08	18:57	16:54	16:24
11	08:47	08:05	07:04	06:52	05:50	05:15 21:03-21:20/17	05:27 21:13-21:20/7	06:12	07:04	07:56	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:54	16:52	16:23
12	08:46	08:03	07:02	06:49	05:48	05:15 21:03-21:19/16	05:28 21:15-21:18/3	06:14 20:25-20:29/4	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:50	16:23
13	08:45	08:01	07:00	06:47	05:46	05:14 21:03-21:20/17	05:29	06:16 20:23-20:31/8	07:08	07:59	07:56	08:41
	16:49	17:46	18:38	20:33	21:24	22:03	21:58	21:10	20:01	18:50	16:49	16:23
14	08:44	07:59	06:57	06:45	05:45	05:14 21:03-21:20/17	05:31	06:17 20:21-20:32/11	07:09	08:01	07:58	08:42
	16:51	17:47	18:40	20:34	21:26	22:03	21:57	21:08	19:58	18:48	16:47	16:23
15	08:44	07:57	06:55	06:42	05:43	05:14 21:03-21:21/18	05:32	06:19 20:21-20:32/11	07:11	08:03	07:59	08:43
	16:52	17:49	18:41	20:36	21:28	22:04	21:56	21:06	19:56	18:45	16:46	16:23
16	08:43	07:55	06:53	06:40 20:08-20:11/3	05:41	05:14 21:04-21:21/17	05:33	06:21 20:19-20:34/15	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:53	18:43	16:44	16:23
17	08:42	07:53	06:50	06:38 20:08-20:13/5	05:40	05:14 21:04-21:21/17	05:34	06:22 20:20-20:33/13	07:14	08:06	08:03	08:45
	16:56	17:53	18:45	20:40	21:31	22:05 21:22-21:24/2	21:54	21:02	19:51	18:41	16:43	16:24
18	08:41	07:51	06:48	06:36 20:07-20:13/6	05:38	05:14 21:04-21:21/17	05:36	06:24 20:20-20:32/12	07:16	08:08	08:05	08:46
	16:57	17:55	18:47	20:41	21:32	22:05 21:22-21:25/3	21:53	21:00	19:49	18:39	16:42	16:24
19	08:40	07:49	06:46	06:34 20:08-20:14/6	05:37	05:14 21:04-21:26/22	05:37	06:26 20:20-20:29/9	07:18	08:10	08:07	08:46
	16:59	17:57	18:49	20:43	21:34	22:06	21:52	20:58	19:46	18:36	16:40	16:24
20	08:39	07:47	06:43	06:31 20:16-20:17/1	05:35	05:14 21:04-21:26/22	05:38	06:27 20:21-20:27/6	07:19	08:12	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:56	19:44	18:34	16:39	16:24
21	08:37	07:45	06:41	06:29 20:15-20:19/4	05:34	05:14 21:04-21:26/22	05:40	06:29 20:20-20:25/5	07:21	08:13	08:10	08:48
	17:02	18:01	18:52	20:47	21:37	22:06	21:49	20:53	19:41	18:32	16:38	16:25
22	08:36	07:42	06:38	06:27 20:15-20:20/5	05:33	05:14 21:05-21:27/22	05:41	06:31 20:20-20:23/3	07:23	08:15	08:12	08:48
	17:04	18:03	18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:25
23	08:35	07:40	06:36	06:25 20:15-20:22/7	05:31	05:14 21:05-21:27/22	05:42	06:32	07:24	08:17	08:13	08:49
	17:06	18:05	18:56	20:50	21:40	22:07	21:46	20:49	19:37	18:28	16:35	16:26
24	08:34	07:38	06:34	06:23 20:14-20:24/10	05:30	05:15 21:05-21:22/17	05:44	06:34 20:12-20:18/6	07:26	08:19	08:15	08:49
	17:08	18:06	18:57	20:52	21:41	22:07 21:23-21:26/3	21:45	20:47	19:34	18:26	16:34	16:26
25	08:32	07:36	06:31	06:21 20:13-20:25/12	05:29	05:15 21:06-21:23/17	05:45	06:36 20:11-20:17/6	07:28	08:21	08:17	08:49
	17:10	18:08	18:59	20:54	21:43	22:07 21:24-21:27/3	21:44	20:45	19:32	18:24	16:33	16:27
26	08:31	07:34	06:29	06:18 20:13-20:27/14	05:28	05:15 21:06-21:23/17	05:47	06:37 20:09-20:14/5	07:30	08:23	08:18	08:50
	17:11	18:10	19:01	20:55	21:44	22:07	21:42	20:42	19:29	18:22	16:32	16:28
27	08:30	07:32	06:27	06:16 20:13-20:27/14	05:27	05:16 21:06-21:23/17	05:48	06:39 20:10-20:12/2	07:31	08:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	22:07	21:41	20:40	19:27	17:20	16:31	16:29
28	08:28	07:29	06:24	06:14 20:13-20:25/12	05:25	05:16 21:06-21:23/17	05:50	06:41 20:09-20:10/1	07:33	07:26	08:22	08:50
	17:15	18:14	19:04	20:59	21:47	22:06	21:39	20:38	19:25	17:18	16:30	16:29
29	08:27		07:22	06:12 20:14-20:24/10	05:24	05:17 21:07-21:24/17	05:51	06:42	07:35	07:28	08:23	08:50
	17:17		20:06	21:01	21:48	22:06	21:38	20:36	19:22	17:16	16:30	16:30
30	08:25		07:20	06:10 20:15-20:22/7	05:23	05:18 21:07-21:23/16	05:53	06:44	07:36	07:30	08:25	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	17:14	16:29	16:31
31	08:24		07:17		05:22		05:54	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	255	276	367	418	489	503	506	456	381	330	263	240
Sum of minutes with flicker	0	0	0	116	41	496	147	158	0	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

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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar per WTG

