S. 37

File With _____

SECTION 131 FORM

Appeal NO: ABP-322575-25 **Defer Re O/H** ☐

TO:SEO

Having considered the contents of the submission ~~dated~~/ received 28/04/26 from

An Taisce I recommend that section 131 of the Planning and Development Act, 2000 ~~be~~ not be invoked at this stage for the following reason(s): no new material planning issues

E.O.: Karen Byrne **Date:** 16/06/2026.

To EO: _____

Section 131 not to be invoked at this stage. ☐

Section 131 to be invoked – allow 2/4 weeks for reply. ☐

S.E.O.: _____ **Date:** _____

S.A.O: _____ **Date:** _____

M _____

Please prepare BP _____ **- Section 131 notice enclosing a copy of the attached submission**

to: _____

Allow 2/3/4weeks – BP _____

EO: _____ **Date:** _____

AA: _____ **Date:** _____

S. 3

File With _____

CORRESPONDENCE FORM

Appeal No: ABP 322575-25

M _____

Please treat correspondence received on 28/04/26 **as follows:**

1. Update database with new agent for Applicant/Appellant _____	
2. Acknowledge with BP 23	**1. RETURN TO SENDER with BP** _____
3. Keep copy of Board's Letter ☐	2. Keep Envelope: ☐
	3. Keep Copy of Board's letter ☐

Amendments/Comments
An Taisce response to S.137 Notice.

4. Attach to file	**RETURN TO EO** ☑
(a) R/S ☐ (d) Screening ☐	
(b) GIS Processing ☐ (e) Inspectorate ☐	Karen Byrne.
(c) Processing ☐	

	Plans Date Stamped ☐ Date Stamped Filled in ☐
EO: Karen Byrne	**AA:** A. Delaney
Date: 11/05/26	**Date:** 11/05/26

Karen

Cathy Carleton

From: Phoebe Duvall <Phoebe.Duvall@antaisce.org>
Sent: Tuesday 28 April 2026 10:48
To: Appeals2
Subject: Ref. 322575
Attachments: 20260428-ACP-322575.pdf

Caution: This is an **External Email** and may have malicious content. Please take care when clicking links or opening attachments. When in doubt, contact the ICT Helpdesk.

A Chara,

Please find attached a submission from An Taisce in relation to Ref. 322575.

Best regards,

Phoebe Duvall

Senior Planning and Environmental Policy Officer
An Taisce - The National Trust for Ireland
5 Foster Place, Dublin 2, Ireland
Phone: 01 454 1786
www.antaisce.org

Company Reg. No. 12469 | Charity Ref. No. CHY4741 | Charity Regulator No. 20006358
An Taisce is a membership-based charity
Join at www.antaisce.org/membership

Please note that I work Monday through Thursday.

An Taisce
The National Trust for Ireland
5 Foster Place
Dublin 2, Ireland
D02 V0P9

20260428-ACP-322575

An Coimisiún Pleanála
64 Marlborough Street,
Dublin 1

Sent by email to: appeals@pleanala.ie

28th April 2026

Ref: **322575**
App: **Mayo Data Hub Limited**
For: **Construction of a data centre and all associated site works. An Environmental Impact Assessment Report (EIAR) and a Natura Impact Statement (NIS) have been submitted with the planning application.**
Site: **Mullafarry and Tawnaghmore Upper, Killala, Co. Mayo**

A Chara,

Thank you for your letter of 13th April 2026 requesting comment from An Taisce with regard to the decision that the Government's Large Energy User Action Plan (January 2026) and the CRU's Large Energy Users Connection Policy (CRU decision CRU/2025236 of December 2025) may be taken into account in determining the above appeal, specifically with regard to the proposed location of the subject proposal as well as in relation to on-site generation and/or storage capacity and renewable energy additionality. We wish to make the following observations.

1. Large Energy User Action Plan

In the first instance, it is important to highlight several major issues with the approach taken in the Government's Large Energy User Action Plan (LEAP) . The LEAP very narrowly focuses on data centres and other LEUs as economic opportunities. Despite the enormous and increasing power demand, LEAP makes no attempt to assess the climate and emissions implications of continued increases in LEU energy demand or the potential impacts of further LEU growth on the electricity grid (or indeed the economic impacts of these issues). It promotes the directing of new renewable energy capacity to use by data centres while failing to address the need to decarbonise our *existing* energy demand and ensure adherence to our legally binding emissions reduction obligations, including under the Climate Action and Low Carbon Development Act 2015 (as amended) (the Climate Act), EU climate law, and the Paris Agreement.

An Taisce considers that the LEAP is mostly, if not fully, irrelevant to the subject proposal, and specific development applications more broadly, as it primarily sets out actions related to forward planning

and developing a "plan-led approach" for LEUs as well as actions related to the development of further policy statements, reporting mechanisms, market mechanisms, etc. It is primarily an action plan, not a policy, and it does not itself set out criteria against which specific development proposals can be assessed. We therefore submit that the subject proposal's adherence or otherwise to the LEAP cannot be meaningfully assessed and that the LEAP should not be a material consideration in the determination of the subject appeal.

Indeed, the LEAP directly states that "*Ireland's data centre policy is set out succinctly in the Government Statement on the Role of Data Centres in Ireland's Enterprise Strategy (2022)*". An Taisce has very significant concerns about that Government Statement, including around its alignment with and adherence to our legally binding climate obligations and the lack of Strategic Environmental Assessment, however, it does deal with specific data centre proposals in a way that the LEAP does not.

It is noted that the LEAP places emphasis on co-location of LEUs with renewables infrastructure. Without prejudice to our position above that the LEAP is largely irrelevant to the proposal and adherence to it cannot be meaningfully assessed, should An Coimisiún still consider the subject proposal in the context of the LEAP, we consider that the proposed on-site measures such as the solar capacity do not cover anywhere near a significant enough proportion of the proposal's overall energy demand to reasonably fit under the LEAP's position on co-location. The proposed on-site solar installation represents approximately 0.1% of the 48MW average power demand of the data centre and is therefore negligible. No on-site storage is proposed.

Similarly, we also note the LEAP will "*prioritise locating LEUs where they support investment in renewables, effective grid utilisation and economic development, and* ***are consistent with Ireland's legally binding climate objectives***" (An Taisce emphasis added). As articulated in our initial observation to An Coimisiún on the subject appeal (on 16th June 2025), An Taisce does not consider that the subject proposal (or the granting of permission for it) is compliant with Ireland's legally binding climate objectives.

On the basis of the above, we submit that the LEAP is largely irrelevant to decisions on specific data centre applications and therefore should not be a material consideration. However, should An Coimisiún still deem it to be such, we also submit that because it entirely fails to provide any consideration of emissions, potential consistency of the project with the LEAP cannot be presumed to mean consistency with other policies and legal obligations, including under s.15 of the Climate Act.

2. CRU Large Energy Users Connection Policy

In the first instance, we would highlight that the CRU LEU Connection Policy decision is currently subject to a court challenge on grounds that it is non-compliant with the Climate Action and Low Carbon Development Act 2015 (as amended) (the Climate Act) and the EU Energy Efficiency Directive. The case is awaiting hearing, and we refer An Coimisiún to the case documentation as soon as it becomes available.

We attach and rely on the submissions made by both An Taisce and Friends of the Irish Environment (FIE) to the consultation on the CRU's proposed LEU Connection Policy. These submissions detail what An Taisce and FIE consider be the serious flaws with the proposed Connection Policy's compliance with the Climate Act and other related policy. The submission from Friends of the Irish Environment contains expert analysis from Prof. Hannah Daly and Dr. Fred Logue. We consider that the CRU's decision and final policy (CRU2025236) did not resolve the issues detailed in the two attached submissions, and therefore that the LEU Connection policy/decision is inconsistent with the

Climate Act and the Climate Action Plans 2024 and 2025 (which are to be read together). As such, we consider the CRU policy to be legally flawed, and we do not believe that it should be taken into account as a material consideration in the determination of the subject appeal.

It should be noted that while the CRU contended that it does not have a legal mandate to "*deliver a connections policy which requires explicit emissions reduction and offsetting measures*", the attached submissions, particularly Dr. Logue's analysis in the FIE submission, offer a robust critique of that assertion and legal evidence as to its inaccuracy.

The following points are made without prejudice to our position that the CRU LEU Connection Policy/decision is flawed and should not be considered in the determination of this appeal, per the reasons above and in the attached submissions.

Crucially, should An Coimisiún maintain its decision to deem the CRU policy/decision a material consideration in the appeal, we submit that the CRU Connection Policy/decision did not directly address emissions, therefore potential consistency with the CRU's plan cannot be presumed to mean consistency with s.15 of the Climate Act. As An Taisce has articulated in our original observation on the appeal, we do not believe that the subject project (or a grant of permission for it) is accordance with the requirements of the Climate Act.

With regard to on-site generation and renewables additionality, we refer An Coimisiún to the attached submissions which contain detailed critiques of the CRU LEU Connection Policy's approach to these issues. This is further evidence of the legal flaws in the CRU's approach and why the policy should not form a material consideration in the subject appeal.

Regarding on-site generation, the CRU's requirements for on-site generation and the lack of restriction on fossil fuel use therein presents a serious issue for compliance with our climate obligations. As Prof. Daly explains in the attached submission:

> *"The requirement for data centres to construct on-site power generation capacity is likely to also result in an increased dependence on fossil fuels, making it more challenging to transition to renewable energy sources in the future and potentially locking Ireland into a high-carbon pathway."*

We consider that the emissions intensity of on-site dispatchable generation should be restricted and that fossil fuel use in on-site or proximate generation should be prohibited in line with our emissions reduction obligations. We note that flexible gas-fired generation to deal with renewables intermittency is the only type of new fossil gas-fired power generation capacity that is provided for in Climate Action Plan 2024/2025 – gas-fired generation for new large energy user power demand is not included. However, the Climate Action Plans do include explicit statements on the need to reduce fossil fuel use, including gas.

Notwithstanding the above problems with the CRU's approach and our overall position that the CRU policy is legally flawed, we submit that the subject proposal is not in compliance with the CRU's criteria. On-site power generation beyond back-up capacity is limited to the solar installation, which, as stated previously, is entirely negligible in comparison to the facility's overall power demand, and the back-up generators,

Regarding renewables additionality, the CRU LEU Connection Policy/decision details its requirements for renewables additionality in Section 3.5. Notwithstanding the CRU's position, unless a CPPA covers more than 100% of a data centre's peak grid-generated power demand and/or 100% of related emissions, it is not actually contributing to the decarbonisation of the energy system. Even a CPPA

matching 100% of peak power demand and/or 100% of emissions only covers the new demand, no decarbonisation of the existing power system is achieved. Moreover, recent research indicates that although half of the new wind energy capacity developed in Ireland between 2020 and 2023 was financed through CPPAs, that met just 16% of the new electricity demand from data centres between 2020 and 2023.[1] Therefore, in the Irish context, there is very much a question over the current efficacy of CPPAs in decarbonising data centre demand. We would also note that CPPAs are not included in the Climate Action Plan 2024 and 2025 (to be read together) as mitigation for the electricity sector.

As stated in our original submission to An Coimisiún, the applicant discusses the possibility of entering into one or more CPPAs, however, it does not appear that any CPPAs are actually in place or in any stage of formal planning. Therefore, notwithstanding An Taisce's view that the CRU policy should not be taken into account in the determining of the appeal, we submit renewables additionality has not been demonstrated by the applicant.

2.1 Strategic Environmental Assessment

Additionally, we submit that the CRU LEU Connection Policy constitutes a plan or programme for the purposes of the Strategic Environmental Assessment (SEA) Directive. We consider that it fulfils the criteria under Article 2(a) of the SEA Directive in that:

a. it was prepared and adopted by the CRU – a national-level authority for the regulation of utilities; and
b. Section 34 of the Electricity Regulation Act 1999 gives the CRU the power to issue binding directions to the electricity transmission and distribution system operators detailing the terms and conditions for the connection to and use of the electricity transmission and distribution systems.

We submit that this means it qualifies as a plan falling under the scope of SEA Directive.

Under Article 3 of the Directive, the Connection Policy must then also meet the following criteria:

a. belongs to the list of sectors; and
b. set the framework for future development consent of projects listed in Annexes I and II to the EIA Directive, **or**
c. require an Appropriate Assessment under the EU Habitats Directive (92/43/EEC).

The Connection Policy and the data centres it applies to are within the energy sector, and it sets out criteria for the development consents for data centres, their implementation and grid connections. Data centres are projects falling under the scope of the EIA Directive.

Therefore, we consider that the Connection Policy/decision should have undergone SEA. As it has not, we do not consider that it can be reasonably used in the determination of the subject appeal.

[1] Daly, H. (2024) Data centres in the context of Ireland's carbon budgets. University College Cork. https://www.friendsoftheearth.ie/assets/files/pdf/data_centrres_and_the_carbon_budgets_-_prof_hannah_daly_dec_2024.pdf

3. Conclusion

Notwithstanding the reasons outlined in this submission on why the LEAP and the CRU LEU Connection Policy/decision should not be deemed to be material considerations in this appeal, if An Coimisiún still deems these policies to be such, we do not consider that the subject proposal is in alignment with either publication.

However, should An Coimisiún deem the subject proposal to be in accordance with these publications, we emphasise that compliance with them does not negate the need for compliance with or imply compliance with other policies and legal obligations, including, crucially, the Climate Act and the Climate Action Plans. To reiterate, neither the LEAP nor the CRU policy have assessed their potential emissions impacts, so compliance with them cannot be presumed to mean compliance with the requirements of the Climate Act, including s.15.

Is mise le meas,

Phoebe Duvall
Senior Planning and Environmental Policy Officer
An Taisce – The National Trust for Ireland

An Taisce
The National Trust for Ireland
5 Foster Place
Dublin 2, Ireland
D02 V0P9

Commission for the Regulation of Utilities,
The Exchange,
Belgard Square North,
Tallaght,
Dublin 24

4th April 2025

Re: Commission for the Regulation of Utilities - Proposed Decision Paper on the Large Energy Users Connection Policy (CRU202504).

A Chara,

An Taisce welcomes the opportunity to comment on the Proposed Decision Paper on the Large Energy Users Connection Policy and would like to make the following submission.

1. Crucial Context: Ireland's Emissions Reduction Obligations and the Current Carbon Budget Situation

Emissions in Ireland are subject to two sets of legal obligations:

- At national level - compliance with carbon budgets and corresponding sectoral emissions ceilings per the Climate Action and Low Carbon Development (Amendment) Act 2021 (hereafter referred to as the Climate Act) and its requirement to reduce national emissions in line with Ireland's fair share of global emissions: the first two budgets are 295Mt for 2021-2025 and 200Mt for 2026-2030 based on a 2018 baseline; and
- At EU level - a 42% reduction in national Emission Sharing Regulation (ESR) emissions by 2030 based on a 2005 baseline.

Focusing on the Climate Act, **on-time compliance with all carbon budget tonnages is legally binding.** In the absence of immediate course adjustment and urgent measures, both the Climate Change Advisory Council (CCAC) and the Environmental Protection Agency (EPA) project a failure to comply with the first budget and most of its sectoral ceilings and indeed with the second budget as well. Per the Climate Act, any overshoot of a carbon budget must be carried forwarded into the next budget period, thereby reducing the subsequent budget. The EPA's latest

emissions reports project that we will fail to stay within the limits of carbon budget 1.[1] Therefore, carbon budget 2 for the 2026-2030 period will have to be reduced by the amount of any overshoot that occurs in carbon budget 1 for 2021-2025. Currently, EPA projections[2] estimate that this overshoot of budget 1 will be within a range of 26 $MtCO_2e$ for the With Existing Measures (WEM) scenario to 19 $MtCO_2e$ for the With Additional Measures (WAM) scenario. Therefore, once the exceedance is applied, the 2026-2030 budget will be smaller and actually lie in the range of 174-181 $MtCO_2e$.

Though it is frequently cited as a legally binding target, including in the CRU's proposed decision paper, a 51% reduction in emissions by 2030 compared to a 2018 baseline was simply the legal benchmark that the CCAC was required to use to set the first two carbon budget levels. Once those budgets were set and agreed by Government, the obligation to consider the 51% reduction by 2030 was legally discharged - compliance with each carbon budget is now the legal obligation. This matters because the projected carbon budgets exceedances mean that the actual emissions reduction required by 2030 will in all likelihood be substantially higher than the often cited 51%.[3]

Not only is Ireland on course to overshoot the first two carbon budgets, but the sectoral ceilings currently do not add up to meet the 2030 budget, in fact they exceed it. This carbon budget "hole" could amount to "planned" excess emissions of 25% or more over and above the budget.[4] The exceedance of the budget comes from the inclusion of "unallocated emissions savings" - a Government decision that unspecified technological developments, unfolding over the time before the second budget period started, would significantly affect the relative feasibility of achieving additional reductions in different sectors. On that basis they "overallocated" emissions across the various sectors, but with a commitment that they expected to subsequently plan additional "emissions savings" in one or more specific sectors (i.e. that they would, at some point, revise one or more of the ceilings downward to come into compliance with the budget). These required "additional" savings were merely being left "unallocated" between sectors as a temporary measure, pending more clarity on technologies, etc. These "unallocated emissions savings" that would have to be subsequently "allocated" represent an additional 13% over the total approved budget for 2026-2030.[5]

Furthermore, the Government failed to assign a ceiling to an entire sector - land use, land use change and forestry (LULUCF). Recently, however, they did introduce what they describe as a "new approach" to LULUCF in the Climate Action Plan 2024. This new approach is based on an EU Regulation on LULUCF emissions that Ireland is already bound to, separately from our domestic climate law. The specific EU limit is arrived at via a formula that depends on emissions in certain previous years, not all of which are yet finalised. Thus, the number arrived at by this "new approach" also increases the amount by which the sectoral ceilings are exceeding the overall carbon budget.[6]

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[1] EPA (2024) Ireland's Greenhouse Gas Emissions Projections: https://www.epa.ie/publications/monitoring--assessment/climate-change/air-emissions/EPA-GHG-Projections-Report-2022-2050-May24--v2.pdf
[2] Ibid.
[3] Dublin City University and An Taisce (2024) "How Big is Ireland's Looming Carbon Budget 'Hole'?" https://www.antaisce.org/Handlers/Download.ashx?IDMF=0bb43829-9018-4075-ba83-b9f18280f15d
[4] Ibid.
[5] Ibid.
[6] Ibid.

To fix this carbon budget hole, the existing sectoral ceilings will need to be reduced, meaning that even more stringent measures will be needed to curtail emissions.

Ultimately, to comply with the constraints of the legally binding carbon budgets, sectoral activities must add up to a figure within the relevant sectoral ceiling. Given the currently projected exceedances for carbon budgets 1 and 2 and their sectoral ceilings as well as the aforementioned carbon budget hole, budget and sectoral ceiling compliance must mean cutting back on current projected WEM/WAM activities as well as not adding further new activities. This has significant implications for the CRU and the LEU connection policy.

This context on Ireland's emission reduction legal obligations is critical in demonstrating the serious problem we current face in complying with the legally binding carbon budgets. It therefore also highlights the urgency with which all of society must act to keep Ireland in line with its commitments to a fair share contribution to global emissions reduction, especially those bodies with obligations under the Climate Act, of which the CRU is one.

2. The CRU's Obligations Under the Climate Action and Low Carbon Development Act

Section 15(1) (hereafter referred to as section 15) of the Climate Act places obligations on relevant bodies, including the CRU and system operators (SOs):

> "*15(1) A relevant body shall, in so far as practicable, perform its functions in a manner consistent with—*
> *(a) the most recent approved climate action plan,*
> *(b) the most recent approved national long term climate action strategy,*
> *(c) the most recent approved national adaptation framework and approved sectoral adaptation plans,*
> *(d) the furtherance of the national climate objective, and*
> *(e) the objective of mitigating greenhouse gas emissions and adapting to the effects of climate change in the State.*"

The CRU acknowledges this legal duty in the proposed decision paper: "*Under the provisions of section 15 of the Climate Action Act, the CRU and System Operators are required to act in a manner consistent with the furtherance of the national climate objective.*"

It is therefore of particular concern that throughout the proposed decision paper, the CRU states that it believes that it does not have a sufficient legal basis to give effect to its duties under the Act. For example, in Section 3:

> "*The CRU notes that the criteria around connection policy are within the remit of CRU and the system operators. Following legal review, the CRU considers that the current provisions under the Climate Action Act do not provide a mandate to CRU to deliver a connections policy which requires explicit emissions reduction and offsetting measures (e.g. the CRU consulted upon the potential option of requiring demand sites to take such actions as would be required to deliver net zero emissions operations at the time of connection). In the absence of such legal basis, the CRU intends to take more limited actions in respect of emissions, such as to require regular reporting on renewable energy*

use and emissions by data centres to system operators, a summary of which will be published by the system operators."

And similarly in Section 4:

> *"The CRU considers that the provisions under the Climate Action Act and the Gas Act do not provide sufficient legal basis to the CRU for measures in relation to islanded data centre gas connections and emissions provisions."*

In the first instance, it is of very significant concern to An Taisce that while the amended Climate Act was passed in 2021, it is only now, almost a full four years later, that the CRU appears to have come to the conclusion that it does not have a "sufficient legal basis" to actually operationalise its clear and acknowledged legal duty under section 15 of that Act as it relates to the LEU connection policy. No detail is provided in the paper on why the CRU now believes it lacks this legal basis or what, if any, steps the CRU has taken to establish such a legal basis. While it is acknowledged that legal advice may be privileged, we would request that additional information be provided on:

- What leads the CRU to believe it lacks a sufficient legal basis to take certain actions to give effect to Climate Act duties, specifically under section 15; and
- What steps the CRU has taken and/or intends to take to ensure that such a legal basis is established and that it can fully comply with its obligations under section 15 of the Climate Act.

Given the CRU's fundamental role in energy regulation and the looming carbon budget and sectoral ceiling exceedances (including in relevant sectors such as electricity), and if in fact the CRU does lack that sufficient legal basis, we cannot over-emphasise the urgency with which we consider the CRU must now seek to rectify the situation and attain the legal basis necessary to fulfil its Climate Act obligations, both as it relates to this connection policy and all of the CRU's other functions.

