An Coimisiún um Rialáil Fóntais
Commission for Regulation of Utilities

# Collated Responses – Energy Demand Strategy Papers

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2023-08-25

**RE: ESBN Scenarios for 15-20% Flexible System Demand – National Networks, Local Connections Programme Paper**

To whom it may concern,

ABO Wind Ireland Ltd (ABO) is a subsidiary of ABO Wind AG, one of Europe's most experienced developers of renewable energy projects, with over 25 years' experience developing wind, solar and storage projects in 16 countries across four continents. Since 1996, the company has developed wind energy, solar and biogas plants with an output of c.4GW. We are currently working on the development of new projects with a total capacity of 21GW. ABO has already connected a 50 MW battery in NI, with a further 325MW of storage projects under development in the Republic of Ireland. We would like to thank CRU and ESBN for the opportunity to reply to this consultation.

We are writing to offer our full support to Energy Storage Ireland's (ESI) response. As also highlighted by ESBN, new markets and revenue streams will be necessary to support investment into much-needed medium-to-long duration storage. We support ESI's preference for a floor and upside share mechanism, to ensure that optimal performance is pursued, but not excessively renumerated.

We also agree with ESI that longer duration contracts are preferable, ideally covering project lifetime, as the financial security this offers brings bidding prices down, lowering cost to the energy system and end-consumer. We appreciate ESBN recognising this fact and querying their current operating directive as to more readily offer 15-year contracts.

Along similar lines, we urge ESBN to maximise the extent to which procured services can stack with other revenue streams. While we recognise the difficulty in factoring in these complications, the end result will be a framework where batteries have a higher utilisation of both the grid and storage assets increasing which offers the greatest benefit to the system, and can achieve revenue from multiple sources, and so bid cheaper into each respective market resulting in better value to end consumers. Again, the end result is a cheaper, greener energy system for all.

We are grateful for the work CRU and ESBN have committed to engaging with industry. We would welcome further opportunities to engage.

Thank you in advance for your time and consideration.

Yours sincerely,

Joseph Herbert – Project Manager

AMERICAN CHAMBER of COMMERCE IRELAND

# CRU Energy Demand Strategy

**Response from the American Chamber of Commerce Ireland (AmCham) to the Commission for Regulation of Utilities' public consultation.**

**August 2023**

# The American Chamber of Commerce Ireland

# The Voice of US-Ireland Business

The American Chamber of Commerce Ireland (AmCham) is the collective voice of US companies in Ireland and the leading international business organisation supporting the Transatlantic business relationship. Our members are the Irish operations of all the major US companies in every sector present here, Irish companies with operations in the United States and organisations with close linkages to US-Ireland trade and investment.

AmCham recognises the unprecedented challenges that Ireland now faces in relation to renewable energy generation and availability. If Ireland is to meet its net-zero targets significant progress will have to be made in a relatively short space of time. In this regard, AmCham also acknowledges the complexity of the challenge in meeting renewable energy demand.

There are almost 950 US companies in Ireland who directly employ over 210,000 people and indirectly support a further 167,000 jobs in the Irish economy. A policy approach focused on attracting inward investment to Ireland has delivered FDI which supports over 80% of Ireland's current corporation tax receipts and over one-third of Ireland's current income tax receipts. The presence of multinationals in Ireland also significantly benefits our indigenous business environment, our local communities, and supports balanced regional development. As reported by the OECD in 2021, one of every four multinational employees who moved job either went to work for an existing Irish company or set up a new one. US companies in Ireland, each year, support over 7,300 community projects, contributing over 600,000 work supported volunteer hours.

Ireland is fortunate to have, right across the country, some of the largest and most advanced manufacturing facilities in the world in sectors including medical technology, biopharmaceuticals, semi-conductors, automotive technology, and food/beverage as well as significant data centre investments. These facilities are supplying key global supply chains and markets – for example, four out of every five medical stents, saving lives around the world, are created in Ireland; even though Ireland only has 0.06% of the world's population it was the fifth biggest responder to the demand for key products due to Covid. These facilities have already committed to their production/output targets – lives around the world literally depend on those targets being met. Many of these facilities operate on a 24/7 basis and very carefully plan their shifts to ensure the people needed have sufficient notice. Most already implement best-in-class energy efficiency as energy is one of the biggest costs they have to manage – Ireland is already cost uncompetitive for energy – some AmCham member companies saw their energy costs rise by up to 200% over the course of 2022.

Concurrently, AmCham companies are committed to climate action. A recent survey of AmCham members found that 42% have committed to reaching carbon neutrality by 2030, with this rising to 64% aiming to reach this goal by 2040. Despite the numerous challenges businesses have faced in recent years, our members remain committed to achieving a more sustainable future.

MNCs in Ireland are determined to deliver on ambitious goals in diverse areas such as renewable energy, waste reduction, and carbon neutrality. AmCham members are focused on how best we can ensure that all sectors of the Irish economy adapt and contribute to meeting Ireland's climate action goals, including through consideration of our renewable energy policy, the adoption of pro-innovation pilot programmes across potential technologies, focusing on achieving net zero, and identifying opportunities to improve energy efficiencies. AmCham and

our members closely engage with Government and State agencies to address the various requirements needed to ensure that Ireland meets its net zero ambitions.

It is key that every sector of the economy plays its part in ensuring that targets laid out in Ireland's carbon budgets are met. The power sector in particular should take a leading role in doing so. However, it is also important to note that flexibility when it comes to energy demand would be incredibly disruptive to the outputs of many of the MNCs that operate here. It is crucial that the CRU continues to engage closely with industry so that the realities of an energy demand side strategy are fully realised.

**Question Q1. What are stakeholder's views on the stated aims of the project? Are there barriers to achieving a successful outcome of implementing an energy demand strategy to meet project climate objectives (viz. carbon emissions reduction)? Are there areas that could benefit from greater policy and regulatory clarity? Are there areas where further alignment between the relevant entities (e.g. state agencies, corporate obligations) to coordinate and enable the delivery of an energy demand strategy would be beneficial?**

The importance of coordination, as stipulated in the first priority cannot be overestimated. Efforts should be made to ensure that a collaborative approach is adopted, and this will require engagement with industry so that their needs are heard, and that businesses fully understand what is to be expected of them upon the rollout of the project. In this regard, AmCham welcomes the CRU's acknowledgement that "*it is important that a coherent and collaborative approach to the EDS project is adopted across all relevant stakeholder groups*."

The final aim of the project, to "*support the delivery of Irelands transition to reach net zero emissions by 2050*" is strongly supported by AmCham. As noted above, AmCham members' ambitions go beyond that of Government in terms of reaching net-zero in a timely manner. Meanwhile Ireland's progress towards net-zero by 2050 is lagging. The Environment Protection Agency (EPA) predicts that Ireland will achieve a reduction of 29 percent in Greenhouse Gas emissions by 2030 compared to a target of 51 percent, and that the first two carbon budgets (2021-2030) will not be met, and by a significant margin.[1] All possible efforts must now be accelerated to ensure that Ireland meets its climate commitments. However, whilst a demand side strategy is important, Ireland will only be able to decarbonise if significant progress is made on the development of renewable generation.

AmCham notes that the approach adopted by the CRU, that of obligating electricity users to deploy additional generation capacity, is different to that which is being implemented in Europe. In Europe, the regulatory model that has been established makes National Regulatory Authorities responsible for the provision of resource adequacy, and for upholding a market

[1] EPA, https://www.epa.ie/news-releases/news-releases-2023/ireland-projected-to-fall-well-short-of-climate-targets-says-epa.php

that is able to deliver the adequate resources. Ireland therefore risks undermining its competitiveness within Europe by following the approach as laid out by the CRU, in terms of the responsibility that is being placed on energy consumers. AmCham suggests that this is kept in mind by the CRU in how it plans to implement its strategy. In this regard, AmCham notes that collaboration with industry will be essential in ensuring that any change is both practical and manageable.

**Q2. What are stakeholder's views on the proposed scope (focus areas) and approach (phasing) of the project?**

AmCham welcomes the mention of microgeneration as it relates to small energy users and would advocate for similar recognition of the potential of large energy users (LEUs) to feed into the grid via microgeneration. Enhanced microgeneration is a means by which Ireland can decarbonise the electricity sector, particularly in the absence of sufficient electrical and gas transmission capacity. More needs to be done to incentivise businesses to engage in microgeneration projects. The Clean Export Guarantee tariff is limited in its renumeration, and so is more relevant for smaller scale microgeneration projects. A similar scheme, more targeted at large businesses would go some way in encouraging the development of more microgeneration projects in Ireland. AmCham suggests that this should be incorporated into the scope of the EDS.

There are several things to consider when approaching scope area 3, new demand connections, and AmCham welcomes the dedication of a separate consultation document to this area.

As noted above, there are a vast and diverse amount of LEUs operating in Ireland and contributing positively to the Irish economy. It will be crucial that the proposed net zero emissions requirement for new LEU connections takes into consideration this diversity. AmCham suggests that the CRU permits a number of different pathways to demonstrate that a business site will be net zero. There are many different ways that business can reduce their operational emissions, and this should be reflected by the CRU. Important to mention here also is that the net-zero requirement for new connections should apply only to new demand and not retroactively to existing LEU demand.

As noted above AmCham members are dedicated to sustainability, and many are actively engaging in projects that will considerably reduce their emissions whilst also benefitting Ireland as a whole in reaching its climate commitments. This should be recognised by the CRU. AmCham suggests that credit is given to consumers who develop energy storage resources or who implement demand response to help reduce emissions, and these actions should additionally be accounted for in the net zero emission assessments.

There needs to be a greater understanding of the practicalities of this initiative, for example smart metres and demand management by varying tariffs make sense in theory, but there is limited insight into how these will operate in practice. The document further mentions dynamic pricing and energy sharing, but again lacks substantial detail. The suggestion that industry could change production schedules fails to take into account the practicalities of operating large sites, with 24/7 shift patterns with many needing to maintain batches at strict temperatures. Power interruption may have lasting impact in terms of potential damage to industrial tools. Several industries need a minimum amount of gas for production continuity. If production is stopped, it cannot be easily restarted without significant delays, regulatory approval, and costs.

It is further unclear what is meant by "*transferring data processing to alternative facilities*", whether this means to elsewhere in Ireland or to abroad. The suggestion that investment should be directed away from Ireland is something that AmCham members would question.

**Q3. What are stakeholder's views on energy demand profiles and the challenges arising from the associated carbon emissions? Considerations may include other information and data that should be included. Or challenges, such as new demand.**

The energy demand profile notes largest growth in energy demand as coming from LEUs. As AmCham has outlined in previous submissions to the CRU, LEUs are most likely to have stable and predictable energy needs.[2]

In the context of security of supply, any increase in demand by LEUs is foreseen and, as such, should and can be planned for. When it comes to decarbonisation LEUs can be part of the solution. Several LEUs are working on technology that would allow the energy storage systems used for backup power to help address any variability within Ireland's power grid. For example, innovation in relation to grid-interactive UPS technology would also allow for backup energy storage systems within facilities to send power back to the energy grid. The potential exists for such systems to significantly reduce Ireland's carbon emissions whereby they could be utilised to reduce the dependence on fossil fuels, and therefore would contribute to reducing Ireland's overall emissions. Whilst it is fair to point out the amount of energy that LEUs need, this shouldn't be presented in isolation from the realities of how these users operate.

**Q4. What are stakeholder's views on the definition for demand flexibility? How should demand flexibility be measured and reported on an ongoing basis? What metric (annual peak system demand / total annual energy consumption / other?) should be used. How**

[2] AmCham Ireland response to CRU Tariff consultation - August 2022.

**should compliance with the CAP targets be assessed for demand flexibility in 2025 and 2030?**

AmCham sees no major issues relating to the CRU's definition of demand flexibility, as detailed in the consultation paper. However, the provision of a more in-depth definition, including clear examples would be beneficial to ensure that what the CRU means by demand flexibility is fully understood.

**Q5. What should be the areas of focus for demand flexibility? Are there any policy or regulatory barriers to the introduction of technologies that could be useful in providing flexibility? What incentives should be considered?**

Greater demand flexibility will be important in managing the variability of renewable power generation. With the right strategy and processes in place, LEUs can contribute substantially when it comes to grid reliability. As mentioned above, a nuanced approach must be taken in relation to LEUs, as they include a range of different business models.

In order to encourage demand flexibility from LEUs, incentives that will permit businesses to operate more flexibly need to be put in place. For example, it will be important that LEUs are not subject to imbalance charges.

AmCham further suggests the establishment of tailored demand response products that take the performance and reliability of LEUs into consideration. LEUs need considerable forewarning if they are to adjust their output. It will therefore be essential that measures to enable an activation notice of several hours, as much as 24 hours in some cases, are enacted. In doing so LEUs who need to change the level of available capacity and the number and duration of events must be accommodated for.

In establishing its EDS, AmCham suggests that best practice models used elsewhere are consulted. For example, Denmark operates a voluntary 'Limited Grid Access Tariff' for LEUs. In doing so, businesses willing to accept interruption would be compensated accordingly. By introducing such a scheme, maximum power levels to be included in grid dimensioning can be reduced, lessening the need for expansion and thereby costs.

**Q6. What are stakeholder's views on the attached ESBN document, 'Scenarios for 15-20% Flexible System Demand (DOC-120423-HRS)', which has been published as part of this four document package?**

ESBN's "*Central Scenario*" is heavily dependent on LEUs "*making significant investments in the behind meter resources and operational changes*", as well as "*rapid*" emissions reporting. The CRU is evidently asking a lot from LEUs, which may impact Ireland's competitiveness. At the same time, they note the importance of "*continued investment by multinational technology*

*and pharmaceutical industries in Irish facilities*". In order to continue to attract investment to Ireland, the CRU needs to better understand the impact that the implementation of this strategy will have on LEUs. A greater degree of clarity regarding what will be expected of LEUs, how much this will cost, and what incentives will be put in place, is needed.

Leading on from this, AmCham regards the "*Industry Led Scenario*" as misguided. Whilst evidence is cited for flexibility of peak demand, the document notes that this is "*pending the customer's investment and operational decisions*". As noted above, these statistics fail to take into account the realities of achieving such levels of flexibility and the disruption they may pose to operations.

AmCham appreciates the document's acknowledgement that there is "*a growing body of international research*" the supports the notion that MNCs can play a core role in "*accelerating the energy transition and, indeed, facilitating the wider decarbonisation of society*". AmCham members are very much reflective of this research and have shown a continued dedication to decarbonisation. Again, AmCham would stress the need for a greater dialogue between Government and industry so that the work they are doing, and the practicalities of the implementation of demand flexibility are fully understood.

**Q7. Comments are invited from respondents on any other associated areas that they consider materially relevant to the project.**

AmCham notes that electro-intensive industries require stable and predictable power in large quantities at all times. Many AmCham members have implemented measures to lessen their dependency on the grid whilst using renewable sources of energy. For example, many companies incorporate on-site generation through the likes of rooftop solar PV. These onsite projects do not provide the quantity of energy that is needed to facilitate full scale production, however. In order to produce the adequate amount of energy onsite, additional land would need to be developed. In this regard it would be beneficial for both the grid and LEUs if there was greater flexibility in terms of locating renewable and storage projects in sites where they are optimised for their output and the needs of the grid.

AmCham would further highlight the importance of Corporate Power Purchase Agreements (CPPAs) in helping LEUs to support additional renewable energy generation. There is significant room for improvement with regard to the procedures related to CPPAs in Ireland. The need to match annual demand with an equivalent volume of renewables, in the context of the variable generation of wind and solar projects, requires over procurement, which in turn creates price risks for consumers as they must sell excess generation on spot markets at uncertain prices. In order to avoid this, AmCham suggests the implementation of a more flexible approach to achieving net-zero which takes into consideration the contribution of other resources such as storage and flexibility.

Again, Ireland's CPPA market compares unfavourably to that in other EU countries, as it is not as developed. Ireland's high grid connection costs, uncertainty over connection timelines, restrictive planning guidelines, high business rates, limits on planning permission lifetime, high levels of renewable curtailment, and a complex and long development process result in a more expensive and timely process.

Finally, AmCham suggests that the CRU allow multisite customers with onsite renewable generation, and demand side flexibility, to trade energy at no cost across the grid between sites. At present, AmCham members who are producing surplus renewable energy are selling this to the grid cheaply, and then buying it again at other sites at full market price with no renewable element included. Steps should be taken to allow for a more direct and cheaper exchange of energy between sites of the same company.

An Taisce 75 YEARS 1948-2023
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Sent by email to: electricityconnectionpolicy@cru.ie

30th August 2023

## Re: Review of Large Energy Users Connection Policy

An Taisce welcomes the opportunity to contribute to the consultation on the Review of Large Energy Users Connection Policy. We wish to make the following submission.

## 1. Obligations under the Climate Action and Low Carbon Development Act (as amended) 2021

As the consultation paper outlines, Section 15 of the Climate Action and Low Carbon Development (Amendment) Act 2021 (hereafter referred to as 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.*"

To comply with s.15(1), the CRU and SOs will need to demonstrate that connection projects align with the Climate Act's objectives around decarbonisation, the net zero requirement, the carbon budgets and the sectoral ceilings. We would highlight that the electricity sector has a very stringent limit.

Critically, the Climate Action Plans are bound by the carbon budgets and sectoral ceilings. Therefore, per s.15(1)(a), 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 sectoral limit for all proposals going forward. That entails that permissions and connection agreements should be refused once sectoral ceilings have been reached.

### 1.1 Carbon budget situation

Ireland will not meet its obligations for the first or second carbon budgets without urgent and deep emissions cuts.[1] This means that the constraints on emissions in the remaining budget years will be significantly higher. This has implications for the CRU and SOs, including in relation to connection policy.

We would highlight that Ireland's carbon budgeting situation is far more pressing than the EPA 2023 Greenhouse Gas Emission Projections report, released in June 2023, has indicated. The report states that Ireland's first two carbon budgets (2021-2030) are projected to be exceeded by a significant margin of between 24% and 34%.

However, An Taisce's analysis shows that Ireland's carbon budgeting situation is further off track than the EPA report indicates (see the Appendix). The Climate Act is very clear in its requirement that any overshoot of the first five-year budget (to the end of 2025) must be carried forward to reduce the following five-year budget for 2026–2030 (per s.6(D)(5) of the Act[2]). This critical analysis is missing from the EPA Projections report.

The reality of the current emissions trajectory toward the end of 2025 means the carbon budget overshoot to be removed from the 2026-2030 budget is so significant that it will be much more difficult for to stay within the legal requirement. This means that highly effective emergency course-correction measures must be immediately enacted to limit the overshoot.

The EPA report provides two emissions projection scenarios, called WEM and WAM, respectively, based on data for existing and projected additional government policies. These projected emission pathways over time are then compared with the legally binding carbon budgets approved by the Oireachtas. In the EPA report, Budget 2 is exceeded by 125 MtCO2eq for WEM and 80 MtCO2eq for WAM. By contrast, in An Taisce's analysis correcting Budget 2 for prior overshoot, the exceedance is substantially greater: 170 MtCO2eq or 110% for WEM; and 117 MtCO2eq or 72%, for WAM. An Taisce's revised analysis (see Appendix) shows that there is a basic budget maths issue in that the EPA report (Sections 4.1 and 4.2) omits the carry-forward of the prior period's overshoot that, under the Act, must result in a corresponding reduction in the subsequent carbon budget.

[1] https://www.climatecouncil.ie/news/press-release-climate-change-advisory-councils-annual-review-2023.html
[2] Climate Act as amended 2021 s.6(D)(5): "*Where the total greenhouse gas emissions for a preceding budget period exceed the carbon budget for that period, the Minister shall carry forward the excess greenhouse gas emissions from the preceding budget period to the current budget period and the current carbon budget shall be decreased by the amount of greenhouse gas emissions that are carried forward.*"

Separately, all references to a target of "51% reduction by 2030 compared to 2018" and the related indicative sectoral emission ceilings comparisons, are out of date.[3] The percentage reductions required by 2030 will be much greater than 51% even if the most optimistic (WAM) trajectory is followed to 2025, and the Sectoral Emission Ceilings for period 2 will require correction proportionate to the reduced 2026-2030 carbon budget.

This clearly demonstrates a need for dramatically increased climate action urgency and is very relevant to the CRU and SOs, in light of the stringent emissions ceilings for the electricity sector.

## 2. Data centres and the dilution of progress towards renewables targets

As of 2022, data centres accounted for 18% of the country's total metered electricity use.[4] Their power consumption has increased 400% between 2015 and 2022 and by 31% between 2021 and 2022 alone.[5]

Progress toward the target of 80% of power to be generated by renewables by 2030 has been significantly diluted by the ongoing proliferation of high energy demand developments, in particular data centres. The higher the total electricity demand, the more renewables capacity needed to reach the 80% target. Therefore, the more energy intensive developments, like data centres, that come onstream, the more difficult it will be to reach that target. Indeed, SEAI figures show that the share of renewables has not increased since 2020, largely due to the impact of data centres.[6] We note that the issue of dilution is acknowledged in section 2.3 of the consultation paper.

The use of Corporate Power Purchase Agreements (CPPAs) or Renewable Energy Certificates exacerbates this issue. Data centres with CPPAs for renewables are still increasing the overall demand for electricity and diluting progress towards that 80% target. Furthermore, even if data centres are using CPPAs to buy renewable power, that renewable energy is then going to cover data centre energy demand rather than dealing with our existing emissions mitigation

[3] As per this Written Parliamentary Answer from Minister Ryan in March 2023, the obligations under the Climate Act, as amended 2021, Section 6A(5), relating to a reduction in annual GHG emissions of 51% by 2030 (relative to 2018), applied solely to the deliberations of the Climate Change Advisory Council in proposing the initial budget programme, *and those obligations are already "fully met"*. Under the Act, the *enduring* statutory obligation on individual Ministers and the Government as a whole is to *ensure compliance with the carbon budgets*, as adopted by the Oireachtas, rather than to achieve any particular level of reduction in annual emissions in any single year. To the extent that annual emissions track above what would be required for budget compliance in any given period (as they have done to date), the statutorily required emissions reduction in following years necessarily increases. Specifically, the level of annual emissions reduction required in 2030 is now determined by the carbon budgets, rather than vice versa. The EPA projections analysis and communication entirely fails to present this new statutory reality.

[4] https://www.cso.ie/en/releasesandpublications/ep/p-dcmec/datacentresmeteredelectricityconsumption2022/

[5] https://www.cso.ie/en/releasesandpublications/ep/p-dcmec/datacentresmeteredelectricityconsumption2022/keyfindings/

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

needs. An Taisce has also encountered cases of data centre operators developing additional renewable energy capacity elsewhere in Ireland in tandem with the data centre project to "offset" the power use of the data centre. Again, the issues of dilution and overall power demand increase remain, particularly since there is a finite amount of space available in Ireland for on and offshore renewable energy developments.

An Taisce submits that a national review of data centre energy demand is needed and that this should inform a new national policy on the level of future data centre development that can be accommodated in compliance with our national, European and international emissions reduction obligations. A moratorium on all further data centre development and connection agreements should be put in place until such a policy is enacted.

## 3. On-site power generation

No further permissions or connection agreements should be granted for data centres or other LEUs to establish fossil fuel powered generating systems in support of their activities. Any use of fossil fuels as such would contravene national policy, including the Climate Act and Climate Action Plans, on emissions reduction.

### 3.1 Renewable gas

We note that the consultation paper discusses the possibility of the use of renewable gas, specifically biomethane, including for on-site power generation. However, An Taisce would strongly caution that it is premature to assume that biogas can be effectively used to reduce emissions.

The feedstock sources and the supply chains of these feedstocks must be assessed as part of an evaluation of biogas's emissions reduction potential. The emissions that contribute to the production of feedstocks must be considered as they can significantly negatively impact biomethane's overall contribution to climate mitigation.

Anaerobic digestion predicated on increased grass or energy crop production has the potential for significant adverse impacts to climate and water quality as a result of the increased levels of fertiliser input needed to grow the silage. The use of existing waste streams for energy provision are often a more sustainable option as they do not promote an increase in production of energy crops, which can increase $NO_2$ soil emissions and water quality impacts through higher fertiliser requirements. With regard to the use of slurry, intensive cattle farming is also a major emitter of greenhouse gases. Any use of slurry for biogas production should not be reliant upon or drive further bovine agriculture intensification.

We would refer the CRU to research by Beausang et. al. (2021) on the sustainability issues with the use of grass silage and cattle slurry for biogas production.[7]

[7] 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. Available from:

We would also highlight that anaerobic digesters suffer from significant fugitive emissions problems via methane leaks. The effect of the leakage of this potent greenhouse gas may greatly reduce or even negate the potential climate benefits of using biogas in place of fossil fuels.[8]

https://www.researchgate.net/publication/350380683_Assessing_the_Environmental_Sustainability_of_Grass_Silage_and_Cattle_Slurry_for_Biogas_Production

[8] 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

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# Appendix
# Comparison of EPA projections with the agreed carbon budgets

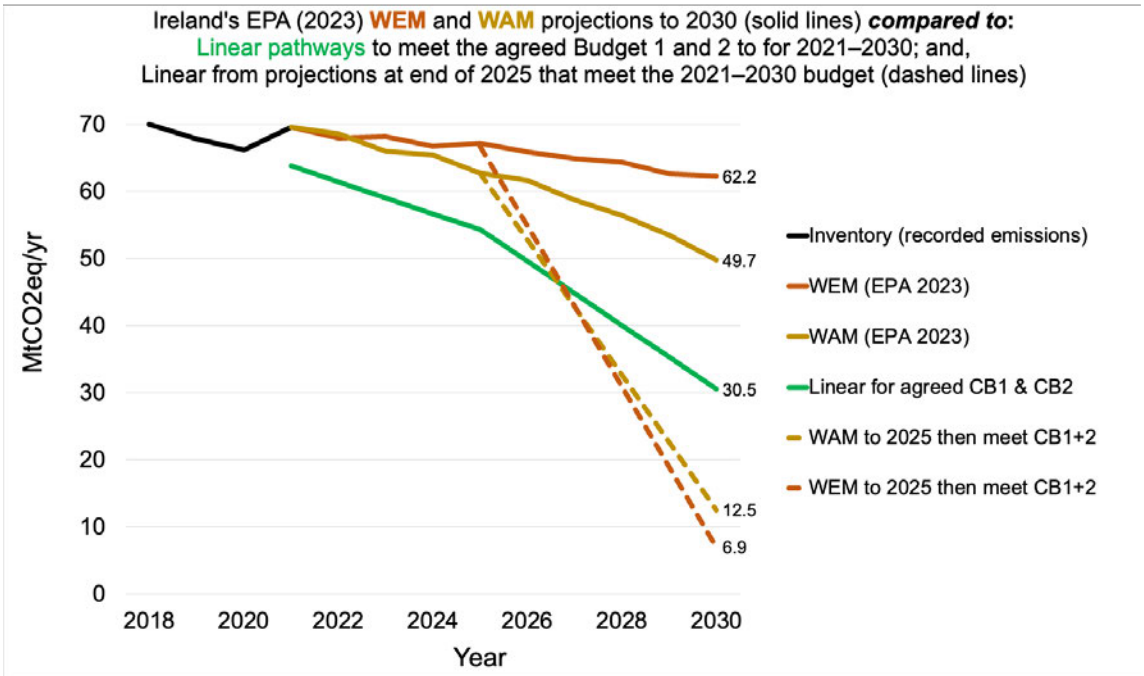
The two tables below, for WEM and WAM projections, set out the agreed carbon budgets, the EPA 2023 projection, and the resulting exceedance (to be carried forward), with a comparison to the exceedance stated by the EPA.

| ***Carbon budgeting based on WEM (With Existing Measures) Projection*** | **(legally binding) Budget 1** | **(legally binding) Budget 2** | **(provisional) Budget 3** | **Not yet defined Budget 4** | **CB1+CB2** |
|---|---|---|---|---|---|
| | **2021–2025** | **2026–2030** | **2031–2035** | **2036–2040** | **2021–2030** |
| **5-year Carbon budget** | **295** | **200** | 151 | Not yet defined | **495** |
| Carry forward prior overshoot | – | -45 | -170 | -325 | |
| **Corrected carbon budget** | **295** | **155** | **-19** | **?** | |
| WEM Projected emissions | 340 | 325 | 306 | 294 | 665 |
| **Overshoot** | **45** | **170** | **325** | **–** | **170** |
| *EPA exceedence value (Projections p.11 )* | 45 | 125 | 160 | – | 170 |
| Percent exceedence of corrected budget | *15%* | *110%* | *1809%* | – | *34%* |

| ***Carbon budgeting based on WAM (With Additional Measures) Projections*** | **(legally binding) Budget 1** | **(legally binding) Budget 2** | **(provisional) Budget 3** | **Not yet defined Budget 4** | **CB1+CB2** |
|---|---|---|---|---|---|
| | **2021–2025** | **2026–2030** | **2031–2035** | **2036–2040** | **2021–2030** |
| **5-year Carbon budget** | **295** | **200** | **151** | **Not yet defined** | **495** |
| Carry forward prior overshoot | – | -37 | -117 | -214 | |
| **Corrected carbon budget** | **295** | **163** | **34** | **?** | |
| WAM Projected emissions | 332 | 280 | 248 | 244 | 612 |
| **Overshoot** | **37** | **117** | **214** | **–** | **117** |
| EPA exceedence value (Projections p.11 ) | 37 | 80 | 93 | – | 117 |
| Percent exceedence of corrected budget | *13%* | *72%* | *625%* | – | *24%* |

The tables show why early course corrective action is essential. The apparently small percentage overshoot of Budget 1 results in a very serious reduction in the smaller Budget 2 and an increased overshoot. This effect becomes ever greater in following budgets unless deep emission reductions are made early to get back to the trajectory defined by the agreed budgets.

The chart below shows: EPA 2023 Projections WEM and WAM (solid lines); a two-part linear pathway (green) with the parts meeting the CB1 and CB2 budgets respectively; and also WEM and WAM to 2025, followed by a linear path to meet the combined CB1+2 budget by 2030. The agreed budgets of 295 MtCO2eq (Budget 1 = CB1) and 200 MtCO2eq (Budget 2 = CB2) result in the green linear pathway seen in the chart.




The table below shows emissions in 2025 and 2030 for the different scenarios and the respective percentage reduction in annual emissions compared to 2018. As shown, the 2030 value in this pathway is 56% below the 2018 inventory value. This shows how all ongoing references to a target of 51% reduction by 2030, as commonly seen in the EPA reporting and in government documents are no longer meaningful. The 51% by 2030 target ceased to be relevant to climate action once the five-year carbon budgets were set by the Oireachtas, and the required percent reductions by 2030 depend on the emissions trajectory actually projected or taken.

| Pathway | 2025 emissions incl. LULUCF | *Percent below 2018 value* | 2030 emissions incl. LULUCF | *Percent below 2018 value* |
|---|---|---|---|---|
| WEM from 2023 EPA Projections | 66.7 | *5%* | 62.6 | *11%* |
| WAM from 2023 EPA Projections | 62.7 | *10%* | 49.7 | *29%* |
| Linear pathways meeting the set 10-year budget to 2030 | 54.2 | *22%* | 30.5 | *56%* |
| WAM to end of 2025, then linear to meet 10-year set budget | 62.7 | *10%* | 12.5 | *82%* |
| WEM to end of 2025, then linear to meet 10-year set budget | 66.7 | *5%* | 6.9 | *90%* |

Under the Climate Act it is meeting the carbon budget tonnages that matters, not a 2030 percent reduction. Failure to meet a five-year budget means that any excess results in a corresponding correction to the subsequent budget, as a result the percentage reduction by 2030 relative to 2018 becomes correspondingly larger.

*Comharchumann Fuinnimh Oileáin Árann Teoranta*

*Ionad Colm Ó hIarnáin, Cill Rónáin, Árainn, na hOileáin Árann, Co. na Gaillimhe*
*info@aranislandsenergycoop.ie*

engagement@esbnetworks.ie.

2 December 2021

**RE: Piloting Roadmap as part of the National Network, Local Connections Consultations**

Dear Sir/Madam,

I refer to the above mentioned Piloting Roadmap consultation and wish to propose the Aran Islands as a suitable pilot for ESBN to run pilot programmes in the areas of Demand Response, Flexible demand, smart grid and micro grid technologies.

Our community-owned organisation, The Aran Islands Energy Co-Operative, was established in 2012 because of the strong desire of the local community to play an active role in the transition to clean energy and to act as an example for other communities both nationally and internationally. The residents of the Aran Islands aim to achieve net zero carbon status and energy independence and have already made great strides in meeting these targets.

We have successfully participated in five European and nationally funded R&D projects to date, piloting and trailing new technologies and infrastructure on the Aran Islands in areas such as Demand-Response, Smart Grids, Virtual Power Plants and more. Local homes and businesses, led by CFOAT have actively engaged in these projects, offering valuable stakeholder insights to the technology developers.

In parallel to this we have also leveraged nationally available funding to upgrade the homes and buildings on the islands, this has seen tremendous local buy-in in the community. To date there has been approx 300kW of Air to Water heat pumps, 150kWp of PV and 185kWh of battery storage installed on the islands, in addition to approx 15 Electric Vehicles allowing for sufficient piloting of DR projects.

In addition to the above initiatives, the Aran Islands Energy Co-Operative have successfully applied to the inaugural community batch process known as ECP 2.1. The projects name is Fuinneamh Oileáin Árann. The Co-Op, following engagement with ESB Networks, are expecting a grid assessment in Q1 2022. The original MEC sought was for 2.3MW, however, after initial discussions with ESB Networks we were advised that the largest MEC that could be exported from the site is approximately 650kW. It is likely that the turbine chosen will have an MEC closer to 900kW. Therefore as part of the build out of this project it is an ambition of the Co-op that the additional power that cannot be exported could be consumed locally utilising the new smart technologies already in place on the Islands. The co-op would like this project to be included as a pilot project under the National Network, Local Connections Consultation programme. It is our belief that there is no greater opportunity to undertake a detailed feasibility of this nature on an island that is unique in the manner in which it is separated from the existing national grid. The European Commission recognises that islands may hold the key to the European energy transition and has established a secretariat tasked with providing technical assistance to islands with

significant funding available to enable this. The Aran Islands were one of six European islands who were chosen by the commission to kick start the Clean Energy for EU Islands Secretariat.

In summary we believe the Aran Islands, and their 'island grid' provide the ideal location for ESBNs piloting activities due to the assets available locally, its organisational structures already in place, and its strong community support for the electrification of transport and heat on the islands. A successful programme on the islands could then be scaled up in any area of the country.

We hope that you will give due consideration to including the Aran Pilots in your upcoming pilot programmes.

Yours faithfully,

Avril Ní Shearcaigh
General Manager.

2nd August 2023

# Response to the National Network Local Connections

# 15-20% Flexible System Demand Paper

Dear Sir/ Madam,

In responding to this consultation paper, I have drawn on;

1)The Clean energy for EU islands: Study on regulatory barriers and recommendations for clean energy transition on the islands **Ireland** (2022), especially recommendations 1.2, 3.1 and 3.2.

2)The recently published Our Living Islands policy, especially in relation to Strategic Objective 2 (renewable/ clean energy pgs 37-38) and Strategic Objective 5 (Smart Villages / Research and Development pgs 60-65) and Action Plan measures 5.9/5.10.

Although the supply side is not within the scope of this paper, it might be useful to look at islands in terms of "whole energy systems" as per Highlands and Islands Energy Scotland Small Islands Energy System Overview (figure 5 illustrates supply and demand across energy vectors).

## Scenarios

From our point of view on the islands, the development, introduction, operation and of flexibility services (pg 17 of this document) would be important in relation to points 4 and 5 around managing local security of supply and maintaining our supply under fault conditions. The fact that flexibility services support the realisation of CAP targets also chimes with our own aims and objectives in CFOAT, the Aran Islands Energy Cooperative

The Aran Islands would be ideal to be part of a **Consumer-led scenario.** Islanders have been forward looking in their installation of low carbon technologies and the DSO needs to be able to "support and incentivise flexible demand" (pg 39 of this document). However, the DSO may need to be particularly aware of "consumer sentiment and needs" on the islands owing to the impact of external events (e.g. electricity blackouts) on the use of low carbon technologies. Islanders are acutely aware of electricity blackouts, be they weather or technical related. Although about a fifth of buildings on Inis Mór have heat pumps installed, and even more have solar PV installed, anthropological studies on the islands have highlighted islanders' dissatisfaction that they can't use their energy from PVs in a blackout as the inverter of the solar panels is connected to the main fuse board in the house, which prevents them from working in the case of a power cut (houses without batteries). The importance of follow up support (and lack thereof) for householders using renewable technologies is also something

that also comes across strongly in studies (see recommendation 3.1 and 3.2 Clean Energy for EU Islands study). This kind of local knowledge and engagement is key and ought to be kept to the forefront in relation to the implementation of the ESBN Stakeholder Engagement Strategy 2024.

We are already partners in projects (e.g. Data Cellar) that are developing data driven energy services such as a Decision Support System (DSS). This will enable flexibility estimation for the consumer and also the optimal location and optimal management of DSO resources.

We have just become partners in a large Horizon Europe funded project (yet to launch) as a demonstration site to be part of "....of an inclusive ecosystem of stakeholders characterized by a mesh of Data, Intelligence, Service and Market flows, jointly enabling the resilient operation of the energy system under increased RES integration and distributed flexibility."

We would like to see collaboration between ESBN and energy communities like our own in these types of research projects which support the green transformation of the energy ecosystem and enhance its resilience.

**Sources of flexibility –**

**1. Domestic PV –** about 70 buildings on Inis Mór have solar PV installed and there are further installations happening. At least 25 of the buildings with intelligent meters (as part of another EU project) and PV panels and are participating in the SEAI funded sECUre project with a Digital Twin study providing a comprehensive baseline of the island's energy consumption. As Dr. N B, the IES Project Manager says "you can't improve what you can't measure". The more information consumers have, the more likely they are to change their behaviour. Both education and financial incentives (pg 75 of this document) would be important in getting customers to engage with demand flexibility. It would be a pity not to use the meteorological data available from the weather station (with 1 minute granularity) in the Aran Islands Research Station (AIRS) on Inis Meáin and the Met Ocean Buoy 10km off the shores of Inis Meáin to add to forecasting models helping inform customers about shifting demand to specific time periods (pg 74 of this document).

**2. Behind the meter storage** – although a feed in tariff is now a possibility for those generating small amounts of electricity e.g. with solar PV, the importance of battery storage can't be overlooked. Island residents were early adopters of electric vehicles and now approximately 10% of cars on Inis Mór are electric. There has also been a high uptake of heat pumps with approximately 70 buildings with heat pumps. To ensure behind the meter storage happens, uplifted grants for islanders installing batteries in addition to PV and for 'stand-alone'

storage could be recommended by the ESB to the SEAI. (see recommendation 3.2, pg 29 CE4EU islands document)

**3.** As islanders have been using electric cars since 2011(in a project carried out by SEAI in conjunction with the Department of Community, Equality and Gaeltacht Affairs), they are very familiar with this type of transport and asked questions at our AGM in February 2023 about the possibility of using **vehicle-to-grid technology**. Could the islands be considered as a pilot site for this technology in Ireland?

**4. Long duration storage**

***Chemical-*** there is already a small power-to-hydrogen-to-power battery in one of the larger buildings on Inis Mór as part of the Horizon 2020 funded REACT project

***Thermal-*** Could a "sand battery" such as the one in western Finland, already at TRL 9, be used as an energy storage technology on Aran? For example, power from solar PV schools/public buildings in the summer could be used to heat water in the bars /B& Bs or partially heat school/public buildings when autumn sets in.

Thank you for taking the time to read this submission, we look forward to being part of sustainable, low-carbon solutions.

Yours faithfully,

Stephanie Brennan

Project Assistant

2nd August 2023

# Response to Incentivising the Uptake of Time of Use Tariffs Consultation

**Question 1: The CRU is proposing to amend the PCW accreditation framework to allow consumers to upload their smart meter data (obtained as a HDF via the ESBN Customer Portal) to receive a price comparison based on their actual historical electricity consumption. Do you agree with this approach? If not, why not?**

Yes, I do agree with this approach. It means that customers can shop around and make choices based on their own usage of electricity.

**Question 2: The CRU is proposing not to put any restrictions on the minimum period of time that needs to be contained in smart meter consumption data that consumers can upload to the PCW. However, we propose that a warning message be included where consumers have included less than a year of data. Do you agree with this approach? If not, why not?**

Yes, I agree with this approach. A clear message should be visible to consumers so that they know using less data will give them a less accurate picture of their overall consumption.

**Question 3: Is there anything else CRU should consider with regards to this matter?**

As a matter of interest, I note that 7% (as of April 2023) of customers have signed up for Time of Use Tariffs. What percentage of customers has signed up to access their electricity consumption data via the customer portal? This is a very important first step. I know from our own involvement in the sECUre project, it has been challenging to get people to log into their computers to read their data. It is not something they are used to. Is there any way more customers can be encouraged to sign up to the ESBN Customer Portal? I know there are regular radio ads encouraging people to sign up to tariffs but they may be afraid to do this owing to misinformation and hearsay. At least if they were signed on to the portal, they could see how they were using their electricity and then make the best choices based on their usage.

Current customers need reassurance that signing up to a Home Electric+ plan offers the same price plan and charges as standard meter plans. The information that customers are free to switch to a more appropriate plan

after six months having had access to their Smart Meter data could also be emphasised to encourage customers to look at time of use tariffs that suit them.

**Question 4: In case a consumer submits a HDF containing periods of missing data, the CRU is proposing that the PCW takes the following actions:**

- **If the missing data accounts for less than 1% of the total dataset: the PCW must use the most recent ESBN load profile and calculate an estimate for the consumption during the missing period.**
- **If the missing data accounts for 1% or more of the total dataset: the PCW must inform the consumer that there is missing data, include the percentage of missing data, and ask if they wish to continue with the price comparison using an estimate for the missing data, as outlined above.**

**Do you agree with this approach? If not, why not?**

I agree with this approach. I know, from living on an island where electricity cuts seem to be more common than on the mainland that there are likely to be gaps in data. I also know that for other reasons, data are not always read or transferred (e.g. extremely low usage) so letting the customer know how much data are missing and giving them the choice to proceed or not (where more than 1% is missing) is the best approach.

**Question 6: The CRU would be interested in hearing whether respondents believe there is added value or not in allowing PCWs to ask consumers additional questions to identify their consumption behaviour, and tailor price comparisons. For example, whether a consumer has an Electric Vehicle.**

**If you believe there is added value in this approach, what guidelines, if any, do you believe the CRU should implement to ensure a minimum standard across PCWs?**

I do believe there is added value in this, as, for example, the use of EVs is on the rise and a greater number of people are installing solar panels following the lifting of planning permission restrictions and the removal of VAT on the purchase and installation of solar panels since the1/05/2023.

However, I believe that the questions should be standardised so that customers know that they are comparing like with like when looking at different providers.

**Question 7: The CRU proposes to require PCWs to implement the functionality to allow consumers to upload their smart meter consumption data (via HDF) from 1 January 2024. Do you agree with this approach? If not, why not?**

Is there any way you could roll this out earlier to certain places? We, on the Aran Islands (certainly Inis Mór anyway) have had smart meters fitted since summer 2022. The earlier roll out here would tie in well with the recently published Our Living Islands policy, especially in relation to renewable/ clean energy pgs 37-38 and Smart Villages / Research and Development pgs 60-65 and Action Plan measures 5.9/5.10. Having access to this consumption data would also make it easier for us to take part in projects that require this type of data.

**Question 9: The CRU proposes to amend the PCW accreditation framework to allow consumers to access price comparisons for microgeneration export tariffs between suppliers. It proposes consumers should be able to do this in one of two ways, either by submitting their actual (historical) export volume, or by submitting their deemed calculation. Do you agree with this approach? If not, why not?**

Yes I do as some customers involved in microgeneration do not have a smart meter installed so it is good to have a choice. I think these consumers will be very aware of the electricity use and submit a realistic deemed calculation.

**Question 11: The CRU proposes to extend the requirement for an EAB to all tariffs available on the market, including time of use tariffs. Do you agree with this approach? If not, why not?**

Yes I do but see below. The more information customers have in helping them compare tariffs, the more likely they are to make informed decisions.

**Question 12: The CRU proposes to implement an EAB for all time of use tariffs from 1 January 2024. Do you agree with this timeline? If not, why not?**

Yes I do, I think it is a realistic timeframe to have it in place. There will need to be a good deal of publicity in the autumn to alert people of this and to encourage them to start monitoring their energy use by signing up to the ESBN Customer Portal if they have a smart meter installed.

**Question 13: With regards to the methodology for calculating an EAB for all time of use tariffs, the CRU proposes to use the demand-weighted approach, which is the same that is currently used for the Standard Smart Tariff and Day/Night tariff. Do you agree with this approach? If not, why not?**

Yes, but only until it can be revised when it is possible to issue load profiles for smart meter consumers. If PCWs were to develop their own methodologies, I think it would be important for them to seek CRU approval so that customers were sure it met principles of transparency, fairness, comparability and consistency.

**Question 15: The CRU proposes to increase the limit on the maximum number of time of use tariffs from four to eight from 1 October 2023. Do you agree with this approach? If not, why not?**

Yes I do. This allows for a better range of tariffs available to customers. I agree that too much choice may be overwhelming for some people so maintaining the Standard Smart Tariff will be important.

**Call for Evidence**

**Question 17: CRU would welcome any views on whether respondents consider it appropriate to schedule a review on the structure of the Standard Smart Tariff ahead of the completion of Phase 2 of the NSMP (currently scheduled for the second half of 2024).**

**Question 18: CRU would also welcome views from respondents on which issues should be considered in such a review. Respondents can specifically focus on the following questions, or provide their own views:**

a) **Is the Standard Smart Tariff achieving its purpose to be an easy to understand 'entry-point' to time of use tariffs for consumers?**

b) **Do you have any concerns or recommendations in relation to the Day/Night/Peak structure of the Standard Smart Tariff, including the hours assigned to each time band?**

c) **In light of the proposed measure to extend the maximum number of time of use tariffs for each supplier from four to eight, do you see a continued need for the Standard Smart Tariff?**

d) **Are there any other issues related to the Standard Smart Tariff you believe the CRU should take into consideration in a future review?**

I am not sure that this is an answer to questions 17 and 18 above but it does tie in with the design of tariffs and the opportunity to experiment with different designs. Ireland's islands, with the help of energy cooperatives and development cooperatives on the islands, could be used as regulatory sandboxes to test out different tariff designs. See Recommendation 4.1 (pg 32) of Clean energy for EU islands: Study on regulatory barriers and recommendations for clean energy transition on the islands **Ireland** (2022).

Signed,

Stephanie Brennan

Project Assistant

# AUGHINISH ALUMINA LIMITED

By email: energydemandstrategy@cru.ie

2nd August 2023

**Re: Energy Demand Strategy Project – Call for Evidence**

*This response is non-confidential.*

Aughinish Alumina Limited ("Aughinish") welcome the opportunity to respond to the Call for Evidence paper set out by the CRU.

**Aughinish Alumina Background**

Since 1983, Aughinish has operated an alumina refinery based in West Limerick, the largest in Europe. The refinery employs over 800 people between direct Aughinish employees and on-site contractors. Further to this, over 900 additional jobs are generated as a result of Aughinish operations. The alumina plant is one of the most energy efficient in the world and produces 30% of EU alumina requirements. The refinery is the largest single site gas user in Ireland with an average demand of 19GWh per day, approximately 11% of Ireland's gas demand. As such a large user of energy, Aughinish's operational viability is heavily dependent on energy and carbon pricing.

In order to remain competitive and survive, Aughinish, like most manufacturing industries, must focus continuously on reducing costs. Aughinish has switched its energy usage from a fuel oil base to lower carbon natural gas ahead of EU legislation and environmental targets.

The Aughinish high efficiency cogeneration plant ("CHP"), built at a cost of over €100M, is a significant user of gas nationally. The CHP facility has benefited Ireland in terms of both reduced primary energy usage and $CO_2$ emissions. Since commercial operation in 2006, the CHP plant has contributed to Ireland reaching its energy efficiency targets and reducing emissions, accounting for an average saving of over 300,000 tonnes of $CO_2$ per annum.