Calculation: Expected Scenario (cumulative) WTG: 14 - Tullabrack3

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:08	05:21 21:00-21:07/7	05:18	05:56 20:57-21:02/5	06:47	07:38	07:34	08:26
	16:33	17:23	18:16	20:12	21:04	21:52 21:11-21:18/7	22:06	21:33	20:29	19:18	17:10	16:28
2	08:50	08:21	07:25	07:12	06:06	05:21 21:00-21:07/7	05:19	05:58 20:57-21:01/4	06:49	07:40	07:36	08:28
	16:34	17:24	18:18	20:13	21:06	21:53 21:11-21:19/8	22:05	21:31	20:26	19:15	17:08	16:27
3	08:50	08:19	07:23	07:10	06:04 20:35-20:38/3	05:20 21:01-21:05/4	05:20	05:59 20:57-20:58/1	06:51	07:42	07:37	08:29
	16:36	17:26	18:19	20:15	21:08	21:54 21:11-21:19/8	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:02 20:36-20:40/4	05:19 21:12-21:20/8	05:20	06:01	06:53	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09	21:55	22:05	21:27	20:22	19:11	17:04	16:26
5	08:50	08:15	07:18	07:05	06:01 20:36-20:41/5	05:18 21:12-21:19/7	05:21 21:21-21:24/3	06:02 20:48-20:50/2	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:19	21:11	21:56	22:04	21:26	20:19	19:08	17:02	16:25
6	08:49	08:14	07:16	07:03	05:59 20:36-20:43/7	05:18 21:14-21:19/5	05:22 21:19-21:24/5	06:04 20:47-20:53/6	06:56	07:47	07:43	08:33
	16:39	17:32	18:25	20:20	21:13	21:57	22:04	21:24	20:17	19:06	17:01	16:25
7	08:49	08:12	07:14	07:01	05:57 20:37-20:42/5	05:17 21:14-21:18/4	05:23 21:19-21:25/6	06:06 20:45-20:52/7	06:58	07:49	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:58	05:55	05:16	05:24 21:19-21:26/7	06:07 20:45-20:50/5	06:59	07:50	07:47	08:36
	16:42	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:12	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	05:53	05:16	05:25 21:10-21:12/2	06:09 20:44-20:48/4	07:01	07:52	07:48	08:37
	16:43	17:38	18:30	20:26	21:18	22:00	22:02 21:18-21:27/9	21:18	20:10	18:59	16:55	16:24
10	08:47	08:07	07:07	06:54	05:51 20:47-20:49/2	05:15	05:26 21:08-21:13/5	06:11 20:45-20:47/2	07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	22:01 21:18-21:27/9	21:16	20:08	18:57	16:54	16:24
11	08:47	08:05	07:04	06:52	05:50 20:47-20:51/4	05:15	05:27 21:07-21:15/8	06:12	07:04	07:56	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01	22:00 21:18-21:26/8	21:14	20:05	18:54	16:52	16:23
12	08:46	08:03	07:02	06:49	05:48 20:46-20:52/6	05:15	05:28 21:07-21:15/8	06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	22:02	21:59 21:18-21:25/7	21:12	20:03	18:52	16:50	16:23
13	08:45	08:01	07:00	06:47	05:46 20:47-20:54/7	05:14	05:29 21:06-21:16/10	06:16	07:08	07:59	07:56	08:41
	16:49	17:46	18:38	20:33	21:24	22:03	21:58 21:18-21:25/7	21:10	20:01	18:50	16:49	16:23
14	08:44	07:59	06:57	06:45	05:45 20:47-20:55/8	05:14	05:30 21:06-21:16/10	06:17	07:09	08:01	07:58	08:42
	16:51	17:47	18:40	20:34	21:26	22:03	21:57 21:18-21:24/6	21:08	19:58	18:48	16:47	16:23
15	08:44	07:57	06:55	06:42	05:43 20:48-20:57/9	05:14	05:32 21:06-21:18/12	06:19	07:11	08:03	07:59	08:43
	16:52	17:49	18:41	20:36	21:28	22:04	21:56 21:19-21:24/5	21:06	19:56	18:45	16:46	16:23
16	08:43	07:55	06:53	06:40	05:41 20:49-20:58/9	05:14	05:33 21:06-21:18/12	06:21	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	21:55 21:19-21:22/3	21:04	19:53	18:43	16:44	16:23
17	08:42	07:53	06:50	06:38	05:40 20:52-20:59/7	05:14	05:34 21:06-21:18/12	06:22	07:14	08:06	08:03	08:45
	16:56	17:53	18:45	20:40	21:31	22:05	21:54 21:19-21:21/2	21:02	19:51	18:41	16:43	16:24
18	08:41	07:51	06:48	06:36	05:38 20:53-21:01/8	05:14	05:35 21:05-21:18/13	06:24	07:16	08:08	08:05	08:46
	16:57	17:55	18:47	20:41	21:32	22:05	21:53	21:00	19:49	18:39	16:42	16:24
19	08:40	07:49	06:46	06:34	05:37 20:54-21:02/8	05:14	05:37 21:05-21:18/13	06:26	07:18	08:10	08:07	08:46
	16:59	17:57	18:49	20:43	21:34	22:06	21:52	20:58	19:46	18:36	16:40	16:24
20	08:39	07:47	06:43	06:31	05:35 20:57-21:04/7	05:14	05:38 21:06-21:18/12	06:27	07:19	08:12	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:56	19:44	18:34	16:39	16:24
21	08:37	07:45	06:41	06:29	05:34 20:57-21:05/8	05:14	05:40 21:06-21:17/11	06:29	07:21	08:13	08:10	08:48
	17:02	18:01	18:52	20:47	21:37	22:06	21:49	20:53	19:41	18:32	16:38	16:25
22	08:36	07:42	06:38	06:27	05:33 20:57-21:07/10	05:14	05:41 21:06-21:16/10	06:31	07:23	08:15	08:12	08:48
	17:04	18:03	18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:25
23	08:35	07:40	06:36	06:25	05:31 20:56-21:07/11	05:14	05:42 21:08-21:15/7	06:32	07:24	08:17	08:13	08:49
	17:06	18:05	18:56	20:50	21:40	22:07	21:46	20:49	19:37	18:28	16:35	16:26
24	08:34	07:38	06:34	06:23	05:30 20:56-21:08/12	05:15	05:44 21:06-21:13/7	06:34	07:26	08:19	08:15	08:49
	17:08	18:06	18:57	20:52	21:41	22:07	21:45	20:47	19:34	18:26	16:34	16:26
25	08:32	07:36	06:31	06:21	05:29 20:56-21:09/13	05:15	05:45 21:03-21:12/9	06:36	07:28	07:21	08:17	08:49
	17:10	18:08	18:59	20:54	21:43	22:07	21:44	20:45	19:32	17:24	16:33	16:27
26	08:31	07:34	06:29	06:18	05:28 20:56-21:09/13	05:15	05:47 21:03-21:11/8	06:37	07:30	07:23	08:18	08:50
	17:11	18:10	19:01	20:55	21:44 21:10-21:11/1	22:07	21:42	20:42	19:29	17:22	16:32	16:28
27	08:30	07:32	06:27	06:16	05:27 20:56-21:09/13	05:16	05:48 21:02-21:09/7	06:39	07:31	07:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45 21:10-21:12/2	22:07	21:41	20:40	19:27	17:20	16:31	16:28
28	08:28	07:29	06:24	06:14	05:25 20:57-21:08/11	05:16	05:50 20:59-21:07/8	06:41	07:33	07:26	08:22	08:50
	17:15	18:14	19:04	20:59	21:47 21:10-21:14/4	22:06	21:39	20:38	19:25	17:18	16:30	16:29
29	08:27		07:22	06:12	05:24 20:57-21:08/11	05:17	05:51 20:58-21:07/9	06:42	07:35	07:28	08:23	08:50
	17:17		20:06	21:01	21:48 21:10-21:15/5	22:06	21:38	20:36	19:22	17:16	16:30	16:30
30	08:25		07:19	06:10	05:23 20:57-21:08/11	05:18	05:53 20:57-21:05/8	06:44	07:36	07:30	08:25	08:50
	17:19		20:08	21:02	21:49 21:10-21:16/6	22:06	21:36	20:33	19:20	17:14	16:29	16:31
31	08:24		07:17		05:22 20:59-21:08/9		05:54 20:57-21:04/7	06:46		07:32		08:50
	17:21		20:10		21:50 21:11-21:18/7		21:34	20:31		17:12		16:32
Potential sun hours	255	276	367	418	489	503	506	456	381	330	263	240
Sum of minutes with flicker	0	0	0	0	246	65	285	36	0	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