However, we would highlight that Community Law and Mediation (CLM), who are also making a submission to this consultation, have carried out an analysis of the CRU's legal obligations under the various Acts that form their remit as it applies to the LEU connection policy. CLM concluded from this review that, without additional detail on the information upon which the CRU is basing the assertion of not having a sufficient legal basis to give effect to their section 15 obligations, there appear to be no other statutory obligations that would override or circumvent the CRU's obligations under section 15. We would refer the CRU to the CLM submission and again request that additional information be provided on why the CRU feels it lacks a sufficient legal basis and what steps have been and/or will be taken to establish that legal basis.

We would also highlight the recent judgement in Coolglass Windfarm Limited v. An Bord Pleanála [2025] IEHC 1,[7] which found section 15(1) to constitute a "comply-with" requirement – a mandatory obligation. In paragraph 64, Mr Justice Humphreys described the "comply-with as far as practicable or possible" standard, which is relevant to section 15, as follows:

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[7] Coolglass Windfarm Limited v. An Bord Pleanála [2025] IEHC 1: https://www.courts.ie/view/Judgments/c6e01981-1045-4571-af0c-06d260290823/ef6f4957-3e77-41bb-945e-ca3adf49b287/2025_IEHC_1.pdf/pdf

> *"the decision-maker is required to comply with the matter in question, unless it is not possible or practicable to do so (concepts that are linguistically separate but only infrequently different in practice). Practicable means capable of being put into practice, not merely doing what is reasonable.* ***This is a very high standard only just falling short of unconditional compliance requirements.*** *"*[An Taisce emphasis added]

Therefore, without any additional information to indicate that there are other legal requirements that supersede, override or circumvent the obligations on the CRU imposed by section 15, An Taisce submits that the CRU will need to demonstrate compliance with section 15 and that its connection policy aligns with the Climate Act's objectives around greenhouse gas mitigation, the net zero requirement, adherence to the Climate Action Plan, etc. Critically, the Climate Action Plans are bound by the carbon budgets and sectoral ceilings. Therefore, per section 15, relevant bodies are also required to perform their functions in a manner consistent with the budgets and sectoral ceilings.

It should be noted that the emissions in each sector represent the sum of all individual emitters. Therefore, it is submitted that decisions on connections for Large Energy Users (LEUs) must take account of the relevant sectoral limits for all proposals going forward (the electricity and commercial and public buildings sectors are the most relevant here). The CRU in setting the connections policy must ensure that the policy is itself compliant with sectoral and carbon budget limits and also enables such compliance in the SOs' decision-making.

Section 1.7 of the proposed decision states:

> *"The purpose of this proposed decision paper is to set out a potential pathway for connection applications to the electricity grid which address risks in relation to security of supply and network constraints while minimising,* ***where possible,*** *potential negative impacts on national renewable energy targets and carbon emissions."*[An Taisce emphasis added].

We would emphasise again that adherence to the carbon budgets and sectoral ceilings is a legal obligation. The CRU also has a legal obligation under section 15 to carry out its functions in a manner that it is consistent with the objective of emissions mitigation. In light of this and the current projected exceedances of the carbon budgets, it is submitted that the CRU cannot put forward a connection policy that facilitates additional emissions in excess of the carbon budgets, as An Taisce considers that this proposed policy will do. The connection policy must align with section 15 obligations and the carbon budgets as well as requiring decisions by the SOs to do the same.

3. Data Centres and Energy Use

The proliferation of data centres has largely gone unchecked in Ireland, as has their power consumption, which increased 400% between 2015 and 2022, by 31% between 2021 and 2022 alone and 20% between 2022 and 2023. As of 2023 data centres consumed 21% of Ireland's total metred electricity.[8] This is up from 5% in 2015 and 18% in 2022, and it represents more

[8] https://www.cso.ie/en/releasesandpublications/ep/p-dcmec/datacentresmeteredelectricityconsumption2023/keyfindings/

electricity use than all urban households in Ireland combined. Data centre use is projected to reach 31% of all electricity demand by 2030 (crucially, however, this only takes into account existing contracts).[9] Data centre energy use is disproportionately large in Ireland relative to other European member states. The Netherlands is the next largest digital infrastructure user in Europe, with just 6% of their electricity being utilised for data centres in 2022.[10] This contrasts sharply with 18% in Ireland in the same year and highlights the disproportionate burden Ireland bears in terms of data infrastructure. While the use of data is undoubtedly a crucial part of modern life, like everything, it must be done within our planetary boundaries and within our legally binding carbon budgets.

Progress towards carbon budget compliance and the displacement of existing high emissions energy sources with renewables has been significantly diluted by the ongoing proliferation of high energy demand developments, data centres in particular.[11] The higher the total electricity demand, the more renewable capacity is needed to ensure decarbonisation of the energy sector. Therefore, the more energy intensive developments, like data centres, that come onstream, the more difficult it will be to reach that goal. Critically, the only thing the climate will actually respond to is a reduction in cumulative emissions. So, despite an increase in overall renewable energy capacity, we are not making significant progress towards achieving the decarbonisation of the energy sector and actually reducing emissions.

Indeed, SEAI figures demonstrate that the share of renewables has not increased since 2020, largely due to the impact of data centres.[12] They state in their 2024 National Energy Projections report:[13]

> "*If the scale and pace of renewable energy growth cannot exceed that of electricity demand, as was the case in 2023, then renewables are just abating further increases in emissions rather than delivering the absolute reductions in greenhouse gas emissions required.*"

Similarly, research from Dr. Hannah Daly in University College Cork found that since 2017 the increase in data centre power demand has outstripped all the additional electricity generated from wind power in Ireland.[14] It is now common for data centre operators to enter into Corporate Power Purchase Agreements (CPPAs) with energy companies with the stated intent to "offset" data centre emissions by buying renewable energy. While CPPAs may boost the development of renewable energy, data centres with CPPAs are nevertheless increasing the overall demand for electricity - the higher the total electricity demand, the more renewable capacity is needed to

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[9] Eirgrid & SONI (2025) All-island Resource Adequacy Assessment 2025-2034: https://cms.eirgrid.ie/sites/default/files/publications/AIRAA-2025-2034.pdf

[10] Kamiya & Bertoldi. 2024. *Energy Consumption in Data Centres and Broadband Communication Networks in the EU.* European Commission Joint Research Centre. https://interactdc.com/static/images/documents/JRC135926_01.pdf

[11] Daly, H. (2024) Data centres in the context of Ireland's carbon budgets. University College Cork. https://www.friendsoftheearth.ie/assets/files/pdf/data_centrres_and_the_carbon_budgets_-_prof_hannah_daly_dec_2024.pdf

[12] https://www.businesspost.ie/politics/irelands-renewable-energy-still-at-2020-levels-says-seai/

[13] SEAI (2024) National Energy Projections 2024: https://www.seai.ie/sites/default/files/publications/National-Energy-Projections-Report-2024.pdf

[14] Daly, H. (2024) Data centres in the context of Ireland's carbon budgets. University College Cork. https://www.friendsoftheearth.ie/assets/files/pdf/data_centrres_and_the_carbon_budgets_-_prof_hannah_daly_dec_2024.pdf

decarbonise the electricity sector. Dr. Daly's research indicates that although half of the new wind energy capacity developed in Ireland between 2020 and 2023 was financed through CPPAs, CPPAs met just 16% of the new electricity demand from data centres between 2020 and 2023.[15]

To decarbonise the energy system, the amount of renewable energy coming on stream must be greater than any growth in energy demand. If this is not the case, as it is currently not in Ireland primarily due to increasing data centre power demand, then renewable energy is not actually reducing net fossil fuel use and mitigating cumulative emissions. On the contrary, data centre energy demand in Ireland is currently resulting in additional emissions.[16]

Additionally, the proposed decision paper raises the issue of different development timeframes for renewable energy projects and LEUs meaning that they cannot necessarily come on stream at the same time, but that does not negate the legal obligation to adhere to carbon budgets or the CRU's obligation to act in a manner consistent with the objective to mitigate greenhouse gas emissions.

Section 3.5 of the proposed decision paper states that: "*The CRU is of the view that connection policy should take account of renewable energy policy, namely, to promote the use of renewable energy.*" Section 3.5 goes on to discuss Ireland's renewable energy targets under the national Climate Action Plan (which we would note again is bound by the carbon budgets and sectoral ceilings). However, the above-mentioned issue of the dilution of progress in renewables development from facilitating further increases in electricity demand is not discussed or assessed. The proposed decision paper also does not critically evaluate the proposed connection policy's alignment with Climate Action Plan. We submit that such an assessment is needed before any connection policy is finalised.

Section 2.1 of the proposed decision paper discusses the 2021 CRU decision on mitigating the impact of data centres on the grid and security of supply. That decision opted to take a "connection measures" approach rather than either doing nothing or imposing a moratorium on data centre connections. Given the projected carbon budget exceedances and the fact that growing data centre energy demand is outstripping the pace of renewables development, An Taisce considers that a connection measures approach is not appropriate and not aligned with the section 15 obligation to act in a manner consistent with the objective of greenhouse gas mitigation.

An independent national review of current and projected data centre energy demand is urgently required, focusing on compliance with the legally binding constraints of the carbon budgets. Such a review should inform a new national policy and regulations on the level of future data centre development, if any, that can be accommodated while achieving compliance with our national, European and international emissions reduction obligations. A moratorium on all further data centre development and connections, not just in currently grid-constrained areas, should be put in place until such a policy is enacted. The moratorium would need to be continued if the review finds that data centre development and connections cannot be accommodated within the constraints of our legally binding carbon budgets. Otherwise, we seriously threaten our fair share commitment to mitigating emissions under the Paris Agreement as well as EU and national law.

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[15] Ibid.
[16] Ibid.

We would refer the CRU to Dr. Daly's aforementioned paper and recommend the proposed policy be assessed against its findings, as it provides crucial analysis on data centre power demand the impact on our carbon budget obligations.

4. Location of LEUs

It is of course acknowledged that this is a policy relating to grid connections, but that is far from the only consideration in the siting of LEUs. Grid capacity constraints (such as that experienced in the Greater Dublin Area over recent years), the proximity to renewable energy sources, etc. certainly need to be taken into account, as discussed in sections 2 and 3.3 of the proposed decision paper. However, there are also numerous other constraints and spatial planning issues that need to be taken into account as well, for example, impacts on ecology and biodiversity, sustainable transport considerations, water abstraction and discharge issues, etc. Any LEU proposal needs to align with planning policy at all levels and comply with our numerous obligations under national and European law.

5. On-Site or Proximate Generation

Section 3.2 discusses on-site or proximate dispatchable power generation and includes the following proposed decision:

> *"The Commission has made a proposed decision that data centres connecting to the electricity network will be required to provide dispatchable onsite or proximate generation and/or storage capacity which matches their MIC (subject to derating requirements), with this generation required to participate in the wholesale electricity market."*

This imposes no restrictions on the use of fossil fuels or the emissions impact of on-site or proximate generation. In accordance with the obligations under section 15 of the Climate Act to act in a manner consistent with the objective of emissions mitigation, and in the absence of information on any legal provisions that override section 15 obligations, we submit that the CRU should restrict the emissions intensity of this dispatchable generation and that fossil fuel use in on-site or proximate generation be prohibited.

Additionally, the CRU states in section 3.2 that:

> *"It is envisaged that any technologies used for onsite or proximate generation should be sufficiently futureproofed in terms of facilitating low/zero emissions going forward e.g. if using gas generation, the equipment should be compatible with being run on hydrogen or biofuels.*

We would refer the CRU to section 7.1 of this submission for our comments on the use of biofuels and hydrogen.

6. Data Reporting Requirement

We note that CRU proposes to require data centres to self-report information regarding renewables usage and emissions (section 3.5):

> *"The System Operators will each publish an annual report summarising information by user on renewable energy use and emissions for new demand connections falling under this policy. The CRU is of the view that transparency with regard to compliance with this self-reporting requirement is important and, as such, proposes that the information referred to above should be made publicly available either by the SOs or the parties."*

The proposed decision is then as follows:

> *"The Commission has made a proposed decision to require data centres to self-report to the System Operator annually in relation to their use of renewable energy (directly or through Corporate Power Purchase Agreements (CPPAs)) and their sites' emissions, and that the System Operators will annually publish information summarising the information provided by the data centres."*

Despite the CRU's acknowledgement of the need for transparency regarding this information, the decision only requires the System Operators to "*annually publish information* ***summarising*** *the information provided by the data centres*" (An Taisce emphasis added). In the interests of transparency, An Taisce submits that the information and data submitted by the data centres should be required to be published and be publicly available in full. We also recommend that the CRU's decision should set out a procedure for independent audits of the data, also in the interests of transparency and accuracy.

7. Gas Connections

Many recent data centre proposals have included plans for on-site gas-fired power generation to provide some, or all, of the data centre's power demand. This has largely been a response to electricity system constraints in recent years. In cases where all power can be provided by on-site gas-fired generation, the data centres are considered to be "islanded". Any data centres that connect to the gas network for on-site generation exacerbate lock-in to fossil fuels and contribute to the overshoot of our legally binding carbon budgets.

Emissions from data centres' on site-site power generation fall under the sectoral ceiling for the commercial and public built environment. The EPA currently projects that emissions in this sector will stay within the ceiling for the With Additional Measures scenario but exceed it in the With Existing Measures scenario.[17] However, Dr. Hannah Daly's analysis of GNI's projections indicates that emissions from data centres with gas grid connections will entail an exceedance of the sectoral ceiling in all of GNI's scenarios (low, medium and high demand).[18] Again, we would refer

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[17] EPA (2024) Ireland's Greenhouse Gas Emissions Projections: https://www.epa.ie/publications/monitoring--assessment/climate-change/air-emissions/EPA-GHG-Projections-Report-2022-2050-May24--v2.pdf

[18] Daly, H. (2024) Data centres in the context of Ireland's carbon budgets. University College Cork. https://www.friendsoftheearth.ie/assets/files/pdf/data_centrres_and_the_carbon_budgets_-_prof_hannah_daly_dec_2024.pdf

the CRU to Dr. Daly's research generally as it presents very significant findings about data centre gas demand and the impact on carbon budgets.

The Government Statement on the Role of Data Centres in Ireland's Enterprise Strategy stated that islanded data centres were not in line with national policy as they would not be consistent with emission reduction and energy decarbonisation objectives. Indeed, multiple groups have expressed concern about this, including the Climate Change Advisory Council, which said in a 2023 statement: *"the recent growth in 'Islanded' data centres is of particular concern due to their potential to increase gas demand and associated carbon emissions."*[19] It is noted that Gas Networks Ireland is currently not granting connection agreements for data centres on foot of this and pending the outcome of CRU processes.

We note that the CRU is "*not proposing to introduce any new decisions relating to connections to the gas network as part of this review process*". It also states in section 4 of the proposed decision that: "*The CRU considers that the provisions under the Climate Action Act and the Gas Act do not provide sufficient legal basis to the CRU for measures in relation to islanded data centre gas connections and emissions provisions.*"

An Taisce strongly questions this assertion (see section 2 of this submission). If the CRU does not make a decision regarding gas connections, GNI will in all likelihood be facilitated to start granting connection permissions. Any decision, or lack thereof, by the CRU that facilitates further gas connections for data centres will exacerbate dependence on fossil fuels, contribute to the overshoot of our legally binding carbon budgets, and therefore be inconsistent with the CRU's obligations under section 15 of the Climate Act.

In accordance with the obligations under section 15 of the Climate Act to act in a manner consistent with the objective of emissions mitigation, and in the absence of information on any legal provisions that override section 15 obligations, we strongly recommend that the CRU make a decision prohibiting further gas connections to islanded data centres. Any use of fossil fuels as such would contravene national policy, including the Climate Act and Climate Action Plans, on emissions reduction.

7.1 Use of Renewable Gases

Section 4 of the proposed decision paper discusses the possibility of the use of renewable gas, including biomethane:

> *"The CRU notes that, where data centres are connected to the gas network, the use of biomethane could play a role in decarbonisation of their demand. The certainty of long-term contracts with data centres could support the development of indigenous biomethane production, which should be done within sustainable production limits and taking into account other demands for biomethane and renewable gases.*
>
> *The CRU notes the role of the gas network in decarbonising Ireland's energy system, and GNIs commitment to achieving a net-zero gas network by 2045. This includes ongoing*

[19] Climate Change Advisory Council: https://www.climatecouncil.ie/councilpublications/councilcorrespondenceandadvice/CCAC%20response%20to%20Joint%20Committee%20on%20Environment%20and%20Climate%20Action_16Oct23.pdf

work by GNI towards the continued roll-out of biomethane and Compressed Natural Gas (CNG) technologies. Going forward hydrogen may be an option to decarbonise the energy system. The domestic production of renewable gases can reduce the need for investment in cross-border infrastructure, support security of supply and contribute to the delivery of Ireland's decarbonisation objectives."

An Taisce would strongly caution that it is highly premature to assume that renewable gases can be effectively used to reduce emissions. GNI's 2023 Ten Year Network Development Plan[20] states that renewable gases are only projected to comprise a small share of the overall gas demand over the plan period. GNI states: *"In the Best Estimate scenario, renewable gases are forecast to grow from 0.1% of demand in 2022/23 to account for just over 16% of demand by 2031/32"* (13.6% biomethane and 2.1% hydrogen). Therefore, even with these best estimate projections, fossil gas will still make up 84% of demand in the early 2030s. Indeed, the biomethane target in the Climate Action and National Biomethane Strategy for 5.7 TWh by 2030, if fully achieved, only displaces around 10% of fossil gas.

Regarding the use of biomethane, Dr. Hannah Daly's research found that:[21]

"The gas demand from GNI projections is equivalent to more than 60% of the biomethane target in the [Climate Action Plan] and this does not include significant demand from data centres who have made formal enquiries, including those which propose to run in 'islanded' mode, without relying on the electricity network."

She goes on to highlight one proposal for an islanded data centre that alone would consume half of the 5.7 TWh 2030 target.

Furthermore, though biomethane is often touted as a as "renewable gas" or a "carbon-neutral fuel", it cannot be automatically labelled as such due to the environmental risks associated with fugitive methane losses,[22] the use of chemical fertiliser to produce silage for use as a feedstock,

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[20] Gas Networks Ireland (2023) Ten Year Network Development Plan: https://www.gasnetworks.ie/docs/corporate/gas-regulation/Network-Development-Plan-2023.pdf

[21] Daly, H. (2024) Data centres in the context of Ireland's carbon budgets. University College Cork. https://www.friendsoftheearth.ie/assets/files/pdf/data_centrres_and_the_carbon_budgets_-_prof_hannah_daly_dec_2024.pdf

[22] [20] Paolini, V., Petracchini, F., Segreto, M., Tomassetti, L., Naja, N., Cecinato, A., 2018. Environmental impact of biogas: A short review of current knowledge. Journal of Environmental Science and Health, Part A 53, 899–906. https://doi.org/10.1080/10934529.2018.1459076 ; Grubert, E., 2020. At scale, renewable natural gas systems could be climate intensive: The influence of methane feedstock and leakage rates. Environ. Res. Lett. https://doi.org/10.1088/1748-9326/ab9335 ; Liebetrau, J., Reinelt, T., Agostini, A., Linke, B., 2017. Methane emissions from biogas plants. IEA Bioenergy; Ebner, J.H., Labatut, R.A., Rankin, M.J., Pronto, J.L., Gooch, C.A., Williamson, A.A., Trabold, T.A., 2015. Lifecycle Greenhouse Gas Analysis of an Anaerobic Codigestion Facility Processing Dairy Manure and Industrial Food Waste. Environ. Sci. Technol. 49, 11199–11208. https://doi.org/10.1021/acs.est.5b01331 ; Baldé, H., VanderZaag, A.C., Burtt, S.D., Wagner-Riddle, C., Crolla, A., Desjardins, R.L., MacDonald, D.J., 2016. Methane emissions from digestate at an agricultural biogas plant. Bioresource Technology 216, 914–922. https://doi.org/10.1016/j.biortech.2016.06.031

the mix of feedstocks used,[23] and the ammonia emissions which can result from applying the by-product of the AD process, digestate.[24]

Regarding hydrogen, we would highlight that the potential future production and use of hydrogen at scale is still highly uncertain. The transition of a gas network to hydrogen use is very complex technically and procedurally, requiring significant resources and cost outlay. Indeed, GNI's own 2023 Ten Year Network Development Plan's strategic hydrogen development timeline lists multiple production, transportation, storage and end-use elements which are not feasible until the mid-2030s and many others that do not appear to be fully feasible until 2038-2050, if ever. GNI also does not appear to have assessed the lifecycle impacts of hydrogen and whether or not it can actually be deemed to contribute meaningfully to emissions reduction.[25]

We therefore submit that these should not be assumed by the CRU to be feasible options for decarbonisation.

8. Additional Comment: Government Statement on the Role of Data Centres in Ireland's Enterprise Strategy

We would highlight that the Government Statement on the Role of Data Centres in Ireland's Enterprise Strategy, despite being repeatedly utilised as a basis, framework and justification for further data centre development, was never subject to Strategic Environmental Assessment (SEA) per EU Directive 2001/42/EC. To An Taisce's knowledge no SEA screening was conducted.

We consider that the content of the Statement likely constitutes the setting a framework for future development consent of projects listed in Annexes I and II to the EIA Directive. Indeed, the Statement's Principles for Sustainable Data Centre Development are described as *"A set of national principles that should inform and guide decisions on future data centre development."* Therefore, because it has not undergone SEA or SEA screening, we submit that the Statement and the content therein cannot be used as a framework or criteria to justify or permit development, including connections to utilities. Furthermore, given the significant and wide-ranging climate and environmental implications of further data centre development, it is submitted the Statement falls within the ambit of the Aarhus Convention and should have been subject to public consultation, which, as far as An Taisce is aware, it was not.

It should be noted that the CJEU has generally taken a broad approach to the interpretation and application of the various aspects of the SEA Directive.