**Question 1: What are stakeholder's views on the stated aims of the project?**

The CRU is guided by four strategic priorities:

- Ensures security of supply;
- Drives a low carbon future;
- Empowers and protect customers; and
- Enables our people and organisational capacity.

The Energy Demand Strategy (EDS) has the potential to reinforce these priorities.

**Security of supply:**

By delivering appropriate consumption signals and cost signals to consumers, Ireland can reduce its reliance on imported fossil fuels and consume would-be-wasted indigenous zero carbon electricity.

**Low carbon future:**

Offsetting fossil fuels with zero carbon fuels will clearly deliver on this strategic priority. In addition, facilitating zero carbon providers of DS3 grid frequency services will allow flexible consumers to replace the current fleet of 'must run' fossil fuels units.

**Empower and protect customers:**

The May 2022 REPowerEU Plan was in response to the European energy crisis and reliance on 3rd country fossil fuels. The roadmap aims primarily at reducing dependence on fossil fuels by fast forwarding the clean transition and joining forces to achieve a more resilient energy system and an effective Energy Union.

In March 2023 the European Commission introduced amendments to the electricity market design. Part of this was to update the role of the EU Agency for the Cooperation of Energy Regulators (ACER). It calls on rapid deployment of variable renewable energy generation and for the enablement of flexibility to allow Europe to utilise these resources. This position was further reinforced by the Industry, Research and Energy Committee (ITRE) of the European Parliament who supported non-fossil flexibility and energy storage on July 19th 2023 as part of European electricity market reforms.

The Regulatory Authorities must remove economic barriers, ensure energy markets be opened up to allow all technologies and facilitate well-designed network charges and tariff schemes. Member States must assess the flexibility needs of their grid and are empowered to put flexibility contracts in place.

Domestic citizens and industrial sites want to play their part in decarbonising the economy. Currently there is no single system to encourage consumption in times of excess renewable generation. The lack of forward-thinking software is a barrier to the empowerment and protection of consumers and results in an unnecessary under-utilisation of our indigenous renewable energy.

A tier 1 immediate deliverable of the EDS must be the upgrade of Transmission System Operator (TSO) and Distribution System Operator (DSO) software to provide scheduling and dispatch signals to active consumers. Industry can deliver large volumes of demand flexibility quickly, but require the EDIL software to be upgraded to give access to real-time markets. Aughinish understand, through engagement with the Scheduling and Dispatch Project currently ongoing, that negative dispatch instructions to consume power during times of curtailed wind will not be possible until the latter part of this decade. Delaying this software upgrade to the current anticipated timeframe of 2028 or later will unnecessarily impede Irelands domestic decarbonisation efforts.

**Enable our people and organisational capacity:**
The EDS must recognise the resources needed to deliver the pioneering changes set out in the Climate Action Plan. All parties (Policy Makers, Regulators, System Operators, Planning Authorities and industry) must be resourced early in this decade if we are to succeed.

A holistic EDS will allow the 22GW of renewable electricity to become the foundation to delivering Irelands 2030 carbon emission targets. This is relevant for not just a renewable led electricity system but also for the utilisation of excess renewable electricity to offset fossil fuels burned in the heat and transport sectors. By coupling the heat and electricity sectors, there are natural synergies that can be unlocked.

*The EDS core project objectives are:*

1. Co-ordinate measures aimed at ensuring overall electricity and gas demand is consistent with Ireland's carbon sectoral emissions ceilings.
2. Deliver demand flexibility and demand response initiatives, as outlined in CAP23, which sets a target of 15-20% demand side flexibility by 2025 and 20-30% by 2030.
3. Support the delivery of Irelands transition to reach net zero emissions by 2050.

Large Energy Users is often a term used to identify data centres who typically have a large constant need for electricity. In this Call for Evidence we will refer to Large Energy Users as all large energy users (not just data centres and not just current electricity consumers.) Aughinish consume 300MW of natural gas to produce heat. Aughinish believe the EDS should capture the potential of industrial, renewable led flexible electricity demand. This would allow Aughinish to become a service provider to the electricity sector and reduce dispatch down of renewable generation whilst also delivering flexible demand, zero carbon heat and overall carbon reduction.

Aughinish agrees with the stated aims of the Energy Demand Strategy and echoes the CRU in the wording of the Public/Customer Impact Statement. However, this requires significant changes to how the energy system operates and in how customers organise their energy use. Because most renewable generation in Ireland comes from wind (and a growing share from solar), it is highly variable. Demand will therefore need to be much more flexible; increasing and decreasing in response to renewable generation output. While this increased flexibility will need to come from all types of energy user, the CRU is proposing that the initial focus be on large energy users.

As a large energy user and a unique electricity market participant, (both a generator and a consumer of electricity), Aughinish is well placed to flexibly increase and decrease onsite demand. Aughinish also agree with the sentiment of demand flexibility and response as well as the rationale behind putting in place schemes to incentivise response at certain times. Dynamic pricing will likely become an important response incentive and Aughinish welcome any such proposals.

**Question 2: What are stakeholder's views on the proposed scope (focus areas) and approach (phasing) of the project?**

The fastest quick wins will come from flexible consumption in the heat sector; industry is best placed to do this at scale and to break down the legacy barriers which exist. Private domestic heat and centralised district heating of domestic homes can also evolve to become flexible consumers of renewable electricity if the EDS implements the correct dynamic signals to consume power and delivers appropriate dynamic price signals. The SEAI published National Heat Study suggests electrification is Irelands cheapest and quickest route to decarbonisation. Eirgrid's Shaping our Electricity Future v1.1 report models unprecedented volumes of excess renewable generation trapped on our island. These two reports combined indicate a huge opportunity to decarbonise our economy using variable zero carbon wind and solar electricity.

The EDS scope must include regular engagement with:

- SEAI
- Eirgrid
- Industrial heat users
- Large energy users
- District heating association

No EDS can be delivered without the early upgrading of the TSO scheduling and dispatch systems (EDIL) to allow for negative dispatch; i.e. the dispatch of consumption assets. Currently the updates are being considered for the end of the decade, which is too late considering the lead times associated with any investment decisions.

Aughinish welcome the prompt timelines of the project but would add that large renewable curtailment volumes are not just a future concept, but already happening today. Interconnectors have often been cited as a mitigation for curtailment but have been shown to not always act as intended in times of high wind in Ireland. Regularly we see similar wind patterns in the UK, which leads to the interconnectors exasperating domestic curtailment issues. Although Aughinish is broadly supportive of interconnection policy, questions should be asked as to whether further additional interconnection should be prioritised over implementing other innovative solutions domestically.

**Question 3: What are stakeholder's views on energy demand profiles and the challenges arising from the associated carbon emissions?**

A dynamic and effective EDS will facilitate increased flexible electrification of heat and transport, resulting in a reduction in natural gas consumption in the heat sector and a reduction of liquid fuels in both the transport and heat sectors.

Non-energy charges assigned to electricity based on legacy methodologies hinder sensible decarbonisation through flexible electrification. They act to lock in fossil fuel consumption and compound the dispatch down of excess renewable generation. New types of Use of

Service Charges, market charges and levies must be designed to promote electricity substitution for fossil fuels in times of ample and excess generation.

Demand that wishes to consume at times of high renewable output should be incentivised and the requirements from the TSO with regards to dispatching systems is already laid out in previous sections. Technologies such as electric boilers in the heat sector are not volume limited and can theoretically operate on a 24/7 baseload basis. Sector coupling, in this instance heat and electricity, should be meaningfully supported. Adding additional, flexible, dispatchable demand to the system is crucial to the long-term business case for the wind and solar industry.

**Question 4: What are stakeholder's views on the definition for demand flexibility?**

The climate action plan has a target of 20 to 30% flexible demand by 2030. The baseline consumption in measuring this should be the total annual consumption if no measures were put in place. It is important that a measurement system does not discourage sensible decarbonisation. For example, if the most sustainable decarbonisation of our economy is to greatly increase flexible electrification and reduce fossil fuel importation, then the percentage flexibility should be based on the 'do nothing' alternative of remaining on fossil fuels.

In our opinion:
*Flexible system demand capacity*
Is the amount in MW of energy demand which is available to / capable of changing its demand consumption profile.

*Delivered flexible demand*
= (MWh of demand – calculated demand in a do-nothing scenario)/ calculated demand in a do-nothing scenario
Delivered flexible demand in a period of shortage will be a form of demand reduction.

Delivered flexible demand in a period of excess generation will be a form of demand increase.

**Question 5: What should be the areas of focus for demand flexibility?**

The area of focus should be on high impact, available technology which can be deployed rapidly and at large scale to help achieve 2025 and 2030 targets. This includes flexible loads such as electric boilers. Creating the correct signals and market mechanisms to facilitate electrical charging of thermal storage and long duration batteries should also be promoted.

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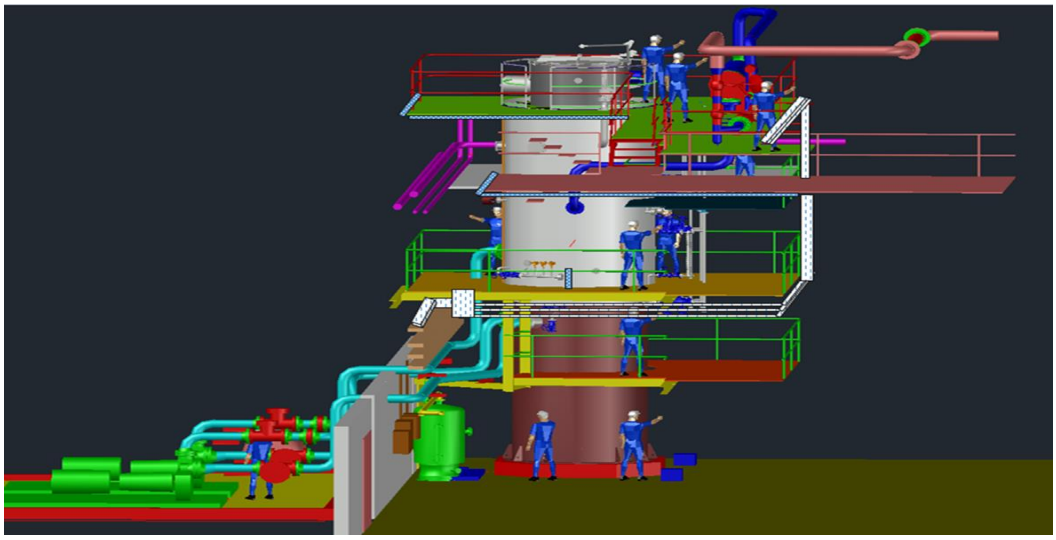


*Figure 1 3D model of 25MW flexible dispatchable electric boiler installed Mar 2023, designed to offset natural gas*

Aughinish continue to seek innovative ways to maximise cost efficiency whilst engaging strongly with the national decarbonisation policies. Aughinish is now in the final stages of commissioning a high temperature heat electric boiler, a first of its kind on the island of Ireland. The boiler will be operational from August 2023 and capable of delivering 40 tonnes of steam per hour from an electrical input of 25MW. The electric boiler can also provide zero carbon fast acting grid services in the case of frequency events.

Aughinish estimate the boiler will save an average of 10,000 tonnes of $CO_2$ per annum over the next 10 years, but due to current scheduling and dispatch software limitations as previously laid out, the unit will be excluded from Balancing Market operation. The utilisation of the boiler will operate only in unconstrained ExAnte markets. The TSO software will not be able to use it as a tool to integrate renewable generation in the constrained time frame. Without a price signalled market position, the boiler will remain off even in the event of localised wind or solar constraints in the South-West region. Not only does this potentially diminish domestic carbon reduction, it is also less cost effective for domestic consumers and the wind industry as PSO levied wind turbines are dispatched down.

With Government 2030 climate targets to be met in less than 7 years, Aughinish has continued to raise this issue at industry fora in an attempt to explore alternative dispatching methods.

The areas of focus which should be considered are:

- Scheduling and dispatch of flexible consumption
- Remove barriers to the constrained balancing market for flexible consumption
- Introduce well-designed network charges and tariff schemes for consumers who can follow the variable renewable delivery.
- Deliver non-firm grid import capacity to better utilises the existing grid which has an abundance of renewable power in times of high wind / peak solar.
- Focus on available technology which can address cumulative carbon emissions

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**Question 6: What are stakeholder's views on the attached ESBN document, 'Scenarios for 15-20% Flexible System Demand (DOC-120423-HRS)', which has been published as part of this four-document package?**

The document produced by ESBN echoes points made by Aughinish in previous consultations. Aughinish has supported incentivising domestic consumption in times of high renewable generation in Interconnection Consultations since 2019. It is now clear that curtailment of renewable power will reach unprecedented levels should demand side strategies not be put in place.

ESBN note the openness to investment of industrial sites and the expected interest in participation. However, the focus appears to be on shifting portions of demand to times of high renewables rather than the creation of new, flexible demand led by intermittent renewables in these periods. Aughinish believe there is space for both given the anticipated build out of new renewable generation. Aughinish's electric boiler is 25MW of new onsite demand that does not require production to be shifted. The boiler is essentially an add on to the existing site and would only be turned on when renewable power is plentiful.

Technologies such as these are essentially a hybrid delivery of heat, capable of switching from gas to electricity. Electric boilers on a flexible, dispatchable demand profile could follow real-time signals to consume power that would otherwise be wasted.

**Final observations**

The Energy Demand Strategy is a vital piece of work that Aughinish believe should encompass a wider scope in order to derive the optimum benefit. Large industry can achieve significant carbon reduction if the correct signals and strategies are in place. The current software limitations that are hampering the TSO from dispatching negative volumes should form part of the Energy Demand Strategy in order to expediate solutions. Delays to software upgrades are not only giving the incorrect investment signal to industry, but also putting more emphasis on carbon reduction later in the decade. As carbon abatement targets are cumulative, the work that could be done today will be delayed without innovative solutions. Fixed charges, such as the TUoS, should be realigned to the future renewable led system. Consumers of excess wind power should not be liable for the same TUoS charges as those whose demand continues to consume irrespective of renewable output. Energy markets are already pricing in a dynamic model and fixed charges should follow in the same direction.

Aughinish continue to support national decarbonisation efforts and are demonstrating this commitment with the installation of an innovative, island first high temperature heat electric boiler. Aughinish look forward to engaging further with the CRU on the points raised above and are available to provide further communication if required.

Yours sincerely,

David Quinlan
Energy Analyst

| AVAIO Digital Partners – Response to Review of Large Energy Users connection policy Call for Evidence 30.8.23 | |
|---|---|
| Question | Response |
| Q.1 Comments are invited from stakeholders on the proposed approach of decarbonising energy demand with a view to achieving net zero emissions from LEUs at time of connection. Please provide reasons and rationale for any views provided. | All new LEUs should be placed as close to areas of growing renewable energy generation as possible, in order to:<br><br>(i) Provide for proximal offtake to these assets with minimal grid augmentation,<br>(ii) Obviate the need to "spill" wind from generating assets at times of grid congestion, and<br>(iii) Allow for private wire/PPA arrangements that support the financing of new generation assets.<br><br>This policy would reflect National policy on balanced development and would help to deliver a more balance, robust and sustainable national grid. |
| Q.2 Comments are invited from respondents on the need for onsite generation and storage capability for LEU connections. Please provide reasons and rationale for any views provided. | A combination of on-site generation and storage are reasonable solutions to ensure grid-wide security of supply. The ratio of on-site storage to MIC, and/or the capacity in MWh of on-site storage, should be variable based on the amount of non-on-site generation proximal to the LEU. In other words, an LEU in an area with an oversupply of generation assets should not be obligated to provide 110% of its MIC. |
| Q.3 Comments are invited on the use of CPPAs for additionality of renewable generation outside of support schemes for decarbonising electricity consumption. What type of de-rating may be appropriate to reflect real-world performance of renewable generation during peak times? Please provide reasons and rationale for any views provided. | CPPAs increase the optionality that renewable energy generation project developers have to bring their projects online, thereby increasing additionality.<br><br>De-rating should be reflected in the terms of particular CPPAs with flexibility to reflect individual project circumstances.<br><br>Provided that the generation asset is meeting its regulatory and safety requirements, it is not clear why the reduction of delivered power under a CPPA should be the purview of the SOs. |
| Q.4 Based on preference that renewable electricity and /or gas contributes to Ireland's emissions targets and security of supply, do respondents have a view in relation to how electricity feeding into Irish system and renewable gas credits feeding into the Irish system could be tracked? | No comments |
| Q.5 Comments are invited from stakeholders on the use of renewable gas credits (feeding into the Irish natural gas system) in order to facilitate the connection of gas demand to the system. Please provide reasons and rationale for any views provided | Use of renewable gas credits is an efficient and transparent way for Ireland to better achieve its near-term climate goals in advance of the development of more robust bio-methane and hydrogen markets.<br>To the extent possible, the market for applicable credits should be defined, at least initially, as broadly |

| | |
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| | as possible to avoid the impact of a spike in regulatory-driven demand on a relatively small market. |
| Q.6 Comments are invited from respondents on enabling demand flexibility requirements as described above. Please provide reasons and rationale for any views provided. | For Datacentre LEUs, the potential for demand flexibility varies significantly with the use case.<br><br>For HPC or AI applications, a flexible model can in principle be commercially viable.<br><br>For more standard data processing/streaming commercial models, any flexibility will have to be more closely tied to self-generation or storage availability. |
| Q.7 Are there other sources of flexibility that can be provided? | No comments |
| Q.8 Comments are invited from respondents on the introduction of interruptible type supply contracts for gas connections. Please provide reasons and rationale for any views provided. | More information is needed as to the structure of such contracts. Given that LEUs can't island themselves to gas-fired generation, by definition the LEU demand for gas will be driven by the availability of grid power. If gas supply contracts are interrupted in order to provide gas to grid-level generation at times of grid constraint, the interruption to gas supply will coincide with the exact times that LEUs will need gas for self-generation. |
| Q.9 Comments are invited on real time zero carbon emissions, shifting of demand in real-time to times of high renewable energy availability. Please provide reasons and rationale for any views provided. | The most efficient way to maximize real-time zero carbon emissions is to co-locate LEUs with renewable power generation assets and linking them via private wire or CPPAs. |
| Q.10 Comments are invited from respondents on what they consider to be an appropriate definition of an LEU for electricity and gas for the purposes of this review. Please provide reasons and rationale for any views provided. | Connections to the transmission systems in either case. |
| Q.11 Comments are invited from respondents on whether this review should only apply to Extra Large Energy Users (XLEUs) in relation to electricity. Please provide reasons and rationale for any views provided. | It is important that the review process be moved forward as a matter of utmost urgency. If a separate review is contemplated for XLEUs in excess of 100MW it should not be allowed to further delay the resolution of the current situation which is inhibiting current projects and damaging future competitiveness. |
| Q.12 Comments are invited for gas LEU definition of those with a peak hourly demand greater than 50MW thermal input and a connection pressure of 16 barg or above. Please provide rationale for any views provided. | This seems to be a reasonable threshold for definition of a LEU |

| | |
|---|---|
| Q.13 Comments are invited from respondents on the treatment of 'islanded' LEUs. Please provide reasons and rationale for any views provided. | An LEU connected via private wire to a large renewable generation asset that has low or zero emissions backup power in the event of low wind/solar capacity, and no MIC, provides a solution that has minimal grid impact, provides additionality and the development of new generation assets to support the broader grid, and supports the zero-carbon renewable fuels markets (H2, HVO, biomethane). |
| Q.14 Should the connection of LEUs to the natural gas network focus on security and decarbonisation as per the Government Policy Statement on Security of Electricity Supply. Please provide reasons and rationale for any views provided. | The connection of LEUs to the GNI network supports the growth of a robust gas grid that future-proofs the Irish system for a time when hydrogen is available at scale and provides a zero-carbon, dispatchable solution that augments intermittent sources of renewable power. |

# Bitpower Response

30th August 2023

## CRU Call for Evidence – Review of Large Energy Users Connection Policy

To: electricityconnectionpolicy@cru.ie

### About Bitpower

Bitpower provide policy advice and support to the digital infrastructure industry in Ireland. We have been tracking data centre maturity metrics since 2017 and helping our clients to understand national energy and climate action policies. We work collaboratively with stakeholders across industry and government bodies and have published a number of both private and publicly available[1] reports on industry topology and digital infrastructure investment in Ireland.

### About Ireland's Digital Infrastructure

We have learned through our work that Ireland's economy is unique in winning technology investment at the scale it has achieved in recent years. One third of Ireland's exports now come from ICT services (€172 Bn in 2021[2]). The industry is made up of multiple types of entity from hyperscale to colocation and telcos. These entities offer a myriad of digital services which effectively make up *the cloud* we all use in our business and personal lives. Data centres and the international fibres that connect them are the physical manifestation of the internet. The government has identified the digital economy as a key pillar in decarbonising society.

### The Call for Evidence

Bitpower welcome the opportunity to respond to the *CRU Call for Evidence on the Review of Large Energy Users connection policy*. The purpose of the call for evidence paper is to seek views on potential assessment criteria which the System Operators (SOs) could use to assess Large Energy User (LEU) applications in the context of statutory national climate targets.

We recognise that Ireland's success in the digital infrastructure space has created a need for urgent direction from policymakers in terms of delivering power capacity, maintaining security of energy supply, and transitioning towards a sustainable future.

Policy signals have, however, appeared uncoordinated to date and have somewhat confused the market. For example, the 2021 Direction to System Operators placed a requirement for dispatchable generation of sufficient capacity to match MIC which has led large energy users to plan overly complex fossil-fuel-based energy systems. These entities now need to participate in the electricity market and effectively operate as energy utilities, which is not their core business. Policymakers must try to avoid unintended consequences when making utility policy.

If digitalisation and decarbonisation are key pillars of Ireland's future - as suggested in government statements - there needs to be constructive dialogue between policymakers, industry and system operators. Digitalisation is key to this for a number of reasons: (i) stable and predictable grid customers, (ii) renewable power purchase certainty backed by strong corporate credentials, and (iii) digitalisation enabling wider society to decarbonise.

[1] Bitpower reports: http://www.bitpower.ie/index.php/dashboard
[2] CSO **International Trade in Services 2021**: https://www.cso.ie/en/releasesandpublications/ep/p-its/internationaltradeinservices2021/

## Background Observations:

- Tech companies are the leading buyers of renewable energy in Europe and the world[3]. A prime example, according to Recharge News in November 2022: "*Microsoft announced the largest chunk of deals covering 900MW of wind and solar in Ireland to help power its data centre operations there. The multi-year agreements with Statkraft, Energia Group and Power Capital Renewable Energy will between them meet 30% of the Irish government's target for corporate PPAs by 2030, said the software group.*"
- Data centres attract over €1.5 bn of direct investment in the construction of data centres and associated power infrastructure in Ireland annually. They are a key part of Ireland's IT services industry, which generated €172 bn of exports in 2021[4], representing 33% of all Irish exports.
- Data centre developers operating in Ireland are also active in other parts of the EU and the EMEA region. Investment in data centres and the associated digital ecosystem will land where policy certainty is clearest. Irish energy policy uncertainty could drive investment from Ireland to other EU countries and the UK.
- The transition to sustainable energy requires the development of large-scale renewable energy projects. Without demand certainty, ambitious renewable energy projects will struggle to secure long-term investment.
- The electricity grid needs predictable and stable baseload demand in order to better manage the transition to a sustainable future. LEUs, and data centres in particular, represent stable and predictable base load demand. The Climate Action Plan goals of 8GW of new wind and solar cannot be achieved without large baseload.
- The services hosted in data centres are diverse. The centres provide secure and reliable infrastructure in which to host data and make it accessible through fibre international optic networks. The centres don't own the data which should be considered distinct from the data centre.

## Comments on specific Questions

### Decarbonisation of energy demand

**Q 1. Comments are invited from stakeholders on the proposed approach of decarbonising energy demand with a view to achieving net zero emissions from LEUs at time of connection. Please provide reasons and rationale for any views provided.**

The concept that LEUs seeking connections to the electrical and or gas systems would achieve **net zero emissions at the time of connection** is practically unworkable. The mechanisms to pre-purchase them are not mature enough to allow this condition to be met. This approach would also place unnecessary strain on the existing state mechanisms such as RESS.

LEUs cannot forward-sign power purchase contracts with renewable energy developers without certainty on timing and clarity on utility connections.

A shift to a more sustainable energy system will require a **transition period**. Complex interactions between supply and demand will take time to mature. The data industry can play an active part of this transition.

Determining and demonstrating net-zero will require the gathering and analysis of multiple datasets from different systems (grid, gas, renewables, on-site flexibility etc). The target of achieving net zero in Scope I and II emissions could provide a catalyst for such utility-linked systems to develop in time.

[3] https://www.rechargenews.com/energy-transition/microsoft-google-and-renault-in-gigascale-corporate-green-power-deal-bonanza-on-land-and-sea/2-1-1360719
[4] CSO Data: https://www.cso.ie/en/releasesandpublications/ep/p-its/internationaltradeinservices2021/

**Q 2. Comments are invited from respondents on the need for onsite generation and storage capability for LEU connections. Please provide reasons and rationale for any views provided.**

On site generation - Current CRU/EirGrid policy requires matching import capacity. i.e. double the size (+de-rating). Plus complexities of participating in the electricity market (T-4 auction timelines etc.). The current policy is not well designed.

If on-site generation is required in order to provide system base-load then we have a situation where large energy users are effectively delivering (replacing) the traditional base load (Coal & peat). Base generation is required by the system but is the most carbon intensive.

On-site renewable generation does not represent the optimum use of land or energy resources. Power densities and demand profiles are not necessarily complimentary. It would be preferrable to fine-tune the cPPA market mechanisms to allow system-wide deployment of renewables.

Legislating for **private wire networks** would allow large projects to develop renewable energy projects of appropriate scale in reasonable proximity to demand. These networks, or microgrids, once matured could in future merge with and support the grid. We welcome the recent launch of DECCs public consultation on private wire networks.

**Q 3. Comments are invited on the use of CPPAs for additionality of renewable generation outside of support schemes for decarbonising electricity consumption. What type of de-rating may be appropriate to reflect real-world performance of renewable generation during peak times. Please provide reasons and rationale for any views provided.**

New connections to the grid should be required to match their demand with an equivalent amount of additional renewable generation on the grid. How this is ramped against development timelines would require some new accounting mechanism.

Corporate power purchase agreement **(PPA) de-rating** – Suggest avoiding the terminology of "de-rating" as this term is also used for generators joining the electricity market. Given the relatively small size of Ireland's grid, de-rating is a complex arrangement for limited net gain. Maybe a blanket percentage uplift (with geographical regions and pre-defined time slots) in the amount of CPPA matching would provide a workable solution?

## Demand flexibility

**Q 6. Comments are invited from respondents on enabling demand flexibility requirements as described above. Please provide reasons and rationale for any views provided.**

It would be useful to detail the types of flexibility required to achieve specific system objectives. We would like to better understand the types of flexibility required to achieve specific system objectives – quantity (kWh, MWh) and duration (seconds, minutes, hours, days, weeks)? How will these requirements vary over time and geographically? – will the effect of flexibility be quantified and fine-tuned to match the transition?

The opportunity for flexible demand varies with the type of LEU. A batch-type process may lend itself to flexibility easily, where a data centre operates mostly a flat load profile. The electricity grid still needs flat predictable and stable baseload demand in order to grow with increased renewable penetration.

Whilst data centres can operate somewhat flexibly, the vast majority can only achieve this on the utility side of their operations. The data, or IT power load, remains part of wider cloud service, which is decoupled from the data centre operator's control. Flexibility also gets significantly more expensive and less optimum as it increases.

**Q 7. Are there other sources of flexibility that can be provided?**

Policy must avoid over-simplification of flexibility as a matter of ramping down consumption or ramping up storage, and rather the result of the most effective deployment of generation (including non-renewable where required), storage and demand.

Flexibility could be further incentivised by creating a carbon accounting mechanism to give **carbon credit** back to large energy users who deliver flexibility. Financial incentives are of limited value to data centres as their customer SLAs are based on power availability.

Introduction of flexible demand which includes both downward and upward (e.g. recharging batteries) flexibility is important.

The ability to 'turn down' onsite energy consumption such as cooling systems is restricted by the physical operating characteristics of systems. Instead, the deployment of behind the meter technologies to deliver flexible demand at the point of connection is recommended.

Demand flexibility must be achieved whilst maintaining resilience, reliability and economic efficiency. Microgrid systems can help to allow operation in the most effective mode having regard to grid system requirements, onsite demand requirements, emissions intensity and a host of other operational, environmental and commercial metrics.

## Interruptible contracts for gas connections

**Q 8. Comments are invited from respondents on the introduction of interruptible type supply contracts for gas connections. Please provide reasons and rationale for any views provided.**

It is unclear what problem **interruptible gas supplies** are intended to solve. GNI design every new demand connection to not overburden the network infrastructure even in a 1 in 50 year worst-case scenario. The concept of interruptible gas supplies overlaps with the natural gas emergency plan[5] already under the remit of GNI.

LEUs building gas-powered generation facilities *must* have certainty of gas availability in normal circumstances otherwise the commercial viability of such projects is compromised.

## Real time zero carbon emissions

**Q 9. Comments are invited on real time zero carbon emissions, shifting of demand in real- time to times of high renewable energy availability. Please provide reasons and rationale for any views provided.**

Most hyperscale data centre operators can demonstrate global annual net zero emissions. According to the International Energy Agency – "Amazon, Microsoft, Meta and Google are the four largest purchasers of corporate renewable energy PPAs, having contracted almost 50 GW to date, equal to the generation capacity of Sweden. Apple (2.8 TWh), Google (18.3 TWh), Meta (9.4 TWh) and Microsoft (13 TWh) purchased or generated enough renewable electricity to **match 100% of their operational electricity consumption in 2021** (primarily in data centres). Amazon consumed 30.9 TWh (85% renewable) across their operations in 2021, with a goal of achieving 100% renewables by 2025."[6]

There is currently no national requirement for LEUs to demonstrate even annual net zero emissions for Ireland. Moving to real-time would represent an unachievable a quantum leap.

Ireland should first require LEUs to demonstrate *annual* procurement of *additional Irish* renewables to match their annual demand in Ireland. Once that mechanism is properly accounted for, annual accounting could shift to monthly accounting, then daily, and so on over a number of years of operation.

Connections policy is not the appropriate mechanism to achieve real-time net zero.

[5] NGEP: https://www.gasnetworks.ie/docs/corporate/company/natural-gas-emergency-plan.pdf
[6] IEA Digitalisation: https://www.iea.org/energy-system/buildings/data-centres-and-data-transmission-networks#tracking

## Definition of an LEU

**Q 10. Comments are invited from respondents on what they consider to be an appropriate definition of an LEU for electricity and gas for the purposes of this review. Please provide reasons and rationale for any views provided.**

Classification of energy users should be based on the cost of building and operating each utility system. A single definition of LEUs across gas and electricity utilities is not achievable in our view. We are not aware of any international examples.

It would be appropriate to allocate the cost of developing and operating the electricity grid and gas systems to end users based on their demand characteristics, and how such characteristics benefit the grid. For example, flat profile, stable, and predictable baseload has a benefit in achieving higher renewable penetration. This should be based on kWh and time impact rather than MIC (MW).

It is not obvious how such classes could be fairly defined to match the evolving lifecycle / phasing of projects. LEUs operate under differing business models and classification by energy demand might be open to manipulation.

**Q 11. Comments are invited from respondents on whether this review should only apply to Extra Large Energy Users (XLEUs) in relation to electricity. Please provide reasons and rationale for any views provided.**

Distribution-connected LEUs should be excluded from any new requirements. This would help to ensure that colocation and telco data centres, which mostly service local needs, have a fair opportunity to develop and continue the migration out of on-premise IT equipment, with the inherent efficiency gain.

Transmission-connected digital infrastructure should be embraced as part of the national energy system and enabled to support overall system decarbonisation.

**Q 12 Comments are invited for gas LEU definition of those with a peak hourly demand greater than 50MW thermal input and a connection pressure of 16 barg or above. Please provide rationale for any views provided.**

Gas Networks Ireland defines large energy users in terms of capacity and delivery pressure. Categories are Daily Metered (DM), Large Daily Metered (LDM), Non-Daily Metered (NDM). These definitions are relatively immaterial to data centre developments, but have an impact on how gas is procured (transmission versus distribution connected customers).

Generation facilities above certain thresholds also must meet environmental license conditions imposed by the EPA. The license conditions should remain the sole appropriate mechanisms to be used in achieving the objectives of sustainability.

## Islanded Connections on the Gas Network

**Q 13. Comments are invited from respondents on the treatment of 'islanded' LEUs. Please provide reasons and rationale for any views provided.**

Large energy users are committed to corporate sustainability. Most data centre-related emissions are counted as their customers' Scope 3 emissions. It is in the interest of large energy users to minimise their emissions. There are no exceptions to this.

CRU Direction to System Operators, December 2021 stated, for grid connections: *"The ability of the data centre applicant to bring onsite dispatchable generation (and/or storage) equivalent to or greater than their demand, which meets appropriate availability and other technical requirements as may be specified by the relevant SO, in order to support security of supply."*

A number of data centre developments with live applications with EirGrid began to develop dispatchable generation plans. To be dispatchable, i.e. "always available" - gas is required. Many of these projects were subsequently refused grid connections based on the CRU direction. The complexity introduced (e.g. capacity market) made it very difficult to align their plans with these new conditions in a timely manner. This **unintended consequence** created "islanded" LEUs.

If grid capacity becomes available then "islanded" LEUs can use their generation assets to support the electricity grid. This might also reduce the need to develop other large dispatchable generation assets and enhance security of electricity supply.

**Q 14. Should the connection of LEUs to the natural gas network focus on security and decarbonisation as per the Government Policy Statement on Security of Electricity Supply. Please provide reasons and rationale for any views provided.**

On-site generation of electricity using natural gas represents an opportunity to use waste heat from generation. CHP systems have large amounts of high-grade heat that, if collected, could provide a solution to decarbonisation of heating. CHP can be as efficient as the grid if demand for heat is sufficient. District heating networks of scale would allow this.

LEUs can help with decarbonisation of heat if appropriate mechanisms are put in place. A transition phase would be welcome to allow heating networks to develop.

LEUs will no doubt form an important part of the market for biomethane and green hydrogen. However, the **biomethane** market is not sufficiently mature to deliver the quantities of gas envisaged if LEUs were required to build on-site dispatchable generation. The government target of 5.7 TWh by 2030 is ambitious but a pipeline of shovel-ready projects is yet to be fully realised.

## General questions

**Q 15. Please suggest any alternative approaches not captured above that could help in meeting the challenges outlined.**

Progressing with legislation for private wire and micro-grids to enable acceleration of renewables with LEUs outside of state-funded projects. We welcome DECC consultation on private wire connections.

Deployment of district heating networks of significant scale.

Simplify the mechanisms for grid interaction, and streamline grid application processes to align with decarbonisation objectives.

**Q 16. Should provisions apply to all LEUs connections, or are there are any exceptions that should apply? Please provide reasons and rationale for any views provided.**

Connections policy should be based on cost of service. It would be appropriate to allocate the cost of developing and operating the electricity grid and gas systems to end users based on their demand characteristics, and how such characteristics benefit the grid. For example, flat profile, stable, and predictable baseload has a benefit in achieving higher renewable penetration. This should be based on kWh and time impact rather than MIC (MW).

**Q 17. Please suggest any incentives which could be applied to new LEU connections in facilitating some of the measures described above. Please provide reasons and rationale for any views provided**.

Incentivise flexibility by creating a carbon accounting credit.

Engage constructively with large energy users through workshops and industry forums.

Promote collaboration between state bodies with responsibility for achieving climate goals including EirGrid, Gas Networks Ireland, the Environmental Protection Agency, and Local Authorities.

Bloomenergy

***Bloom Energy: Response to the CRU's consultation on the Review of Large Energy Users Connection Policy***

**30 August 2023**

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

**Email to:**

Dear Sir/Madam

**Response to CRU's consultation on the Review of Large Energy Users Connection Policy**

We appreciate the opportunity to respond to the CRU's review of Large Energy Users ("**LEU**") connection policy, in respect of which it published a Call for Evidence Paper on 21 June 2023. The stated aim of the review is to provide a pathway for new LEU connections to the electricity and gas systems which minimises the impact on national carbon emissions. We understand that the intended outcome of the review is to inform a CRU decision that will apply to all new relevant connection applications from the date of its publication.

In the sections below, we outline our response to the following questions asked by the CRU in the consultation document:

Question 1 Comments are invited from stakeholders on the proposed approach of decarbonising energy demand with a view to achieving net zero emissions from LEUs at time of connection. Please provide reasons and rationale for any views provided.

Question 15 Please suggest any alternative approaches not captured above that could help in meeting the challenges outlined.

We agree with the majority of the CRU's assessments in the Call for Evidence Paper. However, our response raises several key issues:

1. In any policy brought forward as a result of this review, the CRU is required by law to uphold the principle of non-discrimination.

2. Any policy brought forward should focus on achieving as low emissions as possible rather than net zero at this stage, as current emissions will dwell in the atmosphere for decades, rather than delay reductions until it becomes more feasible to produce net zero emissions.

3. Considerations as to the environmental impact of a new LEU development are important but should be carried out by the appropriate authorities at the appropriate stage of the development.

4. An alternative approach of using a solid oxide fuel cell ("**SOFC**") that can generate electricity using either hydrogen or hydrocarbons should be expressly allowed, as this would result in lower emissions and more efficient solutions than currently used methods of electricity generation.

We look forward to engaging further with the CRU on these matters and the implementation of the regime.

Yours sincerely

Bloom Energy

***Question 1: Comments are invited from stakeholders on the proposed approach of decarbonising energy demand with a view to achieving net zero emissions from LEUs at time of connection. Please provide reasons and rationale for any views provided.***

Reducing greenhouse gas emissions is integral to achieving Ireland's decarbonisation goals and should be promoted, with an emphasis on reducing near-term emissions using available technologies. The CRU's Call for Evidence Paper sets out the possibility of requiring prospective LEUs seeking connections to the electricity or natural gas grid to achieve net zero emissions at the time of connection. If implemented, this would be a mandatory requirement, applying only to LEUs.

Rather than focusing on a net zero approach via connection policy, which would delay interim reductions and the best overall protection of both the environment and the economy, we suggest the overriding aim of the CRU should be to achieve net zero by promoting flexibility such that LEUs can bring together different solutions to minimise emissions, in compliance with its statutory functions and obligations. A focus on carbon intensity that takes place at an earlier stage in the project lifecycle (i.e., in the planning process), rather than at the time of the connection agreement/policy, would achieve the best results.

In any event, in order to promote the use of low carbon solutions amongst LEUs, the CRU is obligated to comply with legal prohibition against discrimination, and therefore should not:

1. make any decision which prevents, or significantly impedes (now or in the future), the carrying out of business from key sectors of the economy; or

2. take any action that is contrary to its obligation to act in a non-discriminatory manner as between different classes of energy users.

The CRU can achieve its intent of reducing GHG emissions in the most effective way, and fully comply with these legal obligations. Imposing a policy of net zero in order to make a connection offer to a LEU development would unnecessarily and inadvisably conflict with these aims and obligations. Bloom Energy welcomes this opportunity through this response to give an overview to the CRU of its SOFC technology which can play a crucial role in assisting Ireland in achieving its decarbonisation aims without impeding growth within specific sectors of the economy and without discriminating against a particular type of energy user.

*The requirement to achieve net zero*

Bloom Energy acknowledges the introduction of sectoral emissions ceilings and the requirement to give consideration to the connection of demand in a way that does not result in unnecessary additional emissions. Key to achieving these goals and protecting the climate, however, is consideration of the value of reducing emissions that will dwell in the atmosphere for decades now, rather than postponing reductions in favour of future zero emissions technologies in the future.

We understand that net zero may be demonstrated, as at the date of the connection, through onsite renewable generation (and if dispatchable generation is required, the use of renewable gas), onsite storage being sourced from renewable sources, corporate PPAs and otherwise. However, the aim of the CRU in this regard should be to promote flexibility to put together solutions which minimise emissions rather than imposing an obligation on a certain class of energy users, LEUs, to achieve net zero in circumstances where this is discriminating against one class of users over others and may result in a significant class of users (requiring onsite dispatchable generation) being unable to connect to either the electricity or gas grids. For example, the Bloom Energy server can capture 100% of the CO2 produced and can sequester it or use it in industry (i.e., it can be 100% used). Bloom Energy's technology uses 20% less gas than traditional generation systems and is 90% efficient when used in Combined Heat and Power ("**CHP**") configurations. A traditional generator cannot do this. This is the type of solution that

can significantly contribute to lower overall emissions and does not require a strict net zero policy at the point of connection.

In practical terms, requiring LEUs to achieve net zero emissions at the point of connection may be outside of the control of the LEU in question. There currently exists a moratorium on private wire connections under Irish law meaning building onsite renewable generators to operate off-grid is not legally possible. Bringing a large volume of renewable generation onto the electricity grid to offset data centre development is dependent on system reinforcement works being carried out by EirGrid to enable such required levels of renewables generation – which is outside of the control of LEUs.

The CRU's focus should, instead, be to promote (and incentivise) a variety of low- or reduced-carbon solutions in order to reduce emissions, emphasizing the greatest near-term reduction of emissions. Furthermore, any policy which is ultimately carried forward as a result of this Call for Evidence Paper must accord with the principle of non-discrimination as is required by law. Article 3 of the Internal Market in Electricity (IME) Regulation (EU) 2019/943 requires that "*Member States, Regulatory Authorities, TSOs, DSOs, MOs and delegated operators shall ensure that electricity markets are operated in accordance with certain principles including: …. market participants shall have a right to obtain access to the transmission networks and distribution networks on objective, transparent and non-discriminatory terms.*" (emphasis added). This provision is directly applicable under Irish law. Thus, to impose a requirement on LEUs to achieve net zero at the point of connection, and not to impose this obligation on other classes of user, is in breach of the requirements of Article 3 of the IME Regulation.

In respect of gas connections, Directive 2009/73/EC on the Internal Market in Natural Gas equally prevents access being withheld save in certain limited circumstances. Article 32(1) of the Directive provides that "*Member States shall ensure the implementation of a system of third party access to the transmission and distribution system, and LNG facilities based on published tariffs, applicable to all eligible customers, including supply undertakings, and applied objectively and without discrimination between system users.*"

LEUs in sectors such as manufacturing, logistics, data centres, digital technology, and pharmaceuticals play a critical role in the Irish economy. Maintaining economic growth and prosperity within critical sectors of the economy while achieving decarbonisation aims are both critical objectives. In formulating any policies, is imperative that the CRU does not discriminate against a particular class of energy user, especially one so integral to economic growth. To do so would clearly contravene its legal obligations pursuant to EU law.

*Carbon intensity to be addressed at an earlier stage in the project lifecycle*

Bloom Energy wishes to respond, briefly, to the proposed interim requirements set out in the Call for Evidence Paper (the "**Interim Requirements**"). The Interim Requirements seek to require system operators ("**SOs**") to have regard to the expected emissions profile of facilities and to give due consideration to same when determining connection applications. However, these Interim Requirements are not appropriate given the current obligation of other statutory bodies to make such determinations during the planning stages of an LEU development. These considerations have already been considered by other consenting bodies in the consenting chain when determining whether the project requiring the connection agreement should proceed or not, namely, An Bord Pleanála ("**ABP**") and the Environmental Protection Agency ("**EPA**").

The fundamental decision to permit the construction and operation of an LEU has already been made by ABP, the body which has been specifically imbued with the statutory function of determining whether projects should be consented. ABP is the expert body qualified to determine whether a particular project is in accordance with proper planning and sustainable development, and it is obliged to exercise its consenting function in compliance with section 15 of the Climate Action and Low Carbon Development Acts 2015-2021 (the "**Climate Acts**").

The EPA is responsible for licencing the emissions of the LEU and is the statutory body assigned the function of protecting the environment in its totality, is the statutory body specifically imbued with the function of licensing emissions, and is obliged to exercise its consenting function in compliance with section 15 of the Climate Acts.

In circumstances where ABP and the EPA are specifically tasked with ensuring that the Climate Acts are complied with, and with carrying out a full assessment of emissions and other environmental considerations at the planning stage, it is not appropriate for the CRU to direct SOs to further take emissions into consideration as part of the connection policy, given the reviews which have already taken place by that stage and the practical inability to make significant changes after those reviews have been completed.

*Ceasing to facilitate gas connections for LEUs*

The Call for Evidence Paper provides information on a letter sent by the Minister for Environment, Communications and Climate to Gas Networks Ireland ("**GNI**") on 29 July 2022 highlighting that it would not be appropriate for GNI to sign any more contracts to connect data centres to the gas network where the data centre would be powered mainly by onsite fossil fuel generation.

Aside from not being in compliance with the law as set out above, ceasing to facilitate gas connections for LEUs (including for 'islanded' LEUs) is neither required by law nor advisable, as it would not have the desired effect of improving near-term or overall atmospheric emissions reductions. Bloom Energy makes a solid oxide fuel cell ("**SOFC**") that can generate electricity using either hydrogen or hydrocarbons, as we explain further in our response below. If using hydrogen to generate the electricity, the net emissions are zero. However, as there are insufficient levels of hydrogen currently available in Ireland, the status quo is to use hydrocarbons to generate the electricity which results in far **lower emissions** than if using natural gas or relying on system power. As GHG emissions dwell in the atmosphere for decades, reductions in actual emissions now and through the near-term are more protective of the climate than future reductions can possibly be. Therefore, there is an alternative option for LEUs to be granted gas connections as usual but to be producing overall less emissions with a view to achieving net zero emissions once hydrogen is more readily available.

A strict approach to denying LEUs such connection rights is therefore (i) not lawful and (ii) neither necessary nor well-tailored in order to meet the CRU's objectives of lowering emissions and ultimately reaching net zero emissions.

***Question 15: Please suggest any alternative approaches not captured above that could help in meeting the challenges outlined.***

An alternative approach that is not captured in the Call for Evidence Paper is the use of SOFC technology. Bloom Energy wishes to draw the CRU's attention to the viable and significant role that such technology can play in decarbonising energy demand with a view, over the longer term, to achieving net zero emissions for onsite power generation facilities.

Bloom Energy's SOFC technology has been available in the US market since 2015 and more recently in the European market and is commercially sold to allow corporations produce combustion-free base power from various fuel sources through the use of the Bloom Energy "energy server" which deploys the SOFC technology. In the US, Bloom Energy's clean energy servers are currently used by many major multi-national corporations including large companies such as Walmart, FedEx, SoftBank, Panasonic, Google, Medtronic, and others, as well as by medical centres, food distribution, and other critical uses that rely on uninterrupted, highly reliable and resilient power. By incorporating the SOFC technology into the approach taken by Ireland in meeting the challenges outlined in the Call for Evidence Paper, the CRU could better meet its objectives of reducing emissions whilst maintaining coordination between gas and electricity networks.

As noted above under our response to question 1, the CRU would more effectively achieve its goals if any approach taken focuses on achieving lower emissions and more efficient solutions rather than mandating net zero emissions at the current stage when hydrogen is not readily available. In reality, any new net zero development would use carbon in the infrastructure required to be built, and so would not in effect be truly "net zero". In contrast, by allowing SOFC technology to be used today as a gas solution, lower emissions would be produced than by using traditional methods and no new infrastructure would be required to be built as Bloom Energy uses medium pressure gas mains. As hydrogen becomes more and more available the emissions from such electricity generation would continue to decrease until eventually reaching "net zero".

*How the SOFC technology works*

The energy server that deploys Bloom Energy's SOFC technology is a distributed power generation platform that provides always-on power that is scalable and with 99.998% reliability. Bloom Energy's SOFC technology is comprised of a type of fuel cell that electrochemically converts hydrogen – whether in pure form, or contained within clean hydrocarbon fuels, into electricity, heat, and water, resulting in both high efficiency and low emissions.