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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar per WTG

Calculation: Expected Scenario (cumulative) WTG: 15 - Tullabrack4

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:08	05:21 21:14-21:18/4	05:18	05:56	06:47	07:38	07:34	08:26
	16:33	17:23	18:16	20:12	21:04	21:52	22:06	21:33	20:29	19:18	17:10	16:28
2	08:50	08:21	07:25	07:12	06:06	05:21 21:14-21:19/5	05:19	05:58	06:49	07:40	07:36	08:28
	16:34	17:24	18:18	20:13	21:06	21:53	22:05	21:31	20:26	19:15	17:08	16:27
3	08:50	08:19	07:23	07:10	06:04	05:20 21:14-21:20/6	05:20 21:23-21:26/3	05:59	06:51	07:42	07:37	08:29
	16:36	17:26	18:19	20:15	21:08	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:02	05:19 21:15-21:21/6	05:20 21:23-21:27/4	06:01	06:53	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09	21:55	22:05	21:27	20:22	19:11	17:04	16:26
5	08:50	08:16	07:18	07:05	06:01	05:18 21:15-21:22/7	05:21 21:23-21:28/5	06:02	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:19	21:11	21:56	22:04	21:26	20:19	19:08	17:02	16:25
6	08:49	08:14	07:16	07:03	05:59	05:18 21:16-21:23/7	05:22 21:21-21:28/7	06:04	06:56	07:47	07:43	08:33
	16:39	17:32	18:25	20:20	21:13	21:57	22:04	21:24	20:17	19:06	17:01	16:25
7	08:49	08:12	07:14	07:01	05:57	05:17 21:16-21:22/6	05:23 21:21-21:29/8	06:06	06:58	07:49	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:58	05:55	05:16 21:17-21:22/5	05:24 21:21-21:28/7	06:07	06:59	07:50	07:47	08:36
	16:42	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:12	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	05:53	05:16 21:18-21:21/3	05:25 21:21-21:28/7	06:09	07:01	07:52	07:48	08:37
	16:43	17:38	18:31	20:26	21:18	22:00	22:02	21:18	20:10	18:59	16:55	16:24
10	08:47	08:07	07:07	06:54	05:51	05:15	05:26 21:21-21:27/6	06:11	07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	22:01	21:16	20:08	18:57	16:54	16:24
11	08:47	08:05	07:04	06:52	05:50	05:15	05:27 21:21-21:26/5	06:12	07:04	07:56	07:52	08:39
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12	08:46	08:03	07:02	06:49	05:48	05:15	05:28 21:21-21:25/4	06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:50	16:23
13	08:45	08:01	07:00	06:47	05:46	05:14	05:29 21:21-21:25/4	06:16	07:08	07:59	07:56	08:41
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14	08:44	07:59	06:57	06:45	05:45	05:14	05:30 21:21-21:24/3	06:17	07:09	08:01	07:58	08:42
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15	08:44	07:57	06:55	06:42	05:43	05:14	05:32 21:22-21:24/2	06:19	07:11	08:03	07:59	08:43
	16:52	17:49	18:41	20:36	21:28	22:04	21:56	21:06	19:56	18:45	16:46	16:23
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17	08:42	07:53	06:50	06:38	05:40	05:14	05:34	06:22	07:14	08:06	08:03	08:45
	16:56	17:53	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43	16:24
18	08:41	07:51	06:48	06:36	05:38	05:14	05:35	06:24	07:16	08:08	08:05	08:46
	16:57	17:55	18:47	20:41	21:32	22:05	21:53	21:00	19:49	18:39	16:42	16:24
19	08:40	07:49	06:46	06:34	05:37	05:14	05:37	06:26	07:18	08:10	08:07	08:46
	16:59	17:57	18:49	20:43	21:34	22:06	21:52	20:58	19:46	18:37	16:40	16:24
20	08:39	07:47	06:43	06:31	05:35	05:14	05:38	06:27	07:19	08:12	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:56	19:44	18:34	16:39	16:24
21	08:37	07:45	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:13	08:10	08:48
	17:02	18:01	18:52	20:47	21:37	22:06	21:49	20:53	19:41	18:32	16:38	16:25
22	08:36	07:42	06:38	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:12	08:48
	17:04	18:03	18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:25
23	08:35	07:40	06:36	06:25	05:31	05:14	05:42	06:32	07:24	08:17	08:13	08:49
	17:06	18:05	18:56	20:50	21:40	22:07	21:47	20:49	19:37	18:28	16:35	16:26
24	08:34	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:06	18:57	20:52	21:41	22:07	21:45	20:47	19:34	18:26	16:34	16:26
25	08:32	07:36	06:31	06:21	05:29	05:15	05:45	06:36	07:28	07:21	08:17	08:49
	17:10	18:08	18:59	20:54	21:43	22:07	21:44	20:45	19:32	17:24	16:33	16:27
26	08:31	07:34	06:29	06:18	05:28	05:15	05:47	06:37	07:30	07:23	08:18	08:50
	17:11	18:10	19:01	20:55	21:44	22:07	21:42	20:42	19:30	17:22	16:32	16:28
27	08:30	07:32	06:27	06:16	05:27	05:16	05:48	06:39	07:31	07:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	22:07	21:41	20:40	19:27	17:20	16:31	16:28
28	08:28	07:29	06:24	06:14	05:25 21:13-21:14/1	05:16	05:50	06:41	07:33	07:26	08:22	08:50
	17:15	18:14	19:04	20:59	21:47	22:07	21:39	20:38	19:25	17:18	16:30	16:29
29	08:27		07:22	06:12	05:24 21:13-21:15/2	05:17	05:51	06:42	07:35	07:28	08:23	08:50
	17:17		20:06	21:01	21:48	22:06	21:38	20:36	19:22	17:16	16:30	16:30
30	08:25		07:20	06:10	05:23 21:13-21:16/3	05:18	05:53	06:44	07:36	07:30	08:25	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	17:14	16:29	16:31
31	08:24		07:17		05:22 21:14-21:18/4		05:54	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	255	276	367	418	489	503	506	456	381	330	263	240
Sum of minutes with flicker	0	0	0	0	10	49	65	0	0	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