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[23] Beausang, C., Mcdonnell, K., Murphy, F. (2021). Assessing the Environmental Sustainability of Grass Silage and Cattle Slurry for Biogas Production. Journal of Cleaner Production. 298. https://www.researchgate.net/publication/350380683_Assessing_the_Environmental_Sustainability_of_Grass_Silage_and_Cattle_Slurry_for_Biogas_Production

[24] https://www.nnfcc.co.uk/files/mydocs/Ammonia%20I%20-%20AD%20and%20digestate%20management%20-%20October%202022.pdf

[25] An Taisce's submission on GNI's Ten Year Network Development Plan 2023: https://www.antaisce.org/Handlers/Download.ashx?IDMF=a26e44ee-a70e-48cf-8013-8248887d5799

9. Conclusion

On the basis of the above submission, An Taisce makes the following recommendations:

- The CRU should publish information on 1) what leads the CRU to believe it lacks a sufficient legal basis to take certain actions to give effect to its Climate Act duties under section 15; and 2) what steps the CRU has taken and/or intends to take to ensure that such a legal basis is established and that it can fully comply with its obligations under section 15 of the Climate Act.
    - If such a legal basis does not in fact currently exist and no steps have been taken to rectify this, the CRU should, as a matter of urgency, take steps to ensure it is established.
- In light of the evidence presented in this and other third party submissions, the CRU should provide reasoned conclusions on how the proposed decision is aligned with the CRU's obligations under section 15 of the Climate Act, particularly how it aligns with the Climate Action Plan 2024 (and the carbon budgets and sectoral ceilings to which the Climate Action Plan is bound) and the objective of emissions mitigation.
- Continuing a connection measures approach for data centres is not aligned with the legally binding carbon budgets or the objective of mitigating emissions. An independent national review of current and projected data centre energy demand is urgently required, focusing on compliance with the legally binding constraints of the carbon budgets. Such a review should inform a new national policy and regulations on the level of future data centre development, if any, that can be accommodated while achieving compliance with our national, European and international emissions reduction obligations. The CRU should put in place a moratorium on all further data centre connections, not just in currently grid-constrained areas, until such a policy is enacted. The moratorium would need to be continued if the review finds that data centre development cannot be accommodated within the constraints of our legally binding carbon budgets.
- The CRU should restrict the emissions intensity of on-site or proximate dispatchable generation and prohibit fossil fuel use in on-site or proximate generation.
- The CRU should make a decision prohibiting further gas connections to islanded data centres.
- The CRU should require that the information and data submitted by data centres on their emissions and renewable energy use be published and be publicly available in full. The CRU's decision should also set out a procedure for independent audits of the data, also in the interests of transparency and accuracy.

Please acknowledge this submission and advise us of any final decision or further consultation periods.

Is mise le meas,

Phoebe Duvall
Senior Planning and Environmental Policy Officer
An Taisce – The National Trust for Ireland

4 April 2025.

A Chara,

Friends of the Irish Environment ("FIE") welcomes the opportunity to engage in public consultation on the **Commission for Regulation of Utilities Connection Policy for Large Energy Users Proposed Decision Paper** (CRU/202504). [1]

1. Background

To gain a clearer understanding of the proposed decision paper on the Connection Policy ("Policy") for Large Energy Users ("LEU"), FIE engaged an independent expert on energy systems and a law firm.

This submission offers professional evidenced opinions to assist the Commission for Regulation of Utilities, electricity and gas System Operators, other regulatory authorities, and project developers in identifying their responsibilities and meeting their legal obligations under the Climate Action and Low Carbon Development Act 2015 (as amended). It also aims to support policymakers, civil society, industries, and academia in their collective efforts to decarbonize Ireland's energy system towards developing a more sustainable economy through a regenerative growth model. [2]

Professor Hannah Daly, PhD, BSc, Professor of Sustainable Energy at University College Cork, prepared a report to describe an analysis and policy impact assessment of the proposed Policy towards meeting the obligations of the Climate Action Plan 2024.

Dr. Fred Logue, PhD, CEnv, MIEMA, MInstP is the Managing Partner at FP Logue LLP. The law firm focuses on practice across regulatory and information law, specialising in

1 https://consult.cru.ie/en/consultation/review-large-energy-users-connection-policy

2 https://www.epa.ie/publications/monitoring--assessment/assessment/state-of-the-environment/EPA-SOE-Report-2024-BOOK-LOWRES.pdf, p.24

environmental, technology, and data protection. Based in Dublin, it advises public bodies, charities, and individuals. FP Logue prepared a report to address the legal framework, the legal context outlined in the proposed decision paper, and an opinion on the legally binding path to net-zero emissions by 2050, as well as a 51% reduction in emissions by the end of this decade.

2. Submission

The following summarises the key considerations and conclusions from Professor Daly's report:

- The context and purpose of carbon budgets for decarbonising,
- Key findings from her report "Data centres in the context of Ireland's carbon budgets" (commissioned by Friends of the Earth, Ireland) – see Annex II,
- Electricity-related emissions associated with existing data centre agreements,
- Demand growth from heat and transport displaces other fossil fuels,
- Emissions from natural gas connections,
- Emissions from flexibility options,
- Carbon leakage arguments.

Professor Daly's concluded that:

1. Data centres with existing electricity and gas network agreements already pose major challenges to meeting the Sectoral Emissions Ceiling for the power sector, especially in the second carbon budget period.
2. Mandating on-site generation for data centres instead of requiring additional time-matched renewable generation could worsen this challenge.
3. In a high-growth scenario, if data centres relied on natural gas rather than renewables, their emissions could exceed the entire power sector's emissions ceiling by 23%.
4. The number of data centres seeking direct natural gas connections is uncertain but could lead to gas consumption comparable to the total use across all sectors in Ireland.
5. Addressing the carbon budget overshoot in carbon budgets in later periods would be costly or impractical, with financial burdens falling on society.

6. Allowing high-emission growth in the energy sector could discourage other sectors from reducing their emissions.
7. The Climate Action Plan 2024 requires a plan for "zero carbon demand growth" and electricity demand flexibility that supports decarbonisation.
8. The proposed LEU policy is not consistent with zero carbon demand growth. It would facilitate electricity demand growth from data centres without emissions mitigation, therefore allowing for fossil fuel generation that is incompatible with Sectoral Emissions Ceilings.
9. The proposed LEU policy applies flexibility in a way that that is inconsistent with the objectives of the Plan, and in fact in a way that is contrary to the decarbonisation objective of flexibility. Alternative flexibility measures should be explored, such as time-shifting demand to match renewable generation and using battery storage to integrate renewables and reduce grid constraints.

The following summarises the key considerations and conclusions from Dr Logue's report:

- The legal framework,
- The legal context set out in the proposed decision paper,
- A legal discussion.

Dr Logue's concluded that:

10. CRU is required to carry out an assessment of the compatibility of the proposed decision with the section 15 obligations, including whether the decision ensures that projected emissions do not cause an exceedance of carbon budgets and sectoral emissions ceilings, there must be an evidence-based assessment, including in relation to carbon leakage.
11. The proposed decision is a plan or programme for the energy sector which sets the framework for data centres which come with the scope of the EIA Directive. Therefore, an environmental assessment is required under the SEA Directive.
12. The CRU is subject to the obligations arising under section 15 of the 2015 Act and must take all measures practicably available that would contribute to achieving the section 15 goals.

13. The CRU may only decline to adopt measures which are precluded by a mandatory and non-fixable legal requirement that confers no discretion or evaluative judgement on the CRU.

14. If the CRU believes that it is so-precluded, it must identify precisely how it is precluded under its duty to give the main reasons for the main issues. In my view the CRU may not assert legal advice privilege over these reasons.

15. If the CRU is precluded by law from taking measures to achieve the section 15 goals, then that law is unconstitutional and invalid having regard to the Charter of Fundamental Rights of the European Union.

3. Conclusion

Friends of the Irish Environment requests that the CRU to take account of the analysis and professional evidenced opinions provided in the following reports by Professor Hannah Daly and Dr Fred Logue when considering the Proposed Decision Paper.

Yours faithfully,

Tony Lowes, Director

Friends of the Irish Environment

An analysis and policy impact assessment of the Commission for Regulation of Utilities' Large Energy Users Connection Policy Proposed Decision Paper

(CRU/202504)

Prof. Hannah Daly, University College Cork

April 2nd, 2025

Disclaimer:

The opinions I have expressed represent my true and complete professional opinions on the matters to which they refer and are not expressed as views of University College Cork or to be interpreted as same but rather as my opinion in light of my experience to date.

1 Introduction

This report evaluates the greenhouse gas (GHG) emissions impact of the Commission for Regulation of Utilities' (CRU) Large Energy Users Connection Policy in the Proposed Decision Paper (CRU/202504), particularly concerning data centres. It situates the proposed policy within the context of Ireland's legally binding carbon budgets, renewable electricity targets, and obligations under the Climate Action Plan 2024.

The analysis draws on national emissions projections, energy demand data, and the proposed requirements for dispatchable on-site generation. It quantifies emissions from both grid-based and direct gas consumption, showing that current data centre expansion threatens the electricity sector's Sectoral Emissions Ceiling, even before new connections are considered. The report further evaluates flexibility delivery options, showing that fossil-fuel-based on-site generation could account for the majority of 2030 electricity sector emissions if adopted on a large scale.

Finally, the report addresses the carbon leakage argument and identifies regulatory and planning options to enable data centre expansion without breaching national climate obligations.

2 Carbon budgets

- Ireland's legal climate obligations relate to **cumulative** greenhouse gas emissions over 5-year periods, known as carbon budgets, because carbon dioxide, the main greenhouse gas, accumulates in the atmosphere. While climate targets are often expressed as emissions reduction targets for a point in time (e.g., a 51% reduction in emissions by 2030 relative to 2018, or net-zero by 2050), these targets serve only as benchmarks, and meeting them will be necessary, but not sufficient, to meet legal climate obligations. It is likely that Ireland's energy-related carbon dioxide emissions will need to reach net-zero well before 2050 in order to meet the conditions of the Climate Act[1][2]. Therefore, when assessing the impact of a sector or development on the provisions of the Climate Act, its cumulative emissions must be assessed, rather than the fact of the development reaching net-zero by some point in the future.
- Any exceedance of a carbon budget in a given period should be removed from the subsequent carbon budget. Given the very small remaining carbon budgets likely to be allowed for the energy sector post-2030, it is likely to be infeasible or impractically costly to meet shortfalls in early carbon budgets during later periods.
- Under existing and planned policies, Ireland's greenhouse gas emissions are projected to exceed the legally adopted carbon budgets by a significant amount[3]. It is unlikely that emissions cuts in later carbon budget periods can be accelerated in order to meet the shortfall in mitigation in later periods without significant risks, costs and reliance on carbon dioxide removal measures, which are unproven at scale[4].
- Therefore, to fill this compliance gap, an acceleration and strengthening of decarbonisation measures is necessary. However, the CRU's proposed LEU connection policy, which facilitates new data centre connections without associated mitigation measures and would, in fact, mandate on-site dispatchable generation, would increase fossil fuel demand and associated emissions, further exacerbating the carbon budget compliance gap.

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1 Climate Change Advisory Council (2024), Carbon Budget Proposal Report. https://www.climatecouncil.ie/media/CCAC%20Carbon-Budget%20Proposal%202024-final.pdf

2 Daly *et al.* (2024), PATHWAYS FOR IRELAND'S ENERGY SYSTEM TO 2050: Modelling analysis to support the Climate Change Advisory Council on the Second Carbon Budget Programme. https://www.climatecouncil.ie/media/CBWG%20Report%20TIMES-Ireland%20Model.pdf

3 Environmental Protection Agency (2024). Ireland's Greenhouse Gas Emissions Projections 2023-2050 https://www.epa.ie/publications/monitoring--assessment/climate-change/air-emissions/irelands-greenhouse-gas-emissions-projections-2023-2050.php

4 Aryanpur *et al.* (2024) Implications of accelerated and delayed climate action for Ireland's energy transition under carbon budgets. npj Climate Action 3 (1), 97. https://www.nature.com/articles/s44168-024-00181-7

3 Key findings from "Data centres in the context of Ireland's carbon budgets"[5]

- Since 2015, electricity demand from data centres in Ireland has surged, at an annual rate of 22.6%, whereas other sectors have seen a modest increase of 0.4%. Without the expansion of data centres, Ireland's overall electricity demand would have remained relatively stable over the past decade.
- Between 2017 and 2023, the growth in data centre electricity consumption absorbed all additional wind energy generation in Ireland. This means that, despite increased renewable capacity, there was no net reduction in fossil fuel usage for power generation during this period.
- To circumvent constraints in the electrical grid, numerous data centres have either secured or are seeking direct connections to the natural gas network to generate either all, or a proportion of energy needs on-site. On-site gas-fired electricity generation is typically less efficient than centralised grid-scale production, leading to higher emissions per unit of electricity consumed. This also limits or excludes the use of renewable energy sources, like wind and solar energy. Moreover, emissions from such on-site generation are not fully accounted for in national energy demand and greenhouse gas (GHG) projections, creating a significant oversight in Ireland's climate action planning.
- While biomethane has been proposed to mitigate demand for natural gas, a fossil fuel and significant source of emissions, the scale of data centre energy demand would likely exceed Ireland's sustainable biomethane production capacities. Additionally, diverting biomethane to data centres could undermine its availability for decarbonising other critical sectors such as heating and heavy industry.
- Electricity demand from data centres has far outpaced the additional renewable energy procured through Corporate Power Purchase Agreements (CPPAs) between 2020 and 2023. This indicates that the majority of additional electricity demand for data centres has been met through a growth in fossil fuels – mainly natural gas – rather than renewables.

The CRU's proposed decision paper, which does not mandate data centres to procure renewable energy and requires the construction of thermal backup generation, is likely to exacerbate the issues identified in that report:

- Without obligations to source renewable energy, data centres are likely to continue to rely heavily on fossil fuels, particularly natural gas, for their substantial energy needs. This reliance will increase GHG emissions and fossil fuel demand, and further hinder Ireland's progress toward achieving its legally-binding carbon budgets and the government's stated goal of rapidly reducing fossil fuel dependence. The requirement for data centres to construct on-site power generation capacity is likely to also result in an increased dependence on fossil fuels, making it more

[5] Daly (2024). Data centres in the context of Ireland's carbon budgets. Friends of the Earth https://www.friendsoftheearth.ie/publications/data-centrres-and-the-carbon-budgets-prof-hannah-daly-dec-20 (Reproduced as Annex II with this report)

challenging to transition to renewable energy sources in the future and potentially locking Ireland into a high-carbon pathway.

4 Greenhouse gas emissions estimates

4.1 Electricity-related emissions associated with existing data centre agreements

- EirGrid and Gas Networks Ireland project electricity and direct gas demand, respectively, for data centres that have been granted grid connection agreements.
- Demand for **electricity** is projected by EirGrid. In 2024, EirGrid projected that over the next decade, 89% of the growth in electricity demand will come from data centres with existing grid connection agreements as their activity ramps up to meet their contracted load.
- Future greenhouse gas emissions associated with data centre demand growth are not explicitly reported by EirGrid, Gas Networks Ireland, SEAI or EPA. Figure 1, below, presents a quantification of emissions arising from electricity demand growth under a range of demand scenarios and assumptions regarding the energy mix that will deliver this demand growth.
- Emissions from electricity demand for data centres with existing electricity grid connection approvals may constitute a significant share of the total Sectoral Emissions Ceiling for the electricity sector, particularly in the second carbon budget period, and even more so if natural gas, rather than a mix of renewables capacity, meets data centre demand growth.
- In a case with high data centre demand growth and assuming this demand is met with additional natural gas capacity (the dark blue scenario in the figure below), rather than a mix of renewables and gas (the orange scenarios), then emissions from the electricity demand of data centres alone would total 25 million tonnes over the second carbon budget period, exceeding the allocated emissions for the electricity sector over the second carbon budget period – 20 million tonnes – by 23%.
- According to emissions projections by SEAI, emissions from all remaining electricity demand over the second carbon budget period would total 18.5 million tonnes[6]. Therefore, in the worst-case scenario quantified below (where data centre demand is met by electricity from natural gas), total electricity-related emissions in the second carbon budget period would be more than double the Sectoral Emissions Ceiling – 20 million tonnes.
- The figure below only quantifies emissions scenarios from data centres that already have existing electricity grid connection agreements and relates only to emissions from

[6] This is estimated by subtracting the data centre share of demand from total electricity-related CO2 emissions over 2026-30 in the SEAI WAM scenario https://www.seai.ie/data-and-insights/energy-data-portal

grid-scale electricity generation, rather than on-site dispatchable generation. Therefore, this represents a lower bound estimate.

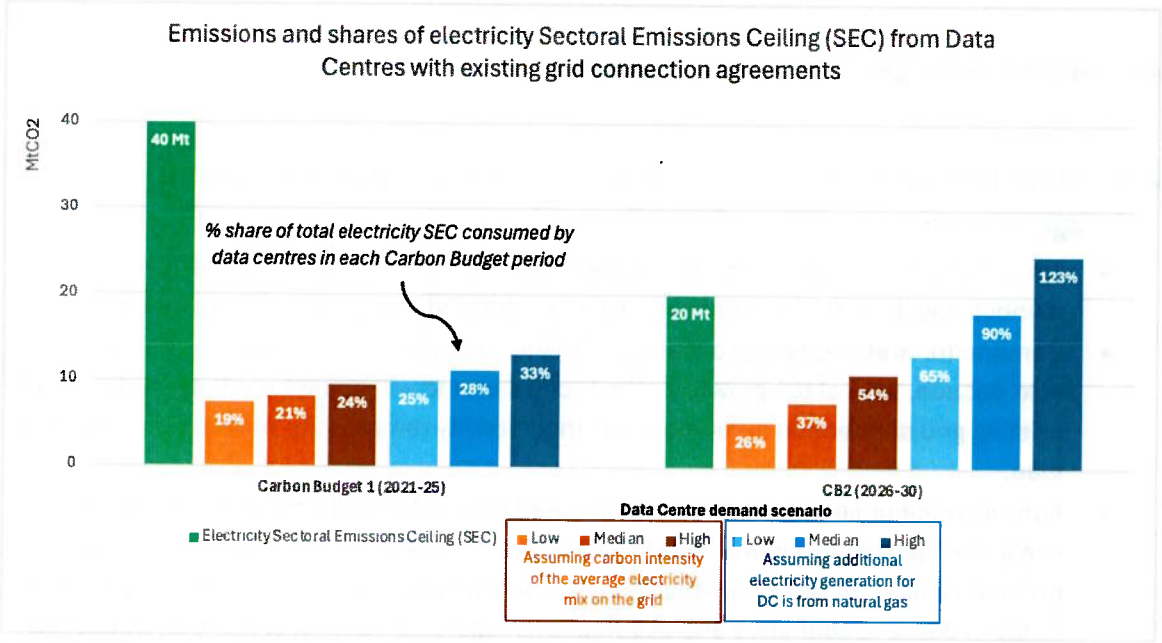


Figure 1: Estimate of greenhouse gas emissions from centralised electricity generation to meet the demand of data centres with existing grid connection agreements. "Low", "Median" and "High" demand refer to scenarios by EirGrid with varying assumptions on the extent to which data centres meet their contracted demand level. Orange scenarios allocate average electricity grid emissions to data centres – this assumes that the growth in data centre demand is met primarily with renewables. Blue scenarios assume that additional electricity demand for data centres is derived from natural gas from efficient, grid-scale CCGT plants.

- While some data centre operators are seeking to meet their electricity demand growth with procured renewable energy, known as a Corporate Power Purchase Agreement (CPPA), there is no requirement for data centres to adopt PPAs, no mechanism to ensure that renewables financed through PPAs are "additional" (which would ensure that they are not being diverted from meeting existing demands), and no mechanism to time-match demand with renewables supply (which is necessary to ensure that demand is not relying on fossil fuels at times of low renewables generation).

4.2 Demand growth from heat and transport displaces other fossil fuels

- According to SEAI, electricity demand growth from electrifying existing demand sources, such as vehicles, delivers overall GHG savings, whereas the scale of demand growth from data centres poses a significant threat to the delivery of carbon budgets:
    - *"From a national greenhouse gas emissions perspective, increased electricity demand from replacing fossil fuel heating systems with heat pumps or fossil fuelled cars with EVs results in an overall net reduction in emissions. This is because the emissions from the increased electricity demand are more than compensated for by a reduction in emissions in the heat and transport sectors, leading to lower overall emissions. In contrast, increased electricity demand from datacentres and continued growth in the industry, services and residential*

sectors does not displace fossil fuel use elsewhere in the economy. If total electricity demand increases ahead of the roll-out of renewable generation capacity it will lead to higher emissions. This will make it extremely challenging for the electricity sector to meet its national greenhouse gas emissions reduction obligations."[7]

- The following figure illustrates this trade-off: generating an additional terawatt-hour (TWh) of renewable electricity generates no overall emissions savings if it is diverted to serve new data centre demand growth, whereas it generates substantial overall emissions savings if diverted into electrifying home heating transport or displacing existing natural gas as a power generation source on the electricity grid.
- Consequently, in order to mitigate emissions in line with carbon budgets, meeting the renewable energy targets set out in the Climate Action Plan is not an end in its own right. Moreover, electricity demand growth itself does not necessarily cause an increase in emissions; replacing fossil fuels in transportation, buildings or industry with additional electricity demand causes an overall reduction in emissions. But if renewable energy is diverted to serving additional data centre demand growth, no overall emissions reductions are realised. For this reason, realising "zero-carbon growth" from data centres requires a condition that any renewable capacity claimed to serve growth must be **in addition** to the renewable capacity necessary to realise emissions savings for existing energy demand across the energy system.