Today, Bloom Energy's energy servers can utilise any of the available gas fuels in Ireland. The energy server has a base product that is optimised to run on natural gas (usings team reformation to extract hydrogen from it for conversion to electricity). This non-combustion process converts natural gas to electricity in a highly efficient manner, with significantly lower greenhouse gases and virtually none of the local air pollutants that harm human health and the environment, such as Nitrogen Oxides (NOx) , Sulfur Oxides (SOx) and Particulate Matter (PM), as noted below. The SOFC technology of the energy server consists of hydrogen fuel cells, so Bloom Energy removes the steam reformation process when 100% hydrogen is available for operation. The energy server can also run on biogas and other green fuels, such as ammonia. In this way, the energy server promotes a coordinated approach between the gas available today and the gas available in the future. By utilising clean fuels, the SOFC technology aligns with the CRU's goal of ensuring that new gas connections do not lead to an increase in emissions.

*High efficiency*

The Bloom Energy server product has high electrical efficiency (above 64%) and can reach above 90% efficiencies when used in CHP configurations. Using natural gas today through a non-combustion process, the Bloom Energy server uses 30% less gas than any gas combustion technology and has more than 35% higher efficiency on delivering electricity. By operating in such CHP or trigeneration mode, the energy server can simultaneously produce electricity and useful heat. This makes the use of the energy servers highly efficient in sectors like industrial processes, commercial buildings and district heating systems, where both electricity and heat demands exist.

*Lower emissions*

In addition to being a highly efficient solution, the SOFC technology is combustion free, and therefore has near-zero emissions of NOx, SOx or PM that are a major threat to local air quality, human health and the environment. By using hydrogen or clean hydrocarbon fuels, such as biogas or synthetic natural gas produced from renewable sources, the energy server generates combustion-free electricity with extremely low emissions, reducing the carbon footprint of the producer. In the case of synthetic natural gas, Bloom Energy's projects at agricultural facilities have demonstrated record-low emissions for any fuel-using electric generation technology. Due to the current lack of availability of a hydrogen economy in Ireland, it is more likely that Bloom Energy's customers would currently use clean hydrocarbons in order to produce the electricity and heat, which although may not result in net zero emissions, demonstrably produces much less emissions than traditional electricity combustion generation methods. As hydrogen or other clean fuels become increasingly important as a clean energy carrier, Bloom Energy's SOFC technology can readily make use of them. This establishes Bloom Energy's fuel cells

as a key "bridge" technology, which can significantly contribute to the development of a hydrogen economy in Ireland. Hydrogen and other clean fuels like ammonia produced from renewable sources can be used with the Bloom Energy server to generate truly green (i.e., net zero) electricity, which clearly aligns with the CRU's objectives.

As Ireland works to transition to reach net zero emissions by 2050, the SOFC technology can assist in providing a solution with lower emissions than other more commonly used solutions until reaching that point of providing net zero emissions through the use of hydrogen and other clean fuels. Once hydrogen becomes more readily available, Bloom Energy's fuel cells can easily be converted from natural gas to hydrogen with minimal adjustments. We therefore believe that such technology can play a vital role in meeting the CRU's goal of delivering a secure, sustainable and low carbon solution whilst actively working towards Ireland's commitment to reach net zero emissions by 2050.

*Additional benefits*

Other useful aspects of the Bloom Energy server are as follows:

(a) The Bloom Energy server can capture 100% of the CO2 produced and can sequester it or use it in industry (i.e., it can be 100% used). As a non-combustion technology, capture of CO2 is less complex, less expensive and more easily implementable than for combustion technologies, which produce emissions mixed with other contaminants such as NOx, SOx and PM. A traditional generator cannot match this capability.

(b) As noted above, the Bloom Energy server produces virtually no local air pollutants, protecting human health and the environment, and in stark contrast to backup generation methods such as diesel or combustion natural gas generators.

(c) The Bloom Energy server can form part of an overall distributed energy resource, and provide waste heat for district heating systems etc. This heat from the energy server reaction (above 350°) can be used for municipal buildings and district heating networks, as well as for onsite heating, cooling and commercial or industrial needs. The energy server is compatible with various heat recovery systems including but not limited to heat exchangers and absorption chillers. Using the energy server as distributed generation can enhance grid stability, providing a base power source by reducing transmission losses and mitigating the challenges associated with integrating intermittent renewable energy sources into the grid.

(d) The Bloom Energy server can be deployed as decentralised energy solutions, reducing the need for large, centralised power plants and long-distance electricity transmission. This approach can enhance energy security and resilience in the face of disruptions to the central grid. With two large manufacturing facilities with proven supply chain and no reliance on precious metals, the energy server can be deployed in months in lieu of years for a quick time to power solution.

(e) Bloom Energy's SOFC technology can provide grid flexibility by modulating its output based on electricity demand or renewable energy availability. The energy server can work in parallel with the utility in grid following mode or independently from the grid in grid forming applications. The energy server is compatible and can work alongside both utility and other distributed energy sources.

(f) Additionally, surplus electricity can be used to produce hydrogen through electrolysis, effectively storing energy for later use or for fuelling other applications like fuel cell vehicles.

*Conclusion*

Overall, the Bloom Energy server and the SOFC technology presents a viable and versatile option to fulfil the CRU's request for alternative generation options that align with the emissions reduction goals while maintaining coordination between gas and electricity networks. Although it is not currently "net zero" emissions, it offers a unique "bridge" solution - significantly reducing emissions now and providing a seamless transition to net zero fuels in the future, when they become available. As noted above, it is also essential to consider the overall lifecycle impact, including the source of the fuels used, to ensure that any new technology contributes positively to Ireland's sustainable energy future. By having lower emissions than current generation methods, and by enabling a realistic route to achieving net zero emissions once hydrogen is more readily available, the use of SOFC technology should be considered by the CRU as a key bridge, offering an important and valuable alternative approach to meeting Ireland's climate targets.

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**August 29th, 2023**

**RE: CRU202358 Incentivising the Uptake of Time of Use Tariffs**

We would like to thank you for allowing us to provide our feedback and present our views on the consultation paper *CRU202358 Incentivising the Uptake of Time of Use Tariffs* published on June 21st, 2023.

bonkers.ie believe that establishing a criteria for incentivising consumers to switch to time-of-use tariffs is of paramount importance to the domestic electricity market, and we are happy to be given a platform to express our own views on how such criteria could work.

As an ever increasing number of smart meters continue to be rolled out across the country, and in the context of the cost-of-living crisis, it has never been more important to establish an approved methodology on how to best demonstrate to consumers the potential value of switching to a time-of-use tariff, and the potential savings on a cost of consumption.

Price Comparison Websites (PCWs) are in a unique position to best help consumers understand these potential values by providing a way of comparing the different time-of-use tariffs that are available in addition to standard legacy tariffs. As such, having a clear and consistent framework to help PCWs demonstrate the potential costs or savings that are achievable by taking advantage of time-of-use tariffs will be of great value to both consumers and providers, and will serve to deliver guidance into the future as tariff innovation continues to evolve.

In response to the questions presented in the consultation paper *CRU202358 Incentivising the Uptake of Time of Use Tariffs,* please see our responses below.

We look forward to receiving any feedback, and to continuing to support CRU and all licensed suppliers in delivering a functioning, transparent and optimised consumer market for retail electricity in Ireland.

Regards,


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# Answer Section

### 2.1. Accreditation Framework Price Comparison Websites

***Question 1: The CRU is proposing to amend the PCW accreditation framework to allow consumers to upload their smart meter data (obtained as a HDF via the ESBN Customer Portal) to receive a price comparison based on their actual historical electricity consumption.***

***Do you agree with this approach? If not, why not?***

bonkers.ie holds the opinion that the PCW accreditation framework should be amended to allow consumers to upload their smart meter data to receive a price comparison based on their own actual historical electricity consumption.

Since the value of this data can vary, this should be an optional feature for consumers who wish to complete a comparison using their own data file. For consumers who do not yet have sufficient data or access to their files, average usage figures based on the latest ESBN smart meter load profiles could be used to deliver an approximation using national average values.

If the usage data that is provided in the HDF file is only partially complete, and shows a consumption that is likely to differ from the average usage described in the ESBN load profiles, then the values used to populate the missing data should be adjusted accordingly.

The inclusion of an upload feature should be a mandatory requirement for any PCW accredited by the CRU to ensure a consistent approach across comparison websites with regard to the calculations used for comparing time of use tariffs.

It is important to note however that any upload of an historic HDF file would only be useful in describing the historic consumption pattern of the customer, and accordingly suitable warning messages should be incorporated into any results set delivered so as to warn the customer that the future consumption may differ substantially; this is especially true for customers who have acquired an electric vehicle which is charged at home, as the consumption of that vehicle is likely to increase the overall consumption of the household by 70% (for the given average household consumption of 4,200kWh per annum, and the calculated average annual consumption of an EV of 2,912kWh).

#### 2.1.1. Considerations

**<u>Time period</u>**

***Question 2: The CRU is proposing not to put any restrictions on the minimum period of time that needs to be contained in smart meter consumption data that consumers can upload to the PCW. However, we propose that a warning message be included where consumers have included less than a year of data. Do you agree with this approach? If not, why not?***

In cases where the time period of the data provided is less than 1-year, default averages based on ESBN load profiles could be used to populate the missing time periods.



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Highlighting this to consumers will be a requirement and bonkers.ie is in agreement with the CRU on the proposed message on comparison results pages stating the following: *"The more data we have the better our price comparison results. As you have provided less than one year of data, our results may not reflect your consumption pattern throughout the year."*

Where the data provided shows a consumption pattern that is likely to differ from ESBN load profile averages, the missing data that is populated should be adjusted to conform with this pattern.

***Question 3: Is there anything else CRU should consider with regard to this matter?***

bonkers.ie believes that an alternative approach should also be considered which provides users with simple usage profile options. These profiles could be based on different household types that consider the number of occupants, the household type, Electric Vehicle, and Commuter/Work from Home lifestyle.

These usage profiles would allow users who are unsure of their annual consumption or have recently changed their usage behaviour which is not reflected in their previous consumption patterns, to easily select a profile they feel best describes their own lifestyle.

**Missing data**

***Question 4: In case a consumer submits a HDF containing periods of missing data, the CRU is proposing that the PCW takes the following actions:***

***• If the missing data accounts for less than 1% of the total dataset: the PCW must use the most recent ESBN load profile and calculate an estimate for the consumption during the missing period.***

***• If the missing data accounts for 1% or more of the total dataset: the PCW must inform the consumer that there is missing data, include the percentage of missing data, and ask if they wish to continue with the price comparison using an estimate for the missing data, as outlined above.***

***Do you agree with this approach? If not, why not?***

As mentioned previously, bonkers.ie is in agreement with the CRU regarding how best to handle HDF files with periods of missing data.

In cases where the missing data accounts for less than 1% of the total, the comparison should proceed by using the most recent ESBN load profile to calculate an estimate for the consumption during the missing period.

Where the missing data accounts for more than 1% of the total, the comparison should proceed by using the most recent ESBN load profile to calculate an estimate for the consumption during the missing period and include a message to inform the consumer that estimates will be used to populate the missing time periods in the comparison calculations. Any missing consumption data

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that is populated using ESBN load profile averages should be pro-rated if the known data shows a usage that differs from average consumption figures.

***Question 5: Is there anything else CRU should consider with regards to this matter?***

bonkers.ie believes that if the user's historical data is missing a significant portion of data, the consumption pattern for the data that is available should be considered in any future usage estimates.

If a user's HDF file shows that the recorded consumption data exceeds or is likely to exceed the national average annual usage, the difference should be reflected in the estimated consumption for any missing periods.

Therefore, should the data that is provided show a consumption pattern that is estimated to be several times greater than the average, the same difference should be applied to the average usage data taken from the ESBN load profiles.

**Additional data inputs**

***Question 6: The CRU would be interested in hearing whether respondents believe there is added value or not in allowing PCWs to ask consumers additional questions to identify their consumption behaviour, and tailor price comparisons. For example, whether a consumer has an Electric Vehicle.***

***If you believe there is added value in this approach, what guidelines, if any, do you believe the CRU should implement to ensure a minimum standard across PCWs?***

bonkers.ie is of the opinion that PCWs should be able to assist consumers by demonstrating the value of time-of-use tariffs by collecting additional information regarding the user's own consumption behaviour. This includes prompting the consumer that modifying their existing behaviour could substantially alter their bill amount without changing the amount of energy they consume - thereby fully identifying the benefit to the consumer of modifying their consumption pattern to the benefit of their household expenditure.

Additional questions can be added regarding what high-usage electricity appliances are currently being used in the household, in addition to the frequency of use of those high energy consumption appliances. Allowing consumers to edit the frequency of use and the kWh consumption of the appliance per use, will be of great value to consumers regarding their consideration in choosing a time-of-use tariff. Although the questions asked regarding additional data inputs could vary between different PCWs, user messaging can be presented throughout the process to highlight how any adjustments to the projected annual costs have been calculated. The user will also be required to consent that they understand that the projected costs presented in the calculations are based on the behavioural changes presented.



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The additional questions should be optional and in cases where the user chooses not to provide this information, the data provided from either the uploaded HDF file or ESBN standard load profile defaults should be applied without any adjustments.

The only guidelines from CRU on how such additional questions are framed and calculated should be that the source of the data used for estimating the usage of any listed appliances or electric vehicles is transparent. This will allow PCWs to update and adapt their own methodologies without requiring CRU approval.

**Implementation timeframe**

***Question 7 : The CRU proposes to require PCWs to implement the functionality to allow consumers to upload their smart meter consumption data (via HDF) from 1 January 2024. Do you agree with this approach? If not, why not?***

See below answer to Question 8

***Question 8: Are there any other issues that you believe the CRU should take into consideration with regards to the timeline?***

bonkers.ie is in agreement with CRU that the functionality of allowing consumers to upload their smart meter consumption data (via HDF) from 1 January 2024 is a realistic and achievable timeframe.

We consider the inclusion of Time of Use tariffs on PCWs to be of great importance. There is a wide misconception regarding the value of time-of-use tariffs and smart meters in general. As such, having a trusted and impartial source that can highlight the potential benefits of time-of-use tariffs will be of great value to both the NSMP and consumers.

As more user data become available, the quality of comparing time-of-use tariffs will only improve and will allow users to make an informed decision that is tailored to their own user profile.

As the NSMP programme completes, and all residential meters are replaced by Smart Meters, the role of time-of-use tariffs will become increasingly important to Irish households. It is therefore of vital importance that the marketplace introduces the ability for consumers to begin to understand that *when* they consume their electricity has as much of a bearing as *how much* electricity they consume, when it comes to reducing their bill. It must be balanced with an overall message that reducing consumption is the preference, but where consumption cannot be reasonably reduced, that the time of consumption should be considered, and rewarded to the benefit of the network and the household alike.

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### 2.1.2. Microgeneration

***Question 9: The CRU proposes to amend the PCW accreditation framework to allow consumers to access price comparisons for microgeneration export tariffs between suppliers. It proposes consumers should be able to do this in one of two ways, either by submitting their actual (historical) export volume, or by submitting their deemed calculation.***

***Do you agree with this approach? If not, why not?***

See below answer to Question 10

***Question 10: Are there any other issues that you believe the CRU should take into consideration with regard to this functionality?***

bonkers.ie is in agreement with CRU regarding the two methods proposed in providing comparison calculations for microgeneration.

In cases where users do not know the export volume of their household, assistance should be provided by collecting information on their current microgeneration equipment which can subsequently be used to determine an accurate estimation of the export volume achievable, for example asking the customer kWp rating per panel of their installed system would be effective as estimating a total kWh generation delivered to the network, once combined with other variables. The CRU could prescribe the questions asked, and the methodology used in order to standardise the calculation that PCWs employed at estimating the net consumption of a property with micro generation capability, if it deemed it appropriate.

Microgeneration comparisons should be included in standard electricity tariff cost comparisons, once the existing supplier and microgeneration rate is determined, and any calculated export values should be highlighted alongside (or deducted from) the estimated first-year cost. This service could be included as an optional feature for users who wish to include micro generation calculations in their comparison.

In future, should the possibility of users having separate suppliers for their import and export be possible, a separate microgeneration comparison service should be used to determine the potential value of exported volumes across all licensed suppliers.

### 2.2. Estimated Annual Bill for time-of-use tariffs

### 2.2.1. Methodology for calculating EAB for time-of-use tariffs

***Question 11: The CRU proposes to extend the requirement for an EAB to all tariffs available on the market, including time-of-use tariffs. Do you agree with this approach? If not, why not?***

bonkers.ie is of the opinion that the current **EAB model is not compatible** with time-of-use tariffs. The existing methodology for EAB calculations for legacy tariffs is beneficial when comparing the projected costs of standard 24-hour tariffs or Day/Night tariffs since the calculations that are used are relatively straightforward, with a maximum of 2 time bands. However, for time-of-use tariffs



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offering multiple time bands, including time bands for different days of the week, of which there can be large variations in the cost per kWh, an EAB based on average consumption figures would not be indicative of the actual potential costs of the tariff when the consumption behaviour of the individual customer impacts every calculation almost on a per-user basis.

The incompatibility of an EAB on time of use tariffs is especially evident in cases where an electric vehicle is being used. Recent reports show that over 50% of new vehicles being purchased are either fully electric or hybrid in which case an estimated 2911 kWh of annual consumption is likely to be added to the total annual usage of the household. As a result of this large increase in annual consumption, using average defaults would result in a large discrepancy between a predetermined EAB and the actual cost.

Additionally, the current common time-of-use tariffs that are available on the market include 'Free Saturday or Sunday' or "Nightboost / EV", these tariff types encourage users to adjust their consumption behaviour by moving a portion of the usage to the free Saturday/Sunday or late night periods. Using an EAB that is based on average user behaviours is not beneficial to such tariffs since it would not consider the incentivised behavioural change that is required to benefit from such tariffs.

bonkers.ie believes that showing a projected first-year cost that is calculated based on user-defined additional data inputs is the best approach to demonstrating the potential annual cost/savings. This approach can be used to highlight the benefits of adjusting user behaviour to maximise the potential savings of a specific time-of-use tariff.

Should CRU decide that an EAB requirement is necessary for time-of-use tariffs, bonkers.ie is of the opinion that the General Principles approach is most suited since it will allow the CRU to create a methodology that holds consideration towards the potential user behavioural changes that are necessary to maximise the benefits of time of use tariffs.

***Question 12: The CRU proposes to implement an EAB for all time of use tariffs from 1 January 2024. Do you agree with this timeline? If not, why not?***

While bonkers.ie holds the opinion that an EAB is not suitable for time-of-use tariffs, should the CRU require this to be implemented then 1 January 2024 is considered to be a realistic and achievable timeframe, once the calculation methodology for the proposed EAB is published, on a tariff-by-tariff (or standardised) basis to ensure any defaults are populated appropriately such that a calculation and the EAB coalesce, as they currently do for legacy tariff calculations. i.e. to our calculation engine, an EAB is merely the simple case of a calculation where defaults are used to determine the level of the consumption, any applicable discounts, network charges, and taxes.

***Question 13: With regards to the methodology for calculating an EAB for all time of use tariffs, the CRU proposes to use the demand-weighted approach, which is the same that is currently used for the Standard Smart Tariff and Day/Night tariff. Do you agree with this approach? If not, why not?***


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bonkers.ie is of the belief that the demand-weighted approach is not the best methodology for the calculation of an EAB for time-of-use tariffs. The demand-weighted approach uses network averages to determine the property usage at any given time, however, the value on time-of-use tariffs is attained through behavioural changes where the user is encouraged to adjust the time of their usage where possible to the time band offering the lowest cost per kWh.

The most suitable approach to calculating an EAB for all time-of-use tariffs would be a calculation methodology that takes into consideration the necessary behavioural changes that maximise the value of the specific tariff. This could be achieved by the General Principles approach where a methodology is outlined by CRU that includes an increased percentage of the total annual usage for the time band offering the lowest cost per kWh.

An standardised EAB for time-of-use tariffs should only be used in cases where the user has not provided or consented to any additional data input information being that will adjust their total annual consumption or the percentage of a specific time band.

***Question 14: Are there any other issues that you believe the CRU should take into consideration with regards to implementing an EAB for all time of use tariffs?***

bonkers.ie believes that one of the biggest risks with having a standardised EAB would be that such a calculation would not take into consideration the presence of an Electric Vehicle that is charged at the household. An Electric Vehicle will add a substantial amount to the annual consumption of a household. Our current estimates show that an Electric Vehicle being charged 8 hours per week on a typical 7kWh home charging point would result in an increase of approximately 2912 kWh to the total annual consumption.

With increased number of Electric Vehicles on the road and the commonly available time-of-use tariffs that are tailored for Electric Vehicles (Nightboost, EV), a predetermined EAB would not consider the increased consumption into it's calculations and consumers will be contracted based on an inaccurate estimated cost.

| Time Banding | Cost per kWh | Consumption | Total Cost in € |
|---|---|---|---|
| Day | 43.68c | 2912 kWh | €1271.96 |
| Night | 21.55c | 2912 kWh | €627.54 |
| Boost | 12.65c | 2912 kWh | €368.37 |

(PUT IN A SIMPLE CALCULATION TABLE FOR 2912kWh at Day, Night, Peak, Boost rates.)

The table above clearly indicates the difference in cost to the customer for charging their EV at various times and rates available on a typical time-of-use tariff. If an EAB approach is used, it is difficult to see how predetermining an EAB, rather than asking a customer key questions about their EV and how much they charge it at home would be of benefit.



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**2.3. Limitation on the number of time of use tariffs**

***Question 15: The CRU proposes to increase the limit on the maximum number of time of use tariffs from four to eight from 1 October 2023. Do you agree with this approach? If not, why not?***

bonkers.ie is happy for the current limit on time-of-use tariffs to be increased from four to eight from October 1st, 2023. This will allow for greater flexibility and tariff innovation to allow the consumer to find a time-of-use tariff that is best suited to their own lifestyle.

***Question 16: The CRU proposes to end the limit on the maximum number of time of use tariffs from 1 April 2025. Do you agree with this approach? If not, why not?***

bonkers.ie is happy for the current limit on time-of-use tariffs to be removed from April 1st, 2025, so long as the calculation methodology or rules governing inclusion in a result set are implemented. This will allow for greater flexibility and tariff innovation to allow the consumer to find a time-of-use tariff that is best suited to their own lifestyle.

**2.4. Call for evidence on Standard Smart Tariff structure review**

***Question 17: CRU would welcome any views on whether respondents consider it appropriate to schedule a review on the structure of the Standard Smart Tariff ahead of the completion of Phase 2 of the NSMP (currently scheduled for the second half of 2024).***

See below answer to Question 18

***Question 18: CRU would also welcome views from respondents on which issues should be considered in such a review. Respondents can specifically focus on the following questions, or provide their own views:***

***a) Is the Standard Smart Tariff achieving its purpose to be an easy to understand 'entry-point' to time of use tariffs for consumers?***

bonkers.ie holds the opinion that the current Standard Smart Tariffs still serve as a sufficient 'entry-point' to time of use tariffs by discouraging usage during 'Peak' hours and as such, reducing network demand during traditional high usage periods.

***b) Do you have any concerns or recommendations in relation to the Day/Night/Peak structure of the Standard Smart Tariff, including the hours assigned to each time band?***

bonkers.ie holds the opinion that the current Day/Night/Peak structure of Standard Smart Tariffs is adequate.

***c) In light of the proposed measure to extend the maximum number of time of use tariffs for each supplier from four to eight, do you see a continued need for the Standard Smart Tariff?***



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bonkers.ie holds the opinion that Standard Smart Tariffs still hold value as standardised entry-point into time of use tariffs, and should be considered as one of the eight allowable tariffs in order to provide for some standardised approach to time-of-use in the market, while also allowing for sufficient tariff innovation to the segments of the electricity market.

***d) Are there any other issues related to the Standard Smart Tariff you believe the CRU should take into consideration in a future review?***

Given the irreversible nature of changing from a legacy tariff to a smart tariff, bonkers.ie believe there is an argument for the necessary inclusion of a standard 24 hour smart tariff to be made available from all suppliers. This tariff should only be required for a set period of time to help facilitate the transition to smart meters and could be reviewed at a later date once the familiarity with smart tariffs and their potential benefits more understood.

***Question 19: CRU would welcome any additional suggestions to incentivise the uptake of time of use tariffs.***

With the rollout of the NSMP, the electricity market in Ireland will be irrevocably changed. Smart meters will allow for great tariff innovation that will benefit consumers greatly in the long run. A key component in the early stages of this transition will be creating awareness and educating consumers on the potential value in switching to time-of-use tariffs.

One of the greatest challenges in this will helping consumers understand the potential costs associated with a time-of-use tariff and this is something that will only increase as a greater variety of tariffs become available over time.

The estimated annual bill (EAB) that has long been used to show the potential costs associated with an electricity tariff is simply incompatible with time-of-use tariffs since it is based on national average calculations that do not consider the encouraged behavioural changes required to attain value from a time-of-use tariff.

The solution to this will be providing consumers with a more advanced comparison tool that allows them to see the value of these behavioural changes by gathering additional information on their current user behaviour and consumption. This information can subsequently be used in a calculation that can demonstrate the actual potential costs of a time-of-use tariff by allowing users to see what is achievable by adjusting the time of use for their high-usage appliances in relation to a specific time-of-use tariff.

While such a comparison tool may not be possible for all interested stakeholders, PCWs hold the unique position of being able to deliver such a tool that can then be used to compare all time-of-use tariffs from all available suppliers and thus providing consumers with a valuable service that will both educate and incentives uptake for time-of-use tariffs.

In closing, I would like to thank you again for allowing us to present our views on incentivising uptake on time-of-use tariffs as it is something we feel passionately about.

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Should you have any questions or comments on any of the above, please do not hesitate to contact me at ***mark.smith@bonkers.ie***

Yours Sincerely,

Mark Smith
***bonkers.ie*** Partner Support

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30h August 2023

**RE: (CRU/202357) Review of Large Energy Users connection policy - Call for Evidence ('paper')**

Dear Electricity Connection Policy Team,

Bord Gáis Energy (BGE) welcomes the opportunity to respond to the CRU's Call for Evidence on a Review of Large Energy Users (LEU) connection policy. BGE supports the review by the CRU of grid-related policy to ensure that developers in, and users of, the Irish electricity system are provided with the clarity they need to contribute to the transition of the Irish grid for delivery of the government's 2030 targets for renewable generation and decarbonisation.

BGE believes that Data Centres as Large Energy Users will be the most immediate and strategically impactful type of LEU seeking connections to the grid under any updated LEU Connection Policy, and it is in this context that we have considered the Call for Evidence paper. A data centre (as an LEU) can catalyse the formation of an energy cluster which can in turn be a source of flexible decarbonised energy to the benefit of the national grids, and the elements within the energy cluster (please see Figure 1 in Q1 of the annex to this response). Through energy clusters, we see data centres playing a critical role in decarbonizing demand, alleviating grid constraints and supporting renewable generation such as hydrogen, wind and solar. An Energy Cluster is a combination of generation and demand sites[1] that brings together different assets and capabilities to help provide renewable generation and flexible demand[2] to the whole energy system. BGE does not see future LEUs as being "islanded" or acting in isolation but instead as part of a coordinated cluster that can flex generation and demand in response to renewable availability and system capability.

For this to work, we need the electricity and gas systems to be developed with these energy clusters in mind. Furthermore, we need the other utilities infrastructure (e.g., broadband, water etc.) to be developed in tandem to ensure the sites for clusters are attractive and viable for developers.

[1] Being fully interconnected with the national grid
[2] Meaning demand flexibility beyond the traditional peak periods and instead reflecting the ability for units to flex demand in response to the availability of renewable generation and the carbon intensity of the grid

Business and large energy users are already seeking to play an important and positive role in addressing both the energy security and decarbonisation challenges. Most large energy users have set, or are in the process of setting, ambitious emission reduction targets and are exploring ways to decarbonise, develop renewables, and reduce energy use. This contribution from LEUs will aid the build out of renewable generation and provide an opportunity (with data centres/ LEUs as an anchor tenant) for the construction of new dispatchable renewables units, such as hydrogen and/or biomethane if the policy emerges in time to bring volume. To reinforce this progressive business activity and investment, we see it as crucial that strong collaboration by the IDA, local authorities, utility providers, the CRU, the SOs, and DECC occurs to bring the policy together to support energy cluster development to maximise regional generation (RES and conventional) and new LEU connections for Security of Supply and deliver on the decarbonisation agenda. This collaboration and coordinated measures can offer the right locational signals for the development of energy clusters to minimise the need for substantial additional grid development to enable LEU connections.

We see the benefits of energy clusters to LEUs / Data Centres to include:

- that energy clusters will offer LEUs and data centres a suite of options for them to choose how they want to decarbonise their energy demand including RES generation, zero carbon generation (on-site, or near-site that is directly connected), and battery discharge besides the standard grid connections (please see our answer to Q1 in the annex to this response),
- that as demand "anchor tenants" for energy clusters LEUs / Data Centres can catalyse/ increase the level of investment to renewable energy source (RES) generation around the cluster so contributing more RES power to the grid at a lower cost to the consumer and facilitating renewable gas (hydrogen) manufacture and storage contributing to national decarbonisation targets (please see our answers to Q1-Q3 in the annex to this response),
- that energy clusters can provide the supply optionality to LEUs / Data Centres to facilitate demand flexibility that is focused on decarbonising demand or reducing the carbon intensity of that demand rather than just turning down demand which may not be an option to some LEUs (please see our answers to Q6-Q7 in the annex to this response), and
- that the interconnectivity of the sites in an energy cluster, and the grid connections of each of the cluster units, will prevent the occurrence of "islanded" operations by LEUs (please see our answers to Q13-Q14 in the annex to this response).

Please do not hesitate to contact me should you require further information or wish to discuss any aspect of our response.

Yours sincerely,

**Ian Mullins**
**Regulatory Affairs – Commercial**
**Bord Gáis Energy**

*{By email}*

# Annex

## Decarbonisation of Energy Demand

### Q1. Comments are invited from stakeholders on the proposed approach of decarbonising energy demand with a view to achieving net zero emissions from LEUs at time of connection. Please provide reasons and rationale for any views provided.

BGE supports the proposed approach of decarbonising energy demand from new LEUs to achieve net zero at the time of connection. We propose that the best model to give new LEUs enough options to achieve net zero emissions at the point of connection is to be part of energy clusters as described in our introductory comments above. Below is a simple representation of the energy flows we see as happening locally across the region in which the cluster is located.

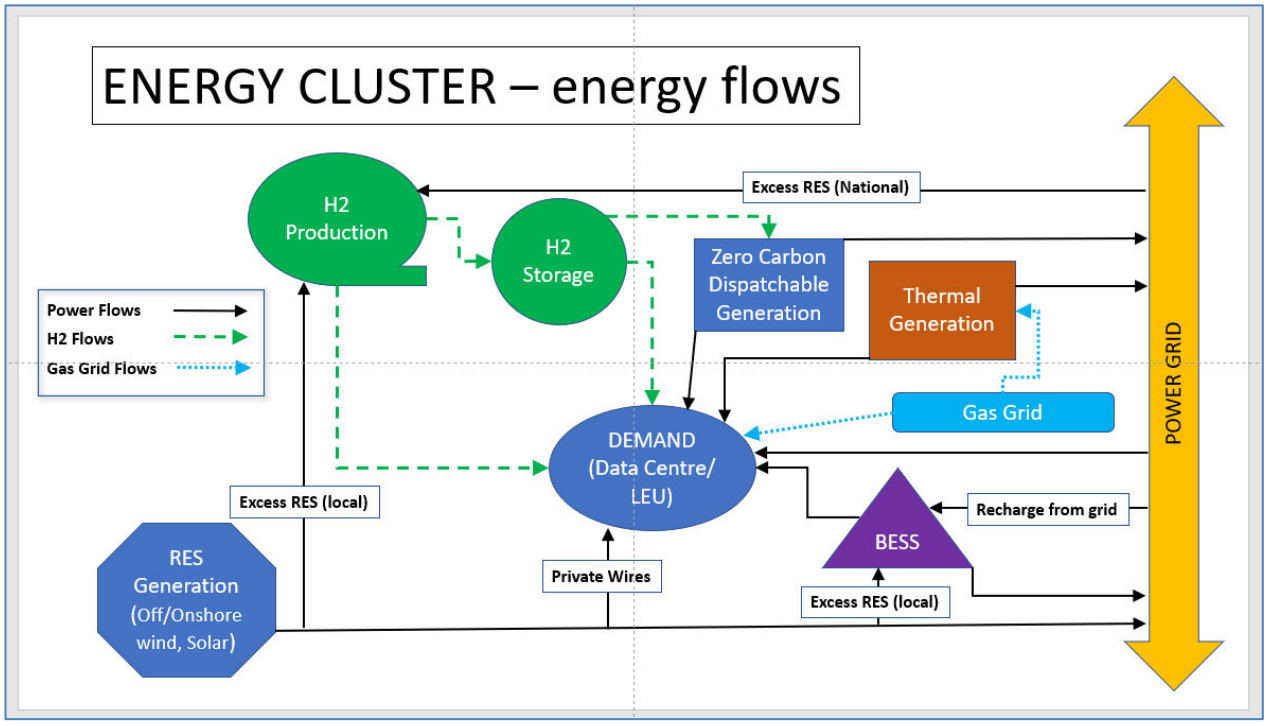



**Figure 1** – Diagrammatic representation of energy flows in an energy cluster[3]

LEUs can serve as anchor tenants and catalysts for Energy Clusters. Energy Clusters can offer LEUs, and the rest of the energy system/ grid, direct access to renewable power where the cluster has catalysed the development of significant RES generation that is geographically/ regionally local to the cluster (and so to the new LEU). The energy cluster can include renewable gas-fired electricity generation (zero carbon dispatchable generation) for use within the cluster or for exporting onto the grid, and an option for renewable gas (as manufactured or from storage) as a source for any thermal heat requirement in the cluster or as a zero carbon fuel for on-site generation where incorporated by the LEU. The new LEU can also have access to battery storage as batteries may also be a feature of the cluster allowing the new LEU to achieve net zero emissions at the point of connection within the energy cluster. We do not believe however that the battery storage itself would be an enduring security of supply solution for the LEU and is instead one of the supply options that LEUs can call on to lower the carbon intensity of their power supply outside of the main

[3] The option for hydrogen to be blended into the national gas grid (while is being discussed by industry) is not represented here only for simplicity of the connections in the diagram.

generation/ grid supply options. The preference of power supply to LEU demand could be as follows (or even a blend to optimise power availability):

i. From RES where the wind/ solar fuel sources provide sufficient generation,
ii. If the RES generation is insufficient, from on-site, or near-site (directly connected)[4], zero carbon (hydrogen) generation in conjunction with BESS discharge from within the energy cluster,
iii. Grid sourced power / Conventional generation.

Should the new LEU have need of electricity or gas beyond the cluster it can look to secure further renewable sources beyond the cluster through CPPAs for electricity or renewable gas credits for gas. BGE's view is that the units within the energy cluster will still be connected to the national energy grids, and may indeed be interconnected where needed, to optimise the use of the existing grid and support grid through both demand flexibility and demand response where required by the system operators. As the cluster would be connected to the electricity grid, "islanded" LEU units will be avoided.

**Q2. Comments are invited from respondents on the need for onsite generation and storage capability for LEU connections. Please provide reasons and rationale for any views provided.**

Largescale demand connections require firm and reliable energy sources, hence, most have onsite generation. In our experience, battery storage does not provide the level of security and reliability required but on-site or 'near-site but directly connected' generation would. We believe that an LEU can avail of energy security and reliability in an Energy Cluster without putting significant pressure on the gas or electricity grid (See Figure 1 in Q1).

Taking our vision of the Cork cluster as an example, a Data Centre (as an LEU) locating within the energy cluster would take its power from renewable energy sources when wind and solar levels are high. However, when RES generation availability drops below an agreed threshold, the onsite or near-site(directly linked) zero carbon generation (taking fuel directly from an electrolyser or hydrogen storage facility within the energy cluster) would ramp up and provide the power needed to meet the data centre's demand. The most likely onsite or cluster storage may be a Hydrogen store in the event that the electrolyser is not powering at the time the hydrogen is required such as a hydrogen store offshore at Kinsale.

The model of new LEUs as part of energy clusters which we propose and describe in our introductory comments can allow the new LEUs access to renewable generation and energy storage options within the cluster to meet their energy requirements when power of a lower carbon-intensity from the grid may be unavailable. Should on-site generation and/or on-site storage be required by new LEUs (perhaps where **not** part of an energy cluster) then the fuel source for each should be renewable in nature or matched by the equivalent renewable credits/ CPPAs to ensure the new LEUs meet their requirements against the national targets.

**Q3. Comments are invited on the use of CPPAs for additionality of renewable generation outside of support schemes for decarbonising electricity consumption. What type of de-rating may be appropriate to reflect real-world performance of renewable generation during peak times. Please provide reasons and rationale for any views provided.**

[4] that is, a stand-alone zero carbon (hydrogen fuelled) generator near to an LEU but directly connected.

BGE's view is that CPPAs need to demonstrate additionality of renewable generation to the Irish grid and not displace existing renewable generation away from the consumer. A CPPA of sufficient size by a new LEU may catalyse a larger renewable generation development lowering the unit cost of energy produced and perhaps having an excess of renewable power to offer to the grid. Any de-rating mechanism used will need to be based on a representative model of actual grid operations such that the marginal impact of the power is properly valued to avoid overly-conservative de-rating factors being used to the detriment of the units.

**Q4. Based on preference that renewable electricity and /or gas contributes to Ireland's emissions targets and security of supply, do respondents have a view in relation to how electricity feeding into Irish system and renewable gas credits feeding into the Irish system could be tracked?**

**Q5. Comments are invited from stakeholders on the use of renewable gas credits (feeding into the Irish natural gas system) in order to facilitate the connection of gas demand to the system. Please provide reasons and rationale for any views provided.**

Taking Questions 4 and 5 together, any renewable energy source tracking process should mirror the functionality of the European markets within an Irish context and provide a workable market-based credit "book and claim" system that aligns to those used for renewable energy throughout the EU so that Irish participants can engage (import/ export) in renewable energy credits without any additional boundaries.

## Demand Flexibility

**Q6. Comments are invited from respondents on enabling demand flexibility requirements as described above. Please provide reasons and rationale for any views provided.**

**Q7. Are there other sources of flexibility that can be provided?.**

Taking Questions 6 & 7 together, we believe that demand flexibility must be more broadly defined and is not simply about just being able to turn down demand but is also about decarbonising demand or reducing the carbon intensity of that demand. We understand from Data Centres and other largescale LEUs that because of the nature of their operations (e.g., 24/7 hour manufacturing) they cannot simply turn down demand on request without incurring major financial impact. But these Data Centres and LEUs do see the benefit of investing in and decarbonising their activities and are keen to do so. There is a willingness to invest in dispatchable forms of renewable generation and they are willing to flex between a number of sources of lower carbon power as long as their energy supply is guaranteed. We believe that these Data Centres/ LEUs operating within an energy cluster is the best way to get this balance between the availability and optionality of sources of renewable generation while minimizing the need for grid investments.

## Interruptible contracts for gas connections

**Q8. Comments are invited from respondents on the introduction of interruptible type supply contracts for gas connections. Please provide reasons and rationale for any views provided**

As we explained in our answer to Questions 6 and 7, Data Centres and other largescale LEUs cannot simply turn down their demand on request without incurring major financial impact because of the nature of their operations (e.g.,. 24/7 hour manufacturing). Energy supply interruptibility is not something that these LEUs can tolerate within their operations. Flexible and diverse energy sources on the other hand is something

that they can incorporate so long as their energy requirements continue to be met by a guaranteed pool of energy sources as would be available within an energy cluster. Where energy clusters provide a guaranteed optionality of fuel sources to meet the data centre/ LEU demand, then we should not need interruptible contracts where the use of localised clusters serves the load of LEUs and LEUs can flex between available sources of renewable energy to best reduce the carbon intensity of their demand.

## Real time zero carbon emissions

**Q9. Comments are invited on real time zero carbon emissions, shifting of demand in real-time to times of high renewable energy availability. Please provide reasons and rationale for any views provided.**

We believe that once an energy cluster is established and operational, it will be a net zero system where the balance between demand and supply will naturally seek options to minimise or eliminate carbon emissions as a whole. Data Centres and LEUs see the benefits that energy clusters can bring to their operations but we need the policy and technology to be available to them to achieve it. This needs to be achieved sooner rather than later to the point that the hydrogen policy and hydrogen production are operational before the end of this decade, rather than waiting for the next decade.

## Definition of an LEU

**Q10. Comments are invited from respondents on what they consider to be an appropriate definition of an LEU for electricity and gas for the purposes of this review. Please provide reasons and rationale for any views provided.**

**Q11. Comments are invited from respondents on whether this review should only apply to Extra Large Energy Users (XLEUs) in relation to electricity. Please provide reasons and rationale for any views provided.**

**Q12. Comments are invited for gas LEU definition of those with a peak hourly demand greater than 50MW thermal input and a connection pressure of 16 barg or above. Please provide rationale for any views provided.**

Taking Questions 10, 11 & 12 together, BGE supports the approach to begin the application of connection obligations to those demand units that will have most impact on the energy system and the sectorial emission ceilings. For electricity demand units these would be the XLEUs of DG10 and DTS-T, while for gas this can be those units with a peak hourly demand greater than 50MW thermal input and a connection pressure of 16 barg or above. We note that these LEU obligations would equally apply to LEUs within energy clusters as to those not in energy clusters, as BGE's view is that all units within an energy cluster would also maintain electricity grid connections.

## "Islanded" connections

**Q13. Comments are invited from respondents on the treatment of 'islanded' LEUs. Please provide reasons and rationale for any views provided.**

**Q14. Should the connection of LEUs to the natural gas network focus on security and decarbonisation as per the Government Policy Statement on Security of Electricity Supply. Please provide reasons and rationale for any views provided.**

Taking Questions 13 & 14 together, BGE supports the positions of the government and the CRU that "islanded" demand centres (particularly new Data Centres) should be avoided as they will not offer the demand flexibility[5] to help decarbonise the energy sector if operating in an "islanded" status. We believe that new Data Centres as part of energy clusters will avoid any need for consideration of implementing an "islanded" status due its direct connection to renewable energy generation sources and renewable gas-fired generation or energy storage. We believe that LEUs see the benefit from decarbonising their demand with a reliable option to source low/ zero carbon power and this interest from LEUs to make this change should be incentivised and facilitated to support the delivery of the 2030 national targets for renewable generation and decarbonisation.

## General

### Q15. Please suggest any alternative approaches not captured above that could help in meeting the challenges outlined.

It should be recognised that the provisions being considered under this review should apply only to all new LEUs as they will have the location and design flexibility to meet the requirements being proposed. Almost 80% of the expected LEU demand in 2032 is already in place and connected to the system and so we ask that specific consideration is given to consider the provisions that could be applied to existing LEUs given the diverse level of constraints they are facing relating to location, access to renewable energy sources or storage, connection level (transmission v distribution), and their usage classification. Existing Data Centres and LEUs will need to make their contribution[6] to the national 2030 targets for renewable generation and decarbonisation but the incentives and policy requirements will need to differ in starting point[7] and approach although keeping the end goals of this paper. The parallel consultation on demand side strategy therefore needs to consider how to decarbonise and repurpose those existing LEUs with existing on-site installations as a matter of priority if we are to deliver sizeable carbon emission savings from that sector. We believe that companies are eager to decarbonize but the process needs to be established as to how they should decarbonise systematically to contribute to our decarbonisation of the electricity and gas grids as a collective as opposed to each company taking an individual approach which may in turn drive inefficient grid investments to accommodate the individual action taken.

### Q16. Should provisions apply to all LEUs connections, or are there are any exceptions that should apply? Please provide reasons and rationale for any views provided.

We believe that the provisions being considered under this review should apply only to all new LEUs. We ask that a specific consultation is published to consider the provisions that could be applied to existing LEUs given the diverse level of constraints they are facing relating to location, access to renewable energy sources or storage, connection level (transmission v distribution), and their usage classification. Equally that proposed consultation could consider if the model of energy clusters could offer existing LEUs a wider range of options to decarbonise their current demand.

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[5] That is to take power from the grid when RES generation (i.e., wind and solar) output is high, but can then in turn support the grid at times when the RES generation output is low by flexing their demand to other low to zero carbon sources of power while minimising any increase in their carbon emission intensity. This can be hydrogen fuelled thermal generation with contributions by battery storage where possible.

[6] Essentially through the retrofitting of existing on-site higher carbon (oil-fired) back-up generation

[7] As existing LEUs may not have the site space for changes/ additions to on-site generation or have viable access to low/ zero carbon fuel source connection.

**Q17. Please suggest any incentives which could be applied to new LEU connections in facilitating some of the measures described above. Please provide reasons and rationale for any views provided.**

We believe that the LEU connection policy must provide the right locational signals for energy cluster development to minimise/ postpone significant additional grid development to enable LEU connections. We ask that coordinated measures on policies and supports are taken by the IDA, local authorities, utility providers, the CRU, the SOs, and DECC to support energy cluster development to maximise regional generation (RES and conventional) and new LEU connections for Security of Supply and deliver on the decarbonisation agenda.

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**30th August 2023**

To whom it may concern,

**RE: BGE Response to Consultation on '*Energy Demand Strategy – Call for Evidence*'**

To date, demand side response has mainly focused on reducing demand around peak hours. This made sense when price was simply a factor of demand and dispatchable generation. As generation becomes increasingly dominated by variable renewable generation, price and the need for flexibility will move more in line with generation availability than traditional peak periods. It is good to see that in its consultation, the CRU is recognising the need for a shift in the definition and understanding of demand side flexibility and response.

***We therefore believe the definition of demand flexibility should change and reflect the ability to flex demand in response to the carbon intensity of the grid.*** Recognising Ireland's expected increase in demand over the coming decades, our focus should be on decarbonising each kWh of demand as opposed to simply reducing that demand. Energy efficiency is still part of the overall agenda, however, the ability to flex demand to shift with variable generation is going to provide the more realisable outcome given energy demand needs.

The technologies to support demand side flexibility are still emerging. We know that electric vehicles, heat pumps, energy storage systems (at commercial and residential levels), smart thermostats and smart meters are going to be the enabling technologies for high flexibility in buildings (noting that the IEA estimates that 50% of all demand side flexibility will come from buildings in the longer term[1]). ***However, the digital management systems (to enable automation) and the enabling data are still lagging. This is curtailing the full potential of these low carbon technologies.*** The appetite for and speed of investment in the enabling technologies is also slower than expected given skills shortage and inflation affecting customer sentiment.

There is significant potential to decarbonise and flex the demand of large ICT and pharmaceutical companies – recognising the push by some of the major corporates to source 24/7 zero carbon electricity over the coming decade. However, this will not be achieved by storage as seems to be suggested in the call for evidence and ESBN flexibility scenarios report.

It is not economical – in terms of cost or reliability – for large ICT plants and large manufacturing companies to invest in storage as a means of offering flexibility. The demand of these units is 24/7 and therefore onsite renewable dispatchable generation is the only source of flexibility that is commercially viable and feasible. The LEU Connection Policy Consultation that sits alongside this consultation is useful for new connecting sites, in terms of planning for their decarbonisation. However, the vast majority of this demand has already connected, and

[1] https://www.iea.org/energy-system/energy-efficiency-and-demand/demand-response#tracking

we need to plan for retrofitting existing sites, which have relied on diesel back up generation to-date for their own security of supply reasons. ***This demand side strategy therefore needs to consider how to decarbonise and repurpose those on-site installations as a matter of priority if we are to deliver sizeable carbon emission savings from that sector***.

Batteries of 2-4-hour duration are not enough for the system and at a site level, batteries of a larger scale are not economically viable in our experience. Batteries work best on a site as part of a package of onsite variable generation and connected systems, which provide an automated response to optimise load that can flex and shift with generation availability. It is therefore more suitable as a measure for some commercial entities, dairies for example. ***Our experience with commercial entities is that automation will be key to the delivery of the targets. Digital systems and smart devices are therefore going to be crucial if the suggested savings are to be met in this sector***.