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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar per WTG

Calculation: Expected Scenario (cumulative) WTG: 16 - Tullabrack5

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January	February	March	April	May		June		July		August		September	October	November	December
1	08:50	08:22	07:27	07:15	06:08	20:32-20:35/3	05:21	21:08-21:18/10	05:18	21:21-21:30/9	05:56		06:48	07:38	07:34	08:26
	16:33	17:23	18:16	20:12	21:04		21:52		22:06		21:33		20:29	19:18	17:10	16:28
2	08:50	08:21	07:25	07:12	06:06	20:32-20:36/4	05:21	21:08-21:19/11	05:19	21:20-21:30/10	05:58		06:49	07:40	07:36	08:28
	16:35	17:24	18:18	20:13	21:06		21:53		22:05		21:31		20:26	19:15	17:08	16:27
3	08:50	08:19	07:23	07:10	06:04	20:33-20:38/5	05:20	21:08-21:20/12	05:20	21:21-21:30/9	05:59		06:51	07:42	07:37	08:29
	16:36	17:26	18:20	20:15	21:08		21:54		22:05		21:29		20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:02	20:36-20:38/2	05:19	21:09-21:21/12	05:20	21:21-21:31/10	06:01		06:53	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09		21:55		22:05		21:27		20:22	19:11	17:04	16:26
5	08:50	08:16	07:18	07:05	06:01		05:18	21:10-21:22/12	05:21	21:18-21:30/12	06:02		06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:19	21:11		21:56		22:04		21:26		20:20	19:08	17:02	16:25
6	08:49	08:14	07:16	07:03	05:59		05:18	21:11-21:23/12	05:22	21:18-21:30/12	06:04		06:56	07:47	07:43	08:33
	16:39	17:32	18:25	20:20	21:13		21:57		22:04		21:24		20:17	19:06	17:01	16:25
7	08:49	08:12	07:14	07:01	05:57		05:17	21:12-21:24/12	05:23	21:16-21:29/13	06:06		06:58	07:49	07:45	08:34
	16:41	17:34	18:27	20:22	21:14		21:58		22:03		21:22		20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:58	05:55		05:16	21:16-21:25/9	05:24	21:16-21:28/12	06:07		06:59	07:50	07:47	08:36
	16:42	17:36	18:29	20:24	21:16		21:59		22:02		21:20		20:12	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	05:53		05:16	21:15-21:25/10	05:25	21:16-21:28/12	06:09	20:43-20:47/4	07:01	07:52	07:48	08:37
	16:43	17:38	18:31	20:26	21:18		22:00		22:02		21:18		20:10	18:59	16:55	16:24
10	08:47	08:07	07:07	06:54	05:51		05:15	21:16-21:26/10	05:26	21:15-21:27/12	06:11	20:42-20:47/5	07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:20		22:00		22:01		21:16		20:08	18:57	16:54	16:24
11	08:47	08:05	07:04	06:52	05:50		05:15	21:17-21:26/9	05:27	21:15-21:26/11	06:12	20:42-20:45/3	07:04	07:56	07:52	08:39
	16:46	17:42	18:34	20:29	21:21		22:01		22:00		21:14		20:05	18:54	16:52	16:23
12	08:46	08:03	07:02	06:49	05:48		05:15	21:16-21:25/9	05:28	21:15-21:25/10	06:14	20:41-20:43/2	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23		22:02		21:59		21:12		20:03	18:52	16:51	16:23
13	08:45	08:01	07:00	06:47	05:46		05:14	21:17-21:26/9	05:29	21:15-21:25/10	06:16		07:08	07:59	07:56	08:41
	16:49	17:46	18:38	20:33	21:24		22:03		21:58		21:10		20:01	18:50	16:49	16:23
14	08:44	07:59	06:57	06:45	05:45		05:14	21:18-21:26/8	05:31	21:15-21:24/9	06:17		07:09	08:01	07:58	08:42
	16:51	17:47	18:40	20:34	21:26		22:03		21:57		21:08		19:58	18:48	16:47	16:23
15	08:44	07:57	06:55	06:42	05:43		05:14	21:18-21:26/8	05:32	21:16-21:24/8	06:19		07:11	08:03	07:59	08:43
	16:52	17:49	18:41	20:36	21:28		22:04		21:56		21:06		19:56	18:45	16:46	16:23
16	08:43	07:55	06:53	06:40	05:41		05:14	21:19-21:26/7	05:33	21:16-21:22/6	06:21		07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29		22:04		21:55		21:04		19:53	18:43	16:44	16:23
17	08:42	07:53	06:50	06:38	05:40		05:14	21:19-21:26/7	05:34	21:16-21:21/5	06:22		07:14	08:06	08:03	08:45
	16:56	17:53	18:45	20:40	21:31		22:05		21:54		21:02		19:51	18:41	16:43	16:24
18	08:41	07:51	06:48	06:36	05:38		05:14	21:19-21:26/7	05:36	21:16-21:20/4	06:24		07:16	08:08	08:05	08:46
	16:57	17:55	18:47	20:41	21:32		22:05		21:53		21:00		19:49	18:39	16:42	16:24
19	08:40	07:49	06:46	06:34	05:37		05:14	21:19-21:26/7	05:37	21:16-21:19/3	06:26		07:18	08:10	08:07	08:46
	16:59	17:57	18:49	20:43	21:34		22:06		21:52		20:58		19:46	18:37	16:40	16:24
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	17:01	17:59	18:50	20:45	21:35		22:06		21:50		20:56		19:44	18:34	16:39	16:24
21	08:37	07:45	06:41	06:29	05:34		05:14	21:20-21:26/6	05:40		06:29		07:21	08:13	08:10	08:48
	17:02	18:01	18:52	20:47	21:37		22:06		21:49		20:53		19:41	18:32	16:38	16:25
22	08:36	07:42	06:38	06:27	05:33		05:14	21:21-21:27/6	05:41		06:31		07:23	08:15	08:12	08:48
	17:04	18:03	18:54	20:48	21:38		22:06		21:48		20:51		19:39	18:30	16:37	16:25
23	08:35	07:40	06:36	06:25	05:31		05:14	21:21-21:27/6	05:42		06:32		07:24	08:17	08:13	08:49
	17:06	18:05	18:56	20:50	21:40		22:07		21:47		20:49		19:37	18:28	16:35	16:26
24	08:34	07:38	06:34	06:23	05:30	21:07-21:09/2	05:15	21:20-21:27/7	05:44		06:34		07:26	08:19	08:15	08:49
	17:08	18:06	18:57	20:52	21:41		22:07		21:45		20:47		19:34	18:26	16:34	16:26
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27	08:30	07:32	06:27	06:16	05:27	21:06-21:12/6	05:16	21:20-21:28/8	05:48		06:39		07:31	07:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45		22:07		21:41		20:40		19:27	17:20	16:31	16:29
28	08:28	07:29	06:24	06:14	05:25	21:06-21:14/8	05:16	21:21-21:29/8	05:50		06:41		07:33	07:26	08:22	08:50
	17:15	18:14	19:04	20:59	21:47		22:07		21:39		20:38		19:25	17:18	16:30	16:29
29	08:27		07:22	06:12	05:24	21:06-21:15/9	05:17	21:21-21:30/9	05:51		06:42		07:35	07:28	08:23	08:50
	17:17		20:06	21:01	21:48		22:06		21:38		20:36		19:22	17:16	16:30	16:30
30	08:25		07:20	06:10	05:23	21:06-21:16/10	05:18	21:21-21:29/8	05:53		06:44		07:36	07:30	08:25	08:50
	17:19		20:08	21:02	21:49		22:06		21:36		20:33		19:20	17:14	16:29	16:31
31	08:24		07:17		05:22	21:08-21:18/10			05:54		06:46			07:32		08:50
	17:21		20:10		21:50				21:34		20:31			17:12		16:32
Potential sun hours	255	276	367	418	489		503		506		456		381	330	263	240
Sum of minutes with flicker	0	0	0	0	66		259		177		14		0	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