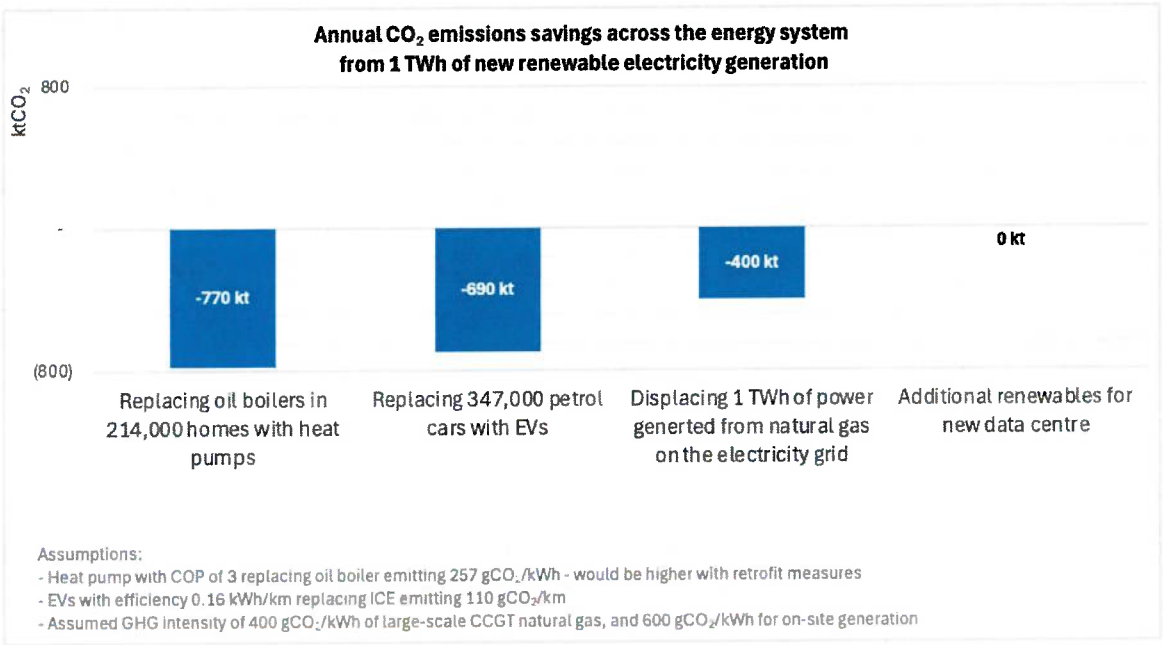


Figure 2: Annual CO2 emissions savings across the energy system from 1 TWh of new renewable energy generation for displacing existing demands, or meeting additional data centre demand.

[7] SEAI (2024) National Energy Projections, 2024, p27 https://www.seai.ie/sites/default/files/publications/National-Energy-Projections-Report-2024.pdf

4.3 Emissions from natural gas connections

- Emissions from **natural gas demand** by data centres are either **indirect**, arising from the generation of electricity from natural gas, which data centres then consume, or **direct**, arising from natural gas consumed directly by data centres to power their energy needs on-site. Estimates for indirect natural gas-related emissions from data centres with existing grid connection agreements are presented in Figure 1.
- There is significant interest in data centres seeking to connect to the gas network in "islanded" mode. The GHG emissions arising from these connections could be very substantial.
- Gas Networks Ireland (GNI) forecasts direct gas demand for data centres with existing gas grid connection agreements as part of their ten-year Network Development Plan 2024, which has been published in response to a Parliamentary Question[8] (Table 1). GNI does not publish emissions estimates arising from data centres. **Emissions would amount to 0.34 million tonnes of carbon dioxide in 2030 and would total 1.5 million tonnes during the second carbon budget period.**

Table 1 Projected gas demand, 2025-2032 under "Best Estimate" scenario, Gas Networks Ireland draft ten-year Network Development Plan 2024 (NDP24)

-		2025	2026	2027	2028	2029	2030	2031	2032
Power Generation	GWh/yr	25,205	33,714	29,737	30,144	28,614	29,491	24,625	23,252
Data Centres	GWh/yr	477	1,058	1,408	1,557	1,630	1,680	1,868	2,068

- There are 11 data centres, with an approximate 2,100 MW (thermal) capacity, contracted to the gas network. Current gas demand is only a fraction of this contracted capacity, with demand projected by GNI anticipated to ramp up towards contracted connection levels as customers build out their sites. An additional 22 data centres have made formal enquiries for gas connections to GNI, representing 9,308 MW of potential capacity.
- Multiple factors will determine the actual level of gas demand arising from these developments, and GNI anticipates that actual gas demand will be significantly lower than the total capacity contracted by data centres. However, to illustrate the scale of potential demand that could arise, if all these developments are permitted, constructed and operate to their full maximum capacity, they would consume around 100 TWh of natural gas annually – around double the total natural gas consumed in Ireland annually

[8] https://www.oireachtas.ie/en/debates/question/2025-03-19/148

in 2023, which would cause 20 million tonnes of carbon dioxide emissions annually. While this is not a plausible scenario, it provides an upper-bound "worst case" estimate of the gas demand and associated emissions that would arise.

- Examining the Environmental Impact Assessment Reports (EIARs) of proposed data centres illustrates the scale of potential emissions arising from individual data centre developments. To take a single example, the Vantage Data Center Dublin Campus, which is projected to have a peak electricity demand of around 100 MWe. To mitigate constraints on the electricity grid, the facility plans to incorporate a multi-fuel plant capable of operating on oil and natural gas supplied by Gas Networks Ireland. In one scenario, where on-site generation with natural gas meets all the site's energy needs, more than 2 million tonnes of carbon dioxide would be emitted annually, amounting to 152 million tonnes cumulatively over the 60 years of operation[9]. Over the second carbon budget period, its annual emissions in this scenario would be equivalent to half of the entire Sectoral Emissions Ceiling for the electricity sector (20 million tonnes). It should be noted that the development proposed to use HVO – Hydrogenated Vegetable Oil – to mitigate a proportion of its fossil fuel demand, but the sustainability of this fuel is under scrutiny – indications are that Ireland is importing HVO which is derived from pure palm oil and driving tropical deforestation[10].

4.4 Emissions from flexibility options

- **Flexible demand** refers to the ability to shift electricity consumption in time or reduce it in response to external signals, such as electricity price, grid conditions or the availability of renewable generation. The Climate Action Plan 2024 sets a target for 15-20% of the electricity system's demand to be flexible by 2025, increasing to 20-30% by 2030. This target supports the decarbonisation of the power sector by facilitating the consumption of wind and solar energy at times of high production, shifting or reducing demand during times of high fossil fuel production, and improving the efficiency of infrastructure – reducing the need for costly grid upgrades and peaking plants.
- Electricity demand flexibility can be delivered in a number of ways:
    - Through **load shifting** – moving the use of appliances, such as electric vehicle (EV) chargers or clothes dryers, and industrial processes to off-peak or high renewables times – or simply **curtailing demand**, such as reducing the operations of a data centre at times of low renewables.
    - Through **energy storage** – including **batteries** charged at times of high renewables and storing electricity for use during peak times or periods of high fossil fuel use, as well as thermal/heat storage, such as heating hot water at off-peak or times of high renewables.

[9] https://epawebapp.epa.ie/licences/lic_eDMS/090151b2808852d5.pdf Section 13.98

[10] https://www.transportenvironment.org/articles/10-years-of-eus-failed-biofuels-policy-has-wiped-out-forests-the-size-of-the-netherlands-study
https://www.businesspost.ie/news-focus/fuels-paradise-the-penny-begins-to-drop-on-fraud-in-biofuel-supply-chains

- Another option is to shift electricity demand to **on-site backup generation using a fuel such as diesel or gas during** times of grid stress.

- Of these three flexibility options – load shifting, storage and back-up generation – only the third creates additional greenhouse gas emissions. Flexible demand is crucial for integrating renewables, reducing emissions, and stabilising the power system. However, the climate benefit depends on how flexibility is delivered. Prioritising zero-carbon options is essential to meet climate goals. Prioritising on-site back-up generation to deliver flexibility runs counter to the ultimate objective of delivering zero-carbon demand growth and flexibility to support the decarbonisation of Ireland's electricity system. Back-up generation also disincentivises LEU from participating in zero-carbon flexibility options.
- **The Climate Action Plan 2024 includes targets and measures for flexibility and demand management to meet carbon budgets/SECs and facilitates zero-carbon demand growth and increased renewables utilisation:**
    a) A "key metric" to deliver abatement under CAP24 for the power system is demand management, including "zero-carbon demand growth" by 2025 (p164) and "Deliver a demand side strategy that facilitates zero-carbon demand" (p168) – this refers to meeting increasing electricity demand without adding greenhouse gas emissions.
    b) "Deliver a demand side strategy that facilitates zero-carbon demand, incentivises low carbon electricity consumption ... The demand side strategy should ... contain measures to incentivise Large Energy Users to increase the flexibility in their electricity demand" (p168)
    c) "Incentivise and enable large energy users to participate in flexible demand initiatives designed to enable low/zero-carbon demand growth" (p174)
    d) "Ensure that 15-20% of the electricity system demand is flexible by 2025, increasing to 20-30% by 2030, to reduce the peak demand and shift the demand to times of high renewable output"
- CAP23 indicates that a significant proportion of flexibility should be procured from LEU.
- The CRU notes the CAP aim for electricity demand flexibility (p67 of LEU policy). It notes that, given the proposed requirement that new data centres provide dispatchable on-site, or proximate generation or storage, no additional demand flexibility mandates would be applied to new data centres. This implies that, instead of shifting demand to times of high renewables outputs, reducing peak demand and facilitating zero-carbon demand growth, the policy will require flexibility from on-site dispatchable generation, the majority of which is likely to be derived from fossil fuels.
- While the CRU's proposed policy decision paper appears to superficially align with the CAP24 target of increasing flexibility in electricity demand, it does so in a way that contradicts the overall aim of CAP24's demand management and flexibility goals, which is to minimise greenhouse gas emissions and fossil fuel use.

Greenhouse gas emissions impact of alternative flexibility options

Figure 3 presents an estimate of annual greenhouse gas emissions caused by alternative flexibility options to meet the CAP24 target, that 20-30% of demand is flexible in 2030. The calculation assumes that the flexibility capacity is only utilised 10% of the year – this

assumption is highly sensitive to market and grid conditions. However, it clearly highlights that to deliver the CAP24 demand flexibility target through on-site generation with fossil fuels would be a significant source of emissions. According to CAP24, total emissions in the power sector would need to fall to 2.5 million tonnes in 2030 to meet the Sectoral Emissions Ceiling for that sector. Delivering flexibility through demand curtailment or shifting to times of high renewables penetration, or utilising battery storage (charged with renewable energy).

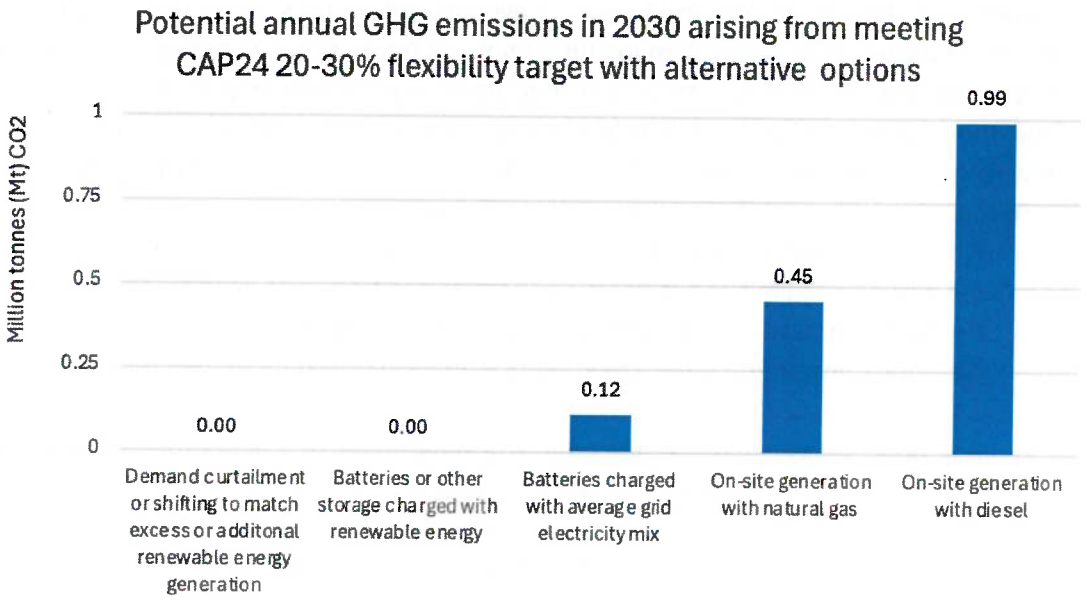


Figure 3: Estimate of annual GHG emissions in 2030 arising from meeting CAP24 20-30% flexibility target with alternative options. ***Data & assumptions: Total electricity demand of 45 TWh in 2030 (source: EirGrid 2025); 25% of this demand is flexible (CAP24 target of 20-30%); 10% of this annual demand flexibility is actually called upon – this assumption is sensitive to grid constraint; Batteries: 85% round trip efficiency, grid-scale CO2 intensity of 87 gCO2/kWh (SEAI projection for WAM) (may be significantly larger if battery charging coincides with peak demand or low renewables); On-site gas generation: 50% efficiency; 202 gCO2/kWh; On-site diesel generation: 30% efficiency; 264 gCO2/kWh.***

5 Carbon leakage argument: Will restricting data centre expansion in Ireland drive emissions elsewhere, or limit essential services?

The Climate Act requires consideration of carbon leakage when delivering carbon budgets. This is a situation where stringent climate policies in one country lead to the relocation of industries to countries with laxer emission constraints, potentially increasing global emissions. During the consultation phase of the CRU LEU policy, stakeholders expressed concern related to carbon leakage.

However, the risk of carbon leakage is limited in this case for the following reasons:

- Firstly, alternative lower-carbon locations exist. Ireland's power sector is not among the most low-carbon across Europe. Countries such as Norway, Sweden, France and Finland offer low-carbon grid electricity, competitive energy costs, and stable policy environments. New data centres may move there without increasing global emissions. Moreover, the

energy efficiency benefits of locating data centres in Ireland's moderate climate have diminished as efficiency innovations in data centres have reduced the energy needs for cooling, even in hot climates.

- Secondly, while often framed as essential infrastructure, most current expansion is driven by commercial demand for AI and cloud services. A large proportion of these workloads are geographically flexible.
- Thirdly, evidence from other industries suggests that environmental regulation spurs innovation and efficiency. Moreover, recent developments improving the efficiency of AI algorithms suggest that energy demand for computing needs may be significantly reduced[11]
- Fourthly, Ireland's climate responsibility is domestic. Rapidly reducing domestic emissions within the carbon budgets is a legal requirement, regardless of potential emissions abroad. Allowing one industry an exemption from mitigation based on the carbon leakage argument may undermine action in other sectors, and in other countries.
    - Finally, zero emissions growth of data centres is possible. Alternative policy options are available to limit and mitigate GHG emissions from data centres, for example:
    - Require data centres to procure renewable energy directly, such as through Corporate Power Purchase Agreements (CPPAs), equivalent to their total electricity consumption.
    - A stronger version of this would require developments to procure renewable energy supply to match their demand for every hour of the year (known as a 24×7 CPPA12). This would deliver deeper decarbonisation, reduce the impact on the grid, and incentivise data centres to invest in innovative storage and flexibility solutions, which would create positive spillovers.
    - Mandate data centres to install renewable generation capacity (solar, wind, battery storage) onsite or nearby to meet a defined share of their energy demand.
    - Impose emissions or energy intensity performance standards.
    - Require data centres to financially contribute to national renewable infrastructure projects and electricity infrastructure as a condition of connection to the grid.
    - Prevent or strictly limit the installation of fossil-fuel-based thermal generation for backup power, favouring battery storage.
    - Enforce energy efficiency benchmarks and mandate recovery and reuse of waste heat in local district heating or agricultural systems.
    - Prioritise grid access by granting grid connections preferentially to data centres demonstrating the lowest carbon footprint or highest renewable integration.

[11] https://www.nature.com/articles/s41928-025-01361-x

[12] https://www.pinsentmasons.com/out-law/analysis/power-purchase-agreements-help-data-centre-sustainability

6 Conclusion

- Data centres with existing electricity and gas network connection agreements already pose major challenges to the achievement of the Sectoral Emissions Ceiling for the power sector, particularly over the second carbon budget period. A policy decision that would mandate data centres to construct on-site generation capacity capable of meeting their energy needs, rather than mandating the construction of additional, time-matched renewable generation capacity, creates a real and substantial risk of exacerbating this challenge. Under a "high" growth scenario, if demand from data centres with existing electricity grid connection agreements was met from natural gas rather than renewables, data centres alone would emit 23% more than the entire Sectoral Emissions Ceiling allocated to the power sector. Moreover, the scale of data centres seeking direct connections to the natural gas network is highly uncertain, but could potentially consume natural gas equivalent on the scale currently consumed across all sectors in Ireland.
- Making up for this consequential overshoot in carbon budgets in later periods would be costly or impractical, and costs would fall on society. Moreover, allowing an emissions-intensive growth pathway for one sector would undermine the motivation for other sectors to take action to cut their emissions.
- The Climate Action Plan 2024 requires a plan for "zero carbon demand growth" and for electricity demand flexibility that supports decarbonisation. However, the proposed LEU policy is not consistent with this: it would facilitate electricity demand growth from data centres without emissions mitigation, therefore allowing for fossil fuel generation that is incompatible with Sectoral Emissions Ceilings. It also applies flexibility in a way that is inconsistent with the objectives of the Plan, and in fact in a way that is contrary to the decarbonisation objective of flexibility. Alternative flexibility options should be pursued, that include a requirement to time-shift demand to align with renewables generation, battery storage that integrates renewable energy and reduces grid constraint.

FPLOGUE SOLICITORS

Our Reference: FPL/178/
Your Reference:

4 April 2025

To: Friends of the Irish Environment CLG

RE: CRU/202504 – Review of Large Energy Users Connection Policy Proposed Decision Paper

A Cháirde,

Introduction

1. The following note sets out my opinion on the legal framework governing the CRU's consultation on the "Large Energy Users Connection Policy" CRU202504 and how it should be applied.

2. As is apparent from the Proposed Decision Paper the context of the consultation is "*how we maintain security of supply at reasonable cost, while decarbonising our generation of electricity and facilitating economic growth*" when there is sustained growth in large energy users such as data centres.

3. The CRU notes that "*Government policy on data centres aims to enable the "twin transitions" of digitalisation and decarbonisation of our economy and society. There is an opportunity to match this demand with future available renewable resources such as offshore wind energy.*"

4. In previous consultations the CRU identified a number of mitigation options:

    1. Do nothing.
    2. Moratorium on data centre connections.
    3. Connection measures.

5. The current consultation states that for the purposes of this proposed decision the CRU "*remains of the view that imposing a moratorium on data centre connections at this time may be disproportionate and proposes to take an approach based on "connection measures".* (p.47)

6. The main elements of the proposed decision are:

    - This policy applies to all data centres seeking to connect to the electricity network.
    - Data centres connecting to the electricity network will be required to provide dispatchable (i.e. available when it is needed by the system) generation or storage onsite or nearby, which will participate in the electricity market.
    - The ramping up of a new data centre's demand will be linked to the delivery of the required generation capacity.

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- The System Operators should continue to take into account the location of any data centre connection applications and associated generation capacity in respect of whether it is in a constrained or unconstrained region of the electricity network.

- The System Operators will be required to publish regular information on existing and future grid network capacity to accommodate connections on the electricity network and to provide insight to new data centres and other developers.

- Data centres will be required to self-report to the System Operator annually in relation to their use of renewable energy and their sites' emissions. A summary of these reports will be published.

Legal Framework

Electricity Regulation Act 1999

7. Section 9 of the Electricity Regulation Act 1999 sets out the CRU's functions.

8. Section 34 of the 1999 Act provides that the CRU has the power to issue Directions to the Electricity TSO and DSO in relation to the terms and conditions offered to parties seeking to connect to and use the distribution and transmission systems. Those Directions may provide for a range of purposes set out in Section 34(2), and the electricity SOs shall comply with such Directions. Under Section 34(2), Directions given by CRU may provide for, inter alia, those matters which the CRU considers necessary or expedient for the purpose of making an offer for connection to or use of the transmission or distribution system.

9. Section 34(4)(a) of the 1999 Act provides that the electricity SOs are not required to enter an agreement with a person for connection to or use of the transmission or distribution system where they have demonstrated to the satisfaction of the Commission that it is not in the public interest to provide additional capacity to meet the requirements to be imposed by that agreement.

10. The outcome of the consultation will inform any resulting CRU decision, including any new direction under Section 34 of the 1999 Act, which will apply to all new connection contracts for new or additional capacity captured under the scope of the decision. It is intended that direction CRU/21/124 will be superseded by a new direction to the SOs following completion of this review.

Climate Action and Low Carbon Development Act 2015

11. Section 15(1) of the Climate Action and Low Carbon Development Act 2015 (as amended) imposes specific obligations on relevant bodies:

15(1) A relevant body shall, in so far as practicable, perform its functions in a manner consistent with—

(a) the most recent approved climate action plan,

(b) the most recent approved national long term climate action strategy,

(c) the most recent approved national adaptation framework and approved sectoral adaptation plans,

(d) the furtherance of the national climate objective, and

(e) the objective of mitigating greenhouse gas emissions and adapting to the effects of climate change in the State.

12. The CRU is a relevant body and therefore subject to these obligations.

13. The national climate objective is defined in section 3(1) of the 2015 Act:

3. (1) The State shall, so as to reduce the extent of further global warming, pursue and achieve, by no later than the end of the year 2050, the transition to a climate resilient, biodiversity rich, environmentally sustainable and climate neutral economy

14. To achieve this objective the 2015 Act puts in place:

a. Binding carbon budgets which limit the permit carbon emissions over three successive five-year periods between 2021 and 2035 under section 6A, 6B and 6D. Budget exceedances in one period are carried over and deducted from the budget allocation in the next period. The carbon budgets define an absolute total amount of carbon emissions.

b. Binding sectoral emissions ceilings are defined in section 6C limiting the emissions in specified sectors over the same periods.

c. Annual climate action plans consistent with the carbon budget program setting out inter alia sector specific actions that are required to comply with the carbon budgets and sectoral emissions ceilings under section 4.

d. A national long term climate action strategy covering a minimum period of 30 years under section 4; and

e. A national climate change adaptation framework under section 5.

15. The obligations on a relevant body under section 15 of the 2015 Act have been subject to a detailed interpreted by the High Court in *Coolglass Windfarm Limited v An Bord Pleanála* [2025] IEHC 1.

16. The Court observed that the amendment to section 15 enacted in 2021 "*has created a broad range of sweeping obligations across the whole public sector*" which each relevant body being subject to those obligations without the need for further specific legislative changes (§77).

17. The Court held that "*the approach of a general requirement of general application underlines and reflects the need for "rapid, far-reaching and unprecedented changes to all aspects of society and the economy. To subject the Act to the detail of any and every rule in a contrary sense is to allow it to die a thousand deaths.*" (§79)

18. The Court concluded that "*all vectors of interpretation point strongly in the same direction – the need for an imperative reading of s. 15(1) in line with what it says, namely that the board and any other relevant body is required to act in conformity with the climate plans and objectives set out in the subsection unless it is impracticable to do so.*" (§117) and "*It imposes an obligation to act consistently with the climate plans and objectives referred to in s. 15 insofar as practicable. That does not mean allowing an application which is prohibited by law. That wouldn't be practicable apart from anything else. But it does mean exercising discretionary and evaluative powers in whatever way is most likely to be consistent with the relevant plans and objectives.*" (§119).