ESBN appears to be developing markets – for storage and flexibility – in parallel with EirGrid. We need to ensure that the development of contracts and markets at a distribution level do not undermine or compete with markets being developed at a transmission level. This could create a run on one market against the other. We therefore urge the CRU to bring Area 2 and the development of flexibility markets under the one umbrella. Planning for overarching and localised system flexibility and stability should be coordinated centrally by EirGrid as system operator. Contracts and markets should be operated through the one operator.

***We need to ensure that the terms and competition for the procurement of flexible demand are on a level playing field across the system. The Irish system and market are too small to start disaggregating the procurement of flexibility between the transmission and distribution systems.*** It is not in our view in the interest of the wider system to have a two-tiered market for system services and flexibility. Recognising that ESBN has its own operational requirements – these should be taken into consideration as part of the EirGrid plan (noting that EirGrid is currently reviewing the flexibility products needed). They should <u>not</u> be planned and/ or procured separately***.*** We ask that enhanced engagement between industry and the two system operators (TSO, DSO) occurs imminently to ensure that all parties are aligned on how the risk of a two-tier market for system services and flexibility will be avoided.

Lastly, we ask that the CRU lead the consultations on market **<u>and</u>** contractual arrangements for the system services to ensure a level playing field between investor and contracting body. ***We ask that the CRU ensure the project has adequate resources to ensure these procurement processes are transparent and balanced in the interest of competition.***

In short, the Demand Side Strategy is a very welcomed initiative. There is growing potential in Irish demand to be more efficient and less carbon intensive. However, there are a number of barriers that will prevent the full realisation of the potential. ***We ask that as part of the CRU's Phase 1 of the project that a list of barriers is captured and actioned to be included as part of the plan for delivery across Phase 1 and Phase 2***.

Yours sincerely

**Jill Murray**
**Bord Gáis Energy**

*{By email}*

## Consultation Questions

**Question 1:** What are stakeholder's views on the stated aims of the project?

Bord Gáis Energy is fully supportive of the CRU developing an Energy Demand Strategy for Ireland. BGE is investing heavily in developing the systems, services and people to deliver a vision where customers have integrated energy and service offerings, helping them to optimize their energy use and costs.

This vision however is hugely dependent on widescale investment in homes, businesses and industry. The breadth and scale of investment required to deliver the full scale of reliable demand side flexibility will take a number of years to develop to scale. Firstly, homes need to be retrofitted and low carbon technologies installed. This requires funding and skills – both of which are only in the nascent stage of delivery. Following that, automation of decisions and actions from the technology and relevant data sources need to come together to give a reliable and predictable response. In short, there is a significant journey before we deliver the scale and ambition of demand side flexibility proposed for the Strategy.

Although we are cognizant of the targets and the contribution of energy demand flexibility to the achievement of our overarching carbon budgets, we are concerned that the aim of the project is focused on hitting certain percentages in a very short time frame (2025 and 2030). We are concerned that in focusing on deliverables, and 2025 in particular, that the scope of the project will overlook the wider changes needed to facilitate the future vision of energy and energy services. For instance, reviewing the behavioral and economic barriers that are preventing customers from engaging fully in demand side response.

We therefore suggest that the project phases should instead focus firstly on identifying capability in the different sectors. Then the focus should turn to barriers in achieving that capability, before then entering implementation and delivery mode for the various initiatives.

If the project only focuses on outcomes in the short term, we believe it will delay the delivery of the overall capability in the longer term. As mentioned above, BGE is investing significant capital and resources in delivering a long-term strategic vision for decarbonized, distributed and flexible energy demand. The pathway is long and we are experiencing significant hurdles even in these early stages. Skills shortages are affecting delivery, administrative burden and inflation are affecting customer sentiment to invest, and the data and systems to facilitate connectivity are only emerging.

In short, if the project is to achieve the stated aims of maximum energy demand flexibility, it **should not** be focused on delivering specific initiatives to deliver the targets from the outset. The CRU should instead help create the vision and the platform for energy demand flexibility. In so doing, identify the barriers to achieving the vision and work with stakeholders to unblock those barriers. This will then allow the market to then deliver the suite of services and technologies that will enable the aims to be achieved quicker and in the longer term.

Whereby we appreciate the Climate Action Plan sets specific carbon emissions targets for 2025 and 2030, we are concerned that if the project focuses primarily on short term deliverables, that the longer-term objectives will be jeopardized. ***The objective of the project should be to set Ireland on a pathway towards flexible, responsive and low carbon demand*** – this project is a great opportunity for the CRU to ensure the foundations of that pathway are strong and realizable.

**Question 2:** What are stakeholder's views on the proposed scope (focus areas) and approach (phasing) of the project?

The focus areas, in our view, should be broadened in their vision and deliverables. For instance, Area 1 looking at smart services seems to only consider ToU take-up, Microgen rollout and Energy Sharing as deliverable outcomes. While we recognise the benefits of enhancing ToU take up, the real benefits will only accrue once the customer has the installed low carbon technologies and necessary data and systems to optimize their usage. Simply pushing ToUs as an outcome in themselves will not garner customer support and trust in smart services. In our view therefore, Area 1 needs to broaden out its remit to look at the wider systems, economic models and regulatory frameworks needed to support growing demand side offerings and take up. This includes identifying barriers such as financial, regulatory & policy burdens and skills shortages. Some of these areas will be beyond the CRU's remit but as the owner of the overarching Energy Demand Strategy, the CRU will need to coordinate engagement with the various other stakeholders to enable growth in demand side flexibility[2].

We would suggest that some pilot projects may be a good avenue for the CRU to understand the barriers, burdens, propositions, and customer considerations further.

Similarly with Area 2, focusing simply on the ESBN National Network Local Connections project is not recognizing that a market will evolve for smart and demand side services, once the technology and systems are in place. It also does not reference the market for flexibility that EirGrid is developing with the CRU and Utility Regulator. We are concerned that this project is working in parallel, effectively in silo from the information we have, with the SEMC projects to deliver a System Services Market and to enhance Demand Side Unit Participation in the wholesale market. The projects, even if distinguished between transmission and distribution level, should be coordinated implicitly to ensure consistency of market signals. ESBN may be targeting a more locational, local response for the design of their storage contracts and flexibility services, but how, when and for what services they are contracting for should be consistent with what EirGrid is competing/designing for. Otherwise, we are in danger of operating competing and/or conflicting markets.[3]

We therefore suggest that Area 2 looks to consolidate the ESBN programme into the programme for System Services Future Arrangements (SSFA). In so doing, it should create a single market for flexibility – including demand side flexibility – with a single procurer of services to ensure competition and a level playing field for participants. It will also better ensure that the overarching system requirements are best met and coordinated (and in line with EU requirements). Recognising the urgent need for certain services in specific locations on the network, it may be more appropriate to initiate pilot contracts for battery projects at a distribution level to help understand the requirements – both commercial and operational. This will allow parties to understand how the contracts may need to be structured and operated as the enduring commercial arrangements are developed.

[2] For example, one of the barriers to the roll out of low carbon technologies is a labour shortage in the construction industry. This is part of a government CAP taskforce, but it's outcome is very relevant to the achievement of the Energy Demand Strategy.

[3] In this regard we note ESBN's proposal to start procuring battery storage by end 2023 on long term contracts when at the Transmission level the Products needed for system services under SSFA are not to be determined by EirGrid until Q2 2024. Alignment and compatibility as between the products procured on the distribution and transmission levels is critical.

Lastly, Area 3 needs to be broader to account for the fact that almost 80% of the expected LEU demand in 2032 is already in place and connected to the system. Rather than just focusing on connection policy, Area 3 must also equally focus on retrofitting and repurposing existing onsite back up generation on existing sites. Based on our experience, this will come with emissions and planning hurdles that will need to be overcome.

In short, we suggest that the areas of focus are set up in such a way that it considers the wider systems and markets that are needed to deliver the longer-term goal of a dynamic system with embedded flexibility. As currently drafted, it would appear that the areas of focus are concentrating on certain specific deliverables. These deliverables, like ToU take up and storage at a distribution level, may contribute to energy demand flexibility in the very short term, but they are only inputs into a wider vision.

**Question 3:** What are stakeholder's views on energy demand profiles and the challenges arising from the associated carbon emissions? Considerations may include other information and data that should be included. Or challenges, such as new demand.

Over 55% of the overall expected demand in 2031 is due to come from LEU and Data Centre sites. These sites do not have flexible demand in the traditional sense. They cannot or simply will not turn down demand in response to system stress and renewable generation. Their operations are 24/7. We therefore need the Energy Demand Strategy to focus on the ability of this demand to reduce its carbon emissions as opposed to simply turning down or off. Whereby storage may be practical for some commercial sites – for the larger manufacturing and data centre units, this will not be viable and renewable onsite dispatchable generation is the only practical solution.

The LEU Connection Policy, the overarching Energy Demand Strategy and the government strategy for Hydrogen and Biogas need to be aligned to ensure that delivery is consistent across each of the strategies.

As mentioned earlier in this response, almost 80% of the LEU demand is already connected, therefore the LEU Connection Policy will only impact a relatively small portion of the expected demand. The Energy Demand Strategy needs to consider how to retrofit the existing onsite generation that these LEU sites tend to have for security of supply reasons. This includes ensuring that there is a revenue stream for these sites to make a return on any investment that they may make. This is one of the reasons why we need to ensure that the ESBN flexibility market is consistent with the development of the EirGrid system services market, to avoid creating an arbitrage between the two markets.

Our experience of residential and commercial demand is that savings or flexibilities cannot be guaranteed unless there are automated systems making decisions and forcing behavioural change. If flexibility is reliant on physical actions and decisions, they cannot be counted on when the system most needs it. It is for this reason that we believe the Energy Demand Strategy needs to focus on the enabling systems and technology as a starting point. Once they are in place, the service provisions become more reliable and useful for customers at a residential and SME level.

**Question 4:** What are stakeholder's views on the definition for demand flexibility? How should demand flexibility be measured and reported on an ongoing basis? What metric (annual peak system demand / total annual energy consumption / other?) should be used. How should compliance with the CAP targets be assessed for demand flexibility in 2025 and 2030?

Demand side flexibility means the ability to move demand both up and down, so it should not be defined as a metric of reduction against peak – it may be appropriate to consume at peak times if there are high volumes of wind and solar energy.

We suggest instead that demand flexibility is measured as a % change in carbon intensity per unit of demand – i.e., the obligation is a % change in carbon intensity relative to a point in time. If we calculate the carbon intensity per unit for the reference year (average across the year), we should aim to reduce that carbon intensity by 15%-20% and 20%-30% by 2025 and 2030 respectively. Given the increase in demand we are expecting to witness over the coming year, this would seem to be the most pragmatic approach.

***Question 5***: What should be the areas of focus for demand flexibility? Are there any policy or regulatory barriers to the introduction of technologies that could be useful in providing flexibility? What incentives should be considered?

Please refer to our response to Q2.

***Question 6:*** What are stakeholder's views on the attached ESBN document, 'Scenarios for 15-20% Flexible System Demand', which has been published as part of this four-document package. Respondents are encouraged to provide detailed responses by referencing specific sections of ESBN's document.

BGE has engaged with ESBN on certain aspects of its National Network, Local Connections Programme. Specifically, we engaged with the consultations that ESBN has issued over the past couple of years looking to uncover the availability of system flexibility at a distribution/ local level. BGE did not engage directly in the pilot schemes as from a resource point of view it coincided with intensive consultation and preparation for the capacity auctions and consideration of the system services market at a wholesale (transmission) level. We do not think it is effective or efficient in terms of available resources to be segregating the procurement and management of flexibility into two parts – one managed by EirGrid and the other managed by ESBN.

As an industry, we need to deliver an overall system of demand flexibility and we need to ensure EirGrid and ESBN are aligned and coordinating investment. We note too that under the Electricity Price Review Decision 5 (PR5), the system operators have an incentive to undertake a "whole of systems" approach and "optimise the network as a whole" to bring "beneficial outcomes to consumers… a more efficient market and/ or more reliable electricity supply."[4] Furthermore CAP23 requires ESBN, under approved regulatory arrangements and in coordination with EirGrid, to introduce local flexibility market arrangements. Thus, TSO collaboration is critical. On a related point, Centrica's involvement in flexibility trading in the UK via our leadership role in the Cornwall Local Energy Market (LEM)[5] allowed both the transmission and distribution network operators to purchase flexibility services simultaneously from residential and industrial consumers. The auction process involved allowed network operators to buy flexibility from energy producers and consumers, including businesses and households, in a coordinated transparent competitive manner. BGE would be happy to share the experiences and lessons learned from that project should they be of interest. To that end, **we would welcome an expansion of the ESBN Report to cover overarching system flexibility requirements and understood capability. The Report is very informative and useful but**

[4] PR5 Regulatory Framework, Incentives and Reporting, p.63, https://cruie-live-96ca64acab2247eca8a850a7e54b-5b34f62.divio-media.com/documents/CRU20154-PR5-Regulatory-Framework-Incentives-and-Reporting-1.pdf

[5] https://www.centrica.com/media/4609/the-future-of-flexibility-centrica-cornwall-lem-report.pdf

**without the overarching system perspective, including transmission and distribution level requirements, we feel it is somewhat limited**.

As mentioned earlier, batteries are not practical options to provide flexibility for some of the largest LEUs (or 55% of overall demand) on the system. We therefore understand that the delivery of behind the meter, local batteries are more likely a tool to deliver system stability as opposed to demand flexibility.

The other aspect that the ESBN report does not get into detail on is the systemisation that is required to deliver the volume of flexibility it is proposing to deliver through its flexibility market. This may impact the timelines for delivery as, in our view and expanded on above, flexibility cannot be relied upon unless there is automation backing up the commitment to provide services.

Lastly, the ESBN report does not recognise the role that ESBN plays in ensuring the independent retail market systems are updated and upgraded to ensure they are fit for purpose for a more dynamic market. The report focuses on the work of the National Network Local Connections Programme and does not take an overarching view of ESBN's role in the transition.

Recognising that there are ring-fencing obligations within ESBN, the requirements of market systems and how they need to change to be fit for purpose in a smarter more flexible industry needs to be brought into the spotlight within Area 1 of the overarching Energy Demand Strategy Project.

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**30th August 2023**

To whom it may concern,

**RE: BGE Response to Consultation on '*Incentivising the Uptake of Time of Use Tariffs*'**

Almost 2 years after the launch of the Smart Metering Programme for the first tranche of customers, it is timely to take stock and review the take up of Time of Use ('ToU') tariffs. Based on experience and customer feedback, we believe improvements could be made to help customers in deciding to take up ToUs and in ensuring they choose the most economic option for them.

Before addressing the specific questions asked in the consultation, Bord Gáis Energy ('BGE') would like to make some high level, principled points we believe should be considered.

Firstly, ToU tariffs are designed to be valuable for customers who can and who choose to change their consumption behaviour and patterns. They are by design, individual to customers and dependent on the ability of a customer to shift consumption and behaviour. Therefore, the old model whereby customers simply use average past consumption as an input to understanding future costs is no longer relevant. Rather than focusing on EABs with past consumption, we need to paint a picture for customers to help them understand how future changes in consumption can affect future costs with ToUs. That is, EABs cannot be static based on past consumption but must become more dynamic, reflecting how savings can change with changes in consumption patterns. Without this, EABs will become increasingly irrelevant and misleading to customers.

Related to this, we are concerned that if Price Comparison Websites (PCW) do not create scenarios (or some other mechanism to help customers compare future behavioural changes), they may incorrectly or falsely advise a customer of best value. The objective of this consultation is to help incentivise customers to engage with ToU products. The information given to the customer must therefore help them understand how the customer can make savings by shifting demand. If a customer does not shift demand (levels and/or patterns), it is unlikely that a ToU product will be optimal for them. Therefore, we are concerned that a tweak to the current model to simply include smart data will not help in the education of customers and improve general engagement with ToUs. We appreciate that PCWs are helpful for customers in comparing plans across suppliers. However, it is our experience that when customers are unhappy with the outcome of a decision made based on advice from a PCW, resolving the problem sits with the supplier or the CRU. We strongly believe that PCWs must be held to account for the advice they offer customers, and therefore the model and systems they use must be robust and reflect the complications of the industry in which they are operating.

Looking forward and bearing in mind that this consultation sits alongside a wider Call for Evidence on a Demand Side Strategy, we believe that the focus on EABs and price comparisons will be inappropriate in the coming years. As the energy supply industry builds out a model that

increasingly integrates energy molecules with energy services, it will become increasingly difficult to provide equivalence when comparing supplier offers. Smart tariffs will become increasingly intertwined with low carbon services and indeed smart tariffs will be designed to enable customers with low carbon technologies to optimise their use and value. PCWs will not have the level of data available to them to understand the segmented value that suppliers may offer customers with different low carbon technologies. Although it is appreciated that this consultation is focused on the short-term delivery of increased ToU take-up, we believe that as an industry we will need to deliver something more robust as the model of supply becomes more complicated in the coming years.

Yours sincerely

Jill Murray
Bord Gáis Energy
{by email}

## Section A: Accreditation Framework for Price Comparison Websites

**Question 1: The CRU is proposing to amend the PCW accreditation framework to allow consumers to upload their smart meter data (obtained as a HDF via the ESBN Customer Portal) to receive a price comparison based on their actual historical electricity consumption. Do you agree with this approach? If not, why not?**

BGE has no issue with customers being permitted to upload their smart meter data to PCWs but as to our general point in the introduction, past consumption is no indication of future potential cost savings. If we are to deliver the true benefits of smart meters, and shift behaviour from peak and high carbon time frames, the PCWs must show customers how they can affect their savings by changing their consumption behaviours and patterns. Advising customers simply on a single cost point will not in our view contribute to engaging customers on the journey to accepting and opting for ToU tariffs and the related shift in demand. We therefore believe that the platform and service offering of PCWs needs to be considered more strategically in the context of the policy and societal journey we are endeavouring to take.

**Question 2: The CRU is proposing not to put any restrictions on the minimum period of time that needs to be contained in smart meter consumption data that consumers can upload to the PCW. However, we propose that a warning message be included where consumers have included less than a year of data. Do you agree with this approach? If not, why not?**

As we migrate from static to dynamic tariffing, basing future cost estimations on past consumption patterns is missing the point of ToU tariffs. Customers are not being shown the clear benefit or savings that are achievable if customers respond and engage with their ToU tariffs. We believe that the advice and service PCWs provide for customers need to be recontextualized in terms of offering indications of value depending on customer behaviours and in particular, changes in those behaviours. Simply including asterix' as caveats to advice will not help engage customers or help them understand how they can best obtain value from the market with ToUs.

Unless a customer has at least a full year of smart meter data, it is likely that a customer is new to ToU and therefore has not engaged in any behavioural changes to try to curtail their energy consumption or costs. In that instance, it may be more relevant to offer that customer a different advisory tool whereby their AQ data is used to calculate their average bill without ToU and then that AQ data is flexed between different time bands to show how savings can be made through ToUs if they move consumption. Another aspect can show how they can save even more by reducing consumption completely (perhaps using the average savings across all Smart Meter customers as an industry benchmark).

For customers with a full years' smart meter data, the approach may depend on whether the customer has changed behaviour and consumption patterns already (i.e. past consumption is an indication of future consumption and costs) or whether they are only engaging with ToUs for the first time (where we revert to the point above and the advice is based on potential scenarios).

When PCWs advise customers of best value, customers expect the level of savings indicated by PCWs to be delivered. If there is any difference between expectations and what costs or savings the customer actually experiences, the supplier is generally held accountable by the customer. We therefore think it is critical that PCWs provide the right metrics and tools for customers depending on where they are at in their ToU journey.

**Question 3: Is there anything else CRU should consider with regards to this matter?**

As per overarching points in response to Q1 and Q2, BGE is of the view that a simple upload of HDF files will not provide the right context to customers. It will not help customers understand the potential for ToUs and how customers can benefit from ToUs when they their behaviour. We believe that PCWs should provide more dynamic insights for customers to better understand the options available to them depending on their capability to change consumption patterns.

Any assessment of ToU value has to make reference to changing behaviour if it is going to help in educating and informing customers to make the right decisions for them. PCWs as an assessment tool for customers to benchmark the market, must be obliged therefore to design their tools to reflect the market they are operating in. A static tool based on past behaviour, does not go far enough in our view to achieve the objective we are reaching for.

**Question 4: In case a consumer submits a HDF containing periods of missing data, the CRU is proposing that the PCW takes the following actions: • If the missing data accounts for less than 1% of the total dataset: the PCW must use the most recent ESBN load profile and calculate an estimate for the consumption during the missing period. • If the missing data accounts for 1% or more of the total dataset: the PCW must inform the consumer that there is missing data, include the percentage of missing data, and ask if they wish to continue with the price comparison using an estimate for the missing data, as outlined above. Do you agree with this approach? If not, why not?**

The reason for the missing data is critical in understanding if this is the right approach. Again, bearing in mind the overall objective here is to help educate customers and inform them of the best decisions for them, if the missing data is part of an ongoing problem, then a wider conversation with the customer to help them understand the reasons and implications for the missing data is necessary. Otherwise, the customer may be ill-advised and may not be able to reap the benefits of a ToU and changes in their behaviour.

***Question 5: Is there anything else CRU should consider with regards to this matter?***

***Question 6: The CRU would be interested in hearing whether respondents believe there is added value or not in allowing PCWs to ask consumers additional questions to identify their consumption behaviour, and tailor price comparisons. For example, whether a consumer has an Electric Vehicle. If you believe there is added value in this approach, what guidelines, if any, do you believe the CRU should implement to ensure a minimum standard across PCWs?***

In line with what we have suggested earlier, we believe the PCW tool requires more optionality to give better guidance to customers depending on their low carbon technology options available (i.e. EVs, Heat Pumps, Solar Panels, Batteries, ability to shift demand). The preferences and capability of the customer to shift their behaviour is key to understanding the value a customer can obtain from a ToU product. It is therefore crucial that the PCW tool is designed to input this data to give a customer an accurate representation for their individual circumstance. However, a balance must be struck to avoid making it too complicated and therefore a waterfall type approach with optionality might be the best design to allow for the variance between customer interests and capabilities.

***Question 7: The CRU proposes to require PCWs to implement the functionality to allow consumers to upload their smart meter consumption data (via HDF) from 1 January 2024. Do you agree with this approach? If not, why not?***

Balance is key here – we appreciate the urgency in helping customers engage with ToU tariffs to unlock demand side savings. However, if this tool is designed and implemented without giving an accurate representation, reflecting the options and ability of customers to shift behaviour, it could be counterproductive. It is crucial that customers can trust the recommendations and advice that the PCW tools provide. Just incorporating smart data into the existing tool may be a quick solution that could be implemented for January 2024, but we do not feel it would be in the best interest of the overall objective.

In short, the implementation date in our view should be determined by when the PCWs believe they can implement a suitably robust tool to deliver the optionality to reflect the true dynamics of a ToU tariff. BGE does not have sight of the capabilities of PCWs to deliver such a project and would therefore suggest CRU engages with the PCWs to understand what the earliest date of implementation could be.

***Question 8: Are there any other issues that you believe the CRU should take into consideration with regards to the timeline?***

***Question 9: The CRU proposes to amend the PCW accreditation framework to allow consumers to access price comparisons for microgeneration export tariffs between suppliers. It proposes consumers should be able to do this in one of two ways, either by submitting their actual (historical) export volume, or by submitting their deemed calculation. Do you agree with this approach? If not, why not?***

We agree that the PCW functionality should be able to incorporate microgeneration into their assessments for customers. Bearing in mind that an enduring microgeneration solution is yet to be delivered, how this is incorporated may need to be changed in time. In the short term however, the process may need to consider an estimate of future export volumes where the customer has only recently installed a microgenerator on its premises.

***Question 10: Are there any other issues that you believe the CRU should take into consideration with regards to this functionality?***

## Section B: Estimated Annual Bill for ToU Tariffs

***Question 11: The CRU proposes to extend the requirement for an EAB to all tariffs available on the market, including time of use tariffs. Do you agree with this approach? If not, why not?***

Using an EAB to represent dynamic ToU tariffs has significant limitations. The lack of granularity to reflect the impact of changing behaviour can be misleading. Scanning the current market, suppliers with different rates across day, night, peak and different propositions (such as free weekend tariffs) will represent different value for customers depending on when the customer can consume their energy. Whether a customer can simply shift the energy to off peak or to free weekend periods can have significant implications for a customers cost. EABs cannot reflect this and does not accurately represent the value in the market to customers

Recognising that the aim of EABs is to bring clarity and simplicity for customers, we suggest that retaining the EABs for SSTs to be still relevant and from there it's for suppliers and PCWs to design tools to help customers understand the value of each of the products on offer and how customers can benefit from each.

***Question 12: The CRU proposes to implement an EAB for all time of use tariffs from 1 January 2024. Do you agree with this timeline? If not, why not?***

***Question 13: With regards to the methodology for calculating an EAB for all time of use tariffs, the CRU proposes to use the demand-weighted approach, which is the same that is currently used for the Standard Smart Tariff and Day/Night tariff. Do you agree with this approach? If not, why not?***

As per our response to Q11, we do not believe that it is appropriate to introduce EABs for each ToU tariff or product. The EAB is based on a CRU determined volume and ESBN determined profile which is based on past consumption patterns and averages. The point of ToUs is to change behaviour and patterns and suppliers have designed and are designing different ToU products to help customers shift their behaviour and benefit from associated cost savings. A customer's ability to do this is individual depending on their ability to change behaviour and invest in low carbon technologies in their home. Comparisons against the average therefore become less relevant and less appropriate.

As we outlined in our response to the section on PCWs, the tools to help customers understand their costs and potential value across the market therefore need to become more individualized and reflect how changes in behaviour can impact costs. The EAB therefore in our view is counter-intuitive to the aim of ToUs and we feel would be misleading to customers. ToU products are designed and priced with different behaviours in mind and trying to create EABs for each to enable customers to compare tariffs would miss the important nuances of each of the tariffs.

That is not to say that we are adverse to EABs for the SST products. Again, we see the merit of EABs and the SST is a good entry point for customers embarking on their ToU journey. We therefore think that the EAB can be retained for SSTs but should not be mandated for all other ToUs.

***Question 14: Are there any other issues that you believe the CRU should take into consideration with regards to implementing an EAB for all time of use tariffs?***

## Section C: Limitation on Number of ToU Tariffs

***Question 15: The CRU proposes to increase the limit on the maximum number of time of use tariffs from four to eight from 1 October 2023. Do you agree with this approach? If not, why not?***

BGE is happy for the number of ToUs permitted to be increased at this point. With increasing experience of the market and customer feedback we would welcome the opportunity to increase the number of products that we can offer customers. Given the delays to Phase 2, it would seem appropriate to delink the increase in ToUs to the delivery of Phase 2.

***Question 16: The CRU proposes to end the limit on the maximum number of time of use tariffs from 1 April 2025. Do you agree with this approach? If not, why not?***

BGE is supportive of this proposal but linking it back to the proposed obligation to provide EABs for all ToUs, we do not feel that both are compatible. EABs are useful tools for customer to compare similar tariffs and product offerings between suppliers. But as suppliers increasingly integrate service and energy offerings and differentiate products depending on a household package of services, the EAB will become increasingly irrelevant and misleading. Firstly, the CRU will struggle to determine the parameters for calculating different EABs to ensure consistency.

Secondly, given the nuances of tariffs, customers will likely not be comparing like for like and the EAB will misinform the customer rather than guide the customer.

## Section D: Call for Evidence on Standard Smart Tariff Structure Review

***Question 17: CRU would welcome any views on whether respondents consider it appropriate to schedule a review on the structure of the Standard Smart Tariff ahead of the completion of Phase 2 of the NSMP (currently scheduled for the second half of 2024).***

BGE believes that the SST serves a good purpose for the market. Firstly, it provides an entry level interface for customers engaging in ToUs for the first time. It allows customers to understand how they consume and how they can benefit from general shifts in behaviour. It also acts as a shield for those who are concerned about data privacy. As the industry looks to build a robust governance framework for new data flows, it provides comfort to some that they can engage in ToUs without divulging detailed data flows.

***Question 18: CRU would also welcome views from respondents on which issues should be considered in such a review. Respondents can specifically focus on the following questions, or provide their own views:***

a) ***Is the Standard Smart Tariff achieving its purpose to be an easy to understand 'entry-point' to time of use tariffs for consumers?***

Yes – as per response to Q17

b) ***Do you have any concerns or recommendations in relation to the Day/Night/Peak structure of the Standard Smart Tariff, including the hours assigned to each time band?***

We appreciate that there are some who believe that the 'Night' rate is too late to be useful to customers and that there are calls to bring it forward. BGE has no issue in changing the time bands. We would just note however, that changing the time bands will just mean that more costs are brought into the night period and the likely effect is that night rates will increase as a result.

Tariffs at a wholesale level are set depending on a balance between demand and supply. If demand increases in the night term period – as it likely would if it was brought forward – the night rate will increase accordingly. Albeit that bringing forward the night time band to earlier in the evening may entice more customers to switch behaviour from day to night – the counter to that is that customers who were making savings from shifting to nighttime consumption will see a reduction in their cost savings.

c) ***In light of the proposed measure to extend the maximum number of time of use tariffs for each supplier from four to eight, do you see a continued need for the Standard Smart Tariff?***

Yes, we do believe that the SST will continue to be useful for customers until such time as the majority of the market has switched across to ToU tariffs. It will continue to provide useful entry level benchmark for customers.

d) ***Are there any other issues related to the Standard Smart Tariff you believe the CRU should take into consideration in a future review?***

BGE has advocated for a number of years now for more data to enable suppliers to help customers transition from static energy products to ToU. We continue to believe that with Day,

Night, Peak data as a standard for the industry and indeed even weekday, weekend breakdown of Day, Night and Peak data that we could help customers better identify potential savings and behavioural changes for them.

We believe if Ireland is to make a return on its investment in Smart that we need to take a mature review of smart data and engage with the numerous interested stakeholders to agree an improved minimum. There is a balance to be struck between the privacy of customers and the wider societal benefit of increasing the take up of ToUs.

BGE therefore asks that the CRU review the level of data made available on a default basis and engage with DECC, the DPC and others to agree a considered change.

BGE also believes that it may be worthwhile reviewing and considering changes in the DUoS profile to make the differential between time bands more pointed. ESBN has the relevant data to hand but it may be opportune at this time to review the options to change the profiles and tariffs at a DUoS level.

# Submission to the Commission for Regulation of Utilities on Incentivising the Uptake of Time of Use Tariffs

30 August 2023



CCPC

Coimisiún um Iomaíocht agus Cosaint Tomhaltóirí | Competition and Consumer Protection Commission

## Introduction

The Competition and Consumer Protection Commission ('CCPC') welcomes the opportunity to respond to the Commission for Regulation of Utilities ('CRU') consultation on incentivising the uptake of Time-of-Use (ToU) tariffs. The CCPC has a statutory function under Section 10(3)(a) of the Competition and Consumer Protection Act 2014 to provide advice to policymakers on matters likely to impact on consumer protection and welfare, or competition and the CCPC's submission reflects this mandate.

The energy markets are changing to meet the targets of the energy transition. The electricity markets have an increased emphasis on reduced energy use and ongoing efforts to encourage consumers to use smart meters to adjust their usage in line with fluctuations in generation cost. These developments have led to greater choice, but also greater complexity in terms of price plans and tariffs available to consumers. It is therefore important to identify any tools and incentives which may facilitate consumer choice and encourage their engagement and participation with new energy products.

The CCPC provide its views on the CRU's proposed measures below regarding price comparison websites (PCW), the use of the Estimated Annual Bill and the number of ToU tariffs.

## Price Comparison Websites

The CCPC notes the CRU's proposal to amend the PCW accreditation framework to allow consumers to upload their smart meter data to encourage and help consumers choose a ToU tariff. The proposal is in line with the Economic and Social Research Institute (ESRI) recommendation that "efforts to improve the user-friendliness of personalisation tools for consumers, perhaps through automation using their real usage data from smart meters, could improve the quality of choices for more consumers"[1]. The CCPC notes that

[1] Smart choices? An experimental study of smart meters and time-of-use tariffs in Ireland (esri.ie) The Study investigated consumer choice in electricity markets with time-of-use tariffs. The study's findings suggested that consumers have a general aversion to time-of-use tariffs which led them to make suboptimal choices between tariff types. However, the study also found that when participants chose between different priced time-of-use tariffs via an experimental price comparison site, decisions were significantly improved by a tool that personalised estimated costs.

the European Consumer Organisation (BEUC) has also stated that, where possible, consumers should be able to share data on their energy consumption recorded by their smart meter with comparison tools[2]. The CCPC welcomes this proposal which should provide a basis for consumers to be empowered to make accurate comparisons of offers based on their real energy usage.

The consultation paper proposes that an amended accreditation framework would require PCWs to clearly present a message alerting consumers that sharing less than one year of data may result in comparisons which do not fully reflect a consumers' consumption. The CCPC notes that the CRU proposes that there would be no minimum time limit applied to the data shared by consumers but that data of less than a year would prompt the warning message. This appears to be in line with the current approach provided in the CRU accreditation framework which sets out that a warning message must alert the consumer about early termination fees if the offers compared for less than 12 months. In addition, it may be valuable to alert consumers that changes in their consumption patterns can affect the comparison results. This is particularly so in light of the objective of ToU Tariffs to encourage consumers to alter their consumption patterns to reduce demand at peak times.

Further to this the CCPC notes that the consultation paper seeks views on whether PCWs should ask consumers additional questions to identify their consumption behaviour, and tailor price comparisons (e.g. whether a consumer has an Electric Vehicle). In 2020, the ESRI recommended that future research could incorporate the role of anticipated behaviour change into the tariff choice decisions of consumers. In field studies, the accuracy of consumers' predictions of their own future behaviour change could be measured. The ESRI indicated that if evidence of a gap between the express intentions of consumers and their subsequent behaviour is found, whether for overall usage or for shifting usage to cheaper times of the day, then reconciling this could be a fundamental policy issue in promoting the long-term success of ToU Tariffs.

The CCPC agrees that consumers will be best enabled to make meaningful comparisons when the nature of their electricity demand is more fully integrated into those comparisons. The consultation paper notes that there is a risk of inconsistency between

[2] beuc-x-2022-014_position_paper_on_energy_comparison_tools.pdf

PCWs of the questions asked of consumers. The CCPC agrees that the amended accreditation framework should include a standardised set of questions to aid comparisons. Such questions might cover topics such as use of electric vehicles or electricity-based heating systems (e.g. heat pumps)[3].

**Estimated Annual Bill for Time-of-Use Tariffs**

The CCPC notes the approach proposed by the CRU to extend the Estimated Annual Bill (EAB) to all tariffs available on the market, including ToU Tariffs that are currently not covered by it. Energy products can be complex and difficult for consumers to compare and the EAB is a tool by which such comparison might be aided. The CCPC notes that comparison of ToU Tariffs can also be supported by how the information is represented to consumers[4]. It can be expected that consumers will not recall all features of a tariff but they can be assisted in understanding the salient features. Employing a guide to the annual cost to a consumer is a key means by which to choose between tariff offers. As such the CCPC supports an approach which will facilitate comparison for consumers, including the Standard Smart Tariff with other ToU Tariffs.

The CCPC notes the three options provided in the consultation paper for calculating the EAB for ToU Tariffs and the CRU's preference to adopt the 'demand weighted approach'. The CCPC agrees with the CRU that it is imperative that consumers are made aware that the EAB is intended as a tool to compare tariff offerings, using average consumption data. The EAB can therefore complement comparisons made using accurate real consumption data. To that end the CCPC notes the CRU view that when consumers are able to upload their smart meter consumption data to PCWs, they are likely to be less reliant on generic EAB calculations and it is expected that this may mitigate the impact of potential

[3] The CCPC notes in this regard "Smarter Tariffs - Smarter Comparisons" a report prepared for the Department of Business, Energy and Industrial Strategy in the United Kingdom (UK). The report found that the available savings when comparing smart tariffs "are much larger when storage and automation technologies for electric vehicles and heating are brought into play". In addition, the report found that "smarter comparisons can also show consumers the large savings available by switching from an internal combustion engine to an electric vehicle with EV-tariff". The report is available here: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1130644/smarter_tariffs_smarter_comparisons_final_report.pdf

[4] An ESRI study in 2021 commissioned by the CRU found that consumer comprehension of ToU Tariffs can be aided through presentation in a table format and that consumers choices can be influenced by how decisions are framed (e.g. emphasising both environmental and monetary benefits). See here: https://www.esri.ie/system/files/publications/WP704_0.pdf

shortcomings in EAB methodology. It is suggested that the CRU keep the methodology under review and factor in the extent of real time data being used for comparison purposes.

**Limitation on the number of time-of-use tariffs**

According to the CRU website, there are currently 15 gas and electricity providers licensed to supply to residential and/or business consumers in Ireland[5]. Consumers have the choice between many different plans for gas and electricity services. For example, dual energy consumers (as of December 2022) have a choice of 36 plans across the top 5 providers by market share. These options include plans with smart, standard and night saver meters, but do not include the numerous plans that are available for electricity and single gas plans separately. Each of these products may apply standing charges, unit rates and discounts and this can make it challenging for consumers to compare.

Since February 2021, consumers with a smart meter have been able to avail of smart time of use tariffs. However, as of April 2023, only 7% of consumers with a smart meter avail of a time of use tariff[6]. The CCPC acknowledges the CRU argument that an increase in the number of tariffs available would enable suppliers to offer a wider range of tariffs suited for particular consumer groups, which could increase interest and participation in time of use tariffs in general. However, the CCPC is concerned that this may not be the case and that the added complexity of additional tariffs may instead lead to greater confusion and consumer disengagement instead[7]. Simplification may be preferable to facilitate the uptake of such tariffs.

Studies have shown that there is a limit regarding how much information consumers can process when making decisions. An "overload" of information or choices can inhibit their ability to make decisions instead of facilitating their decision-making[8]. Choice or information overload can contribute to consumers having a negative view of shopping

[5] https://www.cru.ie/consumer-information/switch-supplier/energy-suppliers-in-ireland/
[6] Energy Demand Strategy | CRU.ie
[7] Increased choice complexity can reduce decision quality and lead some to avoid choosing altogether (Mogilner et al., 2008, Dowding and John, 2009).
[8], H. and Krishen, A.S. (2019) 'When is enough, enough? Investigating product reviews and information overload from a consumer empowerment perspective', *Journal of Business Research*, 100, pp.27-37.

around or switching as they may perceive it to be too "time consuming or difficult to search"[9]. The CRU notes the potential for information overload in the consultation paper but takes the view that the uniformity of the Standard Smart Tariff will mean that there is one consistent ToU Tariff which may act as an 'entry-point' for consumers. The CRU expresses the view that the uniformity of the Standard Smart Tariff alleviates concerns around the complexity of smart tariff offers.

The CCPC notes that suppliers are not currently required to identify the Smart Standard Tariff in a uniform way for the purpose of comparison, although the tariff itself is to be structured in a standardised manner. In order to maximise the benefit of an 'entry-point' tariff the CRU may wish to consider amending the Electricity and Gas Suppliers' Handbook to require suppliers to identify their Standard Smart Tariff in a standardised way. In addition, suppliers should be required by the Electricity and Gas Suppliers' Handbook to present certain information in a standardised format to assist consumer comparison. For example, smart meters can be classified as either 'urban' or 'rural' smart meters, however some offers in the market use variety of terminology in regard to smart meter types. Suppliers should be obliged to describe information on the standing charges as applicable to these two types of smart meter only to avoid confusion when comparing standing charges.

As noted above, consumer savings from switching to a smart tariff are larger when they use storage or automation technology for electric vehicles or heating. The CRU may wish to consider developments in the markets for such technologies when deciding on removing the limit on the number of ToU Tariffs. This would help to ensure that the tariff offerings are tailored to the needs of consumers and can be targeted to a larger group of consumers with more specific requirements.

## Additional Comments

In order for the full benefits of competition to be realised, consumers need to be supported in being active participants in markets when researching their options and

[9] Competition & Markets Authority (2018) *Tackling the Loyalty Penalty: Response to a Super-Complaint Made By Citizens Advice on 28 September 2018*. Available at: https://assets.publishing.service.gov.uk/media/5c194665e5274a4685bfbafa/response_to_super_complaint_pdf.pdf.

availing of better deals through switching. The CCPC believes that encouraging consumers to be active participants in the energy market may lead to greater engagement with smart meter tariffs. However, the CCPC notes that some consumers find participating in markets more challenging. These include older consumers, those with lower educational attainment and those less digitally literate who are disproportionately represented amongst non-switchers[10]. The CCPC recommends that the CRU should reflect on how these consumers could be engaged with to ensure that they can also benefit from the adoption of smart meters and ToU Tariffs.

ENDS

[10] These issues are explored in more detail in forthcoming CCPC research.



Commission for Regulation of Utilities

# Call for Evidence Energy Demand Strategy

A SUBMISSION BY

CEMENT MANUFACTURERS IRELAND

30th August 2023

CMI is a business association in Ibec

## Cement Manufacturers Ireland

Cement Manufacturers Ireland (CMI) was established in Ibec in 2003 as the representative body for the indigenous cement manufacturing industry. CMI has three members; Breedon Cement, Irish Cement, and Mannok Cement. CMI is a member of Cembureau, the European Cement Association and an Associate Member of the Global Cement and Concrete Association.

Located in predominantly rural locations the indigenous cement industry has a long industrial heritage of using abundant local resources to manufacture high quality cement. Our members operate four modern cement factories to the highest European standards and support over 2,000 jobs.

The members compete on the island of Ireland to supply cement products to both domestic and export markets. Accessing export markets has broadened the customer base and been a vital source of revenue during periods of reduced demand from the domestic construction sector, allowing us to continue operations and investment in our workforce and factories.

Our members' cement factories are critical to the supply of cement for the concrete used in housing, infrastructure, transport and renewable energy projects. Cement is literally the foundation of construction sector activity here in Ireland. In addition to making cement, we recognise the nationally important role our members play in recycling and recovering significant quantities of household waste in our cement kilns. It is an important activity to help decarbonise our industry by significantly reducing our members dependence on imported fossil fuel and we look forward to expanding the types and quantities of material that can be beneficially used in our members' 'high-tech', high-temperature cement manufacturing processes.

We welcome this opportunity to inform the Commission for Regulation of Utilities (CRU) of the decarbonisation and energy demand challenges faced by our members.



**Central control room in one of our members' cement factories.**

## Cement – an essential ingredient for our economy

The critical role electricity plays in daily life is easy to see. The role of cement is no less critical to our modern way of life, but much less obvious. Cement is the key ingredient in concrete. Concrete is the most commonly used construction material because it provides unrivalled versatility, resilience, safety, and durability. Cement and concrete are essential for building the homes and infrastructure needed by our modern economy. Our product is literally the foundation of Ireland's construction activity, supporting thousands of jobs and enabling virtually every construction project on the island.

The cement manufacturing process runs 24/7 and requires stable continuous operations to ensure consistent high-quality cement is manufactured to meet customer demand. Due to the nature of our manufacturing process and the scale of the equipment in our members' cement factories our sector has a very high electricity demand. Our members are considered to be Extra Large Energy Users. As an industry, we continue to assist the grid operator to manage electricity supply by shedding electrical load during the 'winter peak'. Our members have made significant investments to reduce energy demand and introduce more energy efficient plant and equipment. As a sector we use approximately 5 million tonnes of local rock as raw materials each year and due to the nature of the cement manufacturing process reducing electricity demand further would be extremely difficult.

**Key Message - Number 1**
**The first important message of this submission is that the continuous nature of our members' cement manufacturing process necessitates continuous access to electricity. The cement factories cannot operate on an intermittent basis and the challenge that lies ahead is to ensure continuity of supply as more renewables are brought into the system.**

## Decarbonisation – a global challenge

CMI members are working to achieve our industries global commitment to reach net zero by 2050. Global sector roadmaps indicate the investments, technologies and policies required to achieve this commitment. Progress has been achieved to date, further progress using existing proven systems and technologies can be achieved and post 2030 new innovations and technologies will be essential to achieve this ambitious target.

One of these technologies is carbon capture utilisation and storage (CCUS) and the global roadmaps estimate it will be responsible for between 30-40% of the emission reductions of the cement industry by 2050. To achieve this goal each cement factory will need to invest hundreds of millions of euro transforming their process and adding significant new infrastructure. Much research and development and pilot scale work has been completed in European cement factories and now a number of early projects are progressing towards

commercial application. From an electricity demand perspective, it is clear that the deployment of these large-scale CCUS technologies can double the electricity demand of the location.

**Key Message - Number 2**

**This is the key message of our submission.**

- **investment in CCUS is essential for our members to achieve net zero by 2050.**
- **As a result, up to a doubling of the electricity demand in each members' location is expected.**

Our members were happy to read the following statement in the discussion document which recognises the fundamental requirement for some industries that to decarbonise they need to use more electricity, once that electricity itself has been decarbonised. *The electricity sector will facilitate the decarbonisation of heat, transport and industry through increased electricity demand, and this, in addition to the increased demand from large energy users, has been factored into the development of CAP23.* Our members are keen to work with the CRU, Eirgrid, ESB Networks, generators and providers to plan the sequencing of this additional demand and what infrastructure and investment will be required.

## Cement – an industrial transformation

Construction activity is closely linked with economic activity, and this has been demonstrated again and again across many different economies. Cement is essential for modern thriving economies and our members are confident that there is ongoing demand for cement and concrete to meet the construction demand in Ireland for housing, healthcare, schools, transportation, infrastructure and renewable energy projects. Page 18 of the National Planning Framework under Project Ireland 2040 states "*The ESRI projects that the population of Ireland will increase by around one million people or by 20% over 2016 levels, to almost 5.7 million people by 2040"* and "*This will give rise to a need for at least an additional half a million new homes by 2040*."

As an essential industry our members recognise their responsibility to transform the way they make cement to ensure, as a key construction material it continues to perform at the highest levels but with significantly less environmental impact. The transformational challenge facing our members is to achieve further reductions in fossil fuel consumption, the introduction of alternative raw materials and investment in CCUS and other innovative technologies, all while maintaining product quality. Over the coming decades our members will see significant transformation requiring substantial investment. Much of this is within our own control but there will also be exposure to external factors and decisions. As XLEUs, our members will be vulnerable to any deficiencies in energy supplies and accessing future investment will require certainty around future security of supply.

## Responses to CRU questions

*Q1. What are stakeholder's views on the stated aims of the project? Are there barriers to achieving a successful outcome of implementing an energy demand strategy to meet project climate objectives (viz. carbon emissions reduction)? Are there areas that could benefit from greater policy and regulatory clarity? Are there areas where further alignment between the relevant entities (e.g. state agencies, corporate obligations) to coordinate and enable the delivery of an energy demand strategy would be beneficial?*

While the ambition set out in the recent Climate Action Plan is clear, the practical steps to implementation is less clear. Large scale investment and transformation of the energy supply system requires a coordinated approach and close collaboration between all the players involved. Our members are committed to working collectively to ensure that coherent fully informed policies are developed that deliver the best outcomes for all.

*Q2. What are stakeholder's views on the proposed scope (focus areas) and approach (phasing) of the project?*

Our members have for many years managed electricity demand in a responsible manner, through significant energy efficiency investments and supporting the grid through the practice of periodically shedding load during critical periods. Some activities in the cement factories require continuous supplies of electricity but outside that our members are open to working constructively to explore the full range of options that will support a sustainable energy demand strategy or Ireland.

*Q3. What are stakeholder's views on energy demand profiles and the challenges arising from the associated carbon emissions?*

Our members, already some of the largest electricity customers, have we believe a unique position in the Irish market in that the pathway to net zero is predicated on securing access to significant increases in electricity supply. This additional demand is expected in the mid-2030s, and our members are keen to work with all relevant stakeholders to plan the sequencing of this additional demand and what infrastructure and investment will be required.