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Calculated:
04/01/2024 11:44/3.6.361

RECEIVED: 29/03/2024

SHADOW - Calendar per WTG

Calculation: Expected Scenario (cumulative) WTG: 17 - Tullabrack6

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	1.64	1.06

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
190	213	197	354	211	672	657	598	555	639	663	1,105	721	761	698	526	8,760

	January	February	March	April	May	June		July		August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:08	05:21		05:18	21:30-21:32/2	05:56	06:48	07:38	07:34	08:26
	16:33	17:23	18:16	20:12	21:04	21:52		22:06		21:33	20:29	19:18	17:10	16:28
2	08:50	08:21	07:25	07:12	06:06	05:21		05:19	21:30-21:31/1	05:58	06:49	07:40	07:36	08:28
	16:35	17:24	18:18	20:13	21:06	21:53		22:05		21:31	20:27	19:15	17:08	16:27
3	08:50	08:19	07:23	07:10	06:04	05:20		05:20	21:30-21:31/1	05:59	06:51	07:42	07:37	08:29
	16:36	17:26	18:20	20:15	21:08	21:54		22:05		21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:02	05:19		05:20		06:01	06:53	07:43	07:39	08:31
	16:37	17:28	18:21	20:17	21:09	21:55		22:05		21:27	20:22	19:11	17:04	16:26
5	08:50	08:16	07:18	07:05	06:01	05:18		05:21		06:02	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:19	21:11	21:56		22:04		21:26	20:20	19:08	17:02	16:25
6	08:49	08:14	07:16	07:03	05:59	05:18		05:22		06:04	06:56	07:47	07:43	08:33
	16:39	17:32	18:25	20:20	21:13	21:57		22:04		21:24	20:17	19:06	17:01	16:25
7	08:49	08:12	07:14	07:01	05:57	05:17		05:23		06:06	06:58	07:49	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58		22:03		21:22	20:15	19:04	16:59	16:25
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	16:42	17:36	18:29	20:24	21:16	21:59		22:02		21:20	20:12	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	05:53	05:16		05:25		06:09	07:01	07:52	07:49	08:37
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31	08:24		07:17		05:22			05:54		06:46		07:32		08:50
	17:21		20:10		21:50			21:34		20:31		17:12		16:32
Potential sun hours	255	276	367	418	489	503		506		456	381	330	263	240
Sum of minutes with flicker	0	0	0	0	0	52		4		0	0	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

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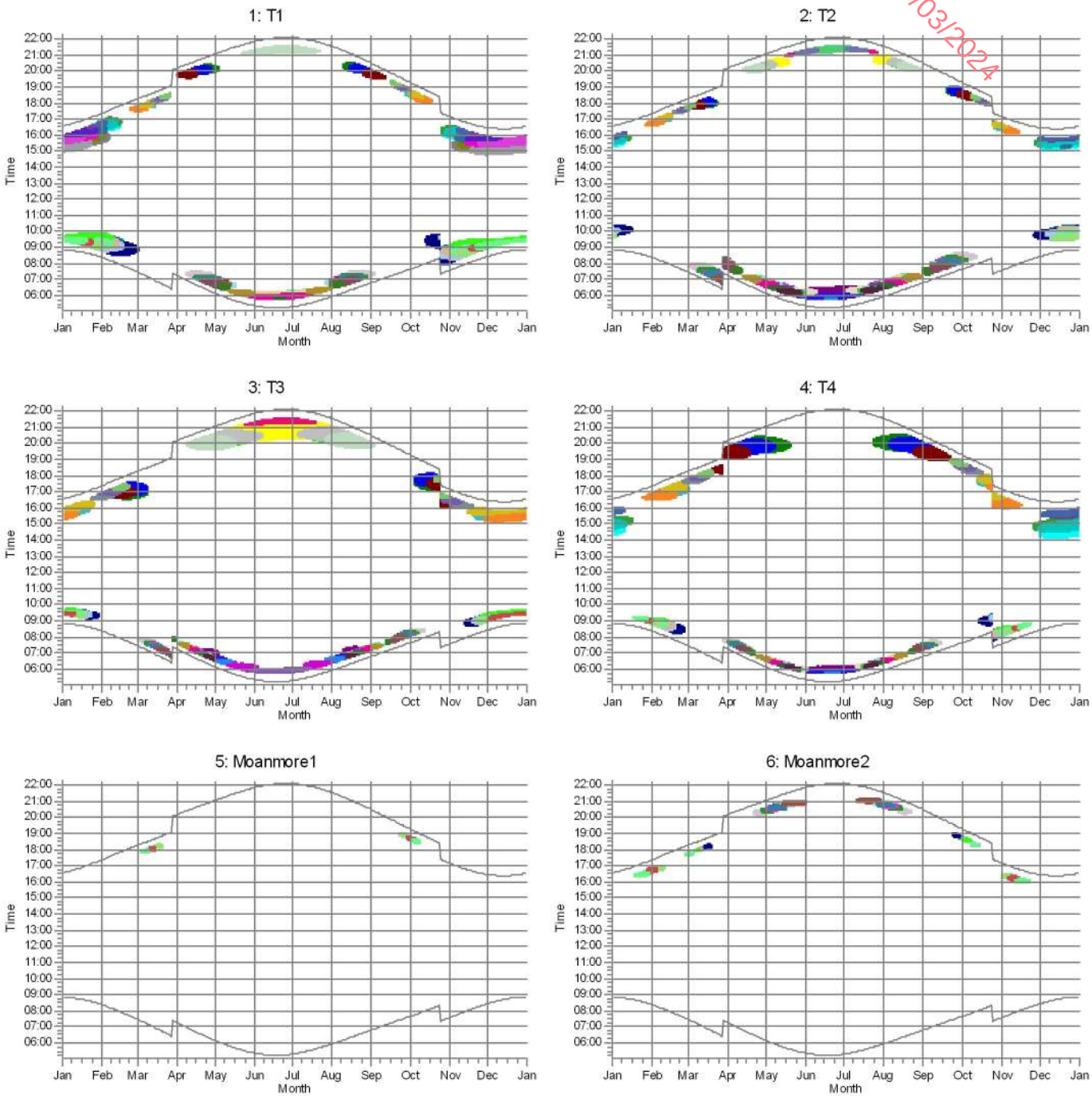
SHADOW - Calendar per WTG, graphical