19. The High Court sets out a detailed procedure which a relevant body must follow under section 15 (§131):

> *131. The conclusion is that where the board (or mutatis mutandis any other relevant body) is called on to make a decision of relevance to the achievement of the matters set out in s. 15(1), it should proceed as follows:*
>
> *(i) The board must ask itself what substantive disposition of the matter that is practicably available would contribute to achieving the s. 15 goals. In the case of renewable energy projects, the answer to that will almost always be a grant of permission, and is obviously so here. It is not an answer that the permitting of any one project won't achieve climate goals on its own. That is the drop-in-the-ocean fallacy that is rejected globally, and would obviously strangle the effort to address climate change at the starting line.*
>
> *(ii) The board should then ask whether the substantive disposition of the matter in a way that furthers climate goals is precluded by a mandatory and non-fixable legal requirement that confers no discretion or evaluative judgement on the decision - maker. If so, the project has to be refused no matter how climate-friendly it is.*
>
> *(iii) If the answer to that is No, the board should then ask if its discretion or evaluative judgement can be exercised in such a way as to support the outcome favouring climate goals. Examples include the following:*
>
> *a. Insofar as concerns an overall judgement as to proper planning and sustainable development, that must be exercised in an evaluative way that furthers climate goals if practicable, albeit that it could allow the board to form an independent judgement*

that a project did not comply with the principles of proper planning and sustainable development, if those two concepts are properly considered together;

b. *insofar as concerns material contravention, if such contravention arises, the board should exercise the power to permit such contravention in whatever way that furthers climate goals if practicable to do so – as the applicant submits, the board cannot merely defer to a limitation in an individual development plan if to do so would contribute to an inconsistency (the avoidance of which is not impracticable) with climate plans and objectives contrary to s. 15;*

c. *if non-mitigable impacts on European sites arise, the board must apply the public interest override in a manner that furthers climate goals, if practicable to do so; and*

d. *if there is some impracticability in a grant of permission, but it can (or could potentially) be resolved by a procedural decision that is not impracticable, then the board is required to make the procedural decision that is most consistent with climate goals to enable the problem to be fixed – for example to require further information or to carry out any additional steps open to it regarding assessments if the developer's initial assessment information is deemed inadequate.*

20. While *Coolglass* concerned an application for planning permission for a renewable energy project the High Court made some *obiter* observations on how a relevant body should approach activities causing emissions (§§132-133):

132 I do need to emphasise that the obligation to use discretionary powers favourably to renewable energy infrastructure does not automatically translate into an obligation to refuse permission for developments that cause emissions. One can see an argument as to why the board would not be required to start from a position of scepticism in relation to projects causing emissions to quite the same extent as it should start from a presumption of favourability regarding renewable projects. We can save detailed consideration for a case in which it arises but there are two obvious reasons for this:

(i) The concept of net zero implies a continuing necessity for some emissions in the short term at least. That relates to the fact that pending complete adaptation of the economy, there will be other imperatives of economic necessity that require projects that, in and of themselves, wouldn't support climate goals in isolation. Energy security to enable the ongoing orderly functioning of society, especially in the context of the Russian Federation's full-scale criminal war of aggression against Ukraine, is one example.

(ii) Even if a project is not in itself driven by such an imperative, one has to be conscious of displacement effects. Refusal of a project in Europe may simply have the effect of the project being relocated to a jurisdiction with lower environmental standards, thus producing more emissions overall. Emissions are definitionally a cumulative global problem, so while refusing such projects feels good in the moment, it may or may not be doing anything to combat climate change. Rightly or wrongly, that was an explicit part of my thinking in An Taisce v. An Bord Pleanála [2021] IEHC 254, [2021] 7 JIC 0205 (Unreported, High Court,

2nd July 2021). Such an approach doesn't particularly give one a feeling of virtue, but it makes a certain amount of sense depending on the context.

***133.** In other words, it doesn't automatically follow from a pro-renewables interpretation that there must be, say, an anti-cheese factory interpretation, an anti-data centre interpretation or an anti-LNG storage interpretation. The trade-offs and displacement effects would need to be considered.*

Climate Action Plan 2024

21. Chapter 12 of the Climate Action Plan 2024 (**CAP24**) concerns the electricity sector. It identifies the sectoral emissions ceilings:

    - Carbon Budget 1 (2021-2025) :40 MtCO2eq.
    - Carbon Budget 2 (2026-2030): 20 MtCO2eq.
    - Emissions Abatement (on 2018): -75% (3 MtCO2eq. per annum by 2030)
    - Emissions up to the end of 2022: 19.7 MtCO2eq.

22. CAP24 notes that the EPA projects that the electricity sector emissions are currently not aligned to Climate Action Plan 2023 (CAP23) pathways and targets. The projections forecast an overshoot of ~5.2 MtCO2eq. in the period 2021 to 2025, and ~8.2 MtCO2eq. in the period 2026 to 2030. CAP24 states that "*The deployment of all the measures within this chapter are required for Ireland to meet its carbon budget requirements for the electricity sector.*"

23. CAP24 §12.3 quotes the SEAI to the effect that "*The deployment of renewables needs to outpace the growth in energy demand for it to deliver the absolute reductions in GHG emissions required. Therefore, the timing of the delivery of the renewable energy generation relative to the scale and pace of growth in electricity demand is a critical factor.*"

24. Table 12.5 sets out a set of KPIs across three themes, see Annex 1 for a copy of this table.

25. §12.4 sets out a range of measures to meet the challenge.

Strategic Environmental Assessment Directive

26. Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment requires an environmental assessment for certain plans and programmes.

27. For a plan or programme to come within the scope of the SEA Directive it must satisfy certain criteria.

28. For a plan or a programme to be a plan or a programme under the SEA Directive, it must be (a) subject to preparation and/or adoption by an authority at national, regional or local level or are prepared by an authority for adoption, through a legislative procedure by Parliament or Government, and (b) which are required by legislative, regulatory or administrative provisions.

29. The Court of Justice of the European Union has interpreted the idea of required as meaning where there exists, in national law, a particular legal basis authorising the competent authorities to adopt that plan or programme, even if such adoption is not mandatory[1].

30. Only certain plans or programmes require mandatory environmental assessment. Article 2(a) makes assessment mandatory for plans or programs which are prepared for agriculture, forestry, fisheries, energy, industry, transport, waste management, water management, telecommunications, tourism, town and country planning or land use and which set the framework for future development consent of projects listed in Annexes I and II to [the EIA Directive].

31. Plans or programs which determine the use of small areas at local level, minor modifications to plans or programs and other plans or programs not included in Article 2 which set the framework for future development consent of projects only require assessment if they are determined to have likely significant effects on the environment.

32. The concept of a plan or program which sets the framework for future development consents has been interpreted by the CJEU as meaning any measure which establishes, by defining rules and procedures for scrutiny applicable to the sector concerned, a significant body of criteria and detailed rules for the grant and implementation of one or more projects that are likely to have significant effects on the environment[2].

33. The environmental assessment envisaged by the SEA Directive means the preparation of an environmental report, the carrying out of consultations, the taking into account of the environmental report and the results of the consultations in decision-making and the provision of information on the decision in accordance with Articles 4 to 9 of the Directive.

34. Article 5(1) requires the preparation of an environmental report in which the likely significant effects on the environment of implementing the plan or programme, and reasonable alternatives taking into account the objectives and the geographical scope of the plan or programme, are identified, described and evaluated.

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[1] Judgment of 4 October 2024, Case C-727/22, *Friends of the Irish Environment (Project Irlande 2024)*, EU:C:2024:825, §25

[2] Judgment of 25 June 2020, Case C-24/19, *A and others*, EU:C:2020:503, §67

35. The environmental report must in particular show that the plan or programme is compatible with the applicable substantive requirements of environmental law. Effects on the environment which infringe environmental legislation would be significant in any case[3].

36. The environmental report must identify, describe and evaluate secondary, cumulative, synergistic, short, medium and long-term permanent and temporary, positive and negative effects.

37. Articles 6 and 7 provide for both national and transboundary consultations.

38. Article 10 requires monitoring of the significant environmental effects of the implementation of plans and programmes in order, inter alia, to identify at an early-stage unforeseen adverse effects, and to be able to undertake appropriate remedial action.

Legal Context set out in the Proposed Decision Paper

39. The CRU lists the various legislative measures which it says set the legal context for the proposed decision in §1.2 of the Proposed Decision Paper.

40. In relation to section 15 of the 2015 Act, the Proposed Decision Paper states:

> *"Following legal review, the CRU considers that the current provisions under the Climate Action Act do not provide a mandate to CRU to deliver a connections policy which requires explicit emissions reduction and offsetting measures (e.g. the CRU consulted upon the potential option of requiring demand sites to take such actions as would be required to deliver net zero emissions operations at the time of connection). In the absence of such legal basis, the CRU intends to take more limited actions in respect of emissions, such as to require regular reporting on renewable energy use and emissions by data centres to system operators, a summary of which will be published by the system operators."*

41. No details have been provided concerning the CRU's legal review nor has a detailed explanation been provided as to why the CRU has reached this conclusion. This conclusion is repeated in various other formats elsewhere in the document, for example:

> *"it is the CRU's understanding that Climate Action Act does not provide it with sufficient legal basis to mandate explicit emissions reduction and off-setting measures." (p.69)*

[3] Opinion of the Advocate General of 21 March 2024, C-727/22, *Friends of the Irish Environment (Project Irlande 2024)* EU:C:2024:266, §57

The CRU considers that the provisions under the Climate Action Act and the Gas Act do not provide sufficient legal basis to the CRU for measures in relation to islanded data centre gas connections and emissions provisions (p.74)

42. The CRU appears to have ruled out, *ab initio* and without explaining the legal basis, the adoption of any measure aimed at directly controlling greenhouse gas emissions. Instead, the proposed approach to climate is simply to require reporting and publication of data.

The CRU recognises the importance of transitioning to a net zero energy system in line with Ireland's climate commitments and believes that data centres can play an important role as part of that transition. This is in line with the Government Statement on the Role of Data Centres in Ireland's Enterprise Strategy which sets out a preference for data centres developments that can demonstrate a clear pathway to decarbonise and ultimately provide net zero data services. In the context of not having sufficient legal basis to mandate explicit emissions reduction and off-setting measures, while also having regard to the need to ensure that grid connection policy takes account of renewable energy policy, the CRU sees merit in capturing and publishing data relating to renewable energy procurement and emissions associated with new demand connections captured under this policy. This will help inform future policy in the areas of renewable electricity and emissions contribution and will act as an incentive for data centres to contract with renewable energy providers.

43. Despite acknowledging the importance of emissions data to the proposed decision there is no environmental assessment identified in the Proposed Decision Paper, and in particular an assessment of greenhouse gas emissions scenarios and their impact on Ireland's carbon budget programme and sectoral emissions ceilings.

Discussion

44. In my view the CRU's conclusion that it does not have sufficient legal basis to mandate emissions reduction and off-setting measures and other measures is incorrect. In my view this is a form of special pleading that was deprecated by the High Court in *Coolglass.* The High Court made it clear that all relevant bodies have an explicit mandate under the 2015 Act to comply with the obligations set out in section 15 without further legislative intervention.

45. In my view the application of *Coolglass* in the context of a carbon emitting activity, having regard to §132 of the judgment, first requires an assessment of carbon emissions from the proposed activity. This is so that the CRU can assess the potential carbon emissions and evaluate them within the context of carbon budgets and sectoral emissions ceilings, the climate action plan and the other measures listed in section 15.

46. The High Court has acknowledged that some emissions are permitted pending complete adaptation, to ensure the orderly functioning of society. Clearly this does not mean that unlimited emissions from all sources are available or that any one sector can simply ignore climate change. There must be, in

all cases, a quantitative examination of likely emissions and a consideration of whether they are compatible with the carbon budget program and/or warranted in the public interest.

47. Second, carbon leakage or displacement may be part of the assessment, but like all assessments such an examination must be fact based and not elusive, contingent and speculative[4]. If the CRU intends making the carbon leakage argument, this must be assessed and determined as part of the overall climate change assessment. Carbon leakage is not a get out of jail free card for polluting activities.

48. In my view the assessment described above is mandatory having regard to the *Coolglass judgment* but in any event the SEA Directive is the appropriate framework to carry it out.

49. In my view the proposed decision is a plan or program under the SEA Directive. The CRU is a public authority which proposes to adopt the proposed decision and make a direction under section 34 of the 1999 Act. The procedure is regulated under specific legislation including the 1999 Act and forms a basis for a direction under section 34 which will be binding on the electricity system operators. The proposed decision and resulting direction will define a detailed set of rules and criteria for the grant and implementation of data centre projects, which are projects in the energy sector that come within the scope of the EIA Directive.

50. Having carried out the assessment? the CRU then must ask itself what substantive disposition of the matter that is practicably available would contribute to achieving the section 15 goals, apart from measures that further climate goals which are precluded by a mandatory and non-fixable legal requirement that confers no discretion or evaluative judgement on the decision - maker. If there are measures available, then the CRU must exercise its discretion in favour of climate goals and section 15. It is only where there are a range of measures does the CRU get to a proportionality analysis to pick the measure that is not disproportionate to the objective of complying with the section 15 obligations.

51. The CRU has not precisely identified a mandatory and non-fixable legal requirement that confers no discretion or evaluative judgement preventing it from complying with the section 15 obligations, although it appears that is what is suggested by the legal review mentioned at §40 above.

52. In fact, the CRU has identified a range of measures up to and including a moratorium on new data centre connections. While it states that a moratorium would be disproportionate this is simply a bald statement made without reference to any specific environmental assessment, nor does it say to what end a moratorium would be disproportionate. In my view the principle of proportionality would only

[4] *An Taisce v An Bord Pleanála (Kilkenny Cheese)* [2022] IESC 8, §110

apply if the CRU had a range of measures available. In the case where the CRU has only one measure then per *Coolglass* it has no choice and must implement that measures per *Coolglass.*

53. In my view if there were to be significant greenhouse gas emissions or other failures to satisfy the section 15 obligations under the proposed decision which and in respect of which the CRU was specifically precluded by legislation from complying then such legislation would be invalid under the Constitution and the Charter of Fundamental Rights based on the logic of the *KlimaSeniorinnen* case[5], having regard to the fact that the section 15 obligations are aimed at vindicating the fundamental rights of citizens. It is also my view that if such rights were violated Friends of the Irish Environment would have standing to seek judicial review in order to vindicate those rights owing to its status as an environmental protection organisation based on the same reasoning as set out in the *KlimaSeniorinnen* judgment.

[5] Judgment of 9 April 2024, App No 53600/20 *Verein KlimaSeniorinnen Schweiz and others v Switzerland* ECLI:CE:ECHR:2024:0409JUD005360020

Conclusion

54. In conclusion in my opinion

a. CRU is required to carry out an assessment of the compatibility of the proposed decision with the section 15 obligations, including whether the decision ensures that projected emissions do not cause an exceedance of carbon budgets and sectoral emissions ceilings, there must be an evidence-based assessment, including in relation to carbon leakage.

b. The proposed decision is a plan or programme for the energy sector which sets the framework for data centres which come with the scope of the EIA Directive. Therefore an environmental assessment is required under the SEA Directive.

c. The CRU is subject to the obligations arising under section 15 of the 2015 Act and must take all measures practicably available that would contribute to achieving the section 15 goals.

d. The CRU may only decline to adopt measures which are precluded by a mandatory and non-fixable legal requirement that confers no discretion or evaluative judgement on the CRU.

e. If the CRU believes that it is so-precluded, it must identify precisely how it is precluded under its duty to give the main reasons for the main issues. In my view the CRU may not assert legal advice privilege over these reasons[6].

f. If the CRU is precluded by law from taking measures to achieve the section 15 goals, then that law is unconstitutional and invalid having regard to the Charter of Fundamental Rights of the European Union.

Yours Sincerely

Fred Logue PhD, CEnv, MIEMA, MInstP

[6] *Elsharkawy v Minister for Transport* [2024] IECA 258

Table 12.5 – Key Metrics to Deliver Abatement in Electricity[71]

Theme	2025 KPI	2025 abatement 2018) $MtCO_2eq.$	2030 KPI	2030 abatement (vs. 2018) $MtCO_2$ eq.	2031-2035 measures
Accelerate Renewable Energy Generation[72]	50% renewable electricity share of demand 6 GW onshore wind capacity Up to 5 GW solar PV capacity, including at least 1 GW of new non-utility solar	2.21	80% renewable electricity share of demand 9 GW onshore wind capacity At least 5 GW offshore wind capacity 8 GW solar PV capacity, including 2.5 GW of new non-utility solar Green hydrogen production from renewable electricity surplus generation	7.18	Decarbonisation Roadmap for a net-zero power system Green hydrogen production via 2 GW offshore wind
Accelerate Flexibility	Maximum level of renewables at any one time on the grid: 85% Dispatch down (excluding surplus generation) of renewables below 7% Minimise surplus generation Required long term storage (4 hour plus) in place	See above abatemen	Maximum level of renewables at any one time on the grid: 95-100% Dispatch down (excluding surplus generation) of renewables below 7% Minimise surplus generation Required additional long-term storage (4 hour plus) in place At least 2 GW of new flexible gas-fired generation Zero-emission gas-fired generation from biomethane and hydrogen commencing by 2030	See above abatement figure	Required additional long duration storage technologies in place Increased zero emission gas-fired generation to enable a net zero power system
Demand Management	Demand side flexibility 15-20% Zero carbon demand growth	2.21	Demand side flexibility 20-30% Zero carbon demand growth	7.18	Demand side flexibility 30% Zero carbon demand growth
Total Estimated Abatement Potential					

Annex I - Friends of the Irish Environment

Friends of the Irish Environment CLG (FIE) is a non-governmental charity formed in 1997 by a group of environmental activists from across Ireland, with the company limited by guarantee established in 2001, towards the following goals:

- monitoring the full implementation of European law and assisting in its development,
- advocating for changes in the Irish planning laws,
- encouraging the implementation of the right to full public participation and access to justice,
- supporting individuals, local groups, and the wider public in understanding environmental issues, and
- seeking the proper implementation of environmental and planning laws to support sustainable communities, including the pursuit of concerns and cases in both the built and natural environments.

In recent years, FIE has taken legal action to hold the Irish Government accountable for meeting national and international commitments to reducing carbon emissions, including the "Climate Case Ireland" on the adequacy of the Government's Mitigation Plan. [3]

FIE conducts policy research, advocacy, and public awareness campaigns alongside litigation. As an independent and principled environmental advocate, FIE strives to be both challenging and cooperative, effective yet respectful. A commitment to fact-finding, truth-telling, integrity, and transparency drives FIE. FIE is a member of the Irish Environmental Network and the European Environmental Bureau. [4, 5]

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3 https://www.ejiltalk.org/the-supreme-court-of-irelands-decision-in-friends-of-the-irish-environment-v-government-of-ireland-climate-case-ireland

4 https://ien.ie

5 https://eeb.org

Annex II - Data centres in the context of Ireland's carbon budgets

Commissioned by Friends of the Earth Ireland and undertaken by Prof. Hannah Daly, December 2024. [6]

Please see overleaf.

6 https://www.friendsoftheearth.ie/assets/files/pdf/data_centrres_and_the_carbon_budgets_-_prof_hannah_daly_dec_2024.pdf

EPMG
ENERGY POLICY &
MODELLING GROUP

Data centres in the context of Ireland's carbon budgets

Prof. Hannah Daly

December 2024

MaREI
Energy · Climate · Marine

Environmental
Research
Institute

UCC
University College Cork, Ireland
Coláiste na hOllscoile Corcaigh

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- Commission for the Regulation of Utilities (CRU) demand policy
- An Electrification Action Plan
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About this study

This study was commissioned by Friends of the Earth Ireland and undertaken by Prof. Hannah Daly. It seeks to explore and analyse the evidence surrounding the impact that growing data centre energy demand is having on Ireland's electricity and natural gas usage, greenhouse gas emissions and legally-binding carbon budgets.

Executive summary

This report explores the implications of rapidly increasing data centre electricity demand on Ireland's carbon budgets and broader decarbonisation commitments. As of 2023, data centres accounted for 21% of Ireland's electricity consumption, a figure projected to rise significantly by 2030. This unprecedented growth is matching the deployment of renewable energy, contributing to a stagnation in Ireland's progress toward reducing greenhouse gas (GHG) emissions and meeting legally-binding carbon budgets.

Key findings include:

- Electricity demand from data centres has grown at an annual rate of 22.6% since 2015, compared to 0.4% for other sectors. Without data centres, Ireland's electricity demand would have seen minimal growth over the past decade. Instead, demand between 2012 and 2022 grew by 24.7%, the second-fastest rate in the EU, while electricity demand in the EU fell by 3.1%. By 2027, data centres are projected to use more electricity than all households use today, and under high-demand scenarios are projected to exceed the demand of all sectors by 2025.
- Between 2017 and 2023, all additional wind energy generation in Ireland was absorbed by data centres. As data centre demand has expanded at the same rate as renewables generation, renewables are not delivering net reductions in fossil fuel use in power generation. Electricity demand from data centres far outstripped the additional renewable energy being procured through CPPAs between 2020 and 2023, and the proportion of CPPAs undertaken by data centres is itself unknown.
- Dozens of data centres have secure or are seeking connections to the natural gas network to overcome local power network constraints. On-site generation of electricity with natural gas less efficient than grid-scale generation, further increasing emissions intensity, and will sustain fossil fuel demand. Current national energy demand and GHG projections underestimate the impact of gas demand, as emissions from on-site generation are not fully accounted for, creating a significant blind spot in Ireland's climate action planning. The potential scale of demand from data centres who have made formal enquiries to connect to the gas network is large, but highly uncertain: if gas connections were temporary, data centres used them for a very small percentage of time, and switched to 100% renewables supply as quickly as possible, the risk would be minimal. However, it is not clear whether this outcome is realistic given the current extraordinary pace of growth.
- Data centres are driving additional GHG emissions from both electricity and natural gas consumption, threatening carbon budgets.
- Biomethane has been proposed as a mitigation strategy but the scale of demand for data centres would exceed sustainable production capacities and is unlikely to meet demand without diverting resources from critical sectors like heating and heavy industry, undermining its decarbonisation potential.
- Ireland lacks real-time emissions data for data centres, hindering accurate assessments of their climate impact. Moreover, the shift to on-site gas generation transfers energy security risks to the gas network, creating vulnerabilities in an already constrained system and creating the risk of fossil fuel lock-in.