*Q4. What are stakeholder's views on the definition for demand flexibility? How should demand flexibility be measured and reported on an ongoing basis? What metric (annual peak system demand / total annual energy consumption / other?) should be used. How should compliance with the CAP targets be assessed for demand flexibility in 2025 and 2030?*

Any metrics chosen must take account of real-world demand profiles. A 'one size fits all' approach will not work for the variety of industrial energy requirements that exist. Indigenous Irish industry both existing and potential new entrants need security of supply in the short to medium term as additional renewable generation capacity is developed.

*Q5. What should be the areas of focus for demand flexibility?*

The focus must be to prioritise customers who require continuity of supply, like some activities in the cement factories, and then put in place appropriate incentives that facilitate additional demand flexibility across key large users. The principal challenge arises during period of low renewables generation and finding robust mechanisms to bridge those gaps, which is likely to involve the deployment of large-scale storage.

Q6. What are stakeholder's views on the attached ESBN document, 'Scenarios for 15-20% Flexible System Demand', which has been published as part of this four-document package.

Within the current system available in the energy market our members have made great efforts to support the grid during peak periods of demand and have been willing to shed load where possible when it does not impact on production schedules. Some activities within the cement factories can be scheduled to avoid peak hours but for others continuity of supply is critical. In simple terms our members manufacture cement to meet the market demand, with the factories running 24 hours per day 7 days per week. Intermittent operation of the cement kilns can have significant negative impacts on the mechanical operation and energy performance of the facility. Previously more favourable incentives were provided to our members and other large users to provide additional demand flexibility. These schemes, we believe are worth reconsidering.

Given the scale of the challenge our members believe a variety of systems and technologies will need to be deployed. Each of our four member locations may differ in the systems and technologies deployed so our members would welcome the opportunity to engage directly with representatives from the CRU and ESBN to explore the local opportunities and challenges.

# Conclusion

### Key Message - Number 1

Our members' cement factories cannot operate on an intermittent basis and the challenge that lies ahead for the energy sector is to ensure continuity of supply as more renewables are brought into the system.

### Key Message - Number 2

This is the key message of our submission:

- investment in CCUS is essential for our members to achieve net zero by 2050.
- As a result, up to a doubling of the electricity demand in each members' location is expected.

Manufacturing cement is fundamentally an energy intensive activity with significant carbon dioxide emissions arising from the processing of the raw materials. Our members have through investment, fossil fuel replacement and product innovation reduced the carbon intensity of our cement by approximately 20%. Further initiatives and investment are under way and how the cement factories access and use electricity in the future will assist our progress to net zero by 2050.

Our members have for many years managed electricity demand in a responsible manner, through significant energy efficiency investments and supporting the grid through the practice of periodically shedding load during critical periods. Some activities in the cement factories require continuous supplies of electricity but outside that our members are open to working constructively to explore the full range of options that will support a sustainable energy demand strategy or Ireland. We remain committed to working with the CRU, and others to ensure that as Ireland transitions to more renewable generation, indigenous industries like the cement industry continue to thrive because the correct policy supports and investments have been put in place to ensure Ireland has a robust and resilient energy system.

Commission for Regulation of Utilities

# Call for Evidence on a Review of Large Energy Users connection policy

A SUBMISSION BY

CEMENT MANUFACTURERS IRELAND

30th August 2023

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**Key Message - Number 1**
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One of these technologies is carbon capture utilisation and storage (CCUS) and the global roadmaps estimate it will be responsible for between 30-40% of the emission reductions of the cement industry by 2050. To achieve this goal each cement factory will need to invest hundreds of millions of euro transforming their process and adding significant new infrastructure. Much research and development and pilot scale work has been completed in European cement factories and now a number of early projects are progressing towards

commercial application. From an electricity demand perspective, it is clear that the deployment of these large-scale CCUS technologies can double the electricity demand of the location.

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Our members are keen to work with the CRU, Eirgrid, ESB Networks, generators and providers to plan the sequencing of this additional demand and what infrastructure and investment will be required.

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As an essential industry our members recognise their responsibility to transform the way they make cement to ensure, as a key construction material it continues to perform at the highest levels but with significantly less environmental impact. The transformational challenge facing our members is to achieve further reductions in fossil fuel consumption, the introduction of alternative raw materials and investment in CCUS and other innovative technologies, all while maintaining product quality. Over the coming decades our members will see significant transformation requiring substantial investment. Much of this is within our own control but there will also be exposure to external factors and decisions. As XLEUs our members will be vulnerable to any deficiencies in energy supplies and accessing future investment will require certainty around future security of supply.

## Responses to CRU questions

| **Decarbonisation of energy demand** | **Response** |
|---|---|
| 1. Comments are invited from stakeholders on the proposed approach of decarbonising energy demand with a view to achieving net zero emissions from LEUs at time of connection. Please provide reasons and rationale for any views provided. | **Access to sufficient electrical energy is essential for our members to transform their operations to deliver the goal of net zero by 2050. Rather than achieving net zero prior to connection or any increases in demand, access to energy is critical to facilitate the journey to decarbonise our industry. For example, carbon capture systems will require significant additional electrical supply, and then substantial emission reductions can be achieved at each location.** |
| 2. Comments are invited from respondents on the need for onsite generation and storage capability for LEU connections. Please provide reasons and rationale for any views provided. | **Onsite generation, particularly renewable options, and storage are of interest to our members however there are currently significant hurdles to overcome. We would welcome efforts to support the delivery of these options at scale. These could be useful supplementary supports to back up our members' primary grid delivered supply.** |
| 3. Comments are invited on the use of CPPAs for additionality of renewable generation outside of support schemes for decarbonising electricity consumption. What type of de-rating may be appropriate to reflect real-world performance of renewable generation during peak times. Please provide reasons and rationale for any views provided. | **CPPAs are currently less commercially attractive in the Irish market compared to other markets in Europe and this needs to be addressed to encourage greater uptake here.** |
| 4. Based on preference that renewable electricity and /or gas contributes to Ireland's emissions targets and security of supply, do respondents have a view in relation to how electricity feeding into Irish system and renewable gas credits feeding into the Irish system could be tracked? | **Our members would welcome the introduction of incentives for behind the meter renewables generation. These should be adopted to reduce network consumption and to encourage greater behind the meter uptake.** |
| *5. Comments are invited from stakeholders on the use of renewable gas credits (feeding into the Irish natural gas system) in order to facilitate the connection of gas demand to the system. Please provide reasons and rationale for any views provided.* | *No cement industry response* |

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| **Demand flexibility** | |
| 6. Comments are invited from respondents on enabling demand flexibility requirements as described above. Please provide reasons and rationale for any views provided. | **Our members have for many years managed electricity demand in a responsible manner, through significant energy efficiency investments and supporting the grid through the practice of periodically shedding load during critical periods. Improved collaboration with the grid along with increased incentives rather than penial charges will encourage additional demand flexibility.**<br>**The returns for the demand and frequency response (DSU &DS3) are reducing year on year in direct conflict with the increasing need for flexibility.**<br>**Build out of offshore wind will allow for more consistent generation. Policy and financial support for battery storage options is also required.** |
| 7. Are there other sources of flexibility that can be provided? | **Additional UK & EU interconnectors** |
| **Interruptible contracts for gas connections** | |
| *8. Comments are invited from respondents on the introduction of interruptible type supply contracts for gas connections. Please provide reasons and rationale for any views provided.* | *No cement industry response* |
| **Real time zero carbon emissions** | |
| 9. Comments are invited on real time zero carbon emissions, shifting of demand in realtime to times of high renewable energy availability. Please provide reasons and rationale for any views provided. | **See response number 6 above.** |
| **Definition of an LEU** | |
| 10. Comments are invited from respondents on what they consider to be an appropriate definition of an LEU for electricity and gas for the purposes of this review. Please provide reasons and rationale for any views provided. | **DG6-DG9** |
| 11. Comments are invited from respondents on whether this review should only apply to Extra Large Energy Users (XLEUs) in | **DG10+** |

| | |
|---|---|
| relation to electricity. Please provide reasons and rationale for any views provided. | |
| *12. Comments are invited for gas LEU definition of those with a peak hourly demand greater than 50MW thermal input and a connection pressure of 16 bar or above. Please provide rationale for any views provided.* | *No cement industry response required* |
| **Islanded Connections on the Gas Network** | |
| *13. Comments are invited from respondents on the treatment of 'islanded' LEUs. Please provide reasons and rationale for any views provided.* | *No cement industry response* |
| *14. Should the connection of LEUs to the natural gas network focus on security and decarbonisation as per the Government Policy Statement on Security of Electricity Supply. Please provide reasons and rationale for any views provided.* | *No cement industry response required* |
| **General questions** | |
| 15. Please suggest any alternative approaches not captured above that could help in meeting the challenges outlined. | **Given the scale of the challenge our members believe a variety of systems and technologies will need to be deployed. Each of our four member locations may differ in the systems and technologies deployed so our members would welcome the opportunity to engage directly with the representatives from the CRU to explore the local opportunities and challenges.** |
| 16. Should provisions apply to all LEUs connections, or are there are any exceptions that should apply? Please provide reasons and rationale for any views provided. | **Our members believe that it is fundamentally important for the electricity grid to support existing indigenous industry. New LEU connections should be assessed in terms of their national importance and their contribution to the sustainable supply of goods and services on the island of Ireland.** |
| 17. Please suggest any incentives which could be applied to new LEU connections in facilitating some of the measures described above. Please provide reasons and rationale for any views provided. | **Greater DSU & DS3 support.**<br><br>**Support of new Capex for Renewable installations and Batteries**. |

## Conclusion

**Key Message - Number 1**
**Our members' cement factories cannot operate on an intermittent basis and the challenge that lies ahead for the energy sector is to ensure continuity of supply as more renewables are brought into the system.**

**Key Message - Number 2**
**This is the key message of our submission:**

- **investment in CCUS is essential for our members to achieve net zero by 2050.**
- **As a result, up to a doubling of the electricity demand in each members' location is expected.**

Manufacturing cement is fundamentally an energy intensive activity with significant carbon dioxide emissions arising from the processing of the raw materials. Our members have through investment, fossil fuel replacement and product innovation reduced the carbon intensity of our cement by approximately 20%. Further initiatives and investment are under way and how the cement factories access and use electricity in the future will assist our progress to net zero by 2050. Access to increased supplies of renewably generated electricity will unlock future carbon capture opportunities by our members which will be essential to reach the goal of net zero cement and concrete.

Our members have for many years managed electricity demand in a responsible manner, through significant energy efficiency investments and supporting the grid through the practice of periodically shedding load during critical periods. And we remain committed to working with the CRU, and others to ensure that as Ireland transitions to more renewable generation, indigenous industries like the cement industry continue to thrive because the correct policy supports and investments have been put in place to ensure Ireland has a robust and resilient energy system.

COMHAIRLE CONTAE AN CHLÁIR | CLARE COUNTY COUNCIL

**The Commission for Regulation of Utilities**
**The Grain House**
**The Exchange**
**Belgard Square North**
**Tallaght**
**Dublin 24**
**D24 PXWO**

30/08/2023

**Re: CRU Review of Large Energy Users Connection Policy - Call for Evidence**

A Chara,

I refer to the above Consultation Paper on CRU proposed direction on Large Energy Users Connection Policy including relating to Data Centres grid connection and I wish to make the following observations on behalf of Clare County Council. The Council understands the rationale behind the proposed call for evidence given the publication of Sectoral Emissions Ceilings and the Government Statement on Data Centres published in July 2022 and the need to ensure the stability of the power transmission and service networks nationwide.

In general, the Council supports the Government Statement on Data Centres July 2022 and a policy of a coordinated approach in relation to connections to the electricity and gas networks. However, the policy needs to be informed on a site specific basis, based on the Strategies & Planning Policy put in place by Local Authorities, location within a constrained or unconstrained region of the electricity system and the ability to comply with Government Policy on Data Centres.

It does, however, wish to make a number of suggestions which need to be considered when making connection offers: –

1. Some account should be taken of whether a specific site for data-centre development has been identified within the Development Plan of the Planning Authority. Where the development of one or more data centres has been identified as a strategic objective in a Development Plan and land has been set aside for that purpose, it should be clear that such a policy and designation should have an impact on prioritisation. If such an approach is not taken, it will become impossible for a Planning Authority to take a strategic approach to the development of data centres with any level of confidence and the context for engaging with potential developers of such data centres will become very tenuous. Such a situation would fly in the face of current Government economic development promotion policy.

An Stiúrthóireacht Forbairt Gheilleagrach
Áras Contae an Chláir, Bóthar Nua, Inis, Co. an Chláir, V95 DXP2
Economic Development Directorate
Áras Contae an Chláir, New Road, Ennis, Co. Clare, V95 DXP2
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2. Developers and End Users must have the ability to comply with the recent *'Government Statement on the Role of Data Centres in Ireland's Enterprise Strategy'*, published on 27 July 2022, which sets out a number of agreed principles including:

    i. ***Grid Capacity and Efficiency*** - *The Government has a preference for data centre developments that make efficient use of our electricity grid, using available capacity and alleviating constraints.*

    ii. ***Renewables Additionality*** - *The Government has a preference for data centre developments that can demonstrate the additionality of their renewable energy use in Ireland.*

    iii. ***Decarbonise Data Centres by Design*** - *The Government has a preference for data centre developments that can demonstrate a clear pathway to decarbonise and ultimately provide net zero data services.*

    iv. ***SME Access and Community Benefits*** - *The Government has a preference for data centre developments that provide opportunities for community engagement and assist SMEs, both at the construction phase and throughout the data centre lifecycle*

3. The ability to mitigate heat extraction by providing access for District Heating.

4. Clare is in an unconstrained area where grid power is available. The current policy under CRU/21/124 requires onsite generation to enable power to be despatched back to Grid on demand. The system operators should be allowed discretion in these locations where no security of supply risk exists.

5. It is important that the Legislation around Private wire to allow direct connection of wind and solar Farms to Data Centre sites be progressed to enable direct connection of Data Centres.

6. The Council is also of the view that account be taken of the proximity of a proposed data centre site to a high-voltage transmission and distribution network. Account should be taken of the capacity of a Local Authority area to generate electricity from renewable resources and the extent to which the planning policies of that area provide support for such generation (as set out in the statutory County Development Plan) including access to local sustainable Solar, Wind and over time access to Hydrogen and Bio Methane.

7. Also, account should be taken of projects which have been approved for renewable energy generation within the County in which the proposed Data Centre is located.

8. The Council acknowledges the need to ensure continued security of electricity supply while supporting the growth in renewable electricity generation from wind and solar energy and in this regard has proactive policies supporting the many renewable energy projects in Co. Clare.

9. Data Centre projects at planning or pre-planning stages should be given status in the proposed Direction in particular in unconstrained locations with a firm access to power.

It should be acknowledged that the existing and proposed growth of renewable energy generation in Co. Clare and off the Clare coast responding to significant demand growth and the retirement of existing generating stations shows the leadership position that we have taken in the supply of renewable energy to the grid.
This Council respectfully requests that you take the above points into consideration before a further Direction is issued.

Is Mise, le Meas,

Dr Carmel Kirby
Director of Service
Economic Development & Ennis Municipal District

# Cloud Infrastructure Ireland response to CRU Call for Evidence Paper – Review of Large Energy Users connection policy

**About Cloud Infrastructure Ireland**

*Cloud Infrastructure Ireland ("CII") is a trade association within Ibec focused on the infrastructure policy issues that affect cloud providers. Ireland's cloud infrastructure enables much of the Irish and global digital economy worth billions and is responsible for tens of thousands of jobs. A thriving cloud infrastructure is vital to Ireland's economic success, as a growing number of businesses locate in regions with well-developed cloud infrastructure. CII seeks partnerships with national and local governments to protect and nurture cloud infrastructure to enhance Ireland's global economic standing.*

**Introduction**

Area 3 of the "CRU Energy demand strategy Project call for evidence," consultation (EDS, issued June 21st, 2023) outlines that the CRU are undertaking a review of the processing of new large energy demand grid connections to the electricity and gas systems. The aim of the review is to provide a pathway for new Large Energy User (LEU) connections to the electricity and gas systems which minimises the impact on national carbon emissions while providing a clear path for business investment and growth.

CII recognises the efforts made by the CRU in this regard and welcomes the opportunity to respond to the consultation. CII believes that Ireland's power sector can only decarbonise if sufficient carbon-free generation is built out over the coming years and the grid and other resources are developed to support their integration. Ahead of responding to the questions below, CII notes that the approach outlined in the call for evidence is atypical. In European electricity markets the responsibility for ensuring that adequate, clean generation capacity is added to the grid does not rest with electricity consumers. The regulatory model established by the past four EU energy packages appoints National Regulatory Authorities (NRAs) as responsible for ensuring sufficient resource adequacy, and ensuring a functioning market is in place to deliver the resources needed. CII believes that requiring LEUs to take responsibility for adding new generation to the grid diverts from this practice. CII encourages the CRU to ensure this approach does not become common practice and is sunset after it is no longer necessary.

In order to ensure that security of supply is maintained on the Irish grid and the sector's carbon budget is respected, the CRU must ensure that Irish power markets, ancillary services and other market products are designed such that they deliver the resources the power sector needs to meet both of these demands. The long-term health of the Irish power system depends on well-functioning markets and products that deliver firm and flexible carbon-free generation in a timely manner, respecting the remaining carbon budget.

Finally, it is worth remembering that demand for data centre services is a function of the digitalisation of our society, the growth of our economy and of our population. In an Irish context alone, since 2016 our economy (GNI*/Modified Gross National Income) has grown by 59%, our population has increased by 8% or an extra 390,000 people and our numbers in work have jumped by nearly 500,000 or 3.5%

per annum. In this time period, the total growth in demand for electricity was 9%[1]. Playing its role at the heart of these remarkable numbers are hyper-scale data centres. In recognition of that role the Irish government policy statement on Data Centres from July 2022 observed:

*'Data centres are not a separate or optional economic infrastructure – they are integrated into our data-driven knowledge economy and information society. Digital infrastructure should be assessed in the context of the total economic value it gives rise to, including employment across the value chain, as well as its role in underpinning the evolving data economy….data centres represent a core digital infrastructure for both Ireland's and Europe's digital economies and for strengthening Ireland's position as a strategic international location for IT services.'*

These figures and the above quote are, CII believes, important context when considering the issues under review in this Consultation process.

**Q.1**

**Comments are invited from stakeholders on the proposed approach of decarbonising energy demand with a view to achieving net zero emissions from LEUs at time of connection. Please provide reasons and rationale for any views provided.**

Cloud Infrastructure Ireland (CII) members strongly support the objective of decarbonising the electricity system. CII's members are the global leaders in corporate clean energy procurement and have, through Power Purchase Agreements (PPAs), committed to enabling over 1100 MW of renewable capacity in Ireland -with no direct Government or consumer subsidy. To achieve net zero, every sector of the economy must decarbonise and ensure that its sectoral carbon budget is respected, including the power sector. Decarbonising the power sector must be a priority given its critical role as the backbone of the economy, enabling economy-wide decarbonisation via electrification.

Given the complexity of the electricity grid, the CRU should provide optionality which allows for multiple pathways to demonstrate that a facility will be 'net zero.' Optionality recognises that there are many different clean energy resources & technologies (e.g. renewables, storage, demand response), sourcing mechanisms (e.g. physical PPAs, financial PPAs, on-site generation, direct investment) and other actions that LEUs can leverage to contribute to reducing power sector emissions. We are supportive of two options for all LEUs: 1) annual matching, whereby an LEU demonstrates their new load will result in net zero emissions, by matching annual new procured clean energy generation with new annual DC consumption, or 2) LEUs may adopt an hourly matching approach, whereby the LEU demonstrates that their new load will be net zero emissions by sourcing carbon-free energy to match that load in every hour of every day.

Allowing two options recognises the diversity of approaches taken by business to achieve net-zero emissions. Within the data centre (DC) industry alone there are dozens of sustainability standards, regulations, and voluntary schemes that different operators subscribe to depending on their business model, customer needs, or where they are located. These include the Climate Neutral Data Centre Pact Self-Regulatory Initiative, EU Green Public Procurement criteria for DCs, the Blauer Engel standard for DCs, CEEDA, ENERGY STAR, BREEAM and many more. For business more generally there

[1] Statement of Mr. Mark Foley, EirGrid plc Chief Executive, to the Joint Committee on Environment and Climate Action – 30th August 2022. "The total growth in demand for electricity over the last 5 years has been 9%."

are many other widely used standards for emissions accounting the primary example being the GHG Protocol Corporate Standard. Many corporate buyers are committed to achieving a 100% annual renewable energy match, and some energy consumers are pursuing 24/7 carbon-free energy, matching their demand with carbon-free supply from the same grid in every hour. These schemes recognise that there are many different ways that corporates can contribute to reducing their operational emissions. The approach taken for defining net-zero emissions for LEUs should not therefore be limited to a single approach and should recognise the diversity of sustainability programmes undertaken by businesses.

If a requirement is introduced that new LEU connections must result in net zero emissions, it is important to ensure such a requirement is applicable and achievable by all types of LEUs. In the case of DCs, operators request firm capacity in time for a facility to be powered on and then grow into that capacity over time, relying on ramp schedules to meet growing digital demand. It is important that the requirements for LEUs to deliver net zero are sequenced to align with the consumer's demand ramping schedule, rather than being solely based on the requested MIC.

There is also a period of time between when a PPA is signed and the Commercial Operation Date (COD) of the project. This time is outside of the control of the LEU. Projects can face delays due to planning, grid connections, supply chain disruptions, or other issues. A connection agreement (CA), and the investment that follows a CA, cannot be put at risk by factors outside an LEU's control. Therefore, we recommend that demonstrating net zero as part of an application for a connection agreement should require the LEU to show commitment to contracting with a renewable project, but is not dependent on the project being operational.

CII recommends taking the following approach for ensuring that new LEU demand is 'net zero emissions'. This requirement should only apply to new load that has not yet received a grid connection.

- The scope should be limited to operational emissions arising from electricity at the facility (i.e. scope 2 emissions as defined by the 2015 GHG Protocol corporate standard guidance)
- Net zero emissions can be achieved by either demonstrating a 100% annual renewable energy match, or by achieving a 100% hourly carbon-free energy match for the anticipated new electricity demand. This is the approach adopted under the Climate Neutral Data Centre Pact as mentioned in the Government Statement on Data Centres.
- In order to encourage the deployment of a diversity of clean energy resources, account for the contribution of the resources below in the following way:
    - In a given year, each MWh of carbon-free electricity sourced by the operator from a project located on the island of Ireland counts as a MWh of net-zero electricity consumption
    - In a given year, each MWh of carbon-free electricity sourced by the operator from a project located in a neighbouring country with interconnection capacity with Ireland counts as a MWh of net-zero electricity consumption (with an appropriate cap on the contribution such projects can make, see response to question 4)
    - In a given year, each MWh of electricity demand shifted by the operator from an hour with high fossil fuel generation to an hour with high levels of carbon-free generation /lower fossil fuel generation contributes a MWh of carbon-free electricity consumption towards the operator's target (provided this shift can be demonstrated by the LEU)
    - In a given year, each MWh of carbon-free electricity stored and discharged in a storage asset on the island of Ireland which the operator contracts with, contributes

a MWh of carbon-free electricity consumption towards the operator's target (provided that the asset is certifiably charged with carbon-free energy)
    - A company may measure the level of renewable energy or carbon-free energy they source in accordance with a publicly available methodology
- Clean electricity may be sourced through either a physical PPA, a financial PPA, other energy supply contract, or through direct investment in generating assets (including on-site generation) and shall count equally regardless of sourcing instrument. Guarantees of Origin are the most appropriate means of demonstrating adherence and avoiding double counting.
- We recommend that demonstrating net zero as part of an application for a connection agreement should require the LEU to show commitment to a PPA or other instrument within 3-years of the approval of the application to account for the time it takes to negotiate an offtake agreement. An obligation to deliver an operational project within a fixed timeframe is not practical, as many factors such as permitting and grid connection timelines are outside of the control of the LEU.

CII is pleased to recommend this approach for determining if an LEU is resulting in net zero emissions for the purpose of securing a connection agreement. We believe this approach can help ensure Ireland meets the ambitious decarbonisation goals set out in the Climate Action Plan while also enabling economic investment. We are available to discuss the concepts outlined above with the CRU and we stand ready to work with the CRU, EirGrid, and other stakeholders to implement this approach.

**Q.2**

**Comments are invited from respondents on the need for onsite generation and storage capability for LEU connections. Please provide reasons and rationale for any views provide**

Developing additional onsite storage and generation resources can be challenging for LEUs given the availability of landholdings and permitting. Developing these resources will make business sense for some LEUs, however requirements for new LEU facilities are already challenging in Ireland, and an obligation to develop on-site generation or storage will create significant hurdles for new investments in Ireland. The requirement for gaining permitting for on-site generation ahead of receiving a Connection Agreement from EirGrid is onerous and introduces risk to LEUs. Achieving such permits is challenging as the technical project requirements are not defined until the Connection Agreement is issued. Furthermore, onsite investments are not necessarily optimised to meet system needs and therefore, may not be the most cost-effective method for decarbonising and balancing the system. Rather than asking an LEU to co-locate storage or generation, we recommend flexible solutions that allow for investments that can be sited in other locations on the Irish grid. Therefore, an LEU can invest in, for example, large-scale battery storage that is needed to support the grid in one location and build a new LEU in another location. Limiting investments to on-site could constrain the opportunity for LEUs to deploy more cost effective and resilient solutions to support decarbonisation and better integration of renewables on the Irish grid.

Many DC designs now incorporate solar PV, however these arrays can only meet a very small fraction of a facility's energy needs and cannot provide enough power or reliability to meet the needs of a DC. LEUs can have a much more positive impact on the grid if there is flexibility to locate renewable and storage projects in sites where they are optimised for their output and the needs of the grid.

**Q.3**

**Comments are invited on the use of CPPAs for additionality of renewable generation outside of support schemes for decarbonising electricity consumption. What type of de-rating may be appropriate to reflect real-world performance of renewable generation during peak times? Please provide reasons and rationale for any views provided**

PPAs are the most effective instrument that LEUs can leverage for supporting additional new renewables. CII members have so far committed to 1100 MWs of renewable energy in Ireland and continue to increase their portfolio of renewables in Ireland and globally. The benefits of PPAs for grids and consumers have been well documented by the International Energy Agency (IEA) and the European Commission. CII is supportive of allowing an LEU to contract for PPAs that generate additional renewable energy to meet the requirement that new connection agreements (CAs) result in net zero emissions, provided the accounting guidance outlined in response to Q1 is followed.

'Additionality' should mean any generation that does not receive a payment under RESS, REFIT or other government support scheme at the time it is produced. A de-rating factor for a PPA based on the distance from the LEU's location should not be applied - the volume of renewable energy required should be determined based on the expected average annual generation by the asset. I-SEM operates a single bidding zone, and all renewable electricity supplied into the market is treated equally. No de-rating factors are applied within I-SEM based on location. It is true that, due to grid congestion, some renewable energy projects face higher levels of curtailment than others. However, instances of congestion at specific grid bottlenecks are not permanent and over time can be resolved, so it would not be accurate to apply different de-rating factors based on a snapshot of the current congestion map. CII members and Ireland have a shared goal to reduce the carbon intensity of the Irish power sector. De-rating projects makes no contribution to this shared goal. The assumptions used for future capacity factors for renewable energy technologies should instead align with the average capacity factors used in the modelling underpinning Ireland's National Energy & Climate Plan. LEUs should also be given the option to update their estimates of the volumes of renewable energy they must procure at a later point based on the real-world capacity factors of their renewable projects.

A necessary condition to enable LEUs to deliver more renewables deployment via PPAs is addressing several fundamental barriers to PPAs in the Irish market. The updated Renewable Energy Directive will require member states to remove unjustified barriers to and promote the uptake of PPAs. Ireland does not have as developed a corporate PPA market as other European markets. Barriers that should be addressed to enable LEUs to deliver new renewable capacity to the grid via PPAs include:

- Fundamental issues hinder the market for renewable energy and create long timelines for projects. These include high grid connection costs, uncertainty over connection timelines, restrictive planning guidelines, high business rates, limits on planning permission lifetime, high levels of renewable curtailment, and a complex and long development process. More investment in the grid and resources to reduce curtailment is needed to make PPAs more competitive in Ireland.
- High strike prices and favourable terms in the RESS make PPAs a less attractive option to developers and increase prices. At almost 98€/MWh, the average strike prices from the RESS2 auction are much higher than in other markets. Contracts offered under RESS2 also offer attractive terms to renewable energy buyers including remunerating generators when curtailed, an increasingly attractive feature for developers given the growing levels of curtailment. As a result, PPA prices are higher compared with other European markets. As an

example, the Level Ten Q1/2023 European PPA index has an average strike price for solar projects of around 73€/MWh across Europe, significantly lower than in Ireland. Increasing competition and ensuring a level playing field between auctions and PPAs is essential to enabling LEUs to enter into competitively price PPAs. Auction rules can be updated to ensure a level playing field

**Q.4**

**Based on preference that renewable electricity and / or gas contributes to Ireland's emissions targets and security of supply, do respondents have a view in relation to how electricity feeding into Irish system and renewable gas credits feeding into the Irish system could be tracked?**

The CRU asks that electricity generated by renewable energy projects enabled through PPAs are "feeding into the Irish system" and CII recognises the value of having new renewable energy powering the grids where we operate. The Irish system is interconnected to the UK (both Great Britain and Northern Ireland), will be interconnected to France by 2026, and is considering an interconnect with Spain. We believe that "feeding into the Irish system" must also include PPAs for renewable energy that are enabled on these grids that directly connect into Ireland too because this power is also "feeding into the Irish system". This aligns with the methodology used by the Sustainable Energy Authority of Ireland (SEAI), which states in its 2022 report[2] that "Imported electricity is also considered as zero carbon from Ireland's perspective, as emissions are counted in the jurisdiction in which they are emitted." Furthermore, increased renewables in an interconnected market will increase the volume of zero carbon electricity imported to Ireland, which avoids Ireland having to rely on indigenous carbon emitting generation to meet demand. An LEU that provides additional renewables in a connected market is thereby supporting the increase of imported zero carbon electricity that feeds into the Irish system and a reduction in Irelands in-jurisdiction emissions.

Therefore, PPAs enabled by an LEU in interconnected jurisdictions should count towards an LEUs net zero commitments and be treated as feeding into the Irish electricity system. As stated above, we strongly urge that electricity "feeding into the Irish system" is defined by the national borders of Ireland and the neighbouring countries interconnected into the Irish system since power generated in these countries is also feeding into the Irish system. We would question how a more restrictive approach would be consistent with European Union rules around the single market, which are designed to ensure that it remains competitive and undistorted, while also supporting the removal of barriers to cross-border trade in electricity and providing opportunities for consumers to act as market players in the energy market and in the energy transition.

To ensure that the net-zero requirement still results in new renewable capacity being built in Ireland, a cap can be placed on the contribution that projects in interconnected markets can make towards an LEU's requirement. We recommend setting the level for this cap at the total rated interconnector capacity between Ireland and neighbouring markets.

For power, the existing Guarantee of Origin (GO) system is suitable to allow for the verification of clean energy claims and avoiding double counting. A necessary condition to enable more granular hourly reporting is an update to the GO system to include time-stamping on GOs.

[2] https://www.seai.ie/publications/Energy-in-Ireland-2022.pdf

For the purpose of tracking renewable gas purchases, we encourage leveraging existing registries/platforms for example the European Renewable Gas Registry (Ergar)[3]. The scheme allows participating registries to transfer Renewable Gas Guarantees of Origin (RGGOs) and equivalent certificates between their registries. Current members of the Scheme are: Green Gas Certification Scheme (GGCS) in the UK and Vertogas in the Netherlands.[4]

**Q.5**

**Comments are invited from stakeholders on the use of renewable gas credits (feeding into the Irish natural gas system) in order to facilitate the connection of gas demand to the system. Please provide reasons and rationale for any views provided**

CII is supportive of allowing LEUs to contract for natural gas that is not physically delivered to its site but is substantiated through a market-based 'book and claim' method through the use of renewable gas credits to encourage investment in gas decarbonisation while recognising the physical constraints of the gas system. The development of renewable gas generation needs to be distributed around Ireland and will not easily be co-located with natural gas-powered power plants or other areas of consumption. Therefore, a market-based approach that allows a customer to make a claim of enabling a decarbonised gas system based on the ownership and retirement of an attribute is a sensible approach, aligning with the system used for renewable electricity throughout the EU.

This approach can also help spur investment. The use of renewable gas credits will create a well needed market signal to trigger investment in additional renewables gas projects. This will lead the way to develop a competitive and functioning renewable gas credit market in Ireland. Biomethane producers are waiting for a clear market signal to grow their industry and we are supportive of market mechanisms that provide for clear, traceable claims. This approach will increase the supply of renewable gas on the system and allows an LEU to make an investment in decarbonising the Irish gas system without having to take physical delivery of the fuel or responsibility for burning the fuel.

**Q.6**

**Comments are invited from respondents on enabling demand flexibility requirements as described above. Please provide reasons and rationale for any views provided.**

Greater demand flexibility by energy consumers can contribute to managing the variability of renewable power generation. LEUs can play a valuable role by voluntarily supporting grid reliability with the right enabling framework in place. However, demand flexibility should never be a "requirement". Requiring demand flexibility would be a market signal that the Irish system is incapable of providing customers with firm power and may put Ireland's competitiveness at risk. Flexibility is delivered around the world through market-based approaches and price signals. We strongly support the use of market-based approaches for achieving the flexibility goals set by the Climate Action Plan.

[3] https://www.greengas.org.uk/certificates/ergar
[4] https://verticer.eu/nl/

Flexibility programmes should be implemented to send price signals that encourage demand flexibility by valuing flexibility as a system resource, and consider adequate cost recovery for customers that choose to provide flexibility to the system. A successful programme should allow for multi-year contracts that give certainty to LEUs who must make investments to provide flexibility.

If flexibility requirements were to be introduced for new LEU connections, then the parameters of flexibility need to be clearly defined to allow for appropriate design and planning.

Some CII members already provide flexibility support to the Irish grid via existing mechanisms where they have the on-site resources to do this. Some of our members support the stability of the grid by participating in the DS3 programme and the capacity market. By leveraging batteries (where available) to provide frequency support at times of instability on the grid, this negates the need for the TSO to bring on "Spinning Reserve" which is mainly carbon intensive coal or gas generation plants, hence reducing emissions.

LEUs include many different varying industries with a spectrum of capabilities and maturity in their potential to provide flexibility. DCs have the potential to offer services to the grid in two ways:

- Their on-site electricity infrastructure such as backup power or storage, or
- By modulating electricity demand

DCs are all different - they vary considerably in size, redundancy needs, service type, customer requirements, performance/reliability constraints, etc. The ability of any given DC to provide demand flexibility services is highly dependent on a range of factors, including the operator's customers, business model, facility design, and permitting limitations. Under the right circumstances, some will be able to provide varying levels of demand flexibility, and over time the potential for this resource will mature. However, there are important considerations that currently constrain the potential of the two types of offering noted above:

- Backup generator configurations are not typically designed to operate as power plants, they are designed to ensure reliability in DC operations. Their environmental permits also impose runtime limits designed to allow for a limited number of hours of outage and testing. So in most cases they are not suitable for providing non-emergency-based responses to reduce net site load. Other sources of onsite uninterruptible power supply (UPS) are sized to provide the level of redundancy required by the DC. Some DCs have additional on-site battery capacity which, under the right circumstances, can enrol in providing ancillary services to support the grid
- The ability to modulate electricity demand is highly dependent on the type of services the DC operator is providing. Further, shifting IT workloads is subject to IT infrastructure performance and reliability constraints that aren't necessarily aligned with demand-side and/or market mechanisms' integration and performance requirements.

Demand flexibility from LEUs can be encouraged by developing market mechanisms that incentivise operators to develop the resources needed to offer flexibility. With the right market mechanisms in place a greater volume of LEU load can be responsive to the needs of the grid. Concretely, CRU and the System Operators can take the following steps to unlock more LEU flexibility:

- Develop tailored demand response products that take into account the performance and reliability constraints that many LEUs have. As an example, many large industrial facilities cannot adjust their output (and corresponding electricity demand) at the very short notice periods required by some ancillary service products; in addition, LEU's load profile – and in the case of DCs, composition of IT workloads that are shiftable – change over time, and onerous pre-set capacity requirements can be a deterrent. Many also face limits on the frequency and duration of demand reduction events they can accommodate. In order for many large consumers to plan a shift in output (and corresponding electricity demand), an activation notice of the order of several hours to a day can be required. Such products must accommodate consumers who need to change the level of available capacity as well as the number and duration of events.
- Ensure that LEUs providing demand flexibility are not subject to imbalance charges.
- Monitor and review the model to be introduced by Danish TSO Energinet and consider introducing a similar voluntary 'Limited Grid Access Tariff' for LEUs. A new network tariff option like this could be created for customers willing to accept interruptibility. Energinet concluded that by introducing such a grid product, maximum power levels to be included in grid dimensioning can be reduced, reducing the need for expansion and thereby costs. More information on the design of the new Energinet tariff can be found in footnote below[5].

Regarding the ESBN report: undoubtedly there is potential for DCs to provide flexibility through market mechanisms. However, the assumption that DCs in Ireland could provide up to 1GW of flexibility by 2030 overstates the potential and is not based on actual data**.** The 1GW assumption asserted in the ESBN report is based on one single resource, a report by BNEF, co-authored by Eaton and Statkraft. It is an estimate of the theoretical potential resource, rather than the economically viable resource. Furthermore, there are several fundamental issues with the assumptions taken in this report which lead it to considerably overstate the potential DC flexibility resources in 2030. These include:

- The report identifies UPS as the main source of potential flexibility. However UPS cannot be made available without impacting DC reliability. Making UPS capacity available for providing frequency services means that this capacity is not available to ensure DC power supply is not disrupted during an outage
- The report makes an assumption that 30-50% of DC IT loads are shiftable but no source is provided for this assumption. It is not clear what this estimate is based on, but it does not appear to take into account the diversity of business models, customers, contractual obligations, performance, and reliability constraints that DC operators face. Shifting IT loads is technically challenging, and highly dependent on the types of IT tasks being undertaken by the operator and its business model
- The report notes that lithium-ion batteries or hydrogen could replace gensets, but these technologies are not currently economically viable for providing the level of reliability required by DCs.

The BNEF report identifies an important issue to address in order to unlock more flexibility: improving flexibility incentives and access to markets for operators. The proposal by the DSO to introduce local

[5] https://energinet.dk/media/4cgbsr5u/development-of-energinets-tariff-design.pdf

flexibility products could help to bring more LEU demand flexibility into the market, provided these are voluntary products that respect the operational constraints of LEUs.

**Q.7**

**Are there other sources of flexibility that can be provided?**

DC operators foresee an opportunity for flexible resources to be deployed at the utility level, where Battery Energy Storage System (BESS) technologies can support individual nodes of the grid and market pricing recognises the dispatch of clean energy when renewable energy generation is co-located with storage technologies. This distributed approach allows for a more efficient use of the grid, one of the pillars of the Government's statement. CII supports the use of market-based mechanisms for delivering flexibility. Market-based flexibility products have a proven track record of success around the world. The right market signals may also encourage DC operators to install onsite BESS to provide grid services. At the same time, CII recommends against requiring any customer to provide flexibility, as it would indicate that Ireland's grid is unable to offer firm power to customers, potentially putting Ireland's competitiveness at risk.

We would be open to conversations regarding incentivising deployment of storage at strategic nodes on the grid. Given the size of Battery Energy Storage Systems (BESS) it may not always be practical to install a BESS at a DC site, and the optimal location would likely be in close proximity to renewables or as a standalone solution.

**Q.8**

**Comments are invited from respondents on the introduction of interruptible type supply contracts for gas connections. Please provide reasons and rationale for any views provided.**

An interruptible supply contract for gas or power is a viable market-based tool for encouraging flexibility. If priced appropriately, customers may opt for an interruptible contract and blend that supply with other technologies to ensure a firm connection. Any interruptible contract needs predictability for an LEU to be able to plan appropriately. However, an interruptible contract cannot be the only type of contract offered to an LEU, otherwise it is a signal that the Irish system is not capable of providing firm power to consumers. Firm power contracts must also be available to ensure customer redundancy and resiliency requirements are met.

**Q.9**

**Comments are invited on real time zero carbon emissions, shifting of demand in real time to times of high renewable energy availability. Please provide reasons and rationale for any views provided**.

CII strongly supports decarbonising the grid so that all customers can benefit from a grid that provides continuous, reliable, and carbon-free energy every hour of every day. However, we do not believe this should be a requirement applied to LEUs individually. While some LEUs may have undertaken this goal voluntarily, it is an aspirational corporate sustainability goal, it is not intended to become a regulatory requirement for all LEUs. At this time, the technologies to enable real-time zero carbon emissions are still nascent and companies that have embarked on meeting this goal are still testing approaches to

meeting this high bar. Furthermore, requirements which dictate how a DC load is managed are not workable since the majority of DC operators do not own much of the data and workloads being served in their DCs, it belongs to their customers.

Some DC operators have set goals for hourly carbon-free energy matching. Other DC operators are pursuing different approaches for driving emission cuts in power grids. The approach taken depends on the sector, the individual operator, and its customers' needs. Hourly carbon-free energy matching can bring many benefits for consumers and grids according to analysis by the Princeton zero lab[6], TU Berlin[7] and IEA[8]. A growing number of electricity consumers have set goals to operate on 24/7 carbon-free energy. However, achieving 100% hourly carbon-free energy matching is still a challenging goal, which relies on the removal of several barriers to its delivery and verification. For example, verifying hourly matching claims depends on the GO framework being updated to introduce time-stamping. One step CRU could take to enable more hourly carbon-free energy matching is updating the GO system to include time-stamps to enable those consumers who are following this approach to track and demonstrate their level of hourly supply-demand matching.

Real time zero carbon emissions matching can be achieved by a consumer by drawing on a diverse portfolio of technologies. Demand flexibility may be one of the technologies used, however for some consumers demand flexibility will not be an option, given performance and reliability constraints. They will instead achieve their real-time matching goal by contracting with a portfolio of technologies that can match their electricity demand with carbon-free supply at all times. Some consumers who have the capability to deliver demand flexibility can leverage this to contribute towards their goal, but flexibility will not be part of every consumer's portfolio. As previously noted, given the diversity of industries that could fall under the definition of 'LEU', the CRU should provide optionality which allows for multiple pathways to demonstrate that a facility will result in 'net zero' emissions as defined by the LEU connection policy.

**Q.10**

**Comments are invited from respondents on what they consider to be an appropriate definition of an LEU for electricity and gas for the purposes of this review. Please provide reasons and rationale for any views provided**

We recommend that any customer with a maximum import capacity (MIC) of 0.5MW or greater is classified as an LEU. If the CRU is going to create a specific class for XLEUs, we recommend that be set at 5MW of MIC."

[6] Princeton Zero Lab (2022) *Electricity System and Market Impacts of Time-based Attribute Trading and 24/7 Carbon-free Electricity Procurement*

[7] TU Berlin (2022) *System-level impacts of 24/7 carbon-free electricity procurement in Europe*

[8] International Energy Agency (2022) *Advancing Decarbonisation through Clean Electricity Procurement*

**Q.11**

**Comments are invited from respondents on whether this review should only apply to Extra Large Energy Users (XLEUs) in relation to electricity. Please provide reasons and rationale for any views provided.**

Rules for LEUs should be uniform across the system. Applying these requirements to individual classes of customers within a wider subset is discriminatory. It risks distorting the market, limiting business investment, or encouraging customers to game the rules in order to stay below a threshold.

**Q.12**

**Comments are invited for gas LEU definition of those with a peak hourly demand greater than 50MW thermal input and a connection pressure of 16 barg or above. Please provide rationale for any views provided.**

No response.

**Q.13**

**Comments are invited from respondents on the treatment of 'islanded' LEUs. Please provide reasons and rationale for any views provided**

No response.

**Q.14**

**Should the connection of LEUs to the natural gas network focus on security and decarbonisation as per the Government Policy Statement on Security of Electricity Supply. Please provide reasons and rationale for any views provided**

No response.

**Q.15**

**Please suggest any alternative approaches not captured above that could help in meeting the challenges outlined.**

We believe "Private Wire" connections will present an opportunity to address some of the challenges outlined. We will respond to the current "Private Wire" consultation and provide recommendations in our response

**Q.16**

**Should provisions apply to all LEUs connections, or are there are any exceptions that should apply? Please provide reasons and rationale for any views provided.**

Yes, all LEUs should be treated uniformly - creating exceptions which differentiate between LEUs would potentially be discriminatory.

**Q.17**

**Please suggest any incentives which could be applied to new LEU connections in facilitating some of the measures described above. Please provide reasons and rationale for any views provided.**

No response.

**Conclusion**

CII thanks the CRU for putting forth the consultation and requesting stakeholder feedback. As large energy users, buyers of renewable energy, and innovative solution providers, the future of the Irish grid is important for our business growth and development.

# Cloud Infrastructure Ireland response to CRU Call for Evidence Paper – Energy Demand Strategy Project

**About Cloud Infrastructure Ireland**

*Cloud Infrastructure Ireland ("CII") is a trade association within Ibec focused on the infrastructure policy issues that affect cloud providers. Ireland's cloud infrastructure enables much of the Irish and global digital economy worth billions and is responsible for tens of thousands of jobs. A thriving cloud infrastructure is vital to Ireland's economic success, as a growing number of businesses locate in regions with well-developed cloud infrastructure. CII seeks partnerships with national and local governments to protect and nurture cloud infrastructure to enhance Ireland's global economic standing.*

**Introduction**

In the "CRU Energy demand Strategy Project Call for Evidence," consultation (issued June 21st, 2023, hereafter, the "consultation"), the Commission for Regulation of Utilities ("CRU") requests input from consumers to the development of the CRU's Energy Demand Strategy (EDS).

CII recognises and welcomes the efforts made by the CRU in this regard and welcomes the opportunity to respond to the consultation.

**Questions:**

**Q1.**

**What are stakeholder's views on the stated aims of the project? Are there barriers to achieving a successful outcome of implementing an energy demand strategy to meet project climate objectives (viz. carbon emissions reduction)? Are there areas that could benefit from greater policy and regulatory clarity? Are there areas where further alignment between the relevant entities (e.g. state agencies, corporate obligations) to coordinate and enable the delivery of an energy demand strategy would be beneficial?**

CII has previously encouraged the CRU to develop market-based mechanisms for managing energy demand, increasing generation, and encouraging demand customers to locate to certain nodes on the grid through price signals. Overall, CII strongly supports the CRU's proposals to utilise market-based mechanisms and frameworks to support effective and efficient management of the electricity grid, delivery of investment and construction of renewable energy generation and emerging technologies, to support delivery of carbon reduction and renewable energy goals as we progress to a decarbonised electricity system across Ireland.

Ireland has existing flexibility services that have helped to attract investment in flexible resources that support the balancing of the grid. However, to date, demand-side participation from LEUs has been limited, because the existing products and market mechanisms are not always well-suited to the

performance constraints of these consumers. To enable more LEUs to provide flexibility, new products or other market mechanisms can be developed that accommodate these constraints, or the existing mechanisms can be adapted to make participation possible. Furthermore, Ireland can develop new flexibility offerings that adopt best practices from other markets to enable more storage and carbon-free flexibility to enter the market.

There are numerous examples of successful programs for developing market-based frameworks and mechanisms that value flexibility and demand response. California's Independent System Operator (CAISO)[1] provides a good example of valuing the dispatch of renewable energy during peak demand, and after the hours of peak production, as a mechanism to encourage the deployment of battery storage technology, time-shifting renewable energy to a point in time when demand requires it. CAISO's Non-Generator Resources (NGR) product allows storage assets to participate in the market by participating as supply or load up to its megawatt capacity level. Similarly, CAISO includes a Proxy Demand Resource Load Shift Resource program enabling energy storage assets to bid increases and decreases in load.

Flexibility programmes need clear parameters that allow customers to design, build, plan, and manage. For example, some CII members participate in flexibility programmes that provide predictability for planning purposes. Hydro-Quebec, for example, offers a Demand Response Option program, which credits large customers on-bill at the end of the winter period for reducing effective interruptible power during peak demand events. Customers must be able to reduce demand through on-site generation or other means (like curtailing load) by at least 10 kW. This has a fixed number of annual events with a maximum duration and is limited to supporting peak demand during the heating season. These guardrails allow an LEU to plan accordingly, offer services to the grid, and are reflective of the availability and cost effectiveness of technology.