Calculation: Expected Scenario (cumulative)



Shadow receptors

A: H1	H: H8	O: H15	V: H22	AD: H30	AL: H38	AT: H46	BN: H66	CC: H81
B: H2	I: H9	P: H16	W: H23	AE: H31	AM: H39	AU: H47	BQ: H69	CE: H83
C: H3	J: H10	Q: H17	X: H24	AF: H32	AN: H40	AV: H48	BT: H72	CF: H84
D: H4	K: H11	R: H18	Y: H25	AG: H33	AO: H41	AW: H49	BU: H73	CG: H85
E: H5	L: H12	S: H19	Z: H26	AI: H35	AP: H42	BD: H56	BX: H76	CI: H87
F: H6	M: H13	T: H20	AA: H27	AJ: H36	AR: H44	BF: H58	BZ: H78	CJ: H88
G: H7	N: H14	U: H21	AB: H28	AK: H37	AS: H45	BM: H65	CA: H79	CK: H90

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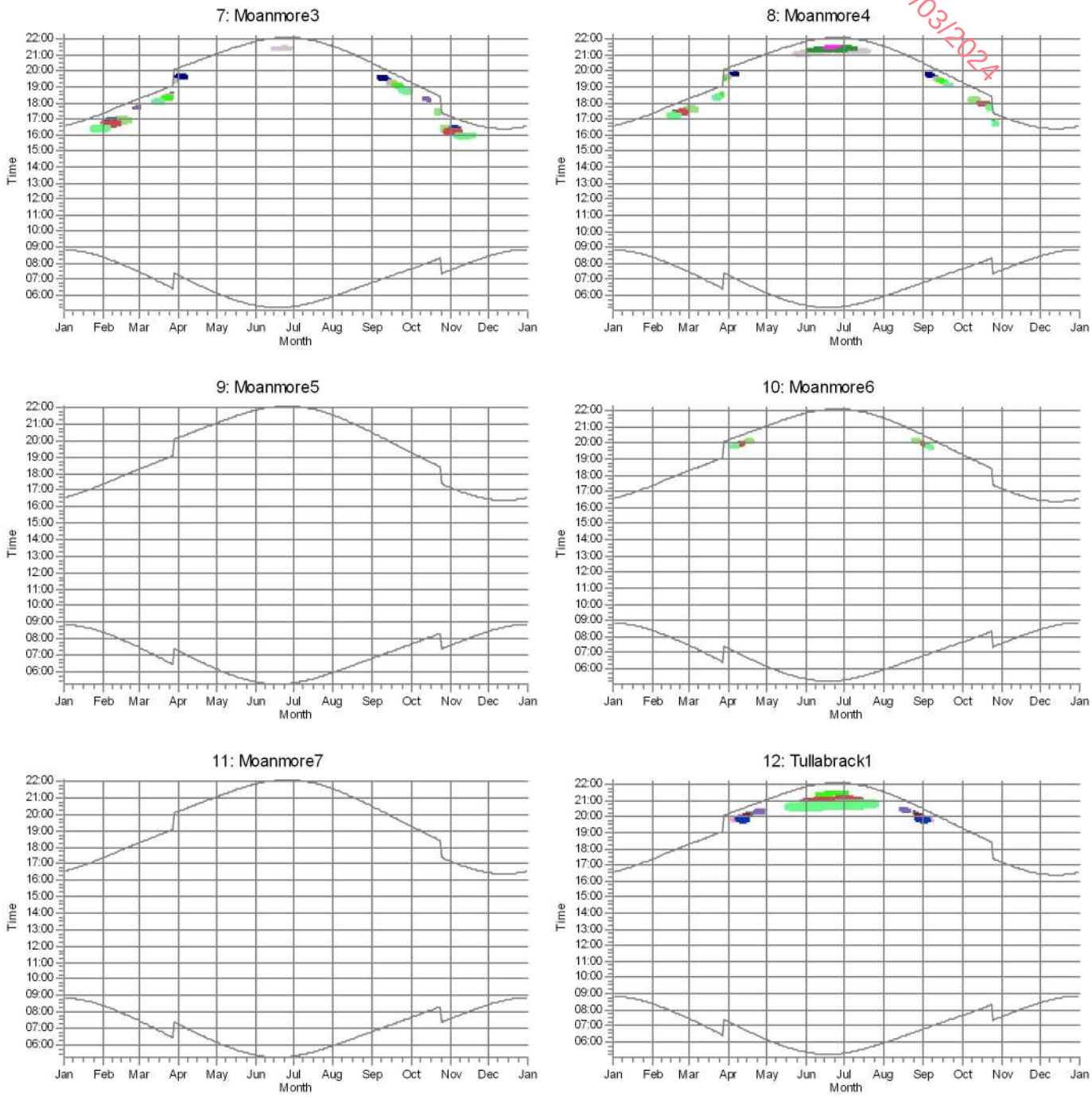
SHADOW - Calendar per WTG, graphical

Calculation: Expected Scenario (cumulative)



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04/01/2024 11:44/3.6.361

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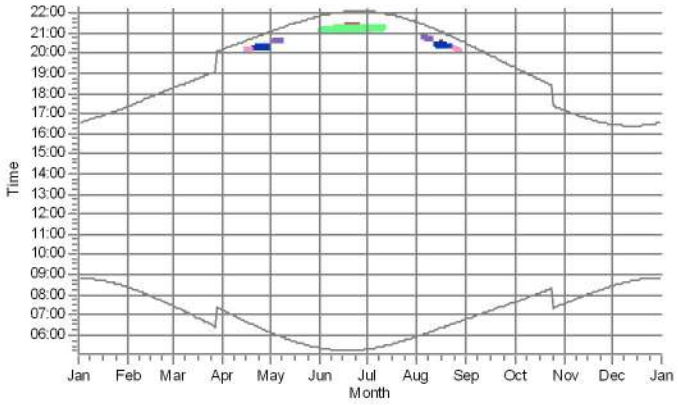
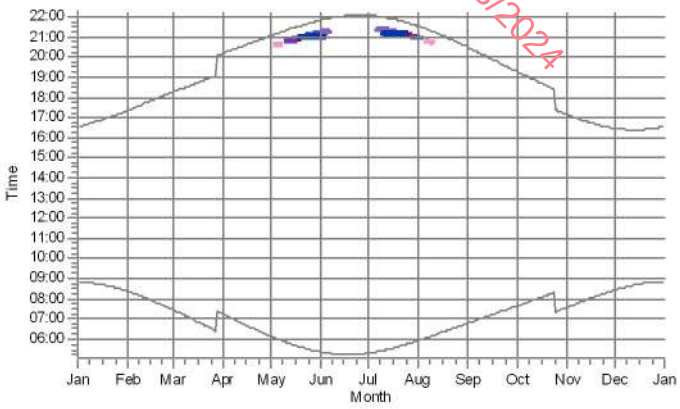
SHADOW - Calendar per WTG, graphical