This report **concludes** that unchecked data centre growth poses a significant threat to Ireland's climate commitments. Without decisive action, data centres will continue to divert renewable energy to serving demand growth rather than displacing fossil fuels, deepen reliance on fossil fuels, and exacerbate Ireland's carbon budget overshoot and energy security threats. A comprehensive policy framework is urgently needed to ensure Ireland's economic development and enterprise strategy are aligned with legally-binding climate commitments.

Policy recommendations include:

- Enforce stricter power and gas grid connection policies for data centres, requiring alignment with carbon budgets
- Enhance transparency and research, by mandating real-time GHG emissions reporting for data centres and improve data collection on gas usage and renewable energy procurement, to allow a full assessment of the current and potential future GHG impact of data centres.
- Develop a national electrification strategy to accelerate the electrification of transport, industry and heating, ensuring that renewables primarily displace fossil fuels. Create a plan for the use of surplus renewable energy production that best serves climate and societal goals, that is not limited to serving data centre needs, if and when this surplus arises. For example, this could entail delivering deeper climate mitigation, such as in aviation fuels, green fertiliser, Direct Air Capture and synthetic proteins.

Context & background

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Background: Global context

Data centres are shaping global energy markets

- The rapid growth in data centre operations across the world is raising concerns that rising power demand will set back progress in cutting greenhouse gas emissions. In the United States, for example, 133 new gas-fired power plants, four oil-fired plants and two coal-fired power plants are being developed because, after a period of stable power demand, power consumption is suddenly and rapidly growing due to a surge in data centre energy use[1]. This surge in demand is also leading to investments in additional fossil fuel infrastructure, and therefore dependence on natural gas supply, including pipelines and liquefied natural gas (LNG) infrastructure.
- Increasing investment in natural gas generation capacity and infrastructure is threatening to lock in fossil fuel use. For example, across Europe, 80.1 GW of new gas-fired power generation capacity is under construction or planning[2], without concrete commitments and actions to remove fossil fuels from power generation by 2035, which is a necessary milestone under the International Energy Agency's (IEA) Net-Zero by 2050 study. Meanwhile, gas, mainly LNG, is powering the booming growth of data centre demand across Asian countries.[3]
- Until recently, increasing energy demand arising from data centres was largely replacing the processing power of smaller-scale processing on servers and personal computers: efficiency improvements associated with large-scale data centres had been offsetting the majority of additional demand due to demand growth, leading to only moderate overall growth in electricity demand. The IEA estimated that global data centre electricity consumption in 2022 was around 1-1.3% of total global electricity demand (excluding electricity for cryptocurrency mining) [4].
- However, despite continued efficiency gains, the rapid growth in data centre investments and workloads has resulted in substantial annual increase in energy use, growing by 20-40% annually globally. This has mainly been driven by a boom in artificial intelligence (AI), and is likely to continue over the coming years, with the IEA projecting that overall electricity demand from data centres could double between 2022 and 2026, depending on efficiency improvements and the outlook for AI[5] . This increase is equivalent to the entire power consumption of Germany.
- This emerging trend has led to concerns on the upward pressure data centres are placing on decarbonisation. Global electricity demand is forecast to grow by around 4% in 2024, which is the highest annual rate since 2007, and grow by 4% again in 2025[6]. While renewable electricity generation is also growing strongly, its growth is not yet strong enough to overtake growth in electricity demand and cause an absolute reduction in fossil fuel use, and greenhouse gas emissions, in global electricity generation – much less to make emissions fall in line with the very rapid trajectory necessary.
- While the IEA projects that greater electricity demand is to arise from other sectors including EVs, industry and buildings, in many of these cases electricity demand is replacing fossil fuel usage, and therefore improves overall efficiency and cuts greenhouse gas emissions. Moreover, the IEA acknowledges deep uncertainty on the future speed and scale of AI growth, with generative AI applications being adopted faster than other innovations such as the personal computer. [7]
- The rise of AI suggests a new era of electricity demand growth, which may only be limited by the ability of physical networks and new power generation capacity to accommodate them. This – and evidence showing that the growing capacity of renewables is insufficient to meet rising demand (at least in the short- to medium-term) suggests that binding climate policies will be necessary to keep growth in line with decarbonisation commitments.

[1] https://www.spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/us-has-133-new-gas-fired-plants-in-the-works-putting-climate-goals-at-risk-81469493
https://www.reuters.com/technology/artificial-intelligence/how-ai-cloud-computing-may-delay-transition-clean-energy-2024-11-21/
[2] https://drive.google.com/file/d/1xVFAZoGefPhfuilcLiiTrcwQ7lCOcOEH/view
[3] https://www.woodmac.com/news/opinion/will-gas-fuel-asias-data-centre-boom/
[4] https://www.iea.org/commentaries/data-centres-and-energy-from-global-headlines-to-local-headaches
[5] https://iea.blob.core.windows.net/assets/6b2fd954-2017-408e-bf08-952fdd62118a/Electricity2024-Analysisandforecastto2026.pdf
[6] https://www.iea.org/news/global-electricity-demand-set-to-rise-strongly-this-year-and-next-reflecting-its-expanding-role-in-energy-systems-around-the-world
https://www.iea.org/commentaries/what-the-data-centre-and-ai-boom-could-mean-for-the-energy-sector

Data centres in Ireland

- Ireland's position as a European data center hub has attracted significant investment but is now facing major challenges in meeting the growth in demand while decarbonising energy supply rapidly, in line with legislated carbon budgets. Electricity consumption from data centres grew by 20% between 2022 and 2023, and represented 21% of total electricity demand in 2023[1]. According to the Sustainable Energy Authority of Ireland, "*the scale of energy consumption growth from datacentres is likely to significantly eclipse the electricity consumption growth of any other sector*".
- Around €15 billion has been invested in data centres in Ireland, according to Bitpower[1], with two thirds of this invested by "hyperscale" operators Amazon Web Services, Microsoft, Meta, and Google. Another nine companies account for the remaining €5 billion, including Echelon, Keppel DC Reit, and Vantage
- In 2021, Ireland's Commission for Regulation of Utilities (CRU) noted that "*there is an evolving, significant risk to electricity security supply in Ireland. A significant contributory factor to this risk is a large increase in electricity demand presented by the growth of the data centre industry*"[2].
- Moreover, according to the Sustainable Energy Authority of Ireland,
  - *In the context of our legally binding national and international climate and energy obligations, the negative consequences versus the benefits of allowing new large electricity users, such as datacentres, to establish in Ireland needs to be considered. If the scale and pace of renewable energy growth cannot exceed that of electricity demand, as was the case in 2023, then renewables are just abating further increases in emissions rather than delivering the absolute reductions in greenhouse gas emissions required.*[3]
- Proponents of data centres in Ireland argue that data centres are supporting Ireland's climate goals, because they are sparking greater demand for renewable energy[4]. Central to this narrative is that not only is the expansion of data centres essential for Ireland's economic prosperity, but this is also compatible with – or even necessary for - Ireland's decarbonisation, as "*data centre owners have been to the forefront of commissioning and paying for clean energy*". However, there is a significant absence of evidence-based analysis to establish the extent to which the concentration of data centres in Ireland are working for, or against, Ireland's legally-binding carbon budgets.
- **The purpose of this report** is to examine and analyse the evidence in relation to this question.
- This issue is arising in Ireland now given the concentration of data centres in a relatively small power system, but this issue is likely to become prominent in other countries which face bottlenecks in renewables and strong growth in demand. Therefore this subject should have broader interest outside of Ireland.

[1] https://www.cso.ie/en/releasesandpublications/ep/p-dcmec/datacentresmeteredelectricityconsumption2023/keyfindings/
https://www.businesspost.ie/news/92-data-centres-using-21-per-cent-of-irelands-electricity/
[2] https://cruie-live-96ca64acab2247eca8a850a7e54b-5b34f62.divio-media.com/documents/CRU21124-CRU-Direction-to-the-System-Operators-related-to-Data-Centre-grid-connection-.pdf
[3] https://www.seai.ie/sites/default/files/publications/National-Energy-Projections-Report-2024.pdf
[4] https://www.irishtimes.com/business/2024/10/14/instead-of-curbing-data-centres-we-should-build-more-to-spark-greater-demand-for-renewable-energy/
https://www.businesspost.ie/analysis-opinion/matt-cooper-data-centre-limits-and-airport-passenger-cap-are-acts-of-self-sabotage/

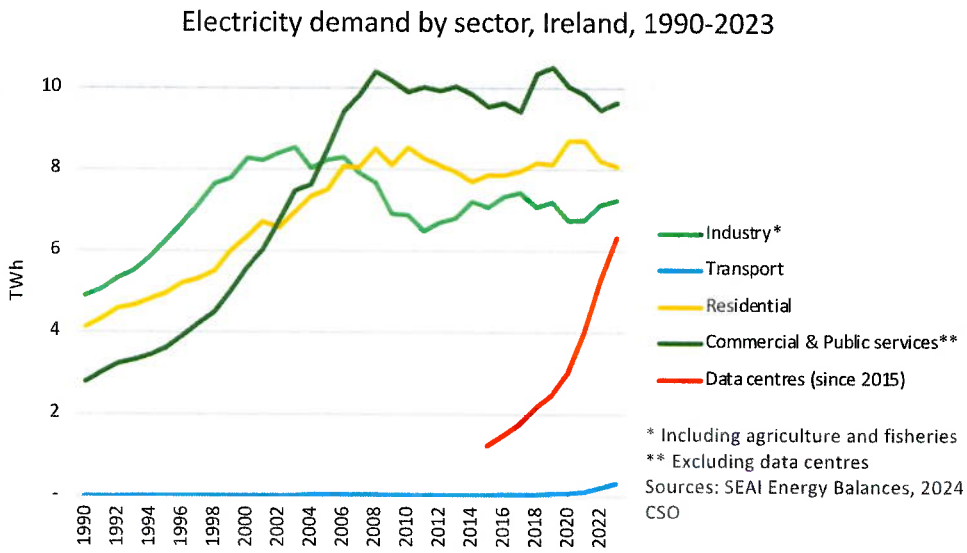
Energy demand growth

To what extent have data centres been driving energy demand growth, and how will this change in the future?

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Past energy demand growth from data centers

- Since 2015, data centres have accounted for the largest share of energy demand growth in Ireland.
  - Between 2015 and 2023, total electricity demand grew by 2.6% annually. Of this, data centre demand grew by 22.6% annually, while demand in all other sectors (industry, transport, residential and commercial and public services), grew by 0.4% annually.
  - Without data centres, Ireland's electricity demand would have been relatively stable. Instead, demand between 2012 and 2022 grew by 24.7%, the second-fastest rate in the EU, while electricity demand in the EU fell by 3.1%[1]. Data from the EU demonstrate that this difference is not explained by greater consumption – electricity consumption by households in Ireland was stable over this period.

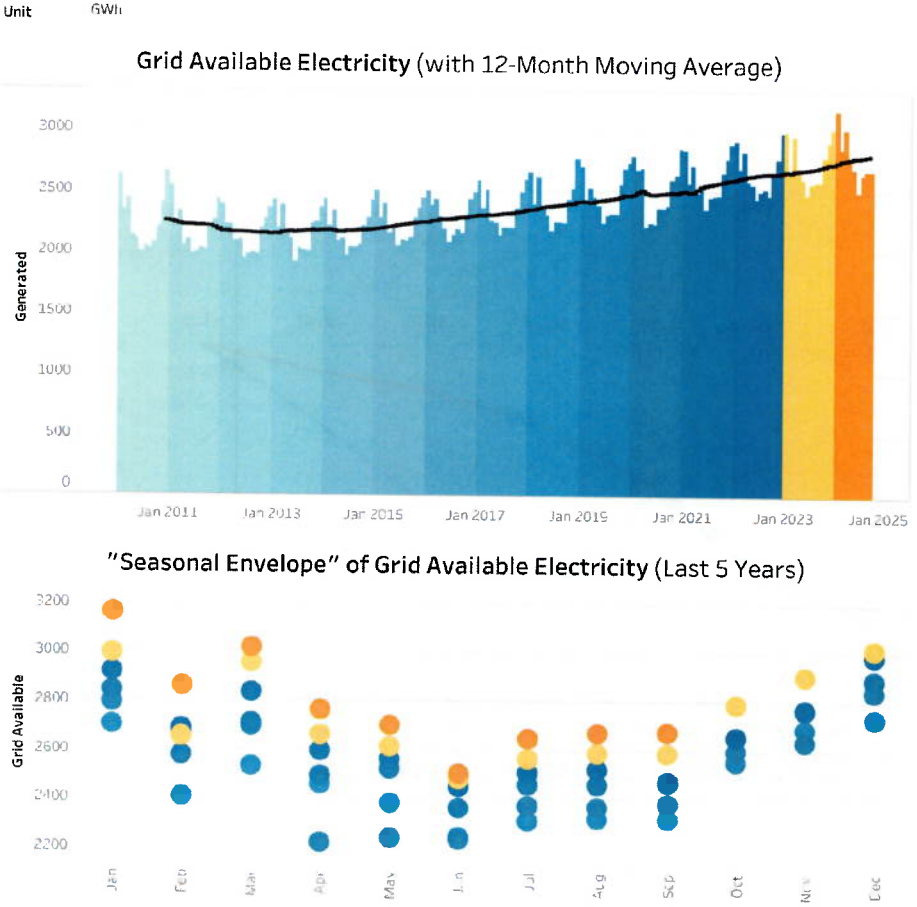


[1] https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Electricity_production,_consumption_and_market_overview

Electricity demand in 2024

- Electricity demand in 2024 continues to grow strongly.
  - In the year to September, the electricity available to the grid* grew by 3.6% relative to the same period in 2023. Increases are being met by increased net imports from Great Britain, which are at historically high levels, while indigenous production has decreased relative to 2023.
  - Peak demand also continues to grow on the Irish electricity grid. Peak demand exceeded 7 GW for the third time in November 2024, with demand this year well ahead of previous years.

*This is an indication of consumption, which comprises indigenous electricity generation, net imports through interconnection and net pumped storage

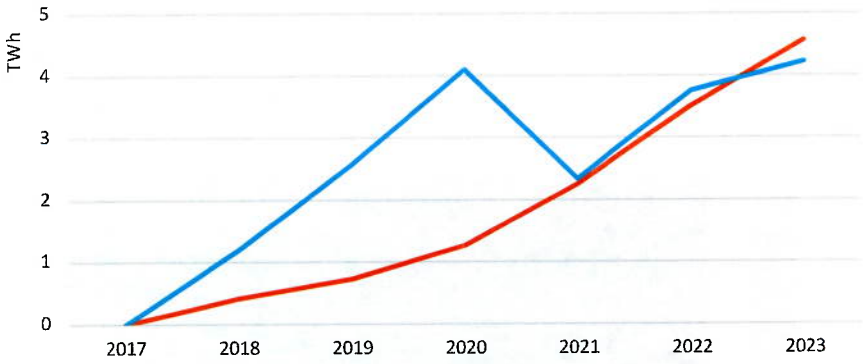


Source: EirGrid, SEAI Monthly electricity demand

Data centres and wind energy demand growth

- To analyse the claim that that greater electricity demand from data centres is accelerating decarbonisation, there would have to be evidence that renewable energy deployment is growing faster (or can grow faster) than energy demand growth from data centres, and net renewables growth is greater than what it would be without data centres. This is because it is cumulative emissions that matter for the climate and the legal carbon budget basis for Ireland's Climate Act – building renewables is only a means to achieve the goal of cutting cumulative fossil fuel use, and therefore carbon dioxide emissions, to meet carbon budgets. If growing renewables generation is simply met by growing demand, then fossil fuel use won't fall – it will be like walking up a downwards-moving escalator.
- When we look at the historical data and projections, there is no evidence to suggest that data centres are supporting net renewables growth in this way. In the figure to the right, additional wind energy generated in Ireland is charted against demand growth from data centres since 2017. Data centres have more than matched all the growth from wind energy.
- For this reason, the share of renewables in Ireland's power generation mix has remained stable over this time period, and the generation from fossil fuels has not fallen.

Since 2017, all the additional electricity generation from Irish **wind energy** has been overtaken by the growth in energy demand from **Data Centres**

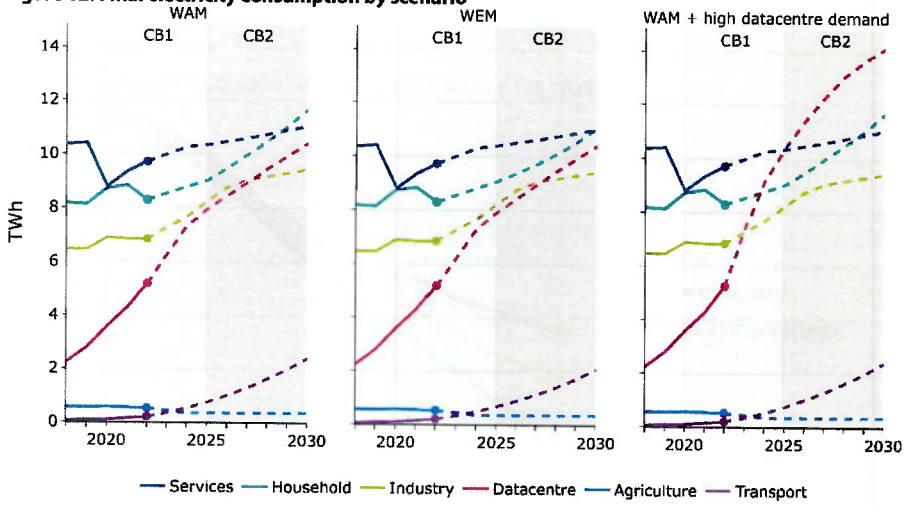


Data Sources:
- Additional data centre demand: CSO Table MEC02
- Growth in wind energy: SEAI Energy Balances, 2023

Projected data centre growth

- The Sustainable Energy Authority of Ireland (SEAI) has projected future electricity demand growth in each sector, under scenarios with existing and more ambitious climate policies (WEM and WAM respectively), and a sensitivity case with higher data centre demand (right). By 2027, data centres are projected to use more electricity than all households use today, and under high-demand scenarios, are projected to exceed the demand of all sectors by 2025.
- According to the SEAI[1],
  - *"From a national greenhouse gas emissions perspective, increased electricity demand from replacing fossil fuel heating systems with heat pumps or fossil fuelled cars with EVs results in an overall net reduction in emissions. This is because the emissions from the increased electricity demand are more than compensated for by a reduction in emissions in the heat and transport sectors, leading to lower overall emissions. In contrast, increased electricity demand from datacentres and continued growth in the industry, services and residential sectors does not displace fossil fuel use elsewhere in the economy. If total electricity demand increases ahead of the roll-out of renewable generation capacity it will lead to higher emissions. This will make it extremely challenging for the electricity sector to meet its national greenhouse gas emissions reduction obligations. The same principle applies with the requirement to reduce total final energy use in line with the EU Energy Efficiency Directive target35, and the requirement to increase renewable energy share in line with the EU Renewable Energy Directive (RED) target. For these reasons, the negative consequences compared to the benefits of allowing large new electricity users to establish in Ireland between now and 2030 need to be considered"*
- It is important to note data centre demand growth within SEAI projections, and the EirGrid data these are based on, are based on contracted data centre projects only, as their operation grows to meet their contracted connection level. Almost all of this extra load is contracted in the greater Dublin area and was contracted prior to a direction by the Commission for the Regulation of Utilities in 2021, which makes new connection agreements to be contingent on the ability of data centres to bring onsite dispatchable generation (and/or storage) with a capacity equivalent to or greater than their demand. This implies that these projections may under-estimate future demand growth, depending on new connections agreements and the rate that data centres ramp up operations to meet the contracted connection
- Moreover, these demand projections relate to electricity only: future natural gas demand is explored in the next section.

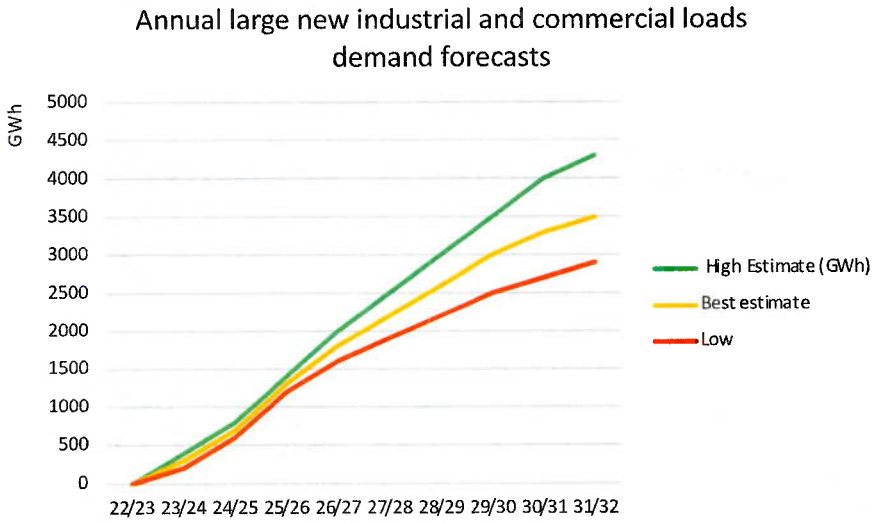
Figure 12: Final electricity consumption by scenario



[1]SEAI National Energy Projections, 2024
EirGrid and SONI, 'Generation Capacity Statement 2023-2032'. Jan 2024

Gas demand from data centres

- As per the 2021 CRU directive, offers of new data centre connections are contingent upon the ability of the data centre applicant to bring onsite dispatchable generation (and/or storage) with a capacity equivalent to or greater than their demand. This can be met with on-site renewables with battery storage, or gas or oil-based backup generators. Only the latter option is realistic for scaled power generation As a result, data centres in the Dublin area are connecting to the gas network, to enable on-site power generation. In 2024, 11 data centres have been approved to connect to the gas network, and an additional 22 have made connection requests, which Gas Networks Ireland are not progressing, pending publication of the CRU Connection Policy for Large Energy User[1]
- SEAI energy demand projections for data centres only cover electricity demand, and do not include direct demand for natural gas as a result of these gas connections. This is a blind spot in energy projections, and the EPA's projections of greenhouse gases, which rely on SEAI modelling. This also creates a blind spot in Ireland's Climate Action Plan, which is an annual report by Government to set out the policies and measures necessary to meet legislated carbon budgets and Sectoral Emissions Ceilings: additional natural gas demand will increase GHG emissions and increase the gap between projected emissions and legislated emissions ceilings. The scale of this gap is quantified in the next section.
- The figure to the right is developed using data from Gas Networks Ireland's Network Development Plan. It shows the demand for natural gas projected by GNI from data centre customers with connection agreements already in place (the "Low" scenario), and the Best and High estimates include new customers. According to GNI, the "Best" and "High" estimates for demand which implies a risk of increased growth, should additional connections be granted.