In Ireland, demand flexibility from LEUs can be encouraged by developing similar voluntary market mechanisms that incentivise operators to develop the resources needed to offer flexibility, drawing on best practices in other markets. With the right market mechanisms in place more LEUs can be responsive to the needs of the grid. Concretely, CRU and the System Operators can take the following steps to unlock more LEU flexibility:

- Develop tailored demand response products that take into account the performance and reliability constraints that many LEUs have. As an example, many large industrial facilities cannot adjust their output (and corresponding electricity demand) at the very short notice periods required by some ancillary service products: many also face limits on the frequency and duration of demand reduction events they can accommodate. In order for many large consumers to plan a shift in output (and corresponding electricity demand), an activation notice of the order of several hours to a day can be required. Such products must accommodate these constraints.
- Ensure that LEUs providing demand flexibility are not subject to imbalance charges or other penalties that would deter participation.
- In addition, the system operators can monitor and review the model to be implemented by Danish TSO Energinet which will introduce a voluntary 'Limited Grid Access Tariff' for LEUs. A new network tariff option like this could be created for customers willing to accept

[1] http://www.caiso.com/participate/Pages/Storage/Default.aspx

interruptibility. Energinet concluded that by introducing such a grid product, maximum power levels to be included in grid dimensioning can be reduced, reducing the need for expansion and thereby costs. More information on the design of the new Energinet tariff can be found via footnote below[2].

- Look to other markets who have successfully introduced flexibility and demand response products and adopt best practices.

It is also important to note that nearly all of the flexibility products outlined above are only possible through the use of cloud computing, digitalisation and cloud technologies.

**Q2.**

**What are stakeholder's views on the proposed scope (focus areas) and approach (phasing) of the project?**

Flexibility is important for balancing a system that is increasingly reliant on variable renewable energy generation. While we understand the need for the system to further utilise flexible solutions to balance increasing load and variable sources of generation, we question if this is the right process for developing a plan. Flexibility is not an end-goal for a system, it is a resource that can balance a system. The CRU and System Operators (SOs) should conduct a system study to assess the system needs under different scenarios and develop models for the most cost-effective solutions necessary for balancing system needs. That type of study and analysis can then provide direction about the right types of flexibility solutions that can help meet system needs. While we understand there is an urgent need to begin to deploy flexibility solutions, we encourage the CRU to conduct a thorough analysis of the system needs for flexibility, including an assessment of the types of flexibility needed, following this consultation.

The success of individual flexibility programmes will be strongly dependent on the programme design, the market signals, marketing campaigns, and customer reception. We encourage taking an approach that identifies the time and location for when flexibility is expected to be needed over the coming years as a starting point. It is important for the CRU and the SOs to project where and when constraints are expected that could be met by flexible products and services.

**Q3.**

**What are stakeholder's views on energy demand profiles and the challenges arising from the associated carbon emissions? Considerations may include other information and data that should be included or challenges, such as new demand.**

Market-based flexibility programmes can be deployed to enable the integration of a broad variety of load profiles and those programmes can provide system flexibility to help meet the needs of the system. The overall goal should be focused on decarbonising the power system so that it can provide

[2] https://en.energinet.dk/Gas/Tariffs-and-Fees/

reliable, carbon-free power to all customers and support economic growth. It is feasible to accomplish that goal and provide the flexibility services needed by properly valuing flexibility through market mechanisms.

**Q4.**

**What are stakeholder's views on the definition for demand flexibility? How should demand flexibility be measured and reported on an ongoing basis? What metric (annual peak system demand / total annual energy consumption / other?) should be used. How should compliance with the CAP targets be assessed for demand flexibility in 2025 and 2030?**

No response

**Q5.**

**What should be the areas of focus for demand flexibility? Are there any policy or regulatory barriers to the introduction of technologies that could be useful in providing flexibility? What incentives should be considered?**

Flexibility programmes are best delivered through market-based pricing that values flexibility as a resource provided to the energy system. These programs are not built on "incentives", rather these programmes are built on developing the appropriate price signals that value flexibility in the same manner that generation is valued, based on the quantity, time, and location when it is provided.

Flexibility is a product that can be delivered by customers or through aggregators that work directly with customers. Flexibility programmes should not be mandated or required of consumers because all consumers have different operational requirements and constraints, and many cannot modulate their demand or leverage behind- the- meter resources for this purpose.

Flexibility programmes can take various forms. Short-term programmes can be offered to manage through immediate issues or be structured to meet seasonal system needs. Longer term programmes can offer opportunities for deeper investments in flexibility. Longer term programmes must also be built on reliable market signals that are long term. Flexibility contracts should offer multi-year payments as an option to ensure they are commercially viable. That investment requires considerable capital. A multi-year flexibility contract will ensure that an LEU can make that investment and predict the return on investment over time.

**Q6.**

**What are stakeholder's views on the attached ESBN document, 'Scenarios for 15-20% Flexible System Demand (DOC-120423-HRS)', which has been published as part of this four-document package? Respondents are encouraged to provide detailed responses by referencing specific sections of An Coimisiún um Rialáil Fóntas Commission for Regulation of Utilities 38ESBN's document are stakeholder's views on the attached ESBN document, 'Scenarios for 15-20% Flexible System Demand (DOC-120423-HRS)', which has been published as part of this four-document**

**package? Respondents are encouraged to provide detailed responses by referencing specific sections of ESBN's document**

Undoubtedly there is potential for data centres to provide flexibility through market mechanisms. However, the assumption that data centres in Ireland could provide up to 1GW of flexibility by 2030 overstates the potential and is not based on actual data.

The 1GW assumption asserted in the ESBN report is based on one single source, a report by BNEF and co-authored by Eaton and Statkraft. It is an estimate of the theoretical potential resource, rather than the economically viable resource. Furthermore, there are several fundamental issues with the assumptions taken in this report which lead it to considerably overstate the potential data centre flexibility resources in 2030. These include:

- The report identifies UPS as the main source of potential flexibility. However, UPS cannot be made available without impacting data centre reliability. Making UPS capacity available for providing frequency services means that this capacity is not available to ensure data centre power supply is not disrupted during an outage.
- The report makes an assumption that 30-50% of data centre IT loads are shiftable but no source is provided for this assumption. It is not clear what this estimate is based on, but it does not appear to take into account the diversity of business models, customers, contractual obligations, performance, and reliability constraints that data centre operators face. Shifting IT loads is technically challenging, and highly dependent on the types of IT tasks being undertaken by the operator and its business model.
- The report notes that lithium-ion batteries or hydrogen could replace gensets, but these technologies are not currently economically viable for providing the level of reliability required by data centres.

The report correctly notes that diesel generators are 'too emissions-intensive to run except in an emergency,' highlighting that diesel generators are not an optimal source of flexibility. Diesel generators installed as a source of backup power at data centres are not designed to operate as power plants, and strict emission limits are imposed on their use by permits.

The report identifies an important issue to address in order to unlock more flexibility: improving flexibility incentives and access to markets for operators. The proposal by the DSO to introduce local flexibility products could help to bring more LEU demand flexibility into the market, provided these are voluntary products that respect the operational constraints of LEUs.

**Q7.**

**Comments are invited from respondents on any other associated areas that they consider materially relevant to the project?**

No response

**Conclusion**

CII thanks the CRU for putting forth the consultation and requesting stakeholder feedback. As large energy users, buyers of renewable energy, and innovative solution providers the future of the Irish grid is important for our business growth and investment.

Commission for the Regulation of Utilities
The Exchange
Belgard Square
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electricityconnectionpolicy@cru.ie

29 August 2023

**Re: Review of Large Energy Users Connection Policy (CRU/202357 dated 21 June 2023) – CyrusOne Response to Call for Evidence**

Dear Sirs,

As an active participant in Irish data centre sector, we welcome the CRU's call for evidence and also welcome the chance to voice our concerns regarding the current trajectory of regulation impacting data centres in Ireland.

**CyrusOne - Background**

CyrusOne is a leading global data centre developer and operator specialising in delivering state-of-the-art digital infrastructure solutions across the globe. With more than 50 high-performance mission-critical facilities worldwide, the Company ensures the continued operation of digital infrastructure for nearly 1,000 customers, including approximately 200 Fortune 1000 companies. In short, we develop data centres and then lease them to large technology companies with large data requirements.

Our current investment in Ireland represents $207 million and employs/contracts 23 FTE at the site. During the construction phases over 250 contractors across multiple disciplines were deployed on behalf of CyrusOne. CyrusOne has had a presence in Ireland since 2018 with our first data centre going live in 2021. Our operational data centre is located at Conchobar Murray Avenue, Grange Castle Business Park South, Co. Dublin, Republic of Ireland.

In terms of sustainability, CyrusOne has recently accelerated its climate neutral goal from 2040 to 2030. To achieve this goal, CyrusOne is working with its customers and its energy suppliers to transition powering our data centres globally with carbon free sources of energy. We are continuing to advance new power transaction structures to elevate CyrusOne's sustainability journey.

CyrusOne publishes a Sustainability Report annually. Highlights of the CyrusOne 2022 Sustainability Report include:

- **Meeting the Climate Neutral Data Centre Pact Early**: As of June 2021, CyrusOne's European facilities met their 2030 carbon reduction commitments to the Climate Neutral Data Centre Pact 8 years early, achieving 100% renewable electricity and offsetting the small amount of diesel used for backup generation.

- **Expanded Renewable Electricity Procurement:** 2021 saw a seven-fold increase over 2020 in CyrusOne's total MWh of renewable electricity purchased, all without the use of national

unbundled RECs. The company also signed contracts for future delivery of an additional 107 MWh/year in renewable power.

- **Pushing the Boundaries of Water Disclosure:** The 2022 report promotes increased water disclosure in the data center industry by not only sharing onsite Water Usage Effectiveness data, but also providing estimates of electricity supply chain water consumption which challenge the industry's conventional wisdom that evaporating water onsite saves total water consumption.

- **Expanded Enterprise Risk Management:** The latest report provides industry-leading transparency into CyrusOne's Enterprise Risk Management process, including details on the company's approach to data protection, information security, business continuity, and climate risk assessment.

- **Action for Diversity & Inclusion:** In 2021, CyrusOne joined the CEO Action for Diversity & Inclusion pledge, providing the company with an enhanced framework to engage with stakeholders on DEI issues and an opportunity to bring third-party expertise and additional resources to existing DEI efforts.

For more information on programs at CyrusOne, visit the ESG pages on CyrusOne.com.

As you can see CyrusOne, along with other data centre developers, are already playing our part in the drive to Net Zero.

**Government Policy on Data Centres, growing need with AI Compute, and Benefits to Ireland from Data Centres**

The Government in its policy statement on data centres issued in July 2022 (the "Government Policy Statement") confirmed that,

"*Government policy seeks to enable the 'twin transitions' of digitalisation and decarbonisation of our economy and society. These transitions can and must be - complementary. For this to happen, digital and climate change policies need to move in tandem and this Statement sets out how this will be achieved in respect of data centres. Data centres are core digital infrastructure and play an indispensable role in our economy and society. Data centres provide the foundation for all almost all online aspects of our social and work lives, including video calling, messaging and apps, retail, banking, travel, media, and public service delivery such as healthcare and welfare*."

The Government Policy Statement goes on to say that the benefit of data centres to the Irish economy is, as follows,

"*Data centres enable digital economies through hosting critical software and data that allows the world's leading companies to run their businesses, organise their supply chains, pay their staff, and host video conferencing applications. These are the suite of technologies and services that have facilitated the digitalisation of our economy, our work lives and many of the online applications, services and platforms widely used across society. During the pandemic, they enabled business and communities to quickly move to a remote model. Data centres also host and deliver entertainment and content services into homes.*

*More broadly however, data centres are also the means by which Ireland's major technology companies process and store companies' most sensitive and strategic assets. They are also the means by which they are transitioning their businesses to the cloud, making Ireland critical to their global presence. Investments by technology multinationals in large, long-life assets such as data centres further secures the presence of the global technology sector in Ireland.*

*Ireland is home to a significant cluster of digital infrastructure and service providers. To maximise the benefits of technology advancements including from 5G, AI and virtual reality, Ireland will need to continue to facilitate sustainable data centre development and the associated technological and economic spillovers. Digital Infrastructure such as data centres underpins our technology sector, which is increasingly cloud based. Ireland's technology sector accounts for €52 billion (16%) of gross value added and employs 140,000 people – equivalent to 6 per cent of total national employment with 40 per cent growth over the last five years.*

*A CSO publication, Information and Communications Technology: A Value Chain Analysis 2019, highlights the economic contribution of the ICT sector. In 2019, output for the ICT sector amounted to €128bn. Total exports of services from the sector were some €121.4bn from both foreign and domestic firms, with domestic ICT companies exporting 37 per cent of their output. Technology companies invested €46bn in fixed capital assets in 2019, with R&D investment of €1.392 bn*."

With the advent of AI computing, more data centres will be required with higher data demands. AI computing is power intensive and will require more power. In order for Ireland to stay at the forefront of this technology revolution, policies must make it easier, not harder to develop and operate data centres in Ireland. It is imperative that the relevant authorities in Ireland undertake an assessment of the potential power requirements that AI will require from data centres, so that appropriate and in time provision can be made to ensure that electricity generation capacity remains ahead of demand. Any failure to make proper provision in this respect could leave Ireland (and data centre operators in Ireland as well as the ICT firms that they support) at a significant tactical and strategic disadvantage.

Data centres are consumers of power that strive to do so in a sustainable way. The achievement of Ireland's increased carbon emissions targets is very much within the scope and responsibility of the Irish Government, as distinct from any specific one consumer of power. The Irish Government has set specific climate action targets and the most effective way of achieving these targets as they impact on energy, is to ensure that the ambitious renewable energy targets set out by Government are achieved on time. Specifically, it is imperative that Offshore Renewable Energy targets for 2030 are achieved as this will make a significant contribution to the sustainability of electricity supply in Ireland.

CyrusOne, as a colocation data centre who leases space to other customers, needs to locate where our Customers have demand. This tends to be in hyperscale availability zones near other data centres to permit fast data transfer for our customers. These areas tend to be in areas around Dublin. It is simply not the case that data centres can be developed in areas where there are no electricity grid constraints. It is clear from the Call for Evidence and the Government Policy Statement that Government and the CRU need to better understand the factors that impact on where it is possible to locate data centres.

**Additional Energy Policy Benefits that Data Centres can Provide to Ireland regarding Security of Supply**

Given the need of data centres to have power on 99.99% of the time, data centres typically have large back-up supplies of electricity generation equipment.

Through the appropriate market signals and incentives, data centres could be utilised to generate power for export to the market at times of grid emergencies and generation shortages. In this way and subject to the overriding considerations referenced below, data centres can be part of the solution to grid constraints in Ireland working within permitted run hours.

While data centres have backup generation, they cannot be considered interruptible loads. CyrusOne customers do not permit us to power down servers. Reliability and backup to prevent power interruptions are core requirements of the technology companies that operate data centres. For this reason flexible demand, which we understand to mean interruptible power, without a viable backup power solution, is the equivalent of unusable non-firm power for a data centre. Conversely, flexible demand, coupled with an economical, viable backup power solution is usable demand that could be used by a data centre to firm up flexible demand into firm load and also serve as backup generation resources for the grid in times of grid constraints.

Further dialogue between policy makers, regulators and the data centre industry could assist in meeting concerns regarding security of supply issues and help avoid power shortages. New programmes can be developed to incentivise demand response. To the extent existing programmes are underutilised, revenue mechanisms for participants need to be revisited.

**Concerns**

CyrusOne's concern is that the benefits of more data centres being located in Ireland is not being adequately voiced and that current energy policy and regulation is singling out the data centre sector amongst large energy users.

For example, DCCOPP singles out data centres from other large demand customers. It also is too restrictive in how data centres can demonstrate their Net Zero credentials by requiring physical electricity generation resources to developed in parallel.

Similarly, Gas Networks Ireland has operated an effective moratorium for new gas connection agreements since the Government Policy Statement was issued. However, this moratorium does not recognise that all gas connection agreements do is allow the physical connection of a data centre to the GNI network. They do not dictate whether the gas consumed is from renewable sources or not. The policy also does not allow the data centre customer to offset their carbon emission through other legitimate and verifiable means.

In this regard, we note your reference in the Call for Evidence paper to:

(i) the principle of equal treatment arising under European law, which provides that individuals or undertakings in comparable situations must not be treated differently or that individuals or

undertakings in non-comparable situations must not be treated in the same way, save where such differential or similar treatment (as the case may be) can be objectively justified, and

(ii) The principle of proportionately arising under European law, which provides that any measure must be suitable for the purpose of attaining the desired objective and go no further than is necessary for achieving that purpose.

**Comment**

Given the economic benefits set out in the Government Policy Statement, we believe a greater balance is required and that the data centre sector should be treated fairly and in the same way as all other large energy users.

We respect and understand the Government's policy and recognise the need to decarbonise and provide a route to sustainability and as outlined above we are already significantly focused on pushing forward the sustainability agenda - but we would respectfully ask that the data centre sector be given the same period of time as other large energy users to transition. We can't emphasise enough that this is a transition to sustainable energy that businesses and Countries are navigating. Given the broad nature of the sustainability journey, it makes no sense for this to be an abrupt cut-over for some industries while the renewable energy market and market tools continue to develop in Ireland.

**Conclusion**

As recognised by the Government, data centres are "*core digital infrastructure and play an indispensable role in our economy and society*" that brings material economic benefits to Ireland. With the advent of AI, this trend is going to continue and accelerate.

We believe current regulation of the sector is too restrictive and will curtail the future growth of the technology-based industries in Ireland.

If Ireland wants to continue to secure jobs and investment in technology based companies in the areas of AI, it will need to encourage growth in data centres or in our opinion there is a danger that Ireland will be left behind other jurisdictions.

CyrusOne welcomes the opportunity to reduce its carbon footprint but would ask that it be given the same period of transition as other large energy users to do so.

We would welcome a meeting with the CRU to discuss the benefits of sustainable growth in the data centre industry in Ireland.

Regards,

Eric Hoegger
Global Director, Power and Energy

*Via email to: energydemandstrategy@cru.ie*

22nd August 2023

**CRU/202356 Response to Call for Evidence**

I am writing on behalf of the Demand Response Association of Ireland (DRAI), the trade association representing Demand Side Unit (DSU) providers in the all-island Single Electricity Market (SEM). By aggregating the otherwise passive electrical loads of individual consumers into substantial load portfolios, our members create predictable, reliable, and controllable assets, which provide a valuable source of Demand-Side Flexibility (DSF) that can be actively used by system operators to meet the needs of the power system.

Today, the DRAI represents approximately 700 MW of demand and embedded generation response across hundreds of industrial and commercial customer sites throughout the island of Ireland. This response is managed by our members who actively participate in the capacity, DS3, and energy markets. DRAI members are committed to shaping the future of power system flexibility through advancing DSF on the island of Ireland. As Ireland strives to achieve its renewable generation targets for 2030 and beyond, our promise as an industry-led organisation is to champion the development of innovative DSF solutions that are designed to address the system-wide requirement for flexibility.

The DRAI expresses a single voice on policy and regulatory matters of common interest to its members, and we welcome the opportunity to provide feedback on the CRU/202356 Call for Evidence on an Energy Demand Strategy for Ireland. On behalf of the DRAI, I hope that you find our response helpful and constructive.

Conor Totterdell
Regulatory Analyst, VIOTAS

Jon Sedgwick
DRAI Chair

## Background – The need for an Energy Demand Strategy

As stated in the Climate Action Plan 2023 (CAP23), the growth of electricity demand due to electrification and decarbonisation of other sectors requires a greater focus on the management of electricity demand, primarily through flexibility, improved infrastructure, and supportive policies. A specific goal of the CAP was to limit peak demand when renewable energy resources are unavailable, thus reducing strain on the system and further decarbonising the overall electricity sector.

With this in mind, the CRU was requested by the Government to *"deliver a Demand Side Strategy, with the aim of 20 to 30% of electricity demand to be flexible by 2030 (15-20% flexibility by 2025), facilitating active participation by citizens and businesses in the energy market."* (EL/23/24 - 'Electricity Demand Side Strategy and Implementation Plan'.)

The DRAI welcomes the Government's step towards a cohesive, and comprehensive strategy that grows electricity demand flexibility in the market, especially at times of system stress due to low renewable energy. With numerous demand-side policies being developed separately, such as the full integration of DSUs into the SEM, the current review of the Enduring Connection Policy, the demand-side developments being advanced for the distribution system by ESBN, and the ongoing work under the Security of Supply Programme of Actions (CRU21115), especially at a time where the growth of demand is expected to add strain to the system, it is important to capture the overall strategy in one document, to give clear vision of future development. It is also worth noting that this strategy coincides with increased attention being paid to demand-side flexibility in Europe, with the revision of the Electricity Market Design as well as the network code for demand-side flexibility both being developed.

Unfortunately, we see the CRU's Energy Demand Strategy, as currently outlined, falling short of the Government's intention of creating a framework for an overarching strategy that aligns all policy workstreams relating to demand-side management. By excluding DSUs from this strategy, the CRU fundamentally fails to meet the requirements set out by CAP23 and will struggle to meet the fast-approaching deadlines for legally binding targets for flexibility, both in 2025 and 2030.

This response, through our answers to the specific consultation questions, outlines where we believe the strategy would fail to achieve the goals set out by CAP23, and so changes are needed.

## Summary of the DRAI Response

The DRAI consider this is an important project. It should act as an overarching strategy for electricity demand, and in particular, flexibility of demand to enable the renewable rollout. As stated in CAP23, this strategy should '*facilitate active participation by citizens and businesses in the energy market*'. This implies that the policy should at the very least cover the participation of demand side in the electricity market. We firmly believe that workstreams outlined in Section 1.3 ('Not in Scope'), namely the security of supply programme of actions, the SEM demand side measures, and the legislative & national policy measures are imperative to include in a strategy intended to achieve national policy measures and must brought under an umbrella strategy, to give structure to Ireland's electricity demand-side management.

To date separate, *ad hoc* policies have not succeeded in enabling the flexibility needed on the system to support the renewable energy rollout, nor are they sufficient to achieve the legally binding targets set out by CAP23, either in 2025, or 2030. As such, the DRAI requests that the CRU reconsiders the purpose of the strategy and ensures that it provides a holistic approach on all relevant fronts to ensure consistency across policy, as well as cohesion between all relevant parties. Without the inclusion of the primary form of demand response, DSUs, this strategy will struggle to achieve the aggressive, legally-binding targets set out by CAP23.

The points below summarise our response and high-level thoughts of the CRU Energy Demand Strategy as well as the ESBN Scenarios for 15-20% Flexibility System Demand Document.

The DRAI

- Considers the project important as an overarching strategy for electricity demand, to align policy in all areas of flexibility in order to support the renewable energy rollout and achieve the legally binding targets set out by CAP23;
- Disagrees with the exclusion of Demand Side Units from the scope of work;
- Cannot rationalise the exclusion of demand side response from scope while intrinsically linked with the definition of flexibility;
- Finds a significant lack of alignment across the key stakeholders;
- Believes clearer price signals are required to incentivize flexibility;
- Seeks improved alignment with Clean Energy Package and EU Market Signals;
- Is supportive of the 'central scenario' of the 15-20% ESBN Demand Flexibility document;
- Wishes to harness the benefits of integrating aggregators and their role in demand flexibility scenarios through Behind the Meter (BTM) storage, transport and Large Energy Users (LEUs).

### Q1. What are stakeholder's views on the stated aims of the project?

> *Are there barriers to achieving a successful outcome of implementing an energy demand strategy to meet project climate objectives (viz. carbon emissions reduction)? Are there areas that could benefit from greater policy and regulatory clarity? Are there areas where further alignment between the relevant entities (e.g., state agencies, corporate obligations) to coordinate and enable the delivery of an energy demand strategy would be beneficial?*

The DRAI agrees with the three objectives stated in the Call for Evidence, in particular the second objective of "*delivering demand flexibility and demand response initiatives, as outlined in CAP23, which sets a target of 15-20% demand side flexibility by 2025 and 20-30% by 2030.*"

Achieving this objective would bring about a three-pronged success. Firstly, it would enable the faster and more efficient rollout of renewable energy sources on the grid, without the increased cost of

constraints or strain with respect to security of supply during times of low wind. Secondly, it would actively engage domestic and commercial participation in the energy market, a stated goal in the CAP23 as well as from the European Union. Finally, it would minimise costs for all actors in the electricity sector by reducing the need for grid upgrades and significant investment in synchronous generation sources and enabling end-users to take advantage of low prices at times of strong renewable supply. As such, we back the aim of this project to achieve this flexibility on the system.

However, as our answer in Q2 will outline, we are conscious that by omitting the enhancement of DSU participation in the SEM from the scope of this project, this objective will be very difficult to achieve. The three forms of success outlined rely on the signal for flexibility coming from the energy market, especially at times of low renewable generation. By not focusing on ensuring DSUs can expand this signal in the energy market, this strategy will struggle to achieve the very ambitious targets.

Finally, alignment between DECC, the CRU, EirGrid, & ESBN appears to be a critical issue at present. This strategy, as an example, highlights the potential disconnect between DECC & the CRU. As outlined above, the request for an Electricity Demand Side Strategy, culminating in the CRU's Energy Demand Strategy, seems to have been morphed somewhat away from DECC's original intentions. It is also worth noting that the request for such a strategy came two years prior in CAP21, without any action from the CRU. This has led to the acknowledged short timelines expressed in the Call for Evidence, and as such, a potential need to trim the scope of the project to ensure completion by the deadline, worsened still by the extended deadline for consultation responses. This raises concerns as to what this strategy can actually achieve in the context of the original ask, both in terms of an umbrella strategy, as well as the end goal of the flexibility targets in 2025 and 2030.

It's clear that urgent, cohesive action is needed from all parties involved, and yet there is a lack of clarity in policy around demand-side flexibility. For example, the TSOs also committed to publish a TSO Demand Side Strategy in their Forward Work Plan for 2022/23. While this was originally due to be published in Dec 2022, this was subsequently pushed back to July 2023, and recent engagement with the TSOs suggests that this workplan item has not progressed beyond a high-level assessment of what each of the potential different types of demand flexibility have to contribute to system needs and the potential for further development. We had hoped this work would be more advanced.

Without a clear, centralised, and cohesive strategy, detailing the long-term goals for demand-side participation and a clear roadmap of what we need to do to get there, the strategy will fall short of what is required to drive us toward the CAP2023 targets for 15-20% demand flexibility by 2025, rising to 20-30% by 2030.

Q2. What are stakeholder's views on the proposed scope (focus areas) and approach (phasing) of the project?

As alluded to previously, one of the DRAI's major concerns is that of the project scope. We see this strategy as an opportunity to create an umbrella framework that aims to achieve cohesion across many different workstreams and actors. Within this, as well as the Governments' request for the strategy, is the need to facilitate '*active participation by citizens and businesses in the energy market'.* Another way of phrasing this is enhancing demand-side participation in the Single Electricity Market, something explicitly excluded from the scope of the project.

The DRAI understands the ongoing work by the CRU, SEMC, and other bodies to fully incorporate DSUs into the SEM through the introduction of energy payments, amongst other workstreams, and we welcome the progress being made on these fronts. However, this disjointed approach has led to a poor policy environment for demand-side flexibility, with issues arising in areas such as DSU de-rating

factors, future arrangements for system services and other recent policy developments as a result of a lack of joined-up thinking. Furthermore, given DSUs currently make up a significant portion of the overall demand side flexibility on the system, it would be illogical to omit them from such a strategy, especially when developing new, potentially overlapping or interfering mechanisms for flexibility.

The DRAI sees three reasons for incorporating the participation of DSUs in the SEM into this strategy. The first is that it provides a clear route for demand-side resources to receive the vital signals that are highlighted in the definition of flexibility. Secondly, it allows the system operator a more explicit way of triggering this flexibility, which, as we outline in Q4, also allows for a better measurement of the level of flexibility on the system. Finally, the upcoming reforms to the Electricity Directive[1] and the Network Code for Demand Response[2] both heavily emphasise the need for demand-side flexibility to participate alongside, and on equal footing to, generation in the electricity market.

**Clear Route for Signals**

It has been acknowledged – within CAP23, in the CRU's definition of flexibility, and in a European context through the reform of the Electricity Directive – that exposing demand-side resources to greater price signals is the best way to elicit demand response when needed most. However, it is also important to shield end-users from price shocks, as was the case throughout the 2022 electricity crisis. As such, the demand-side strategy must form a pathway for end-user to receive price signals without exposing them to the risk of the spot markets.

DSUs, through their participation of the SEM, achieve exactly this. Since participating customers retain their normal relationship with their supplier, they are hedged, and ultimately protected from price shocks, as much as is feasible. However, as the price fluctuates, and rises to a point indicating system stress, these sites will have a signal to respond given directly through the short-term markets. In this way, DSUs provide the system with the required flexibility without deterring end-users through added risk.

It is vital that we enhance the DSU participation in the SEM, in conjunction with other measures, as it ensures that these other measures do not detract from the harnessing of this win-win scenario.

**Explicit Triggers**

Secondly, it is important for TSOs to have explicit visibility and control over portions of system flexibility, in order to trigger them at the most critical times. DSUs, unlike many other demand-side initiatives such as Beat the Peak, can be called by the TSOs exactly when they need them, and since, especially when energy payments are introduced for DSUs, there are clear financial penalties for non-performance, they can be relied upon. This level of visibility and control gives confidence to the TSOs that the MWs provided by DSUs will be present. If overlapping, and in some cases, mutually exclusive markets are pushed by this strategy, while excluding DSUs, it could have detrimental effects on this explicit trigger.

Furthermore, while the role of implicit flexibility, especially for domestic and other small energy users is useful, it's crucial that we maintain the large energy users within the SEM, in order to stack them in

[1] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52023PC0148&qid=1679410882233

[2] https://www.acer.europa.eu/sites/default/files/documents/Official_documents/Acts_of_the_Agency/Framework_Guidelines/Framework%20Guidelines/FG_DemandResponse.pdf

the merit order with generation. By doing so, we can evaluate the importance of system flexibility, and weigh it up against alternatives such as additional generation, conducting grid upgrades, etc.

Finally, by not incorporating DSU participation in the SEM under this strategy, the DRAI struggles to see how the targets set out in the CAP23 will be achieved. If this strategy is intended to achieve the CAP23 targets, but excludes DSU participation, then we must assume that flexibility from DSUs will not be included when determining whether the flexibility targets have been met. We discuss this further in answer to Q4.

**European Context**

Several measures currently being discussed and rolled out in a European context show that the European Commission, as well as ACER and other institutions believe that increasing demand-side participation in the energy markets is a crucial step in the energy transition. The proposals to lower minimum size requirements for participation and minimum bid sizes, as well as reduce the Imbalance Settlement Period to 15 minutes are examples of this focus to enhance demand-side participation. The CRU Strategy, by omitting work on DSU participation, deviates from these objectives, implying that additional future workstreams will be needed to implement these measures.

In addition to the measures above, the introduction of sub-metering and flexibility support schemes, as suggested by the Commission, are examples of measures that could be covered by this strategy, once the scope is expanded to include the participation of DSUs in the SEM. By not including this within the scope of the project, these policies may clash with programmes covered by this strategy, and ultimately lead to a lack of cohesion amongst policies and policy makers.

In conclusion, the DRAI welcomes an umbrella approach to electricity demand management and encourages the CRU to consider the opportunity it has to align multiple ongoing policy workstreams, as well as future ones, in order to ensure cohesion and success of demand management. Without including all relevant demand-side components, we risk policies becoming misaligned and undermining each other. An example of this could be seen in the CRU's proposed tariff changes outlined in CRU202281. Without vital industry feedback, the initially proposed tariffs risked being detrimental to DSU capacity provision and provided a direct financial incentive for large energy customers not to be available to meet DSU obligations.

Q3. What are stakeholder's views on energy demand profiles and the challenges arising from the associated carbon emissions?

> *Considerations may include other information and data that should be included. Or challenges, such as new demand.*

The DRAI has no response to this question.

Q4. What are stakeholder's views on the definition for demand flexibility?

> *How should demand flexibility be measured and reported on an ongoing basis? What metric (annual peak system demand / total annual energy consumption / other?) should be used. How should compliance with the CAP targets be assessed for demand flexibility in 2025 and 2030?*

The DRAI welcomes the inclusion of a formal definition of flexibility within the strategy. It is important to understand exactly what we are trying to achieve with this project, and how to measure its success. While the definition included succeeds in outlining many aspects of flexibility, the DRAI believes it is

missing a timescale element. As written, any flexibility could be included, whether it is achieved in a matter of seconds, such as DSUs, or over a number of years, such as an improvement to a home's BER rating. Such a broad definition may cause issues in the future, and perhaps should be based on the system needs for flexibility. This could perhaps be addressed by adding "within the timeframe required by the system" after "capable of changing its demand consumption profile".

This would allow for a distinction between second-by-second frequency response, multi-hour response for peak times, multi-day response for periods such as 'Dunkelflaute', and the general shift towards energy efficiency driven by high prices. It will also be important, within this strategy, to outline who is expected to achieve flexibility in which timeframe. For example, we have witnessed DSU participants being very successful in the shorter response times, but they cannot, in their current configurations, achieve multi-day responses without significant disruption to the economy. This will allow the strategy to target measures at the correct flexibility providers, and not penalise participants for not providing some types of response to which they are inherently unsuited.

The DRAI is also interested in the approach of measuring the flexibility on the system. We agree that an availability-type metric is suited to this, given the variety of technologies providing different forms of flexibility. As such, actual response, be it during peak hours, or otherwise, may not provide an accurate representation of the flexibility available to the system when given the appropriate signal.

However, we are concerned about the use of DSU flexibility in the measurement, given the exclusion of their participation in the SEM from this strategy. It would be inappropriate to form a strategy to achieve legally binding targets set out by the Government, exclude a major contributor to system flexibility from the strategy, and then include their contribution when assessing the performance of the strategy. As such, we encourage the CRU to incorporate the participation of DSUs in the SEM into the strategy and create a wholistic target to which DSUs can contribute, particularly as the definition proposed inherently aligns with the activities of DSUs.

Q5. What should be the areas of focus for demand flexibility?

> *Are there any policy or regulatory barriers to the introduction of technologies that could be useful in providing flexibility? What incentives should be considered?*

This question is one that's being asked at all levels in the European Union since the Clean Energy Package was first introduced in 2019, but especially since the 2022 electricity crisis. There are several avenues they have identified that may provide guidance to Ireland in the form of policy incentives and the removal of barriers.

However, what is becoming increasingly critical is to fully implement the provisions of the Electricity Regulation & Directive that became applicable as of 1 January 2020 and 1 January 2021 respectively. smartEn[3], in their publication on the '*Implementation of The Electricity Market Design to Drive Demand-Side Flexibility*[4]' put Ireland as one of the lowest ranking countries for implementation of the demand-side measures of the CEP, amongst Romania, Greece & Poland. Much of their assessment was based on discriminatory participation in the SEM, derogations from the requirements for short settlement periods, non-cost reflective network tariffs, the lack of smart-meter rollouts and associated dynamic price plans, as well as the lack of inter-operability with energy management systems, amongst many, many other aspects of Ireland's policies that still fail to comply with the CEP.

[3] https://smarten.eu/
[4] https://smarten.eu/wp-content/uploads/2022/03/The_implementation_of_the_Electricity_Market_Design_2022_DIGITAL.pdf

Understanding these issues and how they affect the participation of demand response, and finally implementing them, will put Ireland on a course to increase flexibility.

New measures, being discussed in the context of the Electricity Market Design reforms, may also provide guidance for Ireland in this strategy. These, will not legislation yet, could include

- enabling market participants, including independent aggregators, to use data from dedicated measurement device for settlement of flexibility services as well as for energy sharing;
- ensuring that the tariff methodology, which should consider both capital and operational expenditure, as proposed by the Commission, incentivises the use of flexibility services and the optimisation of the existing grid, including the development of a smart grid profiting from the flexibility services by energy storage and demand response.
- the introduction of surplus supports for flexibility in order to expand them to levels required on the grid for the deployment of renewable energy.

Q6. What are stakeholder's views on the attached ESBN document, 'Scenarios for 15-20% Flexible System Demand', which has been published as part of this four-document package.

*Respondents are encouraged to provide detailed responses by referencing specific sections of ESBN's document.*

To date ESBN have been progressing flexibility programmes through the NNLC programme. Our members welcome the publication of the scenarios for 15-20% Flexible System Demand. However, the document presents a number of areas that need further development to ensure the 15-20% target is met by 2025. Programmes put forward so far have not had significant uptake by aggregators or their customers because the value proposition is not compelling for customers in the absence of a meaningful financial incentive. The preferred scenario by ESBN must ensure that there is a business case or incentive for industry and aggregators to participate in future competitions and multiyear contracts.

We agree that the central scenario is the most likely means of achieving the 15-20% target, but it is also important to ensure that elements of the 'consumer led' and 'industry led' scenarios are integrated into the central scenario in a holistic way to ensure all industries, particularly Large Energy Users (LEUs), and consumers contribute to the targets.

Utilising programmes that have already been introduced in other jurisdictions and are successful should be seen as the benchmark. The document mentioned the Demand Flexibility Scheme in Great Britain, which was successful and the results of this should incentivise ESBN to quickly implement similar schemes to see the benefits to the system during times of need for demand flexibility. Some of our members participated in this scheme so we can provide further information and any lessons learned from the scheme.

There are various ways in which aggregators and our customers can contribute to the central scenario and through the sources of flexibility outlined in ESBN's document.

Storage – Behind the Meter storage (BTM) can participate in Demand Side Units and this needs to be incentivised in the central scenario by reducing the barriers to entering and accessing the market and grid. For example, reducing the lengthy and costly process to obtain export licences for BTM assets would allow customers and LEUs to optimise their energy use while contributing to system flexibility and improve the business case for BTM batteries.

Transport – aggregators can be a key stakeholder in the optimisation and use of EV charging points. By collaborating with aggregators, ESBN could optimise the EV fleet and ensure use of charging points is optimised through the technology and software's developed by our members.

Industrial and Commercial Other – DRAI members already have a direct customer base with LEUs. However, there are currently many barriers both to carbon abatement and to increased flexibility of their assets. Targeted regulatory frameworks and the ability to stack services is very important for the uptake of new programmes. The document suggests shifting demand by adapting production cycles. While this is possible, there are many factors to consider, such as the opportunity cost, the individual fuel source of each asset type, production timelines, labour costs and at a higher level the very nature of the 'normal' workday. The longevity and financial value of the programme is of utmost importance for the majority of industry and customers.

Q7. Comments are invited from respondents on any other associated areas that they consider materially relevant to the project.

Given system flexibility is a constantly evolving space, with new technologies being developed, and greater needs being identified, as well as the interim targets set by CAP23 which are to be achieved within 2 years of the publication of this strategy, the DRAI would like to reinforce the principle of this strategy being an iterative process. It is assumed that the CRU will need to measure the flexibility on the system in order to report their progress in achieving the legally binding target of 15 – 20% flexibility by 2025, and as such, we recommend this strategy is updated accordingly, to set out necessary reforms to existing measures and the implementation of new steps to achieve the Government's targets. This should happen every two years, which is in line with the expected introduction of the Flexibility Needs Assessment, as outlined in the European Commission's proposal for the reform of the European electricity market. As currently proposed, this should also be conducted every two years, with the outcome being incorporated into national policy. We see this iterative nature as vital to this project's success and believe it necessary to engage with stakeholders on such a basis, especially considering the impact this will come to have on final consumers.

## The Department of Enterprise, Trade and Employment's response to the CRU Energy Demand Strategy Call for Evidence and related papers

**Overview**

The Department of Enterprise, Trade and Employment (DETE) welcomes the opportunity to comment and input to the CRU's considerations in the development of an Energy Demand Strategy (EDS), and on the specific consultation documents published alongside a Call for Evidence. The comments provided below are made in the context of the Call for Evidence request published, but sit alongside DETE's ongoing engagement with the CRU and the Department of the Environment, Climate and Communications as part of the EDS Policy Coordination Group, and wider Working Group, and more broadly.

DETE shares the CRU's perspective that our energy system is undergoing a transformative evolution, at a pace that requires careful and concerted policy and regulatory interventions to ensure that we decarbonise our energy use strategically, efficiently while protecting the interests of all energy customers. This transformation will happen on both supply and demand sides of our energy market, and perhaps most of all in the grid – transmission and distribution systems – that has traditionally connected them.

The Department's observations concentrate on the competitiveness implications of the proposals, emphasising the need to decarbonise our energy system in a manner that facilitates new industrial development, by providing secure and price-competitive energy, and market-based incentives to optimise use of our national renewable energy resources. DETE alerts the CRU to the role that a competitive dynamic between new and existing industries must play in driving efficiency and carbon reduction. Further, our observations stress that regulatory and other supply side interventions must drive decarbonisation of our gas and electricity networks as an interdependent energy system; demand dynamism can facilitate that objective, but individual end users cannot achieve that objective independent of a 'systemic' approach. For example, while DETE strongly supports the objective to enable net zero new demand at the time of connection, this has to be a medium-term objective as the regulatory building blocks to facilitate and demonstrate net zero demand are not yet in place; it would be infeasible to require new demand connections to achieve a policy outcome beyond or in advance of what system operators can currently deliver or the market can provide and further delay the urgent need to establish a clear and certain connection regime as envisaged in the 2022 Government Statement on Role of Data Centres in Enterprise Policy and previous CRU decisions (CRU/21/124).

While the focus of the EDS is necessarily on the demand side, DETE considers that a broad, 'full-system' lens is nonetheless required throughout. The measures that will ultimately decarbonise energy demand rely on firstly driving supply-side reforms that maximise the availability of renewables, reduce curtailment, facilitate hybrid connections, private wire infrastructure and co-located supply and demand. Capacity markets that deliver efficient baseload, responsive peaking, storage, and renewable energy on trajectory towards our national 80% target should remain the primary objective, and are a pre-requisite to unlocking the opportunities presented by strategic demand-side measures, as proposed under the EDS.

In providing input to the CRU, comments from DETE are set out firstly at a high-level on the objectives of the EDS and approaches available to the CRU and policy-making departments in unlocking demand-response and flexibility opportunities, followed by brief comments on each of the consultation documents published alongside the Call for Evidence, on Time of Use Tariffs, ESBN's flexible demand proposals, and LEU connection policy respectively. Comments are provided in bullet point format for brevity and clarity, though DETE will be happy to engage on each in more detail through the EDS Working Group.

**Energy Demand Side Strategy Project (CRU 202356)**

- DETE welcomes and supports the development of an EDS. Increasing flexibility will be crucial to achieving decarbonisation targets under both the electricity and the Industry sectoral emissions ceilings within the Climate Action Plan (CAP). The document correctly notes that: "it is necessary for electricity demand to become more flexible, in order to optimise the use of renewable generation and to minimise demand during times of high carbon intensity on the electricity grid. This will require new demand connections, especially large energy users, to invest in flexibility capability from the outset, and for all customers to increasingly shift their consumption away from peak-times and times of high-carbon intensity on the grid and towards times of high-renewable output."
- While the ambition of net zero new industrial demand is shared by DETE, we would point out the regulatory and infrastructure arrangements that will enable it are not yet in place. The EDS can usefully progress some of these, but technological innovation in energy storage and use of decarbonised gas will also be necessary. The EDS can focus on getting the appropriate data, market incentives and governance in place. These would include publicly available electricity grid carbon intensity information on a 15-minute or 30-minute basis so that businesses can accurately report the impact of their usage and invest in flexibility or storage to reduce it. Clear regulatory and price signalling and market reward for activities that have a broad system benefit are key to unlocking required responses. Certification of renewable gas and Corporate Power Purchase Agreements (CPPAs) additionality can further unlock decarbonisation investments. Private wire legislation will be required. It is important that the EDS does not mandate or require a 'net zero' connection standard before such a standard is clearly defined, well socialised, and can be met cost-effectively; it must also avoid pressurising individual LEU end users to solve challenges better solved on an energy system-wide basis.
- The EDS should plan for overall demand growth from industrial users, as manufacturers decarbonise processes through electrification and new industrial development is increasingly electricity based, with natural gas use only in processes requiring higher temperatures (e.g. dairy sector drying), with biomethane use increasing in line with the forthcoming biomethane strategy objectives. It is important that the EDS should not be thought of as a solution to supply-side challenges – these will need to be addressed directly. The CRU will need to be conscious as to where the requirement for decarbonisation falls and focus on a decarbonised electricity system and wider energy mix. The EDS must therefore focus on how demand can respond and provide value to the system as it decarbonises through greater renewable energy, storage, efficiency, and flexibility; it would not be productive to require individual electricity end-users to take responsibility for the full energy supply chain.
- Electricity demand growth will be necessary for decarbonisation, and the strategy should prioritise efficiency using the right energy sources, at the right time, in the right locations. We

understand the EDS may need to target an absolute reduction in natural gas use. While DETE accepts that the grid cannot facilitate unlimited new electricity demand, the EDS should plan for significant demand growth, justifying economies of scale in new infrastructure, low carbon generation, and storage.

- In the CRU's role as economic regulator, consumer protection from undue costs and regulatory burden must also feature strongly in the EDS. Price-competitiveness of energy is key to Ireland's sustainability as a place to grow low emissions businesses. This is a challenging area for Ireland at present. For example, the National Competitiveness and Productivity Council in its June 2023 bulletin noted that Ireland ranked 41st out of 64 countries when it came to electricity costs for industrial users and energy infrastructure.[1] In particular, where and when carbon intensity is low, and renewables are generating at small marginal costs, the EDS should ensure that the market is designed to provide competitively priced electricity to customers – reducing curtailment and maximising decarbonisation.
- While the EDS will necessarily look at connection policy, new large demand users and regulation of existing users, DETE would stress that an assessment of the impact of measures on competitive dynamics will be essential. The EDS will need to carefully avoid creating an incumbent advantage or barriers to entry, such that new businesses connecting to the grid face significantly higher costs or regulatory requirements than existing users. Barriers to connection would protect the status quo, whereas more energy efficient new connections should create competition and pressure peers to become more efficient and lower carbon emissions.
- Decarbonising our energy system and industrial base is an economic as well as environmental imperative as articulated in the White Paper on Enterprise 2022 - 2030[2]. DETE considers that ambitious decarbonisation objectives will in future form a significant pillar of Ireland's competitive advantage as a place to do business. Conversely, failure to meaningfully invest in the transformation of our energy system would represent a competitive risk in the future. DETE advocates for an EDS that unlocks the opportunities in decarbonising our energy system, taking a collaborative approach with industry to addressing the key challenges of energy customers individually and the effective functioning of a low carbon energy system.
- The EDS should ensure consistency with the Climate Action Plan and sectoral decarbonisation Roadmaps (DETE will produce Roadmaps for the manufacturing sector and commercial buildings decarbonisation in 2023), and the Biomethane strategy.
- As Ireland moves to develop large amounts of renewable energy, particularly through large-scale solar farms and significant offshore wind energy (OWE) projects, it will be essential that there are plans generated to leverage that capacity for Ireland's benefit, through decarbonising our existing economic activities and identifying new economic activities to make the best use of that new, secure, and decarbonised capacity. New LEU developments should in future be co-located where large amounts of renewable energy are readily available with fewer existing grid constraints, and where circular opportunities can be designed to make the most effective use of related activities – such as the creation of energy parks where LEUs are located to use renewable energy, perhaps alongside hydrogen production, energy storage or other symbiotic development. Such energy parks would foster economic clusters in regional locations, and the growth of

[1] bulletin 23-1 imd world competitiveness rankings.pdf
[2] White Paper on Enterprise 2022 – 2030: https://enterprise.gov.ie/en/publications/publication-files/white-paper-on-enterprise-2022-2030.pdf

sustainable industry and communities in the long-term, facilitating greater regional economic development.