Calculation: Expected Scenario (cumulative)

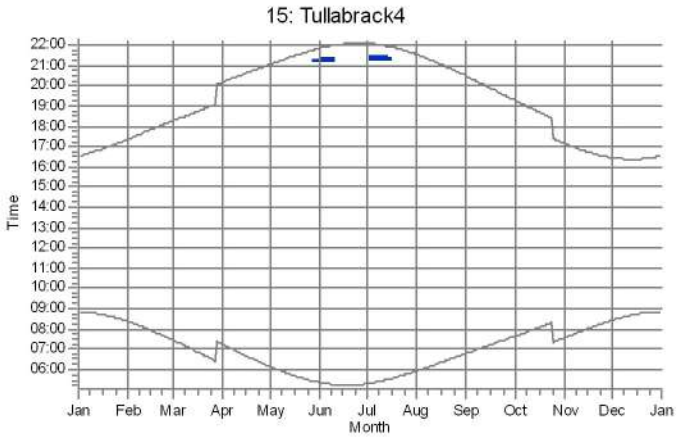
13: Tullabrack2



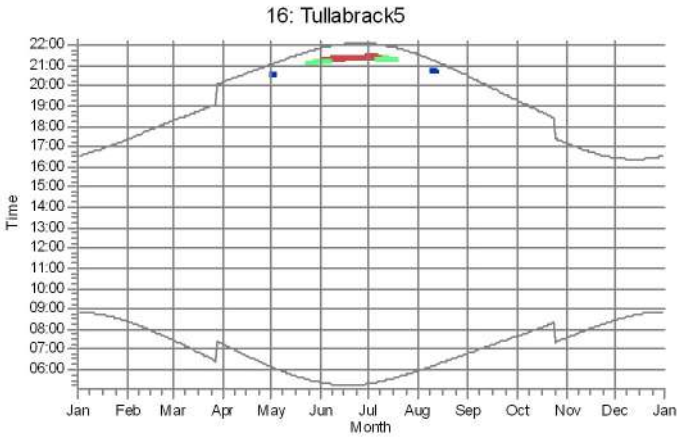
14: Tullabrack3



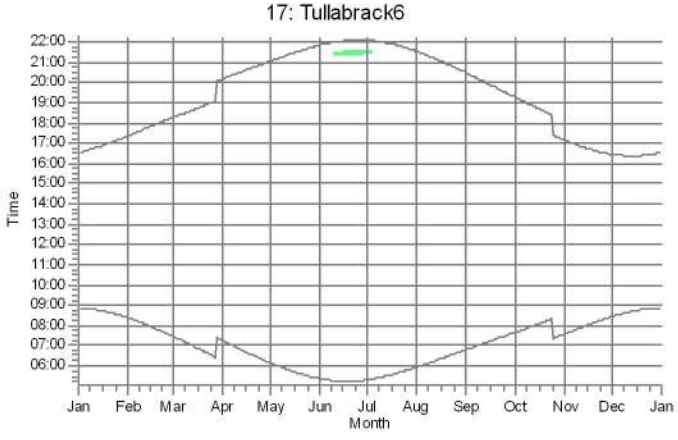
15: Tullabrack4



16: Tullabrack5

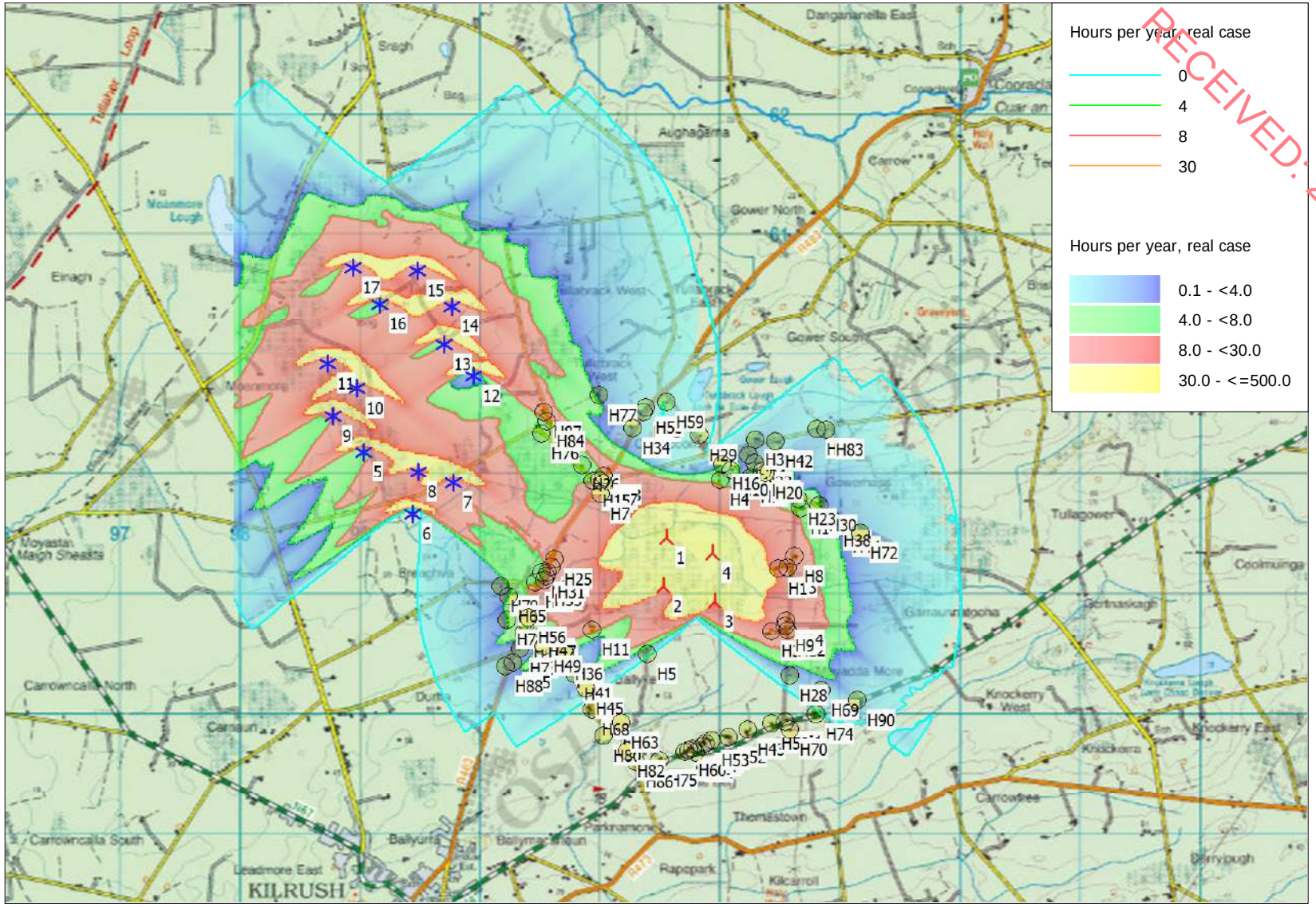


17: Tullabrack6



Shadow receptors

AH: H34 AY: H51 BC: H55 BG: H59 BY: H77 CF: H84 CI: H87



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0 500 1000 1500 2000 m

Map: 6777 basemap , Print scale 1:50,000, Map center Irish ITM-IRENET95 (IE), geocentric, GRS80 East: 501,380 North: 659,120

New WTG | Existing WTG | Shadow receptor

Flicker map level: Elevation Grid Data Object: Ballykett WF Shadow Flicker_EMDGrid_0.wpg (4)

Time step: 2 minutes, Day step: 3 days, Map resolution: 10 m, Visibility resolution: 5 m, Eye height: 1.5 m

Project:

Ballykett WF Shadow Flicker

Description:

4 No. Turbines in Ballykett, Co. Clare
In the more realistic scenario, or "expected values" the statistically likely monthly sunshine frequency and wind direction frequency data is assessed.