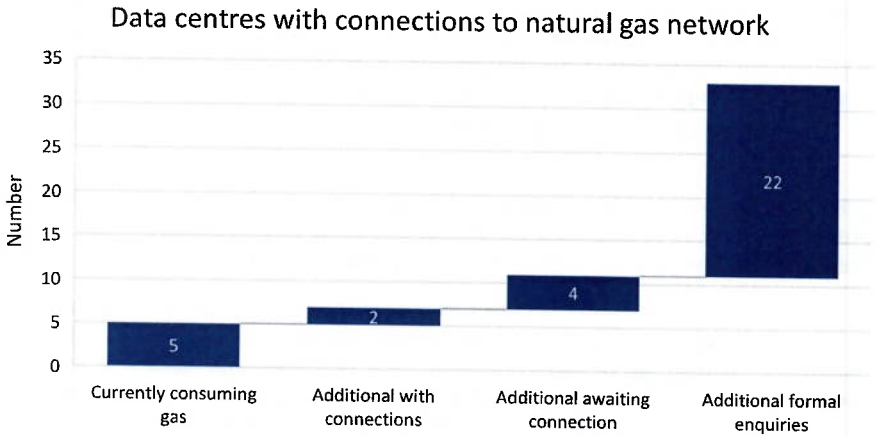


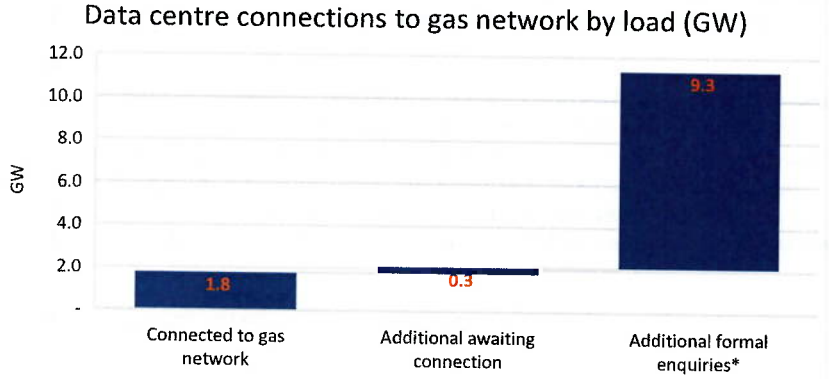
Source: Gas Networks Ireland Network Development Plan 2023: https://www.gasnetworks.ie/docs/corporate/gas-regulation/Network-Development-Plan-2023.pdf

[1] https://www.oireachtas.ie/en/debates/question/2024-11-06/33/#spk_284

Potential additional gas demand

- As of November 2024, GNI has advised DECC that 11 data centres have contracts to connect to the gas network[1] (representing 2.1 GW of aggregated maximum hourly load), of which 7 were in operation (1.8 GW), of which less than 5 are currently consuming gas. Of those with connection contracts to the gas network, 4 are awaiting connections, and an additional 22 additional data centres, representing 9.3 GW, made formal enquires, but have not yet secured contracts. The cumulative maximum capacity of data centres awaiting connections and who have made a formal enquiry represents a 540% increase on the capacity of those currently connected to the gas network. Gas Networks Ireland projects that natural gas demand from these enquiries ranges up to 1.3 GW, but is subject to considerable uncertainty.
- GNI is engaging with the Commission for Regulation of Utilities in relation to the impact of the July 2022 Government Statement on gas connection policy. GNI is not currently contracting more data centres pending the conclusion of this process.
- The above capacity figures relate to total maximum energy capacity, including gas and electricity. Actual gas consumption will depend on many factors, including the status of the electricity connection, timing of connection, the utilisation rate of data servers, the availability or constraints on the electricity grid (i.e., the rate that the TSO or DSO requires the development to switch to on-site power generation), and the potential for the data centre to switch fully to an electricity supply over time. GNI does not gather information on the anticipated duration of the gas connection from a potential data centre, and GNI does not classify data centres as "islanded" (those without an electricity connection) or not.
- No data is available to indicate actual gas use from the five data centres currently consuming gas. The SEAI's Energy Balances includes an estimate of energy use, including natural gas, for the "information and communication" sub-sector, however this is based on the 2022 Business Energy Usage Survey. In 2023, natural gas demand in this sub-sector was estimated to be 24 ktoe (280 GWh), around 0.6% of total primary energy requirement for natural gas in that year, according to the SEAI Energy Balance, but it is not clear if this includes natural gas from on-site power generation.





*Projected demand from these enquiries' ranges from 3.1MW up to 1,300MW; the aggregated demand represents the total developer's strategic long-term ambition which would be dependent on multiple factors including: ability to gain planning permission for multiple phases, availability of electricity grid capacity, permitting, data centre storage demand and route to market to fund these projects. Capacity figures relate to thermal input.

[1] https://www.oireachtas.ie/en/debates/question/2024-11-06/33/speech/284/

Potential impact of on-site gas demand

What is the maximum possible gas demand from data centres who have made formal enquiries to GNI?

- Data centres representing 2.1 GW of demand load currently have connection agreements to the natural gas network[1]. If these were running at full capacity and being powered entirely from natural gas (i.e., in fully "islanded" mode), the have the potential to consume 18,400 GWh of natural gas annually, which is around 38% of the total natural gas consumed in Ireland (across all sectors) annually. However, this is an implausible and extreme upper bound. But it does raise a critical question : what level of gas demand in the future is plausible?
- A number of factors influence the scale of this projected growth:
  - Firstly, more data centres are likely to connect to the network because they already received connection agreements. Currently, only 5 of the 11 data centres with connection agreement are consuming gas; 2 have connection agreements but are not consuming gas, and 4 are awaiting connections. In total, these represent 2.1 GW of maximum load.
  - Secondly, data centres typically take some time to power up to meet their maximum agreed load, though are not likely to use their full maximum agreed load.
  - Thirdly, some of these data centres will use gas for back up on-site power supply when supply on the power system is limited: this may be for a very limited period of the year. Moreover, some gas connections may be temporary However, GNI does not gather or publish data on the nature of the gas connections, and to our best knowledge, no stipulation in the connection agreement limits the the scale of gas usage.
  - And fourthly, an additional 22 data centres representing 9.3 GW of load have made formal enquiries to GNI, which has paused granting connections pending the finalisation of CRU's Large Energy User Connection Policy. There is uncertainty regarding the outcome of this connection policy, and also regarding the proportion of these enquiries that will materialise into formal developments.
- GNI projects that gas demand from the 11 data centres with existing grid connection agreements will grow from 200 GWh in 2023/24 to 2,700 GWh in 2030/31. GNI's "Best Estimate" scenario for gas consumption in 2030/31, which assumes some data centres will be granted new grid connection agreements, is 3,300 GWh, 600 GWh above the "Low" estimate, which only includes demand from the 11 data centres with existing connection agreements. However, the maximum load capacity of the 22 data centres who have made formal enquiries (9.3 GW) is around 5.5 times greater than that of data centres with existing agreements (2.1 GW).
- Therefore there is a risk that gas demand could be far greater than the level projected by GNI, depending on the four factors described above, even in the absence of new connection agreements. Should new connections be granted, the potential demand is very significantly greater. The theoretical annual maximum demand from all data centres who either have a gas network connection agreement, or who have made a formal enquiry, (representing 11.4 GW) is 100 TWh, which is around double Ireland's annual total primary natural gas demand. Again, this is not a plausible projection, but indicates the level of uncertainty and risk into the future.
- A more plausible estimate would take GNI's upper bound for projected demand from these enquiries - 1,300 MW (1.3 GW), and assume these are operational for 20% of the time (with the electricity grid used for the remaining 80% of the time). This would cause 2.3 TWh of additional natural gas demand annually.
- These calculations are not intended to act as projections or forecasts, but to demonstrate the significant risk that this trend for on-site natural gas connections creates for fossil fuel dependence, which is not being sufficiently explored. This risk is particularly strong for data centres which intend to fully bypass the electricity network and power all operations using on-site natural gas, but is also material for data centres which plan on a hybrid connections. On the other hand, if gas connections were temporary, data centres used them for a very small percentage of time, and switched to 100% renewables supply as quickly as possible, the risk would be minimal. However, it is not clear whether this outcome is realistic given the current extraordinary pace of demand growth.

[1] https://www.oireachtas.ie/en/debates/question/2024-11-06/33/speech/284/

Impact on greenhouse gas emissions & carbon budgets

What are the greenhouse gas implications of data centres, and how will they impact on the achievement of carbon budgets?

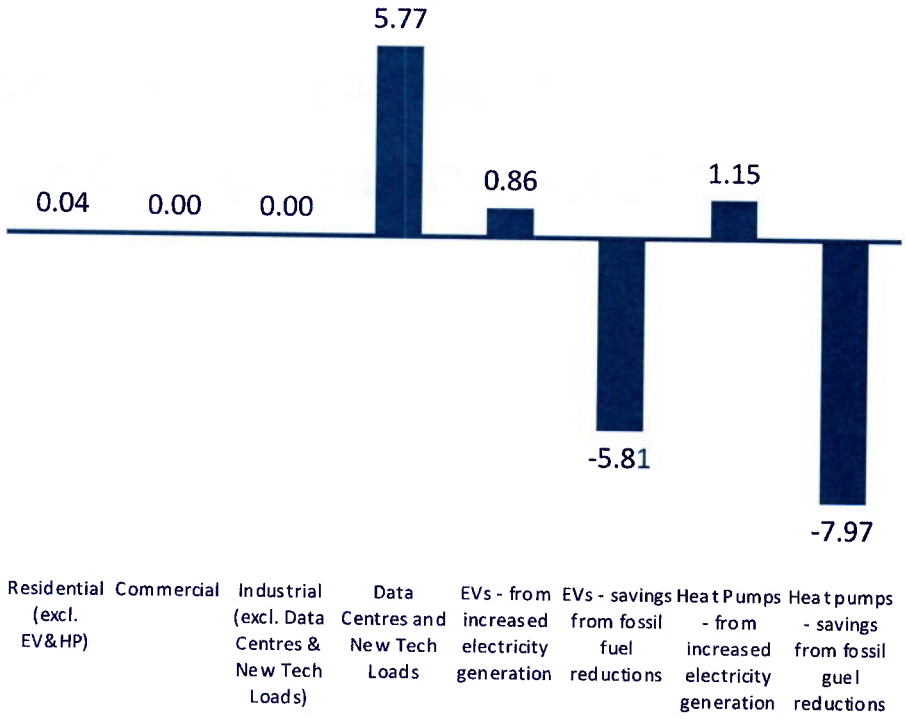
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Greenhouse gas emissions from data centre electricity demand

- We estimate potential additional GHG emissions from both the additional electricity demand, and additional natural gas demand. Bitpower[1] used this approach to estimate that data centres' electricity demand emitted 1.53 million tonnes of CO2 in 2023, 2.5% of Ireland's total GHG emissions, or 4.5% of total CO_2 emissions. This applied the gird average CO_2 intensity of power generated in 2023, 255 gCO_2/kWh
- This approach is also used in the graph to the right, which calculates the GHG emissions from new electricity loads, and also GHG savings from shifting demand from fossil fuels to electricity in transport and heating. This estimate uses the average carbon intensity of the electricity grid now and in the future, according to the EPA's With Additional Measures scenario. This uses EirGrid's Median demand scenario for data centre growth, and assumes the average GHG intensity of CO_2 generation falls in line with government policy. It finds that the GHG savings from EVs and Heat Pumps significant outweigh the additional emissions from their operations, and that new data centre loads cause nearly 6 million tonnes of emissions in the period 2021-2030.
- This approach allocates the "credit" for new renewables equally to all sources of demand. This approach has advantages and disadvantages. On the one hand, it treats all existing and new loads equally, based on total annual electricity demand. On the other hand, if a substantial new source of demand, like data centres, is causing greater fossil fuel usage directly, or indirectly by diverting renewables capacity away from powering existing energy demand, then it could be argued that this approach is favorable to new loads.
- An alternative approach to estimating the GHG impact of new data centre loads is to apply the GHG intensity of electricity using the share of renewables capacity directly procured by data centre developments, and assume that the remaining share is delivered with natural gas. Using this approach, if we assume that 16% of new data centre loads are realised with renewables through CPPA, and the remainder through grid-scale gas generation, then the cumulative emissions from power demand from data centres over 2021-30 rises to 14.6 million tonnes.

[1] https://bitpower.ie/images/Reports/2024_Q4_Market_Update_Ireland_v1-2.pdf

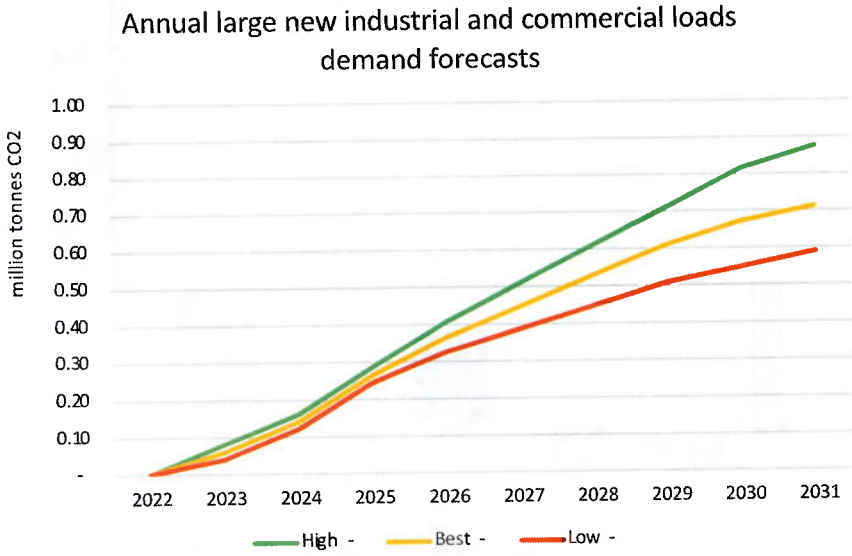
Cumulative Greenhouse Gas emissions of new electricity loads to 2030 (million tonnes CO_2)



Source: Own calculations based on Dr. Paul Deane https://www.esri.ie/sites/default/files/media/file-uploads/2024-06/7.%20Paul%20Deane_ESRI%20Presentation_PDeane%20June2024.pdf

GHG emissions arising from on-site gas generation

- Additional GHG emissions from natural gas demand arising from new industrial and commercial loads, according to GNI's Network Development Plan, is up to 900,000 tCO_2 in 2031. (See Gas Demand from Data Centres).
- To our best knowledge, these emissions arising from additional demand for natural gas from new industrial and commercial loads arising from data centres are not factored into SEAI's energy projections, and therefore not included in EPA GHG projections under "With Existing Measures" and "With Additional Measures" scenarios. Therefore, Ireland's Climate Action Plan is not taking account of an even greater gap between sectoral emissions ceilings and GHG emissions based on current projections.
- The cumulative impact of this additional natural gas demand on carbon budgets is explored in the next page.

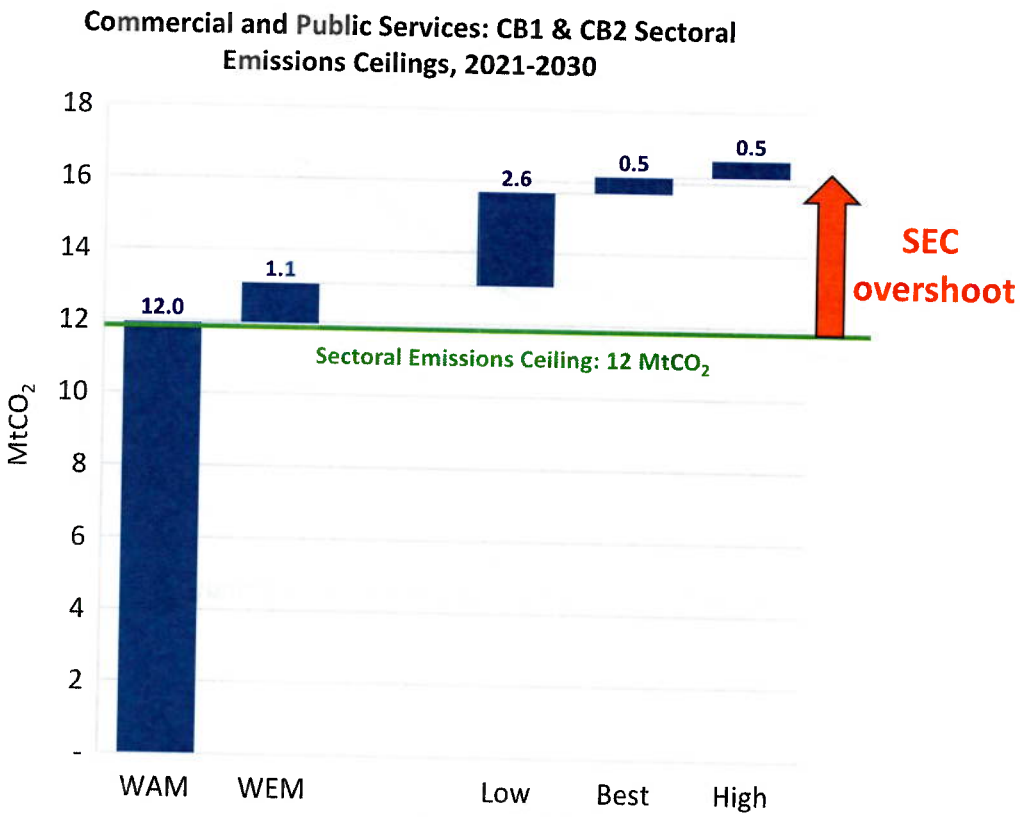


Source: Own calculations based on Gas Networks Ireland Network Development Plan 2023: https://www.gasnetworks.ie/docs/corporate/gas-regulation/Network-Development-Plan-2023.pdf

Impact of new natural gas demand on SECs

- GHG emissions arising from this additional natural gas demand is calculated in the figure presented here. It is counted within the Commercial and Public Services sector within the greenhouse gas inventory, and therefore in the Services sector Sectoral Emissions Ceiling (SEC). EPA's GHG projections show that under the "With Additional Measures" (WAM) scenario, emissions for this sector are projected to be in line with its SEC. Apart from the "other" category, this is the only sector that is currently the case. Under the "With Existing Measures" Scenario (WEM), cumulative emissions are projected to be an additional 1.1 $MtCO_2$ over 2021-30.
- However, this new analysis shows that counting the additional emissions arising from natural gas from new industrial and commercial loads - data centres with connections to the gas network – the sector will exceed its SEC by a minimum of 2.6 $MtCO_2$ (Gas Networks Ireland's "Low" scenario), and up to 3.6 $MtCO_2$ (the "High" scenario). According to GNI, the Low scenario has been limited to Data Centre customers with connection agreements already in place.
- This calculation reflects GNI's projections. However, as shown in the previous section, the maximum potential gas demand from data centres seeking gas connection agreements is significantly higher than projected by GNI. The maximum annual gas demand from data centres who have secured a connection agreement is 18.4 TWh, which would emit 3.8 $MtCO_2$, and the maximum demand from those seeking a connection agreement is 81.5 TWh, which would cause emissions of 16.6 $MtCO_2$. In total, the maximum potential annual GHG emissions from data centres' gas connections is 20 $MtCO_2$ – which is equivalent to 68% of all CO_2 emissions arising from fossil fuel combustion in Ireland in 2023.
- We stress again that this is not a plausible scenario, but a theoretical maximum: It would require that all 33 data centres with connection agreements, or who have made formal enquiries, are granted agreements, are built, are operated continuously at their full maximum load and are fully powered using on-site natural gas generators. Consultation with the industry and GNI would be required to establish a plausible level of demand, in order to make a more credible projection of GHG emissions. However, it indicates an enormous risk to Ireland's carbon budgets, and energy security, beyond the threat that is already apparent from gas projections in GNI's Network Development Plan. This risk is clear when considering that a single planned data centre in Kildare, owned by Herbata, would cause 28.6 million tonnes of CO_2 over its lifetime, which is 4% of Ireland's total carbon budget [1].

[1] https://www.irishtimes.com/business/2024/10/08/kildare-county-council-says-planned-data-centre-runs-counter-to-national-policy/



New industrial & commercial loads demand forecast, Gas Networks Ireland Network Development Plan 2023

Biomethane

What are the greenhouse gas implications of data centres, and how will they impact on the achievement of carbon budgets?

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Can biomethane mitigate GHG emissions from data centres?