- The Minister for Enterprise, Trade and Employment announced in May 2023 his plans to develop a National Industrial Strategy for Offshore Wind which will set out how Ireland can maximise the economic opportunity arising from the production of OWE and complement the suite of government policies led by the Department of Environment, Climate and Communications through the Offshore Wind Delivery Taskforce. It will also take into account the need to develop that sector to its potential and take advantage of the opportunities gained from significant electricity generation from renewable sources. The Strategy is expected to be published in Q1 2024.
- Location-based market and regulatory signals to incentivise new connections where grid capacity is available and where new demand would reduce curtailment of renewables should be further strengthened. The White Paper on Enterprise committed that "A proactive, positive industrial energy development approach will meet the needs of a rapidly evolving energy sector and the transformation of energy use by industry broadly." There will necessarily be a spatial planning element to aligning future energy intensive industrial growth with the capacity of our energy networks, and availability of renewable energy sources, storage and system services. The EDS can usefully provide a clear regulatory signal and oversight arrangement to facilitate this.

**Incentivising the Uptake of Time of Use Tariffs (CRU 202358)**

- DETE is supportive of the CRU positions set out in the paper. Providing customers with their own information to better inform contract choice is reasonable and will encourage price competition on time-of-use basis. It will be key that customers understand that their energy use behaviour, and in particular the time of their energy use, will significantly determine the value of any particular tariff plan. DETE expects that price comparison tools should allow customers assess how a change in their usage patterns within a certain tariff plan would impact on their Estimated Annual Bill (EAB) or costs more broadly.
- DETE is disappointed to see no consideration of the particular opportunity and characteristics of business customers, mostly SMEs, in consideration of time-of-use tariffs (ToUT). Businesses may be very well placed for greater uptake of ToUT, with predictable hours of operations, greater use of timed energy demand (immersions, dishwashers etc.), and good incentives to respond to attractive pricing models. The consultation paper does not consider the specific informational needs of SMEs, or the dynamics of the competitive market for energy retail services to businesses. DETE would propose that the CRU should separately consider and implement measures that incentivise SMEs to assess, better compare, and respond to ToUT to save money on their energy costs and reduce the carbon associated with their electricity usage.
- Page 8 of the consultation document advises that "since November 2022 customers have been able to access their data via the ESBN Customer portal" and that they can create an online account to monitor usage. Is there public information available on how many consumers are doing this? Smart Services have been enabled since February 2021 allowing suppliers to offer a range of smart 'Time of Use' Tariffs to customers who have had a smart meter installed. What is the available data indicating as to the willingness of customers (business or domestic) switching to smart services since having smart meters installed? An analysis of current uptake, a targeted SME survey and stakeholder feedback should inform which measures the CRU and other stakeholders can take to promote higher switching to smart tariffs.

- Digitalisation and decarbonisation will ultimately be complementary. The increased use of smart meters will require large amounts of data to be captured from smart meters and made available not only to system operators but also to electricity consumers in households and enterprises, to encourage smarter decision making on when to use electricity. This is in addition to the large amounts of data which are involved in the management of the generation and transmission of energy. This digitalisation, enabled by significant data storage, empowers energy users and system operators to manage demand and make the best use of available renewable generation at any point in time.

**ESBN Scenarios for 15-20% Flexible System Demand Paper (ESBN DOC-120423-HRS)**

- The paper provided by ESBN is a useful and detailed analysis, providing a credible starting point for detailed technical engagement with energy users, and LEUs in particular, on the data requirements, market systems, communication mechanisms and different response-types that are valuable to local and national electricity networks. DETE has engaged directly with ESBN on this topic and will continue to facilitate engagement with our manufacturing sectors to support the objectives identified by ESBN. DETE's agencies are pro-actively engaging these sectors in decarbonisation projects, and there will be synergies in a coordinated approach.
- DETE strongly supports the broad approach, which proposes targeted and tailored market-based incentives to incentivise energy users to respond to the needs of the electricity system, and provide the kinds of flexibility services that will contribute to the reliability and decarbonisation of the grid. These likely include demand shifting, storage of varying durations, on-site back-up generation and technical systems services. In order to unlock the available services, the System Operators will need to define the flexibility or responsiveness that provides real value and decarbonisation to the grid and therefore all energy customers, and the market based incentives that will elicit the provision of these services while protecting the interests of all electricity customers.
- While DETE agrees with the areas of focus identified by ESBN, the paper perhaps underestimates the opportunity for flexibility provided from upgrading and incentivising innovation and dynamism in industrial thermal heat load flexibility, for example by supporting electrification of CHP plants to allow and/or use of thermal storage on sites requiring a constant thermal load – allowing the demand to be more flexible.
- Having engaged with a number of business energy users through our enterprise development agencies, DETE has significant reservations as to the capability of some XLEUs to shift their demand loads in response to short-term price signals alone. Many XLEUs will have inflexible manufacturing, cooling, packaging or other processes that are planned ahead, and with associated staffing and employment implications, that could not be changed in response to short-term price signals. Different durations of advanced notice to LEUs may also be useful and more effective for different types of flexibility responses required.
- While data centres feature prominently in analysis because of their scale and growth, a narrow focus on XLEUs with very stable demand risks missing an opportunity for other sectors with large electricity demands, or even as aggregated users, that may prove to have much more scope and incentive to introduce dynamism into their usage profile. There are innovative services and technologies available to unlock these opportunities, with appropriate market signals to confirm their business case. DETE and its agencies will be happy to facilitate engagement with ESBN and the CRU beyond this consultation with identified providers. It will be important not to be overly

definitive as to the most effective technological interventions through market incentives, leaving space for innovation in delivering the different duration of flexibility services required by the grid.

- A portion of manufacturing sites will have few options to provide demand flexibility, particularly where space or technical requirements restrict storage options, and where sites operate on a 365/24/7 basis. The costs of ramping down/closing off production outside of maintenance periods can be very significant. Short-term battery or thermal storage options may provide some scope, but these may be limited by space and financing. On pg. 36 in the EDS document there are references to measures such as 'the development of local flexibility markets' to incentivise both domestic and business customers, and this approach is welcome. ESBN and DETE (through Enterprise Ireland and IDA Ireland) could jointly target industrial flexibility where it is most useful in decarbonising the grid and where the demand users' operations represent a good fit for a market-based incentive for an energy demand profile adjustment.
- The document could more clearly define the duration of short-, medium- and long-term storage solutions and comment on which will provide greatest decarbonisation to the grid, within what price range, and whether existing or different types of incentives, market instruments or policy supports will be required to unlock each.
- The document (perhaps mistakenly) claims that there are 140,000 dairy farms. DETE understands that there may be around 140,000 farms nationally in total, but they are not all dairy farms. Pursuing flexibility in energy usage in the dairy sector through the greater use of solar PV is worth progressing, though it is unlikely to be at the referenced scale and energy demand may vary significantly across agricultural operations. The Department of Agriculture, Food and Marine (DAFM) could provide additional analysis.

**Review of Large Energy Users Connection Policy (CRU 202357)**

- DETE strongly supports the objective to enable net zero new demand at the time of connection – to fully decouple industrial development with carbon emissions, new developments will need to be designed for a net zero future. However, by its nature, this is a medium-term objective. It is clear that the regulatory building blocks to facilitate and demonstrate net zero demand are not yet in place and will be required in advance of a connection policy requirement. The required regulatory infrastructure will include publicly available grid carbon intensity metrics across time-of-use, hybrid/dynamic connection policy to allow for co-location of generation and demand, reporting frameworks, markets and/or other incentives to unlock flexibility services, private wire legislation, and, potentially, a robust standard for carbon offset contracts for natural gas connections. Clearly, it would be infeasible to require new demand connections to achieve a policy outcome beyond or in advance of what system operators can currently deliver or the market can provide.
- On pg. 3 of the document, it proposes assessment of the "expected emissions profile of the proposed connection and of its contribution to the decarbonisation of Ireland's economy". It will be important to set out how on-site back-up generation, Corporate Power Purchase Agreements, carbon offsets, reduction of curtailed renewables and the future expected carbon intensity of the electricity grid could or should be assessed in such an analysis. It will be critical that the analysis incentivises the optimal arrangement for the energy system, decarbonising all energy customers, and does not unhelpfully isolate the impacts of a single demand-load from their role in the regional and national network.

- As described above, location-based market and regulatory signals to incentivise new connections where grid capacity is available and where new demand would reduce curtailment of renewables should be further strengthened.
- As noted above, it will be important to avoid creating incumbent advantages or negatively impacting on the competitiveness of new entrants, thereby reducing innovation or competition in the services or products they provide. In most circumstances, new connections to the grid should not face significantly higher costs or regulatory requirements than an existing user. DETE is concerned to avoid significant market distortions, barrier to entry, or unfair incumbency advantages. This would reduce competition, incentives for efficiency and innovation in energy intensive sectors.
- It is essential that the review of the LEU Connection Policy allows for continued industrial development and electricity demand growth, as is required to meet Climate Action Plan (CAP) targets for the electrification of industrial heat. The CAP suggests that electrification of industrial heat use will require at least 3.5 TWhs additional demand annually. DETE is currently developing a Roadmap for the decarbonisation of industrial manufacturing – the approach will encourage manufacturers to differentiate their heat demand on the basis of temperature requirements. Most processes requiring temperatures below c. 130 degrees Celsius can now be cost effectively electrified, while temperatures above this should be decarbonised through the use of decarbonised fuel such as biomass, biomethane or, in future, hydrogen.
- It would be reasonable to limit new fossil fuel gas connections for low temperature processes, and for space heating – similarly, an electricity connection should be expedited for these operations, to ensure lower carbon infrastructure is the most accessible option for new developments. An Energy Efficient design standard, such as ISO 50001, could be required for new LEU connections.
- The Review of LEU Connection policy, as it relates to gas connections, should ensure consistency with forthcoming Biomethane strategy, which is being jointly developed by DECC and DAFM.
- A public consultation process is currently being undertaken by DECC on private wires. The outcome of this process will be relevant to several considerations that arise in this document such as on-site electricity generation (p.33) and 'Shifting of demand in real-time to times of high renewable energy availability' (p.35) amongst others.
- DETE welcomes that the CRU has included a call for evidence on gas connections, their flexibility and carbon impacts in preparing for an EDS. It is crucial to our national decarbonisation objectives, as well security of supply, that we consider the impacts of new policy and regulations across the full energy mix. Nonetheless, it is clear that the 'demand flexibility' target of the Climate Action Plan is aimed at reducing electricity sector emissions and minimising renewable energy curtailment – flexibility in gas demand may be desirable, but for other reasons. It will be essential to address Gas LEUs as a separate cohort of energy demand. They will likely have markedly different energy demand profiles, be in different sectors, and have different operations; DETE would expect very little overlap with electricity LEUs.
- On the possibility of the 'introduction of an "interruptible" type supply to certain network users (e.g., LEUs such as data centres)' which it is noted 'could provide a useful demand side management tool to assist in peak day management of the network' (p.36).In principle, DETE would welcome a diversity of contractual connection arrangements, so that demand users can procure a grid connection that meets their requirements while limiting the costs of additional infrastructure or regulatory requirements automatically triggered by performance standards,

perhaps to provide a level of availability not always required by the end user. International examples of such connection contracts for gas networks would provide useful templates and information for further consideration of the options available. Importantly, such contracts should be optional, rather than standard for a new connection contract.

- Figure 6 on Large Energy Demand (pgs. 26 & 27) shows the breakdown of electricity demand across different sectors (using median demand scenario) from Eirgrid – DETE notes that the residential sector excludes EVs and heat pumps but that they are included in the other sectors. Is it possible that some of the very large increase in forecast demand for the LEUs is because they will be equipping heat pumps and using EVs as business vehicles (i.e. doing the very things we want them to do). If so, then this should be acknowledged here rather than citing their increased demand so that it could be perceived as a 'problem'. It is important to compare 'like with like'.
- Page 40 refers to the "scenarios where a justifiable case can be made to discriminate against a specific class or classes of energy user due to the unique characteristics of, among other items, their interaction with the network." It may be appropriate to discriminate between demand users based on the size of their demand, the characteristics of their connection requirement, performance requirements or similar technical differentiators. It may in some circumstances be responsible to make a distinction between the efficiency of demand users, or their ability to provide system benefits for efficiency and/or decarbonisation. It is rarely appropriate for a utilities regulation or policy to imply a judgement or preference for particular industrial sectors or demand-uses for reasons other than well-defined technical characteristics, security of supply, or legality.
- Data Centres are a significant subset of the large energy users in Ireland, and they are a critical infrastructure for the modern digital and technology based Irish economy. The Government Statement on The Role of Data Centres in Ireland's Enterprise Strategy, published last summer, ensures that both enterprise and energy policy can now plan for sustainable development of data centres and their energy demand, with a shared understanding of the State's priorities. The CRU and System Operators will be familiar with the Government's preferences as set out, facilitating data centre development:
    - without pulling disproportionately on the capacity of our national grid;
    - while ensuring that we meet our emissions targets; and
    - our ambitious renewable energy targets.
- The Government Statement sets out clear preferences for data centre developments that, inter alia, provide demand flexibility and a trajectory to net zero emissions. The Statement also explicitly references that so-called 'Islanded' data centre developments, "that are not connected to the electricity grid and are powered mainly by on-site fossil fuel generation, would not be in line with national policy". The Statement also emphasises the need to ensure that there is sufficient infrastructure capacity available for the medium and longer term, for digital service and data centre development in line with these criteria, and the opportunities which will come with increased generation capacity from offshore wind, onshore renewables and enhanced storage capabilities.
- DETE notes that the CRU considers that this preference should apply equally to any new "islanded" large energy users. DETE understands that this would only apply where a LEU's demand load is ultimately electrical. The concept wouldn't extend to large gas users that have a high-temperature demand load (i.e. non-electrical).

**Conclusion**

While the timing of the Call for Evidence during August may limit the detail of Stakeholders inputs, DETE will be happy to facilitate engagement through our enterprise development agencies where specific sectoral or technical operating detail of LEUs is valuable to the CRU. Understandably these are technical papers and written primarily for a technical audience. While the executive summaries are welcomed, it may encourage more submissions if these documents could be made a little more concise in parts, and mindful of non- technical readers.

Decarbonising our energy system and industrial base is an economic as well as environmental imperative. DETE believes that ambitious decarbonisation objectives will in future form a significant pillar of Ireland's competitive advantage as a place to do business and that equally failure to meaningfully invest in the transformation of our energy system would represent a competitive risk in future. Our energy costs at present are already amongst the highest in Europe, and one of the areas in which our competitiveness is lagging behind peer jurisdictions. An EDS that unlocks the opportunities in decarbonising our energy system, and takes a collaborative approach with industry to addressing the key challenges of energy customers individually, and the effective functioning of a low carbon energy system is required.

The EDS, and proposals on time of use tariffs, market-based flexibility incentives, and the review of LEU Connection policy can and must all ensure consistency with the Climate Action Plan, enabling sustainable industrial development, electricity demand growth, economic growth and balanced regional development. DETE expects that there will be constructive input to the CRU in response to the Call for Evidence, and will continue to work collaboratively with the Commission in pursuit of these shared objectives.

**30 August 2023**

6 Merrion Square North
Dublin

D02 FF95

**Date: 30th August 2023**

**Sent via email:**

**Electricityconnectionpolicy@cru.ie**

**Re: Review of Large Energy Users Connection Policy**

To whom it concerns,

EAI welcomes the opportunity to respond to this call for evidence on Large Energy Users Connection Policy. The proposals in the consultation represent a fundamental change to the policy and regulatory framework that has been in place since market liberalisation. More specifically, capacity has traditionally been procured centrally to meet demand at least cost while renewables have been procured centrally through support schemes to decarbonise the electricity system. Customers are then billed for the cost of procuring capacity and renewables through the capacity charge and the PSO. This is a system used widely around the world and which can be flexible enough for some players to procure additional renewables or back-up generation themselves but on a voluntary basis.

**Introduction**

This new approach would pick out a very specific cohort of new customers and mandate them to only use zero carbon generation and to provide it themselves before they can connect. Such customers would need to have their own mini zero carbon electricity framework up to twenty years ahead of Ireland's own target for fully decarbonised electricity. It is hard to see how this could be best regulated and whether these parties would be willing to submit to energy related control regarding energy supply to their businesses. Decarbonisation of the energy sector needs to be incentivised equally across generation and demand, both current and future.

It is unfortunate that we are in this position now. The much-increased demand from extra-large LEUs (mainly data centres) has been understood since the publication of EirGrid's 2016 Generation Adequacy Statement and there was ample time to get ahead of this by procuring additional capacity and additional renewables with the question then becoming what the most equitable cost distributions across customer categories are. The recast Energy Efficiency Directive proposals in Fit for 55 may well have an impact on increased demand in general in Ireland but has not been mentioned in this CfE – further consideration is warranted on this.

Ireland's population is projected to grow from five million in 2020 to six million in 2050 and this will require additional employment. Placing the zero carbon obligations on new connections (which may or may not be technically feasible at this time) without facilitating viable options for these LEUs to

meet this obligation could place a cost burden on projects which could otherwise provide hundreds or thousands of jobs or render the investments unviable. The call for evidence seems to entirely ignore the broader economic environment and further analysis is needed here.

EAI believe that the central procurement model for all demand and its decarbonisation can still work, and that a significant part of the capacity issues with new connection is down to an approach of continually and purposely under-procuring capacity to make perceived short term cost savings. EAI further believe the continued market signals towards unabated carbon units, is also a culprit in not encouraging earlier entry of generation that could be decarbonised ahead of targets, rather than resorting to specific new cohorts of customers being decarbonising pioneers. The very short-term approach adopted by the SEMC to date is ultimately, in our members' opinion, likely to cost customers much more than would be the case were a holistic and sensible procurement approach adopted.

Regardless of the outcome of this CfE, CRU must ensure that the central model to procure capacity and zero carbon generation is made to work. The market design, policy and regulatory framework must evolve to support the procurement of repowered decarbonised plant that are currently high emitters, procurement of much more renewables, more storage, more system services, demand side response as well as new zero carbon generation as quickly as possible. As part of this we must transition away from CRU's current approach of procuring new additional unabated gas generation at scale as soon as practicable. At present, capacity under the Capacity Market is contracted to 2038 on the basis of unabated technologies, given the "best new entrant" reference plant remains a high emitting unit, rather than a decarbonised one. Furthermore, repowering policy continues to lack detail, signals and framework for repowering of existing thermal technologies to net zero technologies, with aligned signals in the Capacity Market for entry. There is an opportunity for these to be "reopened" in some manner (such as code modifications) that would allow for recovery of costs associated with net zero readiness for instance.

The central model can furthermore still support the rollout of corporate PPAs for large and small players to procure additional zero carbon generation. It is likely that the centrally procured model will result in lower costs overall where zero carbon investments are optimised and better utilised.

**Decarbonisation of energy demand**

1. **Comments are invited from stakeholders on the proposed approach of decarbonising energy demand with a view to achieving net zero emissions from LEUs at time of connection. Please provide reasons and rationale for any views provided.**

We can see value in on-site or "near site but directly connected" generation helping to reduce the demand of LEUs on the system as this should not contribute to emissions that the energy industry is seeking to reduce. However, this paper and previous papers confuse what LEUs may procure for their own operational security and need 24/7, versus the production of net zero generation by LEUs on a commercial basis in its own right. It would be our view that some direction is needed on what is intended in this case. We would be supportive of LEUs having options to decarbonise their demand

including installed generation for their own use that does not undermine aggressive emissions targets but reduces overall system demand since they require less from the grid. EAI members have less certainty regarding LEUs becoming commercial producers of energy when a central model to date has been the agreed approach for capacity procurement.

In that vein, there are potential impacts arising from the proposals in the CfE which could be far reaching, and they require further analysis.

- The paper states that the current cohort of data centres are currently using 34% of their contracted capacity. Given that the proposals in the paper are for new connections, most of the issues raised in the consultation regarding the difficulties in meeting climate targets remain regardless given the challenge and restrictions that existing data centres/ LEUs will have to decarbonise their current on-site generation.
- Although not stated explicitly, there is a potential that non-data centre connections associated with significant increased jobs will be significantly impacted by the proposals. Encouraging investment in Ireland from LEUs such as pharmaceutical companies and heavy industry manufacturers is important for Ireland's economic growth and provides additional employment which will be needed as our population continues to grow. Whilst the requirement for LEUs to decarbonise is important in achieving our 2030 and 2050 targets, it should not act as a deterrent to investment, especially if viable options are not provided for these LEUs to meet their obligation.
- Any obligation placed on undertaking should be achievable within reasonable bounds otherwise it becomes a de facto moratorium. It can't be concluded from the analysis in the paper that a new connection could be completely zero carbon more than 20 years ahead of the national net zero target and we need to see focused efforts to bring key enablers of achievement of the national net zero target (such as hydrogen policy and production) into effect as quickly as possible to start to provide LEUs with decarbonisation options.

On the other hand, EAI is confident that there are many technologies and initiatives available to increase zero carbon and renewable deployment and the market (e.g., CRM, system services) and regulatory framework must evolve to support this. There are numerous examples of blockages and uncertainties in the system.

- Electricity charging structures – back in 2021 CRU commenced a review of network tariffs to support decarbonisation. This review has not been progressed past a call for evidence. That process should be taken forward along with an overall review of charging structures for electricity (e.g., capacity versus volumetric charges in capacity, imperfections etc). The outcome of this review could play an important part in helping customers (with the support of technology or aggregators) move their demand to follow renewables output.
- Flexible dispatchable electric boilers are being deployed to unlock the synergies which exist between the electricity sector and the heat sector. These have the ability to mitigate the dispatch down of wind and solar generation while also reducing Ireland import of fossil fuels. These Large Energy Users will accelerate Ireland's decarbonisation using indigenous zero carbon energy in hours of abundance and over generation. These projects will need substantial non-firm grid import

capacity, connection policy should avoid unintended barriers to flexible electrification of Ireland's heat sector.

- The availability of hybrid connected capacity could help LEU customers decarbonise their demand on a voluntary and additional basis for CSR reasons etc. Therefore, progressing hybrid connection and the more efficient use of electricity networks should be a national energy priority. The progression of hybrid connections has been an explicit task of CRUs since the publication of the Climate Action Plan 2019 and almost no progress has been achieved in that time. Co-locating wind and solar generation (for example) could allow for a near doubling of renewable generation capacity at existing wind sites with no additional network infrastructure.
- While noting the current Government consultation on private wires, government policy on private wires needs to be expedited as a matter of urgency. Finalised policy in this area might accelerate projects currently on hold or in development awaiting connection.

**2. Comments are invited from respondents on the need for onsite generation and storage capability for LEU connections. Please provide reasons and rationale for any views provided.**

If the requirement being placed on certain new connections is to bring zero carbon generation with it, it is not clear that it should be mandated to be onsite and indeed it may be less efficient to do so. Certain technologies such as large-scale generation and energy storage are likely to be more efficient at large scale (including industrial scale hydrogen storage) and requiring it to be onsite at certain customer sites could make what is already a significant obligation much more onerous. There would need to be some boundaries on the requirement however, and this may be related to bidding zones or unconstrained network areas.

Flexible LEU's such as electric boilers used in the hybrid delivery of industrial heat (or district heating) in their design do not need firm capacity and will not need onsite generation or electricity storage.

**3. Comments are invited on the use of CPPAs for additionality of renewable generation outside of support schemes for decarbonising electricity consumption. What type of de-rating may be appropriate to reflect real-world performance of renewable generation during peak times. Please provide reasons and rationale for any views provided.**

Additionality through CPPAs should be facilitated and encouraged while avoiding the displacement of existing RES generation from the consumer. The emerging EU market design proposals (Article 19a) will include explicit measures to encourage new CPPAs. EAI recommends that Ireland take a proactive approach to implementing these measures.

There are barriers to developing new generation through CPPAs and these need to be addressed. Many of these are covered in Question 1 above. In addition, the route to market for offshore project through CPPAs is now unclear and must be addressed. Specifically, it is not clear how an offshore wind farm could move through permitting and planning outside of the ORESS process.

4. **Based on preference that renewable electricity and /or gas contributes to Ireland's emissions targets and security of supply, do respondents have a view in relation to how electricity feeding into Irish system and renewable gas credits feeding into the Irish system could be tracked?**

These should be tracked in the same way that emissions for all customers are tracked. The cost and complexity of creating a new framework for a certain cohort of customers appears suboptimal. Renewable energy source credits tracking process should mirror the functionality of the European markets within an Irish context and provide a workable market-based credit system that aligns to those used for renewable energy throughout the EU so that Irish participants can engage (import/ export) in renewable energy credits without any additional boundaries.

5. **Comments are invited from stakeholders on the use of renewable gas credits (feeding into the Irish natural gas system) in order to facilitate the connection of gas demand to the system. Please provide reasons and rationale for any views provided.**

It is not clear what is being asked in this consultation question. The concept of renewable gas credits arises from an EU established scheme and so if a new connection sources renewable gas it is not clear on what basis they would be precluded from using the certificates. If the CRU is suggesting this is what should happen, it should be made explicit in the question to aid a more comprehensive response.

There is undoubtedly a scarcity issue with renewable gases of biological origin, and this will need to be taken into account when devising schemes such as the renewable heat obligation.

**<u>Demand flexibility</u>**

6. **Comments are invited from respondents on enabling demand flexibility requirements as described above. Please provide reasons and rationale for any views provided.**

Enabling greater demand side flexibility is a core requirement in the transition to a zero-carbon energy system. Demand will need to follow the output of zero marginal cost renewables and seek options to vary its consumption where possible at times of lower renewable energy generation since producing electricity will be more expensive then. However, enabling this demand response is difficult and hasn't been truly enabled anywhere in the world yet. Unlocking the demand side is best dealt with in a holistic manner as most proposals will be replicable across lots of customer categories. It is possible that we have not seen significant levels of flexibility yet because the overall framework is not in place (see Q1 response on charging structures etc). Care is need that the demand response/ flexibility is

systemised such that individual LEU actions do not result in a greater level of pressure on the national energy grids.

More generally, large customers such as data centres should be encouraged to be as flexible as possible in terms of how they interact with the electricity system. Demand Side Unit design in SEM and tariff design more generally should be considered in this light to encourage reduction in demand or time of usage where possible. Data centre's development and implementation of data processing and management systems to better manage their power demand will be key to such demand response.

The CfE is not entirely coherent between Question 1 and Question 6. If the proposal in Q1 applies and the new connection must have all its demand as zero carbon, it is not clear what difference the obligation in Q6 would make.

**7. Are there other sources of flexibility that can be provided?**

The listed potential sources of demand flexibility is incomplete. One of our members is pioneering the flexible use of electric boilers to offset fossil fuel use in the heat sector by consuming would-be wasted renewable electricity. While demand shifting and building additional behind the meter generation capacity are vital to achieving 20 to 30% flexible electricity demand by 2030 (15-20% flexibility by 2025) a lot of the early wins can be achieved by coupling the heat sector with the electricity sector. To promote this hybrid delivery of heat a number of legacy barriers exist:

- The inability of the System Operators to issue consumption dispatch instruction or to schedule flexible consumption units.
- Legacy charging structures
- The need for non-firm import capacity (or interruptible import capacity)

Another of our members, has proposed that demand flexibility is managed within energy clusters where a combination of locally or regionally inter-linked generation and demand sites bring together different assets and capabilities to help catalyse renewable generation and flexible demand for the whole energy system as the sites will also be connected to the national grids so avoiding "islanded" operations. The combination of assets in the energy cluster will facilitate decarbonising demand, alleviating grid constraints and supporting renewable generation such as hydrogen, wind and solar. Zero carbon energy would be available to the demand sites within this energy cluster from local/ regional renewable energy sources (wind /solar) that can be catalysed into making/ increasing their generation investment by local/ regionally located demand as an "anchor tenant" to the energy cluster. Renewable generation excess to grid requirements or capabilities could be used within the cluster for hydrogen production and storage and charging large-scale batteries which can in turn support the grid and the energy cluster at times of lower renewable energy output (such as via dispatchable renewable-fired generation units).

**Interruptible contracts for gas connections**

8. **Comments are invited from respondents on the introduction of interruptible type supply contracts for gas connections. Please provide reasons and rationale for any views provided.**

Interruptible gas contracts are an established way to manage capacity constraints on gas network networks internationally and to the extent there are capacity constraint on the network here they should be introduced. There may be an additional case for these in Ireland; the Government has signalled that the gas network will no longer supply gas to dwellings and commercial premises as part of the net zero transition. This will start to free up capacity on the network and so interruptible contracts in the short term could avoid investments that would be stranded. The effect of interruptible contracts on new LEUs must also be considered in that they may have a chilling effect on new LEU investment so impacting Ireland's economic national interests. All options to achieve supply flexibility (such as dispatchable renewable fired generators) need to be part of the analysis alongside interruptible contracts.

EAI suggests that interruptible contracts may be a viable option for certain yet to connect customers but further analysis on the broader economic impact potential is needed before these contract types are mandated.

EAI believes that offering interruptible contracts on a voluntary basis for all the market rather than on a mandatory basis for a subset of the market would provide a better overall solution. Interruptible contracts cannot be seen as a panacea to realise demand side response by LEUs, as we understand many of them will have 24/7 generation requirements, making interruptible contracts unrealistic for such customers.

**Real time zero carbon emissions**

9. **Comments are invited on real time zero carbon emissions, shifting of demand in real-time to times of high renewable energy availability. Please provide reasons and rationale for any views provided.**

The CfE is not entirely coherent between Question 1 and Question 9. If the proposal in Q1 applies and the new connection must have all its demand as zero carbon, it is not clear what difference the obligation in Q6 would make.

**<u>Definition of an LEU</u>**

10. **Comments are invited from respondents on what they consider to be an appropriate definition of an LEU for electricity and gas for the purposes of this review. Please provide reasons and rationale for any views provided.**

We would welcome a more direct consultation on this matter with various options of what could be included under such a definition. To date, this term is synonymous with data centres, but it is important for the operation of the SEM and for energy security and reliability that this question is bottomed out. We would suggest a CfE may raise some suggestions, but we would recommend a further detailed consultation so that all impacts arising from different definitions of these parties, can be fully discussed, and responded to. The key starting point needs to be the LEUs that most impact the Irish energy system for emissions.

11. **Comments are invited from respondents on whether this review should only apply to Extra Large Energy Users (XLEUs) in relation to electricity. Please provide reasons and rationale for any views provided.**

Not answered

12. **Comments are invited for gas LEU definition of those with a peak hourly demand greater than 50MW thermal input and a connection pressure of 16 barg or above. Please provide rationale for any views provided.**

Not answered

**Islanded Connections on the Gas Network**

13. **Comments are invited from respondents on the treatment of 'islanded' LEUs. Please provide reasons and rationale for any views provided.**

The CfE is not entirely coherent between Question 1 and Question 13. If the proposal in Q1 applies and the new connection must have all its demand as zero carbon, it is not clear whether the connection is islanded or not makes a significant overall difference. There may be other reasons to consider whether such islanded connections are appropriate such as stranding risk, but this can be managed by CRU within its general regulatory framework. Options where LEUs are part of an interconnected energy cluster (a model offered by one of our members) would remove the risk of "islanded" operations in that sites within the energy cluster can be interconnected, as well as all the sites (generation and demand) being connected to the national grids. This level of grid and local connection across the energy cluster will avoid "islanded" operation of units. It would also provide the benefit that these LEUs would not need to become commercial producers of energy and may provide a supportive environment for CPPAs.

14. **Should the connection of LEUs to the natural gas network focus on security and decarbonisation as per the Government Policy Statement on Security of Electricity Supply. Please provide reasons and rationale for any views provided.**

Not answered

**General questions**

15. **Please suggest any alternative approaches not captured above that could help in meeting the challenges outlined.**

Ireland's clearest route to decarbonisation is through a centralised market where large-scale capacity and renewables are procured centrally and at least cost. This method can be complimented by CPPAs etc. The centralised model needs attention for net zero and EAI urges CRU move ahead with proposals to move the electricity system to net zero in a secure manner. Implementation of the proposals in this consultation must not be at the expense of getting the overall framework right.

It is important that the decarbonisation project is understand as the intersectional challenge that it is, and that to solve it requires clear and close coordination between various aspects of the energy market, as well as along various stages of the value chain. Without a clear and joined up approach that considers generation, conveyance, demand—decarbonisation will not be as effective as it could be.

16. **Should provisions apply to all LEUs connections, or are there are any exceptions that should apply? Please provide reasons and rationale for any views provided.**

Per the response to question 1, the link between the proposals in the CfE and Ireland's industrial policy must be taken into consideration.

The current Use of System classification does not differentiate between sites who might be designed to only consume in hours of high renewable generation and those sites which require firm connection no matter what the source of the electricity is. This consultation appears to be concerned with increased connection of data centres; care should be given not to inadvertently hamper rollout of new dispatchable consumption as part of hybrid delivery of heat by installing electric boiler (or other flexible technology) beside existing fossil fuel boilers. Consideration should be given to creating new DUoS and TUoS groups for future flexible consumers with large non-firm import capacity.

17. **Please suggest any incentives which could be applied to new LEU connections in facilitating some of the measures described above. Please provide reasons and rationale for any views provided.**

Not answered

Yours sincerely,

Aidan Hall

Policy Analyst

Electricity Association of Ireland

# Response to Call for Evidence by the Commission for the Regulation of Utilities

## Energy Demand Strategy

Electricity Association of Ireland

**Status:** Consultation Response

**Date:** 30th August 2023

The Electricity Association of Ireland (EAI) is the representative body for the electricity industry and gas retail sector operating within the Single Electricity Market (SEM) on the Island of Ireland.

Our membership comprises utilities that represent 90% of generation and retail business activities and 100% of distribution within the market. Our members range in size from single plant operators and independent suppliers to international power utilities.

We believe that electricity has a fundamental role in providing energy services in a decarbonised, sustainable future, in particular through the progressive electrification of transport and heating. We believe that this can be achieved, in the overall interest of society, through competitive markets that foster investment and innovation.

We promote this vision through constructive engagement with key policy, regulatory, technology and academic stakeholders both at domestic and EU levels.

We represent the Irish electricity industry in EURELECTRIC, the representative body for the European electricity industry, and help shape the broader European response to developing policy and legislative initiatives.

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Introduction:

EAI welcomes this draft Energy Demand Strategy (EDS) from the CRU. It represents a strong opportunity for the CRU to create a vision and set out the pathway for Ireland to journey towards flexibility and low carbon responsive demand. We have answered the respective questions in this Call for Evidence below but at a high level our key messages on this draft EDS include:

- Focusing on deliverables in the very short timeframe to 2025 risks delaying proper determination of and subsequent delivery of demand response capabilities in the medium-long term. The focus should be on developing a robust vision for 2030 by identifying capabilities for flexibility and all barriers to its delivery and then determining the measures to pursue for 2030.
- Considerable market investment and innovation is required to enable delivery of decarbonised energy services. Once barriers to affordability and retrofit skills needs are addressed and more uptake of EVs and heat pumps occur, system and data automation and retail system upgrades will need to be in place to deliver on the EDS vision. The Smart Metering Programme (SMP) post Phase 2 (i.e., from end 2024), retrofit and energy efficiency targets need to be encompassed holistically into the EDS.
- Quick wins can however be pursued in the meantime, to 2025, chief among which are providing suppliers with data needed to inform and educate customers in making tariff decisions as well as decarbonising the already connected LEUs who already have on-site generation (considering ~80% of expected LEU demand in 2030 is already grid connected). Please see our answer to question 1 for more insights.
- The focus needs to be more on decarbonising demand than on reducing demand in the round. LEUs for example aren't suitable candidates for flexibility given many require 24/7 operations. For major LEUs like data centres we understand that given sizes of batteries, batteries are not conducive for improving flexibility and alternative dispatchable renewable solutions will be required. Both dispatchable zero gas capacity and wind / solar have roles to play. This is pragmatic considering the expected demand growth this decade. Government hydrogen and renewable gas policies and this EDS all need to be aligned. Please see our answer to question 3.
- The traditional concept of reducing demand at peak times no longer stands in a system dominated by renewable generation output. The measure of demand flexibility should correlate to flexing to consume at times when the carbon intensity of the energy being generated is at its lowest i.e., during high renewables generation output such as a windy day. Measurement of the achievement of the targets should be informed from the measuring of the total annual carbon intensity of the consumption relative to the reference period against the "do nothing" scenario when the save level of consumption would have been met but by a generation combination that had a higher share of fossil fuels. Please see our answer to question 4 for more insights.
- We welcome the informative nature of the ESBN flexibility scenarios document but believe it does not take an overarching view on ESBN's role in the decarbonisation transition instead focusing on the NNLC programme. As a neutral market facilitator ESBN's important role in ensuring close out of the Smart programme and enabling delivery of Microgen and prosumer services needs to be better addressed. Flexibility at a local level will be more reliable and effective once there is automation backing up commitment to provide services. Smart is the bedrock to this. Without automated systems and technology enablement, distribution level flexibility which is largely reliant on physical customer actions and decisions will not be facilitated/ or reliable when most needed by the system. We suggest that the DSO in collaboration with the TSO proposes a joint flexibility market framework that supports the 2030 targets and net zero system overall. A holistic view to enhancing flexibility led by the TSO is needed with a stepping-stone approach to its achievement laid out also so that potential synergies and competitiveness in flexibility services are maximised as envisaged under the Electricity PR5 decision. It is not efficient or effective to segregate the procurement and management of flexibility into the TSO programme (SSFA) and this ESBN

programme on flexibility. That would risk creating competing markets where market participants seek to arbitrage between markets leading to a perceived conflict in incentivising flexibility services on the two grid systems. While the TSO should be the overall procurer of flexibility services, local distribution requirements need consideration and consideration could be given to running a pilot scheme for distribution level batteries with a view to helping to better understand their commercial and operational requirements. Please see our answer to question 6 for more insights. Significantly increased transparency around the governance of the NNLC and planned coordination between TSO/ DSO is needed. We believe that the SOs must continue to act as independent and neutral market facilitators (with appropriate oversight and auditing by the regulatory authorities), to allow industry to bring forward assets and business models. Considerable industry engagement is needed imminently to understand how the DSO/TSO pathways are aligned and that industry and all stakeholders are aligned on the optimum way forward for flexibility markets.

## Responses to Consultation Questions:

### Q1. What are stakeholder's views on the stated aims of the project?

*Are there barriers to achieving a successful outcome of implementing an energy demand strategy to meet project climate objectives (viz. carbon emissions reduction)? Are there areas that could benefit from greater policy and regulatory clarity? Are there areas where further alignment between the relevant entities (e.g. state agencies, corporate obligations) to coordinate and enable the delivery of an energy demand strategy would be beneficial?*

EAI firmly supports the CRU's development of an Energy Demand Strategy (EDS). We believe this is a significant opportunity for the CRU to ensure that the foundations of the Demand Strategy are robust in leading Ireland on a journey towards flexibility and low carbon demand response. A building blocks approach to development of the strategy to clarify the vision of the CRU is needed whereby the overall system and customer capabilities for demand response are identified together with barriers to achieving those capabilities in the medium-long term and then delivering required initiatives. Focusing on short term outcomes risks delaying delivery of demand response capabilities in the longer term. Getting the longer-term vision right will enable the market to deliver the array of technologies and services needed to achieve decarbonisation targets in a timely manner.

While energy efficiency is a cornerstone of EU and Irish energy policy, we believe that the main focus should be on decarbonising the supply that meets the demand more so than reducing demand levels – the overarching aim really is to reduce carbon output created from demand consumed. This resonates in the "core project objectives" 1) and 3).[1]

While we agree that demand side flexibility needs to increase as it should overall lead to a more efficient system with optimum use of the grid, 2025 is less than 18 months away so we believe the focus needs to be on 2030 and planning for that year rather than rushing to achieve the high target of 20% by 2025. In the interim certain "quick wins" are identifiable which we suggest could be pursued in the first instance in parallel with fully identifying and understanding the challenges to achieving the stated aims and determining initiatives to achieve the aims. We therefore propose that:

[1] '1' being to "Co-ordinate measures aimed at ensuring overall electricity and gas demand is consistent with Ireland's carbon sectoral emissions ceilings" and "3" being to "Support the delivery of Irelands transition to reach net zero emissions by 2050."

- The focus for this Energy Strategy for 2025 should be on providing suppliers with access to their own already contracted customers' smart data with a view to suppliers educating customers to ensure they are informed when making tariff decisions.
- Simultaneously an in-depth review of any economic and behavioural barriers preventing customers from engaging fully in demand side response should be undertaken.
- In parallel, given that ~80% of the expected demand from LEUs by 2032 is already connected to the system, an increasing focus on how the existing LEUs can contribute to demand side flexibility that does not undermine their commercial viability should occur.
- Flexible electrification of heat has potential to displace vast amounts of fossil fuel in the heat sector while also mitigating oversupply in the electricity sector. This can be deployed fast and at scale including in industrial heat and should be considered as part of the overall strategy.

In order to enable electricity to play the fundamental role in providing energy services in a decarbonised, sustainable future we believe it should play, considerable investment and innovation in the market is required. The level of widescale investment required to achieve the EDS project's objectives will take some time. We are seeing barriers in the retrofitting of homes in terms of funding required but also in the workforce needed. A big step up in the uptake of EVs and heat pumps is also required which needs to see reduced administrative burden and better customer sentiment to invest. Once this funding and uptake of home efficiency measures materialises, automation of data and systems to facilitate new customer behaviours required to deliver on the demand strategy vision is required – necessary data and systems are only emerging at the moment. In fact automation of this data and the systems is required to be developed imminently so it is ready once the investments referred to above materialise.

As part of the vision, EAI believes that after Phase 2 of Smart i.e. from Q1 2025, the NSMP cannot continue in silo, it is part of the demand side strategy as are retrofit and energy efficiency targets. Ultimately, we believe it needs to be recognised that Smart is the bedrock for demand side response at the distribution level. Without Smart, microgeneration and prosumers cannot succeed. Smart enablement including flows of data in line with GDPR will require deep retail market reform. Retail market systems and settlement systems need to change to be more dynamic to achieve targets in for e.g. Microgen and energy sharing/ pro-consumerism and this needs to be a key focus area for ESBN as the DSO.

### Q2. What are stakeholder's views on the proposed scope (focus areas) and approach (phasing) of the project?

The proposed focus areas appear to be focused on deliverables in the short term without considering their role in the longer wider vision and deliverables suitable for delivering the broader vision needed as discussed in answer to question 1 above.

***Area 1 – Smart services*** – this area jumps straight to more measures being needed for domestic and small business customers to encourage greater flexibility (e.g. ToU tariff up take, Microgen) but seems to overlook the:

- Need for enablement of data flows on the meter to facilitate suppliers in educating their consumers.
- The need for funding for retrofits and need for better affordability of EVs and heat pumps.
- In general, retail system upgrade needs, as well as economic and regulatory frameworks to support the aim here.

Identification of barriers encompassing the ones noted above should as a baseline form part of the project. The benefits of ToU and Microgen uptake can really only materialise once customers invest in the

necessary technologies and when systems and data exist to optimise use of these technologies. Collaboration between the CRU and other public entities will likely be required to progress the above to ensure barriers to customer investment including skills shortages, and required system upgrades, are addressed.

***Area 2 – Demand Flexibility and Response*** – putting in place schemes to incentivise providing of demand side response at certain times or system conditions sounds very close to what EirGrid is doing at the transmission level. We have considerable concerns that the two projects – ESBN's NNLC and EirGrid System Services Future Arrangements (SSFA) are working without due regard for each other. There is a significant lack of transparency in how the TSO/ DSO are collaborating on system services including demand response system wide flexibility procurement and industry requests enhanced engagement in this regard as soon as practicable given the ESBN proposals around timing on procurement in 2023. We fear counter-intuitive or conflicting market investment signals may materialise if this continues. A "whole of systems" approach in line with the CRU vision in PR5 is required to be implemented in earnest (please see answer 6 below also). Given EirGrid's considerable experience in the area of procuring flexibility services they would be best placed to coordinate the transmission and distribution systems – that is not to say that the distribution system is overlooked but that the TSO would take into account local flexibility needs on the distribution system level as part of the TSO's work around SSFA in terms of procurement approach, timing and what products are needed under contract. Full consistency and alignment between the TSO/ DSO to avoid competing markets for flexibility materialising should be ensured and to best enable optimising or stacking of revenues. A two-tier market for flexibility needs to be avoided –a single market for flexibility innately should deliver more benefits in terms of investment signals and economies of scale on the TSO/ TAO side.

EAI's view is that once the systems, data and required technology is in place then the potential for a competitive market amongst aggregators/ suppliers in this space without ESBN acting as a competitor is enormous. We take this opportunity again to request that the CRU consider EAI's ask for ESBN to accelerate access for suppliers to their own customer data via bi-monthly reads of day/ night/ peak data. It is not a big step up from the current bi-monthly reads provided on a 24-hour interval basis.

In terms of ESBN entering direct contracts with batteries, we believe that the competitive market dynamic with suppliers could be undermined if long duration contracts are entered by ESBN. Notwithstanding this, we acknowledge that there is an urgency for system services in particular locations but to avoid undermining the competitive landscape we suggest that consideration be given to running a pilot scheme for distribution level batteries with a view to helping to better understand their commercial and operational requirements.

***Area 3: New Demand Connections*** – the focus appears to be on new units but given ~80% of expected LEU 2032 demand is already connected, retrofitting and replacing existing onsite back up generation is necessary for 2025 and needs equal consideration. Emissions levels and planning permission hurdles will inevitably materialise which will need collaboration with relevant bodies including in government.

New flexible demand is also likely to come from hybrid delivery of industrial heat with electric boiler being co-located with existing fossil fuel units. Flexible consumption in the heat sector can also deliver quick wins; industry is best placed to do this at scale and to break down the legacy barriers which exist. Private domestic heat and centralised district heating of domestic homes can also evolve to become flexible consumers of renewable electricity if the EDS implements the correct dynamic signals to consume power and deliver

appropriate dynamic price signals such that the use of variable zero carbon wind and solar electricity to decarbonise our system is optimised.[2]

No EDS can be delivered without the early upgrading of the TSO scheduling and dispatch systems (EDIL) to allow for negative dispatch; i.e. the dispatch of consumption assets including batteries and electric boilers. Currently the updates are being considered for the end of the decade, which is too late considering the lead times associated with any investment decisions.

Q3. What are stakeholder's views on energy demand profiles and the challenges arising from the associated carbon emissions? Considerations may include other information and data that should be included. Or challenges, such as new demand.

As mentioned above under Area 1 in answer to question 2, the EDS needs to focus on enabling the smart systems and investment in technologies at the outset. Once these are in place, the service provision for the customer will become more reliable and effective. Without these automated systems and technology enablement, distribution level flexibility which is largely reliant on physical customer actions and decisions will not be facilitated/ or reliable when most needed by the system. It is important too that an appropriate lag time between the incentives and the time when customers should respond is given i.e. customers need to be given the time to normalise behaviour change.

There is a considerable amount of demand to come from LEUs by 2032. Many of these have 24/7 operational requirements. They do not have traditional flexible demand and cannot turn down ad hoc in response with short notice. The focus should be on decarbonising/ reducing their emissions rather than their ability to reduce down/ off completely. Our understanding is that for major LEUs like data centres, batteries given their size will not be suitable to enable better flexibility so decarbonisation and onsite dispatchable renewables are their optimum solution.

It is pertinent that regulatory and government policy and strategies are aligned including this EDS and connection policy in general and that the government hydrogen and renewable gas policies are borne in mind to ensure consistent outcomes to implementation of the policies/ strategies.

Consideration should also be given to designing non-energy charges including Use of System Charges, market charges and levies to promote electricity substitution for fossil fuels in times of ample and excess renewable generation so as to avoid lock into fossil fuel consumption and compounding the dispatch down of excess renewable generation. Otherwise, non-energy charges based on legacy methodologies could hinder sensible decarbonisation.

Related to the above, it should be attractive for demand to consume at times of high renewable output. Sector coupling, e.g. heat and electricity, should be meaningfully supported. Additional flexible, dispatchable demand will play a key role in the long-term business case for the wind and solar industry.