SHADOW - Map

Calculation:

Expected Scenario (cumulative)

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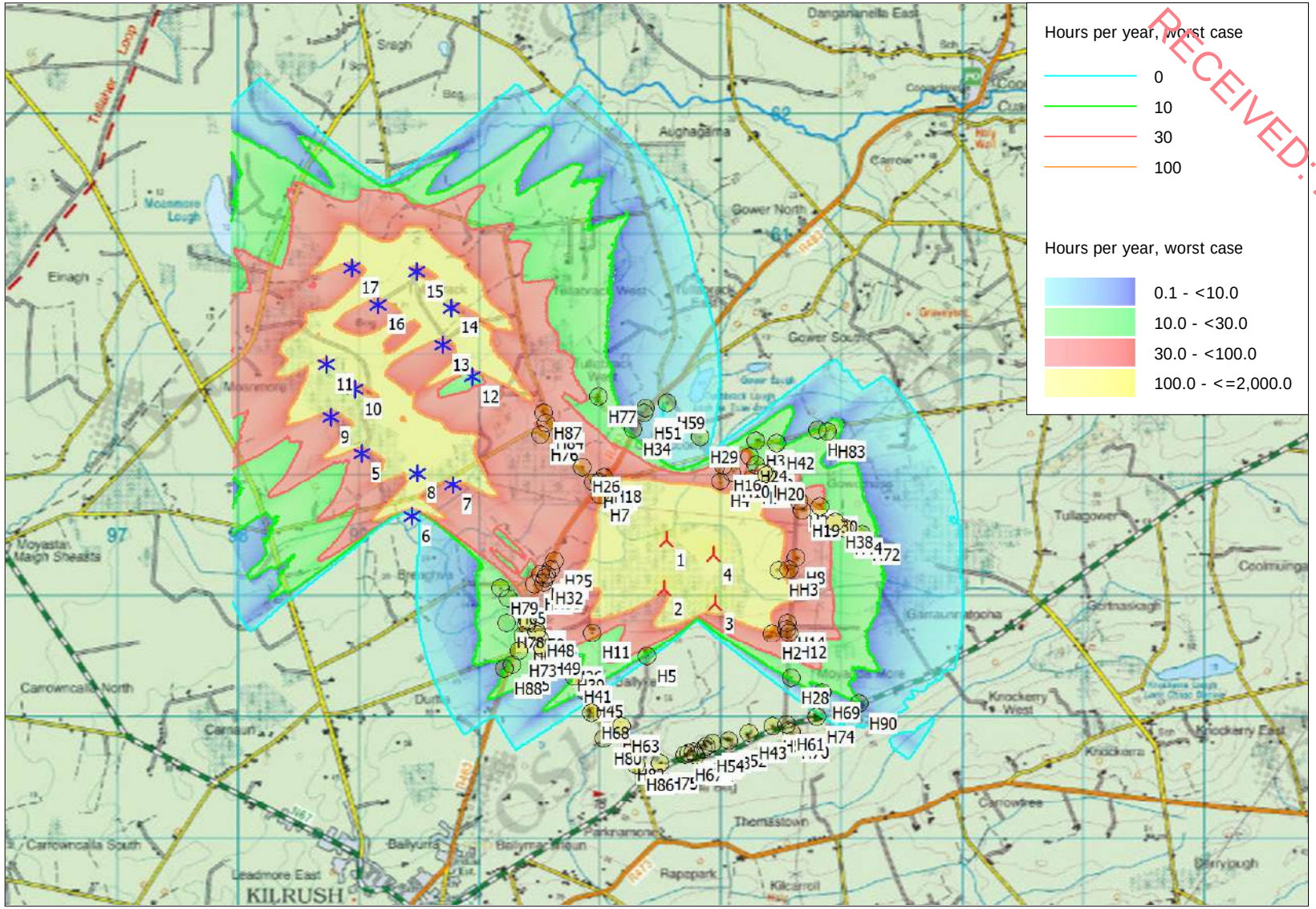
Calculated:

04/01/2024 11:44/3.6.361



0 500 1000 1500 2000 m

Map: 6777 basemap , Print scale 1:50,000, Map center Irish ITM-IRENET95 (IE), geocentric, GRS80 East: 501,380 North: 659,120

New WTG | Existing WTG | Shadow receptor

Flicker map level: Elevation Grid Data Object: Ballykett WF Shadow Flicker_EMDGrid_0.wpg (4)

Time step: 2 minutes, Day step: 3 days, Map resolution: 10 m, Visibility resolution: 5 m, Eye height: 1.5 m

RECEIVED: 29/03/2024

Project:

Ballykett WF Shadow Flicker

Description:

4 No. Turbines in Ballykett, Co. Clare
In the more realistic scenario, or "expected values" the statistically likely monthly sunshine frequency and wind direction frequency data is assessed.

SHADOW - Map

Calculation:

Worst Case Scenario (cumulative)

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Calculated:

04/01/2024 12:04/3.6.361