- Biomethane has been proposed as a mitigation strategy to address the gas demand from data centres. For example, according to Gas Networks Ireland's Network Development Plan: "*There is a clear preference for Data Centre developments that can demonstrate the additionality of their renewable energy use in Ireland and can demonstrate a clear pathway to decarbonise and ultimately provide net zero data services.... Gas Networks Ireland believes that Data Centres connecting to the gas network could meet these principles through the increased use of biomethane and hydrogen while also assisting in establishing indigenous renewable gas markets in Ireland.*"
- However, this reasoning is misleading, using logic is the same that is used to justify expanded data centre power demand to create a market for renewables developments. It confuses targets for clean energy deployment – which in this case is biomethane – with their ultimate objective, which is to replace existing fossil fuels in order to meet legally-binding carbon budgets. Diverting any biomethane that is produced to serve additional demand will divert it from displacing fossil fuels in the electricity mix or for heating.
- The Irish Climate Action Plan (CAP) includes a target to develop 5.7 TWh of biomethane by 2030, which is required to contribute to decarbonising heating and industry by displacing fossil fuels.
- Moreover, the scale of natural gas demand from data centres cannot feasibly be reached by biomethane. The gas demand from GNI projections is equivalent to more than 60% of the biomethane target in the CAP, and this does not include significant demand from data centres who have made formal enquiries, including those which propose to run in "islanded" mode, without relying on the electricity network. One such proposed development, developed by Herbata, would consume the equivalent of half the total national biomethane target in 2030[1].
- According to the Sustainable Energy Authority of Ireland, "*It is possible that significant quantities of biomethane could be purchased by datacentres for use in off-grid electricity generation. Because grid electricity will be 80% renewable by 2030 and because of the losses incurred in electricity generation, any use of biomethane for off-grid electricity generation would be a highly sub-optimal use of this limited and valuable resource.*"[2]
- Short-term increases in fossil fuel use, relying on future biomethane injections, will undermine Ireland's ability to meet carbon budgets—the legal foundation of climate commitments
- Moreover, there are no detailed plans or guarantee that biomethane will be supplied in a timely manner.
- Finally, there are significant trade-offs and costs associated with biomethane production. Biomethane production at scale in Ireland would require significant volumes of sileage, because waste is a finite resource. Increased sileage volumes require greater land area, and threatens indirect GHG emissions through land use intensification and indirect land use change. SEAI classifies biogas produced with sileage using current cultivation practices as "high risk"[2]

[1] https://webgeo.kildarecoco.ie/planningenquiry# File 2460787
[2] https://www.seai.ie/renewable-energy/bioenergy/biomass-in-ireland
https://www.seai.ie/renewable-energy/bioenergy/sustainability-criteria-o
https://www.seai.ie/sites/default/files/publications/Assessment-of-Cost-and-Benefits-of-Biogas-and-Biomethane-in-Ireland.pdf

Power purchase agreements

To what extent are corporate power purchase agreements (CPPAs) meeting the growth in data center power demand?

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Are PPAs meeting data centre demands?

- A corporate power purchase agreement (CPPA) is a long-term contract between an energy producer (typically a renewable energy provider) and a buyer (such as a data centre) to purchase electricity at a pre-agreed price. PPAs help energy producers secure funding for projects by guaranteeing revenue, which offers finance for renewable energy projects and an alternative route to market from renewable energy auctions, while buyers benefit from stable energy pricing and potentially lower carbon footprints.
- Globally, CPPAs for renewable energy were pioneered by big tech companies, but evaluating the impact of this renewable procurement is not straightforward. Typically, the contracts are purely financial: the data centre is physically supplied with electricity by the central power grid, while the renewable electricity generated from the project is sold from where it is placed. This is a beneficial arrangement for a renewable developer, who can finance a project through a CPPA, and a data centre developer, who can secure a guaranteed electricity price and meet corporate emissions goals, but it does give rise to three important questions.
    1. Firstly, what is the additionality of this renewable capacity: would it have been built in the absence of the financial agreement, or is this investment "crowding out" other renewables projects by causing congestion, for example in planning or supply chains?
    2. Secondly, what is the coverage: how much of the electricity demand growth from data centres was matched by power generation from CPPAs?
    3. And thirdly, what is the time-matching of energy consumption from data centres with the generation from procured renewables generation?

Irish policy on CPPAs and data centres

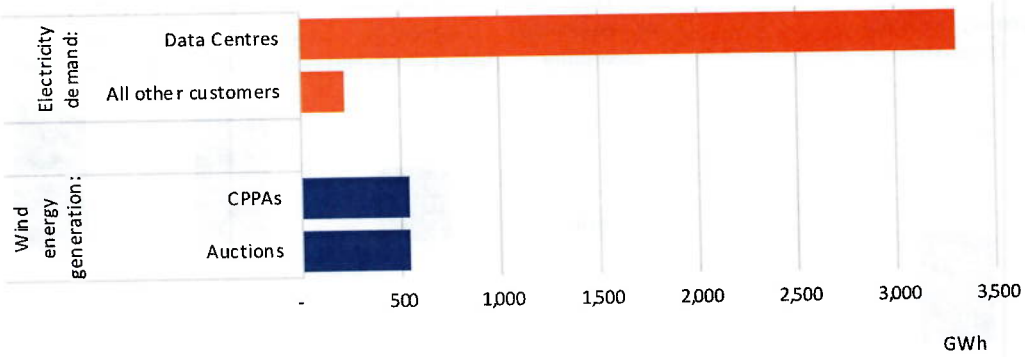
- The Government's Climate Action Plan 2019 included a target that 15% of electricity demand in 2030 is met by renewable sources contracted under CPPAs. However, subsequent Climate Action Plans which have been published under the Climate Act framework have not included a specific reference to CPPAs
- The Renewable Electricity Corporate Power Purchase Agreement Roadmap was published by the Government in March 2022. The roadmap sets out that CPPAs have an important role to play in helping Ireland to reach renewable electricity targets and includes the Principles of Good Practice for Renewable Electricity CPPAs, which state that "such agreements should clearly deliver additional GHG emissions reductions and contribute to Ireland's 2030 renewable electricity and climate targets,
    - Lower the net costs of the energy transition to Irish consumers and the State;
    - Be measured and reported in a way that accurately reflects actual emissions
- A strategy of procuring renewables through CPPAs have formed a significant part of the strategy of some tech companies with a significant presence of data centres in Ireland. For example, Meta has signed PPAs to buy the output of two of Ireland's largest solar farms in 2023[1]

[1] https://www.businesspost.ie/news/meta-buys-total-output-of-two-of-irelands-largest-solar-farms/#:~:text=Both%20solar%20farms%2C%20which%20have,centre%20in%20Clonee%2C%20Co%20Meath.

Are corporate power purchase agreements (CPPAs) meeting the growth in data center power demand?

- According to industry estimates, half of the new wind energy capacity developed between 2020 and 2023 was financed though CPPAs.
- The chart to the right estimates that this led to just over 500 GWh of renewable energy generation over this period. However, this only met 16% of the new electricity demand from data centres between 2020 and 2023, which was over 3,000 GWh. In other words, data centre demand grew 6 times faster than new projects financed by CPPAs, and more than 15 times faster than electricity from all other sources – homes, vehicles, industry.
- From this analysis, it is clear that electricity demand from data centres is far outstripping the additional renewable energy being procured through CPPAs over the past three years, and the proportion of CPPAs undertaken by data centres is itself unknown.
- The narrative that procuring additional renewables capacity through CPPAs helps meet the targets under Ireland's climate act is not valid, because total energy demand is rising much faster than additional renewables, and that energy has to be met through additional fossil fuels. As before, it is cumulative greenhouse gas emissions, not gigawatts of renewables capacity, that is the legal basis for Ireland's decarbonisation commitments (and what matters for the climate).

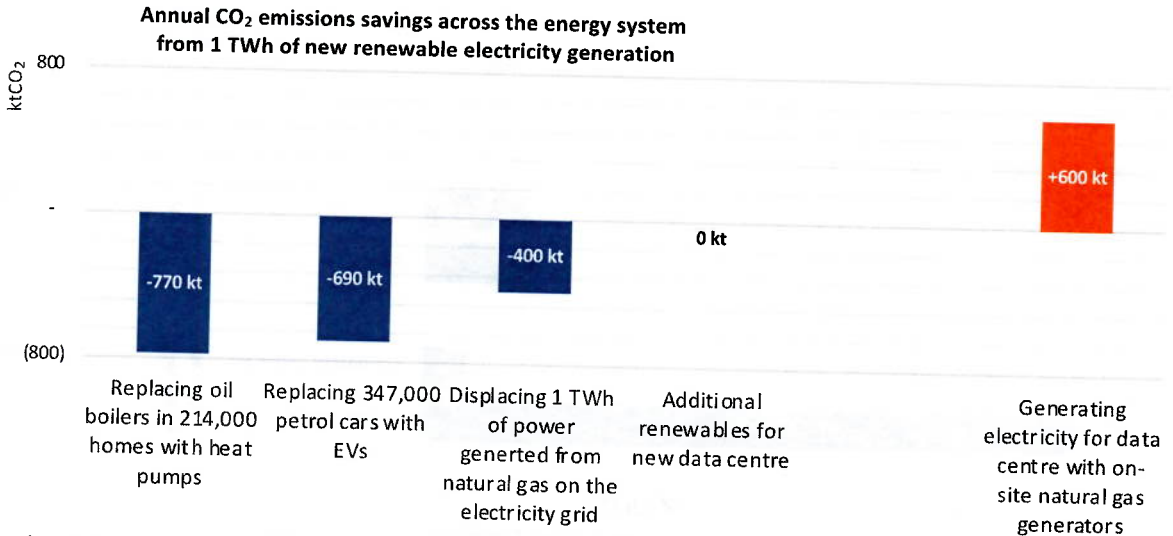
Growth in **electricity demand** and **wind energy generation**, 2020-23



Sources:
- Electricity demand growth: CSO
- Wind energy generation: Estimated from capacity growth (SEAI) and industry estimates for CPPA share

GHG emissions from diverting renewables generation

- This analysis shows that in the Irish context, the coverage of additional power demand from data centres is very limited. Only an estimated 16% of the growth in DC demand between 2020 and 2023 was met with CPPAs.
- The graph to the right shows the impact of diverting 1 TWh of renewable electricity to new loads, like a data centre, from displacing either electricity generated from a gas-fired power plant on the electricity grid, or to produce electricity to replace oil in home heating or transport.
- The graph below illustrates why it is so important, from a climate perspective, to focus new renewables on replacing fossil fuels than on serving additional demand from new data centres. It also illustrates why serving new data centre demand through on-site natural gas generators, which are less efficient than grid-scale generators, offsets large emissions savings efforts from other sectors.



Assumptions:
- Heat pump with COP of 3 replacing oil boiler emitting 257 gCO_2/kWh - would be higher with retrofit measures
- EVs with efficiency 0.16 kWh/km replacing ICE emitting 110 gCO_2/km
- Assumed GHG intensity of 400 gCO_2/kWh of large-scale CCGT natural gas, and 600 gCO_2/kWh for on-site generation

Commission for the Regulation of Utilities (CRU) demand policy

How can new policy developments described in the Commission for Regulation of Utilities review of Large Energy User connection policy contribute to the decarbonisation of data centres?

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CRU National Energy Demand Strategy

A National Energy Demand Strategy (NEDS) Decision Paper, published by CRU in July 2024, comprises three areas: 1. Smart Services, 2. Demand Flexibility and Response, and 3. New Demand Connections. The third area describes the process for developing a Large Energy User (LEU) Connection Policy. A central focus of the policy is to develop initiatives that can contribute towards demand flexibility in the short term, in addition to defining the longer-term strategic plan. CAP23 set a target for electricity system demand flexibility of 15-20% by 2025 and 20-30% by 2030. Shifting electricity demand to times of high renewables generation through flexibility mechanisms can enable greater emissions reductions and lower costs.

A second focus of the NEDS is to set out the parameters of a strategy to balance growing energy demand with Ireland's carbon budgets. One of the objectives, pertinent to this report, is to *"set out measures to ensure that overall electricity and gas demand is consistent with Ireland's carbon SECs"*. According to the paper, in the long term additional demand will be decoupled from emissions growth, but *"at present, and in the short to medium term, electricity generation still produces significant emissions due to the role of fossil fuels in the generation mix. There are limitations, therefore, on the amount of electricity that can be consumed while simultaneously meeting the legal requirements set out in the Climate Act 2021"*.

The focus on the third area in this paper, New Demand Connections, is initially focused on building flexibility contributions from LEUs seeking to connect. This will include reform of the pathway for new LEU connections to the electricity and gas systems so as to support security of supply, flexibility and minimise the impact on national carbon emissions.

The paper builds from the *Review of Large Energy Users Connection Policy* consultation paper, published in January 2024, which aims to set out a pathway for LEUs to connect to gas and electricity networks while addressing concerns around security of supply, network constraints and emissions.

The NEDS notes that *"the connection criteria that will be introduced as part of the new LEU connection policy currently in development and the extent of new LEU demand customers that connect under this policy. There is an expectation that LEUs will provide significant demand flexibility, noting the statement in CAP23 that 'Large Energy Users (LEUs) will be expected to make a higher proportional contribution to the target'"*.

Chapter 6 of the Annex of the NEDS Decision Paper sets out the role of new demand connections, particularly LEUs, in building out demand flexibility in Ireland. It discusses the importance of incentivising new LEUs to provide flexibility as well as the interaction between the decarbonisation of energy demand, the gas network, and options for incentivising flexibility for non-LEU connections. This Annex also sets out the national and European legislative and policy contexts, and describes current emissions trends with regard to legislated SECs. Noting that emissions from the electricity sector are projected to overshoot the SEC, "it is important to recognise that these [scenarios] are based on assumptions that may not reflect the appetite for additional demand to accommodate economic growth, particularly with respect to the technology sector and data centres."

It should be noted that for new demand connections, the provision of flexibility and the impact on carbon budgets are two distinct topics. For example, demand from an LEU such as a data centre could be considered flexible if its operation is aligned with renewables generation on the grid, and powers down at times of low renewable generation, or if it switches to on-site fossil fuel-powered generation. However, in both of these cases, the source of new energy demand may be misaligned with carbon budgets. This is clearly the case for on-site power generation with fossil fuels, but is also the case if the renewable electricity consumed by the data centre could otherwise be used by existing energy customers, or be stored for times of low renewable generation.

NEDS Recommendations and Actions

Recommendations

The key recommendations for Government Departments, particularly DECC and DETE, to support the implementation of the NEDS are summarised below.

1. Policy measures regarding carbon emissions & SECs
    - Monitor the relative share of carbon emissions across the range of energy systems users. Consider whether further policy measures are required, including whether the legislative remit of the system operators remains appropriate with regards to adopting measures that prioritise decarbonisation. [Annex chapter reference: 3.3]
2. Enhanced emissions reporting framework - Part 2 (*Area 2D: Demand Flexibility & Response – Information, Certification and Reporting*)
    - Provide clarity and define the implementation and supporting actions required to complete delivery of the emissions reporting framework (CAP23 action: EL/23/27). [Annex chapter reference: 5.1.1]
3. Consider a national strategic approach for the facilitation of new LEU connections (*Area 3: New Demand Connections*)
    - Consideration to be given to a national strategic approach for the planning of large demand customers and associated infrastructure requirements (e.g. energy water, broadband, transport etc.), the associated costs and benefits, and any potential risks arising from high volumes of similar demand customer types. [Annex chapter reference: 6]

Actions

The NEDS describes 50 actions covering the three areas over 2024-2026, including responsible bodies, target completion dates and interdependencies. Actions relevant to the role of data centres in meeting Ireland's carbon budgets include the following:

- 0.1: Governance arrangements for NEDS implementation
- 0.2: Review the impact of NEDS on carbon emissions
- 2.19 & 2.20: Electricity & gas system emissions information
- 2.21: Enhanced emissions reporting framework: Deliver the design report for an enhanced emissions reporting framework for electricity emissions for LEUs
- 2.23: Certification of additionality for (a) power and (b) renewable gas:
- 2.24: Development of scenarios to define the future role of the gas network.
- 2.26: Support planning for the future role of the gas network and pathway for implementation:
- 3.1: Publication of new LEU connection policy

CRU Large Energy Users Connection Policy

The Climate Action Plan 2023 tasked the Commission for Regulation of Utilities, (CRU), with the delivery of a National Energy Demand Strategy, with the aim of 20% to 30% of electricity to be flexible by 2030. Large Energy Users will be expected to make up a higher proportional contribution to the flexibility target, as they are making up a high proportion of the increase in electricity demand. As part of this strategy, the CRU is also undertaking a review of the connection policy for Large Energy Users to the gas and electricity systems. The aim of this review is to provide a new pathway for Large Energy Users to connect to the electricity and gas systems, that minimises the impact on national carbon emissions while also taking account of the capacity of energy and grid infrastructure.

A Consultation Paper on the Review of Large Energy Users Connection Policy, published by CRU in January 2024, includes questions the following elements:

- **Reporting real-time emissions data:** Transparency around real-time GHG emissions is essential to inform the public debate and policy decisions on the relative costs and benefits of data centres
- **Data centres to be subject to flexible power connection contracts** in constrained locations of the grid – i.e., data centres may not secure a firm connection agreement to the power grid connection, could be asked to reduce power demand at constrained times. This policy could lead to a decrease in GHG emissions if reduced power demand was realised through lowering operation at the data centre. However, it would lead to increased GHG emissions if it caused a switch to on-site power generation, likely fuelled by gas and diesel, unless this was explicitly ruled out
- **Prove the "additionality" of any renewable power purchase agreements,** through regulator-certified system, to ensure they are not claiming renewable projects that are already in development. It is not clear how this policy will seek to establish the additionality of data centres' renewables procurement, for example including the possibility that the procured renewables project would not have been financed through other means, or that the project didn't diverted resources or create bottlenecks in the planning and development stages.
- **Islanded data centres,** which are not connected to the electricity grid at all and run off their own power generation, are expected to only be allowed a gas grid connection if they can demonstrate an ability to align with carbon budgets in the power sector. This report has demonstrated that new gas connections will increase greenhouse gas emissions and threaten the sectoral emissions ceilings of both the power and services sectors. It is not clear how the CRU policy intends to count these emissions, and how it would require data centres to align with carbon budgets. It is critical to ensure that any biomethane or hydrogen would also be additional, and would not be diverted from replacing existing fossil fuels usage.
- Additional analysis and feedback to the CRU Energy Demand Strategy Call for Evidence from MaREI and UCC can be viewed here.

An Electrification Action Plan

How can electricity demand grow along with renewables to replace fossil fuels, rather than serve new demands?

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An electrification strategy

Renewables are serving demand growth, not replacing fossil fuels

- Expanding renewable energy capacity is rightly a central mission in Ireland's climate strategy. However, renewable energy supply is only one half of the picture. Its possibility to decarbonise Ireland's energy system, and reduce fossil fuel dependence, if the power produced from wind and solar farms is used to replace fossil fuels through electrification.
- However, as the data in this report has shown, all the increase in renewables generation between 2017 and 2023 has been matched by demand growth from data centres: at the country level, this means renewables have been "running just to stand still" - fossil fuel use has not declined, and emissions remain stubbornly high. This disconnect threatens Ireland's ability to meet carbon targets.
- The data centre industry argues[1] that its growth is necessary to decarbonise Ireland's economy, claiming that new customers electricity customers are needed to support offshore wind development. While it's true that Ireland may one day produce a surplus of clean electricity to meet the needs of power-hungry industries like data centres, this argument ignores the present reality. Today, the extraordinary growth in energy demand from data centres is straining our electricity system and delaying emissions reductions.
- Renewable developers are seeking PPAs with data centres to secure a guaranteed customer to buy their power at a fixed price: future electricity demand is uncertain, and renewables developers cannot all get contracts through renewable auctions.
- This points to an important gap in Ireland's energy policy – clean electricity can power homes, vehicles, and industries, directly replacing fossil fuels. Yet, electrification is happening far too slowly. Moreover, if renewables are diverted to serving data centre demand growth, this may limit the ability of existing energy-intensive industrial consumers to electrify, risking them being left with a more carbon-intensive fuel mis.

An Electrification Action Plan

- An Electrification Action Plan could create a bridge between Ireland's renewable energy potential and climate commitments. This would entail developing a strategy to accelerate the electrification of existing industry, transport and buildings
  - Ireland's **transport** is almost entirely reliant on combustion engines, but electrification is possible and would bring massive benefits. Progress on this front has regressed – EV sales dropped last year with concerns about depreciation, but new electric vehicles are hitting price parity with fossil fuelled cars, and the electrification of busses and tricks is becoming more viable with advancements in battery technology and falling costs.
  - **Industry** is also poised for electrification. Today, 28 per cent of industrial energy demand is met with electricity, but this share has barely increased in two decades. The remaining demand is mainly for heat, which is met by fossil fuels. According to the Sustainable Energy Authority of Ireland, more than half of this can be electrified, and new innovations like thermal batteries can work well with a variable renewable electricity system. Shifting energy-intensive industries from natural gas to electricity would cut emissions, improve energy security, and make industry less vulnerable to fluctuating fossil fuel prices.
  - The electrification of **heating homes and businesses**, with both heat pumps and heat networks also needs to be prioritised.
  - Ireland's offshore wind capacity will eventually exceed domestic electricity needs. Instead of defaulting to data centres, this surplus could power innovative industries that address global challenges. For example, Ireland could produce synthetic fuels for aviation, or even novel proteins and green fertilisers to decarbonise agriculture. Clean electricity could also support carbon removal technologies like Direct Air Capture to help reverse climate change, which is increasingly likely to be necessary given how close the world is to crossing dangerous climate tipping points

[1] Cloud Infrastructure Ireland "Key to unlocking Irelands Offshore Wind Potential", November 2024

Conclusions

Key findings

- **Energy demand from data centres**
  - Data centres are the primary driver of Irish electricity demand growth, matching growth in renewable energy generation.
  - Current growth trends risk locking Ireland into higher emissions, delaying decarbonisation.
- **Greenhouse Gas Emissions**
  - Significant GHG emissions arise from both increased electricity and gas demand, creating further overshoot of legislated carbon budgets.
  - Data gaps in emissions tracking undermine efforts to fully assess carbon budget impacts.
- **Policy gaps**
  - CPPAs provide limited mitigation, with only 16% of data centre demand covered by additional renewable capacity between 2020 and 2023.
  - Biomethane as a mitigation strategy is unsustainable under current targets and production capacities.
- **Additional Risks**
  - On-site gas generation by data centres creates inefficiencies and shifts energy security risks to the gas network, and creates the risk of long-term gas lock in

Recommendations

- **Energy demand management**
  - Enforce stricter conditions on data centre connections to ensure alignment with carbon budgets.
  - Mandate flexible power contracts to limit peak demand impact.
- **Renewables and electrification**
  - Prioritise renewable deployment for sectors that directly replace fossil fuel use.
  - Develop an "Electrification Action Plan" to accelerate decarbonisation in transport, industry, and heating.
- **Policy development**
  - Introduce mandatory real-time GHG emissions reporting for data centres.
  - Enhance regulation around CPPAs to ensure additionality and time-matching of renewable generation.
- **Data transparency and research**
  - Improve data collection on gas use, on-site emissions, and renewable energy procurement.
  - Undertake detailed research on the extent to which data centres are increasing GHG emissions, including from electricity imports.