[2] The SEAI published National Heat Study suggests electrification is Irelands cheapest and quickest route to decarbonisation. EirGrid's Shaping our Electricity Future v1.1 report models unprecedented volumes of excess renewable generation trapped on our island. These two reports combined indicate a huge opportunity to decarbonise our economy using variable zero carbon wind and solar electricity.

Q4. What are stakeholder's views on the definition for demand flexibility? How should demand flexibility be measured and reported on an ongoing basis? What metric (annual peak system demand / total annual energy consumption / other?) should be used. How should compliance with the CAP targets be assessed for demand flexibility in 2025 and 2030?

We believe that the traditional concept of focusing on reducing demand at peak times no longer stands now we have increased renewables (RES) on the system and are moving to decarbonised output overall. The focus for the definition ideally should be the ability to flex in response to ensure consumption is at a time whereby carbon intensity is at its lowest. E.g. in the traditional peaks of today, increasing RES can have a role to play and where RES is supplying the peak that can be a good time for a consumer to consume as it is not only less expensive but is less carbon intensive.

The Climate Action Plan has a target of 15-20 to 20-30% flexible demand by 2025 to 2030. The baseline consumption in measuring this should be the total annual carbon intensity of the consumption relative to the reference period if no measures were put in place. It is important that a measurement system does not discourage sensible decarbonisation. For example, in greatly increasing flexible electrification and reducing fossil fuel importation to help achieve decarbonisation, then the percentage flexibility should be based on the 'do nothing' alternative of remaining on fossil fuels.

Q5. What should be the areas of focus for demand flexibility? Are there any policy or regulatory barriers to the introduction of technologies that could be useful in providing flexibility? What incentives should be considered?

Please see EAI's response to Q2.

- In Focus Area 1 Smart services we need to see: data flows on smart meters enabled; funding for retrofits and better affordability of EVs and heat pumps; retail system upgrades and economic, regulatory frameworks to support the ESD aim.
- In Focus Area 2 Demand flexibility and response we need to see: a "whole of systems" approach to flexibility market procurement with EirGrid as coordinator and procurer of flexibility services at the transmission and distribution levels; consideration given to a pilot scheme for distribution level batteries to avoid undermining the competitive landscape.
- In Focus Area 3 New Demand connections we need to see: bigger focus on retrofitting and replacing existing onsite back up generation for 2025; collaboration between relevant bodies to overcome hurdles in emission levels and planning permission; enabling customers to deliver flexible consumption in the heat sector.

Other areas that merit consideration include:

- Scheduling and dispatch of flexible consumption including for e.g. from batteries and electricity boilers.
- Remove barriers to the constrained balancing market for flexible consumption.
- Introduce well-designed network charges and tariff schemes for consumers who can follow the variable renewable output.
- Deliver non-firm grid import capacity to better utilise the existing grid which has an abundance of renewable power in times of high wind / peak solar.

Q6. What are stakeholder's views on the attached ESBN document, 'Scenarios for 15-20% Flexible System Demand (DOC-120423-HRS)', which has been published as part of this four document package? Respondents are encouraged to provide detailed responses by referencing specific sections of ESBN's document.

***EAI welcomes the informative nature of the ESBN flexibility scenarios document, but we believe it does not take an overarching view on ESBN's role in the decarbonisation transition***, instead focusing on the NNLC programme. As mentioned at the outset of our response, the focus of this Strategy needs to be on 2030 and planning for that, with interim quick wins where feasible. We believe that ESBN's role in ensuring the independent retail market systems that need updating and upgrading to facilitate the extent of change and new opportunities for consumers that the roll out of Smart meters is intended to bring is not addressed. This is a priority area for ESBN as an independent market facilitator in our view. Retail market systems need to be fit for purpose for a more dynamic market and the plan to address the systems to improve them is required imminently. Area 1 of the overarching Energy Demand Strategy Project as referenced in Answer 2 above needs to reflect this key role of ESBN's.

***EAI is also concerned at the extent to which ESBN appears to be progressing the development and potential procurement of flexibility services at a distribution level practically in silo*** to the similar programme occurring at the transmission level (System Services Future Arrangements or 'SSFA'). Under the CRU's PR5 decision (CRU20154 PR5 Regulatory Framework Incentives and Reporting), the TSO/ DSO joint incentive requires both system operators to have key milestones and targets against a number of areas, one of which is a "Whole of System Approach". Specifically, the CRU envisaged the Whole of Systems Approach as follows (p. 63):

> "*the DSO and TSO will be incentivised to optimise the network as a whole rather than focusing on each network separately. Better coordination between the DSO and TSO could bring beneficial outcomes to consumers in the form of lower network tariffs compared to a scenario without coordination, a more efficient market and/or more reliable electricity supply. This coordination may also allow for the development of infrastructure that benefits both the distribution system but located on the transmission network and vice versa*."

The ESBN paper is lacking an overarching view on the 'whole of systems' operation of flexibility and indeed procurement of flexibility. It is not efficient or effective to segregate the procurement and management of flexibility into the TSO programme (SSFA) and this ESBN programme on flexibility – such an approach is at risk of undermining the potential beneficial outcomes for consumers, efficiency in market operation and reliability in electricity supply that can materialise through optimum TSO/ DSO collaboration as envisaged under PR5's vision set out above. Otherwise we risk creating competing markets where market participants seek to arbitrage between markets leading to a perceived conflict in incentivising flexibility services on the two grid systems.

EAI understands that Great Britain is grappling with similar issues and that their TSO, National Grid, is in fact centralising the management and operation of many domestic flexibility services. In this regard, EAI notes that the ESBN does not have experience in operating a competitive market or investing in and paying for new technologies. EAI also has queries regarding:

- How the extent of investment in flexibility apparent in the paper intends on being paid for – shall consumers see the cost appear via distribution use of system charges for example.
- We also do not understand how investments by suppliers in distribution level flexibility e.g. EVs, Microgen, batteries, can be utilised by the supplier in flexibility markets at either/ both the transmission or distribution level - does ESBN plan on utilising the benefits of flexibility provided by these investments, via participating in SSFA level flexibility?
- How is it envisaged that the capacity market and DS3 market would interact for distribution level batteries?

Given the scarcity of resources across industry including both SOs, we believe that focusing on retail market system development for 2030 coupled with completion of the National Smart Metering Programme (NSMP) need to be prioritised by the DSO while in parallel working with the TSO regarding how best to achieve a Whole of Systems outcome for flexibility needs. Regarding specifically the concept of local/ distribution level batteries we understand that behind the meter, local batteries are more likely to be a tool that supports system stability as opposed to demand flexibility, but that is not to say that local system stability needs should not be taken into account when determining wider system flexibility requirements. We are also cognisant of the fact that the "cheapest" technology options now may not be the "optimal" enduring option and may ultimately cost the consumer in the long-term given our decarbonisation objectives.[3] Ideally, a whole of system approach to flexibility should incentivise storage types that can provide multiple solutions in terms of flexibility and security of supply. What is most definitely needed is a very clear joint-description from the SOs as to the difference between products to be procured under SSFA and under the NNLC programme outlined in ESBN's paper. With this context in mind, ***EAI suggests that the DSO in collaboration with the TSO should propose a joint market framework that supports the 2030 targets and net zero system overall. A holistic view to enhancing flexibility led by the TSO is needed with a stepping-stone approach to its achievement laid out also so that potential synergies and competitiveness in flexibility services are maximised.*** Ultimately, any significant redesign of markets needs to be approached on a holistic, non-siloed basis to capture the interactive and complementary options that markets have for participants and investment.

***New Flexible Demand***: The focus in the ESBN document appears to be on shifting portions of demand to times of high renewables with little regard given to the creation of new, flexible demand led by intermittent renewables in these periods. EAI believes there is space for both given the anticipated build out of new renewable generation. For e.g. coupling the heat sector and the electricity sector in Ireland can unlock synergies which exist - it can quickly reduce Ireland's reliance on fossil fuels in the heat sector while mitigating the dispatch down of our wind and solar generation fleet. ESBN are a vital facilitator of the hybrid delivery of heat. Without this whole of energy approach, it will be more difficult to deliver on our binding carbon emission ceilings.

***Our final point on this report is that significantly increased transparency around the governance of the NNLC and planned coordination between TSO/ DSO is needed. We believe that the SOs must continue to act as independent and neutral market facilitators (with appropriate oversight and auditing by the regulatory authorities),*** to allow industry to bring forward assets and business models. Suppliers and aggregators are the interface between consumers / customers (LEU or otherwise) and ESBN - this concept must not be diluted by any actions on the DSO side such that suppliers/ aggregators must not find themselves either in the short to medium term in a position whereby they are competing with the single DSO in the market for flexibility provision. EAI notes that from our recent bilateral conversation with ESBN that ESBN intends to only play a short-term role in managing flexibility until such time as other market participants like suppliers and aggregators can provide a suite of flexibility services – ESBN must recognise that it is the role of LEUs and their electricity suppliers/ aggregators to work on providing flexibility to the market.

Clarity on the whole-of-systems approach to flexibility / system services and a detailed plan on ensuring retail market systems are fit for the dynamic energy world we're striving to achieve this decade, will help suppliers, aggregators and ultimately competition to the benefit of end consumers.

Kind regards,

Jason Herbert

[3] Thus ESBN's proposal to start procuring batteries on a long-term basis by end 2023 seems premature considering the TSO is to only have the products required for system services at the transmission level by Q2 2024

Policy Analyst

ELECTRICITY ASSOCIATION OF IRELAND

ELECTRICITY ASSOCIATION OF IRELAND

# Response to CRU Consultation

## Time of Use Uptake

Electricity Association of Ireland

**Status** **Consultation Response**

**Date** **30th August 2023**

The Electricity Association of Ireland (EAI) is the representative body for the electricity industry and gas retail sector operating within the Single Electricity Market (SEM) on the island of Ireland.

Our membership comprises utilities that represent 90% of generation and retail business activities and 100% of distribution within the market. Our members range in size from single plant operators and independent suppliers to international power utilities. Our members have a significant presence in Ireland, Northern Ireland and Great Britain across the sector value chain. We represent the interests of the all-island market in all relevant jurisdictions, including the EU via our membership of the European electricity representative body Eurelectric.

We believe that electricity has a fundamental role in providing energy services in a decarbonised, sustainable future, in particular through the progressive electrification of transport and heating. We believe that this can be achieved, in the overall interest of society, through competitive markets that foster investment and innovation.

We promote this vision through constructive engagement with key policy, regulatory, technology and academic stakeholders both at domestic and EU levels.

Our ambition is to contribute to the realisation of a net-zero GHG emissions economy by 2050 or sooner, in order to limit the impact of rising temperatures. Electricity offers opportunities to decarbonise the Irish economy in a cost-effective manner.

ELECTRICITY ASSOCIATION OF IRELAND

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ELECTRICITY ASSOCIATION OF IRELAND

## Introduction

EAI welcomes the opportunity to respond to the CRU consultation on the uptake of time of use tariffs (TOUs). We would like to reiterate our support for the full implementation of smart meter functionalities, Suppliers have been working on rolling out smart services and have been cooperating with the CRU and other relevant stakeholders in achieving this.

The full implementation of smart will require a significant amount of awareness raising and education of customers, suppliers offering a series of innovative products and regulatory barriers to smart being identified and removed. Our response will focus on addressing these three challenges, outlining principles which we would like to see an enduring policy follow.

## Education of Customers

Of the over 1.3 million smart meters installed in Ireland to date, only 7% are on ToU tariffs. Suppliers and customers alike need to see an increase in the uptake of ToU tariffs in order to optimise the value of the major financial investment that suppliers have undertaken in the NSMP to date and for customers to experience the potential benefits of ToU tariffs and help manage their consumption and bills.

Acknowledged in the consultation is customers' awareness that the benefits of smart meters include an ability to reduce bills, better understand consumption, change their tariff, and help the environment. Whilst we recognise that supports such as access to price comparison websites, estimated annual bills and an increase in the number of tariffs on offer have some benefit in aiding customers' decision making, we must emphasise that shifting energy usage to off peak hours is the only means of drawing a financial benefit from a TOU tariff.

This aspect needs to be considered in a customer's interactions with a price comparison website and their interpretation of Estimated Annual Bills. We do not feel that this consultation has acknowledged the significant influence that shifting the customers energy demand will have on their bills and their decision-making process in choosing and comparing between tariffs.

Due to these reasons, we feel that suppliers are best placed to inform their own customers of offers available to them. However, this is contingent upon suppliers' access to smart meter data.

## Supplier access to data

The smart metering program has been a significant and necessary investment in implementing the Clean Energy Package, however customers have not yet committed to the program with

low levels of uptake of smart services. We now need to incentivise innovative services through the effective use of high-quality grid location and time specific data across the energy system to help customers choose and use the digital solutions that deliver the most benefit to them.

On April 27th, 2023, EAI submitted a letter to the CRU detailing that suppliers have been unable to incentivise customers to switch to TOU primarily due to restrictions in access to data. We detailed in the letter that it is becoming increasingly clear that customers will not approach suppliers of their own accord in sufficient numbers to discuss the prospect of taking up a ToU tariff.

EAI suppliers strongly believe that the increased information that MCR1208 data would deliver (being day, night, peak data on a bimonthly basis by default – only a small step up from the data currently received on a bimonthly basis by default) is the main way that suppliers can help educate and inform their own contracted customers of the potential benefits and use of ToU tariffs with a view to incentivising ToU tariff uptake – this is the main use case for MCR1208 data. Without MCR1208 data, suppliers do not anticipate there being sufficient scope to improve ToU tariff uptake before the implementation of the Data Access Code in 2024. Ultimately it is time for a review of what an improved minimum level of smart data is that will help customers better identify potential financial savings and behavioural changes. We believe access to MCR1208 type data would be a good first step while a more in-depth view is undertaken.

### Benefits of Time of Use

EAI committed to bringing case studies to the CRU of instances of how customers have saved money through ToU. Instead of providing individual examples from each supplier, we feel that any CRU campaign promoting ToU can view the Estimated Annual Bills (EABs) as case studies. One supplier stated that their Standard Smart Tariff (SST) is currently 15% lower than their 24-hour EAB. Utilising the data that is readily available such as EABs can form the starting base for advocacy in this area.

### Response to Questions

Question 1 **The CRU is proposing to amend the PCW accreditation framework to allow consumers to upload their smart meter data (obtained as a HDF via the ESBN Customer Portal) to receive a price comparison based on their actual historical electricity consumption. Do you agree with this approach? If not, why not?**

- We strongly feel that tools which assist customers in their decision making need to be supported, with emphasis that the PCW in this instance, is operating under equal data protection legislation as suppliers. The strict GDPR and regulatory guidelines in

managing customer data which suppliers adhere to aim to ensure the highest level of protection to the customer. We would ask CRU to ensure that PCWs are held to the same account if they are handling customer data.

- EAI emphasises that past consumption is no indication of possible future cost savings and more that simply historical electricity consumption insights need to be relayed by PCWs if the cost savings associated changing consumption behaviour are to materialise for customers.
- We also ask for confirmation that suppliers are being allowed to provide this functionality either for their customers automatically – through the implementation of MCR1208 - and to other customers who share their data with the supplier.
- We would like to emphasise our concern regarding customers with poor technical literacy downloading and uploading a HDF which may be beyond the capabilities of a cohort of the population. If allowed access to data, the supplier of a customer in this cohort would be able to provide this function with minimal effort required on the customer's side, ensuring that these customers are supported in the digital transition.

Question 2 **The CRU is proposing not to put any restrictions on the minimum period of time that needs to be contained in smart meter consumption data that consumers can upload to the PCW. However, we propose that a warning message be included where consumers have included less than a year of data. Do you agree with this approach? If not, why not?**

We believe that where less than a year's data is available, then the information/education aspect which should come before results and should outline that the tariffs displayed will be based on an extrapolation of your year-to-date data and will display tariffs accordingly. Ideally the PCW should offer indications of value depending on the customer consumption behaviours and changes in those behaviours in future.

Whilst we agree that customers need to be made aware that recommendations of a TOU are contingent on the data provided, we wish to ensure that the customer journey is proactive, and smooth. Warning messages or caveating the basis of the PCW quote is necessitated to some degree, however it may hinder the customer from switching and will not help better engage the customer in possible benefits of TOUs. Our emphasis on the education of customers regarding the value of their data in recommending tariffs, combined with the assumption that they shift their usage, seeks to mitigate the need for excessive warning messages.

Ultimately, if a customer uploads their usage which fits standard usage profiles, a PCW using this data will not be able to present financially appealing tariffs. It is only when a customer begins to shift their usage that they will see a reduction in their bills.

Question 3 **Is there anything else CRU should consider with regards to this matter?**

There may be limitations in the value of data being used across properties and occupancy in cases where a Change of Tenancy (CoT) occurs. Consideration needs to be given here.

For example, in instances where a customer is switching properties and would like to use their HDF from their previous property, we recommend not allowing this feature and for PCWs to require data to be MPRN specific. Dwellings may vary in their energy usage, even with similar BERs and this would have an impact on data over the course of a year. The customer may be misguided if relying on the usage of a different property.

Question 4 **In case a consumer submits a HDF containing periods of missing data, the CRU is proposing that the PCW takes the following actions.**

**• If the missing data accounts for less than 1% of the total dataset the PCW must use the most recent ESBN load profile and calculate an estimate for the consumption during the missing period.**

**• If the missing data accounts for 1% or more of the total dataset the PCW must inform the consumer that there is missing data, include the percentage of missing data, and ask if they wish to continue with the price comparison using an estimate for the missing data, as outlined above.**

**Do you agree with this approach? If not, why not?**

As stated in question 2, information around the accuracy of an estimate being contingent on the data provided and the customer's ability to switch usage will need to be detailed to the customer during the process. Red flags however may impede the likelihood of customer using these tools. Rather, it is important that before or during the tariff choice pathway, the customer is educated on what will inform the best results for their needs.

In addition, if a property is CTF below 2, and this is an ongoing issue for that customer, then the ability to transmit data will be continuously compromised. For example, rural areas where walls block signal. However, in normal circumstances where CTF is restored to then transmit data, that 'missing' data should simply catch up in time when comms is restored. Our view is that the CRU should follow up with ESBN to determine if this is a material cohort of customers that would warrant such a warning. If the missing data is a persisting issue, how the issue can be addressed with customers to help them understand the impacts of the missing data is necessary.

Question 5 **Is there anything else CRU should consider with regards to this matter?**

Question 6 **The CRU would be interested in hearing whether respondents believe there is added value or not in allowing PCWs to ask consumers additional questions to identify their consumption behaviour, and tailor price comparisons. For example, whether a consumer has**

**an Electric Vehicle. If you believe there is added value in this approach, what guidelines, if any, do you believe the CRU should implement to ensure a minimum standard across PCWs?**

We feel that the Smart meter data will already be reflective of the customer's consumption patterns, and more value would be obtained from questions around whether the customer can shift their demand to a different time band.

The aim of this consultation should be to capture customers who are not currently engaged in the energy transition and questions such as the ones suggested may cause further disassociation i.e., those with EVs for example are less likely to gain the highest benefit from this initiative and therefore we would question whether this is a key priority for this initiative at this time.

Our focus is on ensuring the customer journey is simple and accessible to all customers, while providing prompts for the customer to engage in possible savings based on consumption behaviour change. This behaviour change could be compared to the annual consumption data provided by the customer without a behaviour change on their current tariff.

We support a framework being implemented to guide the inputs/questions posed and feel the samples relating to behaviour change outlined in the consultation are appropriate as they are appropriate illustrative examples for a customer that can serve a dual purpose of guiding and informing a customer on how to change their consumption patterns and partake meaningfully in a Smart TOU tariff to their advantage. This would potentially add to the customers understanding of the benefits of TOU tariffs with behaviour change. For example we suggest that the following are referenced,

1. Ask if the consumer can start their dishwasher at off-peak times or to do their washing at weekends.
2. Ask if a customer can move cooking their meals to off-peak times.
3. Ask if a customer can use electric heaters or boilers outside of peak times in the winter.

We do not feel that there should be an exhaustive list of questions as this may discourage the customer who may disengage from the process.

We are of the view that PCWs and suppliers offering price comparisons should be mandated to ask these questions, however the customer should not be mandated to answer them. If these questions are not answered the customers should be made aware that the tariffs may not reflect the financial benefits of a TOU tariff. Which are predicated on consumption switching.

Question 7 **The CRU proposes to require PCWs to implement the functionality to allow consumers to upload their smart meter consumption data (via HDF) from 1 January 2024. Do you agree with this approach? If not, why not?**

Instead of a launch date suggested at the outset, we would like to see a proposed timeline which allows for discussion of a launch date based on the date of the decision paper, engagement with PCWs, suppliers and consumer representatives, agreement on data transfers between suppliers and PCWs and an education and communication plan being developed. A situation whereby a tool is rushed through that leads to possible confusion or disengagement should be avoided. This tool needs to include functions which account for behaviour change options from the outset to further customers understanding of TOU tariffs.

Question 8 **Are there any other issues that you believe the CRU should take into consideration with regards to the timeline?**

We feel that testing should be included in the approach taken in determining the timeline and that the functionality agreed is consistent across suppliers and PCWs. EAI members are keen to collaborate with the CRU to decide upon an agreed methodology to be used regarding the above.

Question 9 **The CRU proposes to amend the PCW accreditation framework to allow consumers to access price comparisons for Microgeneration export tariffs between suppliers. It proposes consumers should be able to do this in one of two ways, either by submitting their actual (historical) export volume, or by submitting their deemed calculation. Do you agree with this approach? If not, why not?**

EAI members welcome the introduction of this feature for actual export volume and deemed volume, where technical limitations prevent actual export data, noting that a Microgen customer must accept a Smart Meter in a circumstance where it is available to them. Currently, export volume cannot be compared without looking at import volume, however we are expecting these to be separated in the anticipated enduring Microgen scheme. Given the enduring Microgen regime is expected to be finalised by the CRU in the coming year, we are of the view that this aspect of the project is a Day 2 priority until such time as the enduring approach for Microgen is determined.

Question 10 **Are there any other issues that you believe the CRU should take into consideration with regards to this functionality?**

Consideration will need to be given to this functionality's engagement with a TOU tariff and a Microgen tariff I.e. how the exports and imports expected at specific times of day will work together.

Question 11 **The CRU proposes to extend the requirement for an EAB to all tariffs available on the market, including time of use tariffs. Do you agree with this approach? If not, why not?**

EAI members feel that EABs, while a useful tool for comparing average bills with static consumption can be useful, they should not be regarded as the optimal methodology for

decision making. This is particularly significant given that EABs were introduced at a time when tariffs were static in terms of changing customers behaviours. Smart tariffs on the other hand aim to demand shift customer demand to times when energy is more cost effective.

Relying on the EAB as a cross supplier tool to compare prices may result in the customer being misled in their final decision on their tariff. EABs for smart may mislead the customer as they do not consider behavioural change, which is the most influential factor in receiving a financial benefit from a TOU. EABs are counter-intuitive to what TOU tariffs aim to do and will become increasingly less useful for the customer the more TOU tariff options come on the market.

EAI members support a coordinated educational material that aims to assist customers in understanding shifting their behaviour and interpreting how they can manage their data. While EABs aim to bring clarity and simplify insights for customers and should remain for SSTs we believe EABs have too many limitations to be useful as representative of dynamic TOU tariffs. In particular, past consumption patterns and averages inform customer profiles used for EABs and in smart tariffs past behaviour is a poor indicator for potential benefits from future changes in consumption by customers.

Question 12 **The CRU proposes to implement an EAB for all time of use tariffs from 1 January 2024. Do you agree with this timeline? If not, why not?**

No, see comments above.

Question 13 **With regards to the methodology for calculating an EAB for all time of use tariffs, the CRU proposes to use the demand-weighted approach, which is the same that is currently used for the Standard Smart Tariff and Day/Night tariff. Do you agree with this approach? If not, why not?**

If EABs are required for TOU tariffs we agree that the methodology for calculating EABs needs to be consistent across all users. Avoiding discretion within calculations should be central to designing this functionality and we are keen to work with the CRU in workshops before any potential launch date.

We do not support option 3 as this would allow for different methodologies to be used by different suppliers and PCWs.

As per our answer to Question 11, we strongly feel EABs for TOU tariffs are not an effective metric and should not be considered. TOU bills should be focused on customer specific demand profiles and behaviour change. These metrics would be difficult to standardise across a variety of TOU tariffs.

Question 14 **Are there any other issues that you believe the CRU should take into consideration with regards to implementing an EAB for all time of use tariffs?**

Please see our comments above.

We strongly feel that the education of customers is necessary to understand how their homes energy efficiency, size, Microgen capabilities and consumption profile has an impact on their EAB. EAI would like to work with the CRU on any potential messaging to consumers before launching this functionality.

Question 15 **The CRU proposes to increase the limit on the maximum number of time of use tariffs from four to eight from 1 October 2023. Do you agree with this approach? If not, why not?**

EAI members feel that the increase will allow for a more accurate reflection of the market. Acknowledging that the market is more dynamic than illustrated by the EABs and load profiles, we see a greater number of tariffs as being useful to capture how a person may use their energy. Removing barriers to personalisation of tariffs which enables load shifting should be prioritised.

Focus should be placed on the educating customers of the benefits of shifting their demand and including more customers in the digital transition. Without this education, increasing the number of tariffs will not lead to more uptake of TOU.

Question 16 **The CRU proposes to end the limit on the maximum number of time of use tariffs from 1 April 2025. Do you agree with this approach? If not, why not?**

Yes, we agree contingent on the success of these new proposals and the details which will be worked out in workshops on engaging with PCWs.

Call for Evidence

Question 17 **CRU would welcome any views on whether respondents consider it appropriate to schedule a review on the structure of the Standard Smart Tariff ahead of the completion of Phase 2 of the NSMP (currently scheduled for the second half of 2024).**

We do not consider it appropriate to reschedule a review, the SST is still in its infancy and changing the peak hours, or other parameters may only confuse customers. SST serves a good purpose in the market and is a good point against which benefits in shifts in consumption can be measured.

Question 18 **CRU would also welcome views from respondents on which issues should be considered in such a review. Respondents can specifically focus on the following questions, or provide their own views**

a. **Is the Standard Smart Tariff achieving its purpose to be an easy to understand 'entry-point' to time of use tariffs for consumers?**

We do feel that the SST is working as an entry point tariff for customers. The CRU should consider a 24-hour smart enabled tariff as a more accessible structure, which would allow the customer to view their usage through their electricity supplier on their normal tariff which

many suppliers offer. From this, customers would be able to further understand their usage without interacting with the ESBN portal directly.

**b. Do you have any concerns or recommendations in relation to the Day/Night/Peak structure of the Standard Smart Tariff, including the hours assigned to each time band?**

The CRU could look at incentivising the other time bands by offering financial incentives in order to reduce consumption during peak-times. For example, the Network Tariffs decision 2022/23 saw a greater differentiating of the time bands.

While the wholesale market has a role to play in giving the correct signals to customers and suppliers play their role by reflecting these wholesale costs in the price that customers pay for their electricity supply at different times of the day, network tariffs which makes up a significant component of the electricity cost also must provide the right signals to customers. We believe enhanced sculpting and differentiation of the network tariffs at different times of the day and the week, would allow greater price incentives to be passed onto customers. For example, in addition to Day/Night/Peak in network tariffs, other time bands such as weekends should be considered. This solution would support achieving a greater shift in behavioural consumption. Greater sculpting of these network tariffs would facilitate the right incentives to be passed onto customers which would facilitate greater ToU uptake.

**c. In light of the proposed measure to extend the maximum number of time of use tariffs for each supplier from four to eight, do you see a continued need for the Standard Smart Tariff?**

Yes. Particularly as a useful entry level benchmark for customers.

**d. Are there any other issues related to the Standard Smart Tariff you believe the CRU should take into consideration in a future review?**

As stated in our introduction, we feel that the full benefits of the Smart Meter Program will be fully realised with increased use of Smart Meter data. In order to achieve this supplier's request access to day/night/peak data through the implementation of MCR1208.

Question 19 **CRU would welcome any additional suggestions to incentivise the uptake of time of use tariffs.**

**Centrally Organised Awareness Campaign -** EAI believe that misconceptions regarding usage of personal data needs to be addressed. Suppliers operate under highly regulated codes of practice in managing customer data outlined in the Supplier Handbook, a future Data Access Code and GDPR legislation generally. We feel it is important that customers trust their Supplier

and so a campaign regarding this could boost customer confidence and uptake of smart services.
Within this centrally organised awareness campaign we would like to see the customer portal signposted more, encouraging customers to engage with their smart meter data. This could include helpful 'how to' or step by step guides on downloading a HDF file from the ESBN Portal.
The benefits of TOU in terms of environmental benefits, system cost benefits and security of supply should also be stated in this campaign which we would like to see spearheaded by the regulator, the Distribution System Operator (DSO) and the Department.

**Smart Tariffs as Standard -** As we move towards try and move to further integration of smart meter capabilities, measures such as an 'opt out' model may become useful. This would automatically place customers who have had a meter replaced on a smart tariff with the ability to opt out. This would allow for increased flexibility in the near term, reducing the need for investment into the local network to accommodate high penetration rates of EVs and solar connections.
**Retirement of Meters –** It may be useful to communicate to customers the timeline for MCC01, MCC02 and MCC03 meter configurations to be retired.

Kind regards,
Jason Herbert

Policy Analyst
Electricity Association of Ireland.

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Energy Demand Strategy Project Call for Evidence,
Commission for Regulation of Utilities,
Belgard Square North, Dublin D24

Emailed to: energydemandstrategy@cru.ie

*30th August 2023*

**EDF Renewables Submission to CRU's Energy Demand Strategy Project Call for Evidence**

EDF Renewables (EDFR) Ireland is part of one of the world's largest electricity companies and our investment and innovation in renewable energy projects is bringing down costs for consumers and delivering significant benefits for communities. EDFR Ireland's team has a wealth of experience in bringing complex development projects to fruition, across onshore and offshore wind, solar PV and battery storage technology, and is supported by more than 400 colleagues in the UK.

In 2020 we acquired 50% of Codling Wind Park, a major offshore wind farm which will be located off the coast of Co. Wicklow, with a dedicated project development team, and 100% of Wexford Solar, which includes eight solar projects across Ireland. In total, we have an Irish onshore development pipeline of almost 1 GW. We have constructed and energised three of the first utility-scale solar farms in Ireland in Wexford and Kilkenny and have announced five new onshore wind projects in the past two years. We continue to assess M&A and JV opportunities and are actively looking at battery co-location options for all our renewables projects.

EDF Renewables welcomes the opportunity to engage with CRU and respond to this consultation. We also support the detailed response submitted by Wind Energy Ireland. We welcome the accelerated pace at which the Irish Government is moving to support Ireland in achieving the national energy target of 80% renewable electricity by 2030, as set out in the CAP23.

Our key observations, concerns and recommendations are as follows:

- **Growth of Renewables:** It is important that policy is developed to encourage greater flexible demand alongside the growth in renewable electricity generation. A portion of this new demand flexibility will come from increased electrification of heat and transport as these sectors continue to decarbonise.

- **Electrification of heat and transport:** The consultation states that "In order for Ireland to meet its carbon emissions targets, it is necessary for electricity demand to become more flexible, in order to optimise the use of renewable generation and to minimise demand during times of high carbon intensity on the electricity grid". Electrification across heat and transport should form part of this strategy so that these technologies can provide a flexible demand for System Operators. This will reduce emissions in those sectors, help to increase security of energy supply and assist in helping to deal with dispatch down issues on the grid.

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- **Realising the full potential of electrification in Ireland:** The development of electrification will support the growth of renewable electricity generation in Ireland. In the industrial sector alone, there are many opportunities to use available electric heat technology, to move away from fossil fuel sources and decarbonise. The electrification of heat and transport can help lower emissions in sectors seeking to transition from fossil fuels and help reach our net-zero future.

- **Interlinked Policies:** The polices in electrification of heat and transport are linked to other climate actions and energy objectives. The Energy Demand Strategy Project and the electrification policy should be developed in parallel to accelerate electrification of demand and deliver the associated benefits.

In conclusion, we would like to thank the Commission for Regulation of Utilities for the opportunity to engage on this matter.

Should you wish to discuss any of the issues raised in our response or have any queries, please contact Stella Burke on stella.burke@edf-re.ie, or me. I confirm that this letter may be published on the CRU website.

Yours sincerely

Jenny Howard
EDF Renewables Head of Development Ireland

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Review of Large Energy Users Connection Policy,
Commission for Regulation of Utilities,
Belgard Square North, Dublin D24

Emailed to: electricityconnectionpolicy@cru.ie

*2nd August 2023*

**EDF Renewables Submission to CRU's Review of Large Energy Users Connection Policy Consultation**

EDF Renewables (EDFR) Ireland is part of one of the world's largest electricity companies and our investment and innovation in renewable energy projects is bringing down costs for consumers and delivering significant benefits for communities. EDFR Ireland's team has a wealth of experience in bringing complex development projects to fruition, across onshore and offshore wind, solar PV and battery storage technology, and is supported by more than 400 colleagues in the UK.

In 2020 we acquired 50% of Codling Wind Park, a major offshore wind farm which will be located off the coast of Co. Wicklow, with a dedicated project development team, and 100% of Wexford Solar, which includes eight solar projects across Ireland. In total, we have an Irish onshore development pipeline of almost 1 GW. We have constructed and energised three of the first utility-scale solar farms in Ireland in Wexford and Kilkenny and have announced five new onshore wind projects in the past two years. We continue to assess M&A and JV opportunities and are actively looking at battery co-location options for all our renewables projects.

EDF Renewables welcomes the opportunity to engage with CRU and respond to this consultation. We welcome the accelerated pace at which the Irish Government is moving to support Ireland in achieving the national energy target of 80% renewable electricity by 2030.

Our key observations, concerns and recommendations are as follows:

**Sustainable Data Centre Deployment**

- As a renewable energy developer, we encourage the continued deployment of data centres in Ireland. At a global scale, there is a strong case to position data centres in Ireland if they can be supplied by renewable electricity. This is not an option yet in many other parts of the world where the centres might be developed.

- In addition, if the data centres were to be located near to the renewable generation sites, that would help to ease grid pressure, or at least not add to it. However, at present, the electricity transmission system is continuing to struggle to securely accommodate data centres and it may not be possible to meet the additional demand by new renewable generation for some years to come until the grid infrastructure has further developed. As highlighted in the consultation, in this scenario there could therefore be an increase in carbon emissions in the short-term from dedicated CCGTs.

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D04 V9Y9, Ireland

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- Fundamentally, locating data centres in Ireland powered by renewables is a positive outcome, however there is a potential challenge on the relative timing of the new data centres and new renewable generation. We would support the development of a secure, low emission route to enable new data centres to be powered by new renewables.

- EDFR would welcome increased obligations on data centres to secure renewable power in Ireland. We believe that the proposed CRU approach to allow new data centres to proceed is reasonable, however, on condition that they demonstrate a net zero carbon overall impact on the system right from the start. We agree with CRU's view that there needs to be continuous progress to deliver climate targets, and for there to be no additional emissions released now. This CRU approach seems reasonable in the context of the climate emergency.

**Private Wire**

- EDFR would like to highlight the point that private wires are not currently permitted in Ireland. If they were, then this would mean that the infrastructure pressure could be mitigated by the datacentre or the renewable generator project through a private wire development, rather than by EirGrid. Also, putting in place the necessary private wire regulation would open the possibility of using private wire connections to other projects and sectors, which could help accelerate progress towards a net zero electricity system.

In conclusion, we would like to thank the Commission for Regulation of Utilities for the opportunity to engage on this matter.

Should you wish to discuss any of the issues raised in our response or have any queries, please contact Stella Burke on stella.burke@edf-re.ie, or me. I confirm that this letter may be published on the CRU website.

Yours sincerely

Jenny Howard
EDF Renewables Head of Development Ireland

# EirGrid Response to CRU/202356 Energy Demand Strategy Call for Evidence

## 30 August 2023

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## Introduction

EirGrid welcomes the opportunity to respond to the CRU/202356 Call for Evidence. We recognise that demand flexibility can play an important role in contributing to various power system needs and decarbonisation. Because of this, EirGrid, in conjunction with SONI, is currently developing our own demand side strategy under the Shaping Our Electricity Future (SOEF) programme, focusing on the potential for demand side response to meet TSO needs and the impact of demand side response on TSO operations, which we will share with the CRU in due course.

EirGrid is responding via a separate paper to the call for evidence on the "Review of Large Energy Users Connection Policy Call for Evidence Paper".

This paper provides EirGrid's high-level perspective on some of the other aspects of the call for evidence on the Energy Demand Strategy, such as the definition of demand flexibility.

Demand flexibility has the potential to contribute significantly to the TSO's ability to operate the power system at very high levels of variable renewable generation. In that context, we would welcome an opportunity to engage further with CRU in advance of any future CRU consultation(s) on aspects of the Energy Demand Stategy.

## Demand Flexibility target definition

It is important that a definition for flexible demand / demand flexibility be used not just for measuring and reporting, but also to highlight and incentivise the development of more flexible demand to meet power system needs and contribute to decarbonisation. Therefore, it will be important to ensure that what is included in the definition, in terms of the forms of demand flexibility and the metric(s) against which they are measured, helps underpin this incentive.

In that context, the definition should consider the various different needs which demand flexibility can contribute to meeting, e.g. shifting demand from a time of higher carbon intensity to another time of lower carbon intensity, demand reduction over peaks to manage capacity adequacy, congestion management on transmission and distribution systems, provision of system services including reserves and ramping, demand increase at times of surplus renewable generation, etc.

In addition, the intent should be to incentivise the use of demand flexibility when it is needed and where it is needed in accordance with an overall plan-led approach, not to use it even if it is not needed; relying solely on measured level of flexibility provided may result in a misaligned incentive and additional inefficient investment in the entire system.

## Consideration of other demand flexibility drivers, sources, needs, uses, and mechanisms

In general, we consider that the 15-20% demand side flexibility target should encompass all flexible demand in Ireland and all 'system needs' that such flexible demand contributes towards meeting. It should also consider the level of flexibility

provided through existing and potential future mechanisms which are or could be developed by all actors (including the TSO, DSO, retail electricity market suppliers, and others), their current impact, and their potential for development into the future.

It would also be important to understand the level of flexible demand expected from developments in the underlying core fundamental signals (e.g. wholesale and retail energy market tariff prices). Care would be needed to understand the impact of any additional mechanisms on the core fundamental signals they interact with, to ensure that they can work well together, that there are no unintended consequences, and to consider the other developments in these fundamental areas.

We believe it will be important for CRU, the TSO and the DSO to work closely together to ensure that the totality of the commercial and market arrangements put in place to incentivise demand flexibility do so holistically in an efficient and economic manner. These arrangements would include those mentioned in the call for evidence paper but also others, which include but are not limited to the wholesale energy markets, the capacity market, the system services arrangements (e.g. reserves and ramping), demand reduction schemes involving Large Energy Users, Guarantees of Origin, and retail electricity market smart tariffs.

The contribution of Demand Side Units, Batteries, Pumped Storage, Long Duration Energy Storage and other developments into the future all also need to be considered. We believe that more work is needed through the definition of the flexible demand metric to ensure that every relevant aspect of flexible demand is accounted for.

Where new mechanisms or routes to market are proposed, careful consideration needs to be given to how these interact with other existing arrangements, or other arrangements which may separately be developed in the future. In addition, a continued focus on efficient use of electricity will be important and the strategy should dovetail with and complement the SEAI activities in this area.

If a new mechanism is intended to be a support to help incentivise investment, then it would need to be carefully considered how this would be intended to interact with the other mechanisms that provide operational signals and opportunities for revenue. The potential interaction with other mechanisms intended to help incentivise investment, existing and potential to be developed in the future, and the need to comply with state aid requirements, should also be considered.

If a mechanism is intended to be an operational signal which is related to meeting a system-wide need, then it will be important to ensure that this takes into account the other mechanisms which are also used to meet this system-wide need, and the policies which underpin them (e.g. the I-SEM high level and detailed design decisions from the SEM Committee on energy market trading, SEM-14-085, and Future Arrangements for System Services). Similar points around interactions between different arrangements had previously been raised in the conclusions to the call for evidence on energy communities and active consumers in 2021.

Care would be needed to understand the impact of any additional mechanisms on the core fundamental signals they interact with, to ensure that they can work well

together, that there are no unintended consequences, and to consider the other developments in these areas. Local mechanisms (e.g. transmission and distribution system congestion management) and system-wide mechanisms (e.g. capacity market and system services), both existing and being considered for future development, will likely have important interactions into the future to incentivise the development to meet both TSO and DSO needs.

It will be important to determine the approach which works best across all arrangements. Therefore, it will be important to coordinate their development so that the arrangements interact with each other in the most efficient way possible. We believe it will be important for CRU, the TSO and the DSO to engage on these topics and to work closely together to ensure that the totality of the commercial and market arrangements put in place to incentivise demand flexibility do so holistically in an efficient and economic manner. This engagement may also become a requirement in future Network Codes, based on the ACER Framework Guideline for Demand Response published last year, with a potential requirement for a common System Operator proposal for new mechanisms.

As stated above, we would welcome an opportunity to engage further with CRU in advance of any future CRU consultation(s) on aspects of the Energy Demand Stategy.

# EirGrid Response to CRU/202357 Call for Evidence

## Review of Large Energy Users connection policy

**30 August 2023**

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# 1 Executive Summary

EirGrid strongly welcomes this call for evidence by CRU and propose that it represents a valuable opportunity to set out a connection policy that balances our economic and climate ambitions as a State. In this regard we note the complexity of the issues raised in the call for evidence.

Specifically in relation to EirGrid, we note the CRU has included in the Call for Evidence a note on interim arrangements to be applied by the System Operators for new applicants applying for connections following the publication of the Call for Evidence and separately the need for the SOs to consider their obligations under the Climate Action Act in relation to existing connection applicants who have met the criteria of CRU/21/124. EirGrid has a series of concerns with both the interim arrangements and the approach outlined for existing applicants who meet the criteria of CRU/21/124. EirGrid has not addressed these matters in this response but will specifically and separately engage with CRU to discuss these matters further.

Large Energy Users, and in particular data centres, constitute the majority of new contracted demand capacity, and applications for new demand capacity, at transmission level.

CRU/21/124 contains the extant policy direction for the processing of data centre grid connections and has been consistently applied by EirGrid since its publication in November 2021.

CRU/21/124 sought to address the impacts of data centres on security of electricity supply and grid capacity, however this direction pre-dates a number of Government policies, targets and statements that have issued since as outlined in the CRU call for evidence paper. EirGrid has engaged with CRU and DECC on a number of occasions since the publication of the Government Statement on the Role of Data Centres in Ireland's Enterprise Strategy in July 2022 to understand how we move forward in this evolving landscape. This call for evidence and intention to '*…provide a pathway for new Large Energy User (LEU) connections…*' is very welcome and indeed critical to enabling the twin transitions of digitalisation and decarbonisation as referenced in the July 2022 Government Statement on the Role of Data Centres in Ireland's enterprise strategy.

As recently as March 2023, EirGrid wrote to CRU outlining that it was processing a number of applications in line with the extant direction (CRU/21/124) in the knowledge that this direction needs to be revised to address more recent Government policies, targets and statements and therefore, EirGrid cannot issue connection offers to these applicants until such time as there is regulatory clarity in this regard.

The challenge is one of timing and the correlation of our demand growth with low carbon and renewable forms of generation. Our climate ambitions for 2030 and beyond, and our abundant renewable resources including our vast offshore resources, mean that we will make considerable progress to a decarbonised power system over

the decade. In that timeframe LEU demand in many ways will be a very valuable and flexible demand to match to our renewable resources, fully aligning economic and climate ambitions for the State and decoupling economic growth from emissions. In EirGrid's Shaping Our Electricity Future roadmap[1] we have outlined a roadmap that supports a 50% demand growth in the period to 2030 delivering a balance between demand in the form of economic growth, electrification and digilisation and the delivery of a low carbon electricity system based on renewable technologies.

Shaping our Electricity Future includes around 300 MW[2] of additional LEU demand that could be accommodated on the transmission network with the developments outlined in that document, including transmission reinforcements, as well as Government targets for EVs, Home Retrofits and economic growth.

It is worth noting that, in the interim period until we connect the projected quantities of renewable and low carbon generation, all demand increases will increase emissions in the context of our climate targets. The climate targets do not outline how various economic sectors in this regard should be considered. The role of determining which sectors should be accommodated and, more specifically to this call for evidence, how LEUs should be accommodated does not rest with the System Operator.

There is a compelling case for an overarching policy framework which supports the demand proposition as set out in Shaping our Electricity Future with supporting policy signals which allocate this demand growth across the various sectors contingent on how each sub-sector of the electricity system is performing against a forecast demand profile. Where a sector is not growing at the forecasted rate, this demand should be allocated elsewhere to avoid a situation where serious imbalances manifest and stranded assets are created in both the transmission system and and in renewables generation plant.

# 2 Introduction

EirGrid welcomes the opportunity to respond to the CRU/202357 Call for Evidence regarding Review of Large Energy Users (LEUs) connection policy.

This submission provides EirGrid's perspective on LEUs in the context of the Irish power system and wider electricity industry which may inform a new LEUs connection policy. It covers EirGrid's view on the opportunity and ability of the Irish power system to accommodate growth in LEU and the impacts that this may have in the context of wider environmental and social aspects.

We note the complexity of the issues raised in this submission and would be happy to facilitate direct engagement with the CRU and relevant Government Departments (DETE and DECC) to discuss further.

[1] Shaping our Electricity Future (eirgridgroup.com)

[2] This assumes a growth rate for demand from the currently contracted data centres, not higher than 1200 MW in 2030. If data centre demand were to grow at a faster rate, the 300 MW increase may not be achievable

Specifically, we note the CRU has included in the Call for Evidence a note on interim arrangements to be applied by the System Operators (SO) for new applicants applying for connections following the publication of the Call for Evidence and separately the need for the SOs to consider their obligations under the Climate Action Act in relation to existing connection applicants who have met the criteria of CRU/21/124. EirGrid has a series of concerns with both the interim arrangements and the approach outlined for existing applicants who meet the criteria of CRU/21/124. EirGrid has not addressed these matters in this response but will specifically and separately engage with CRU to discuss these matters further.

## 2.1 Legal Context

EirGrid plc is a public limited company, incorporated in Ireland, established pursuant to S.I. No 445 of 2000 – European Communities (Internal Market in Electricity) Regulations, 2000 and is licensed by the CRU as the Transmission System Operator ("TSO") in Ireland.

EirGrid, as the TSO, has the obligation to plan, operate and develop where necessary, a safe, secure, reliable, economic and efficient transmission system in Ireland and, as such, is committed to securing the transition to a clean energy future that will be delivered in line with government policy and with the support of the Commission for Regulation of Utilities ("CRU"). As a regulated entity, EirGrid must follow policy and direction as set out by the CRU, which itself works within the government policy context.

## 2.2 Policy and Regulatory context

LEUs, and in particular data centres, constitute the majority of new contracted demand capacity, and applications for new demand capacity, at transmission level. CRU/21/124 contains the extant policy direction for the processing of data centre grid connections and has been consistently applied by EirGrid since its publication in November 2021.

CRU/21/124 sought to address the impacts of data centres on security of electricity supply and grid capacity, however this direction pre-dates a number of Government policies, targets and statements that have issued since as outlined in the CRU call for evidence paper and restated below:

- the Government Policy Statement on Security of Electricity Supply (November 2021);
- the Government Strategy on the Role of Data Centres in Ireland's Enterprise Strategy (July 2022);
- Ireland's Sectoral Emissions Ceilings under the Climate Action and Low Carbon Development(Amendment) Act 2021; and
- the Climate Action Plan 2023.

In addition, we are aware of the need to support balanced regional economic development outside of the Dublin area, as set out in Government documents such as

Project Ireland 2040 and the Programme for Government, as well as in the IDA's 'Driving Recovery and Sustainable Growth 2021-2024' strategy document[3].

Specifically, the Government's Climate Action Plan 2023 ("CAP 23") sets out a target of 80% of electricity being generated by renewables by 2030 and the target of a 51% reduction in Ireland's emissions by 2030. This has been supported through the setting of economy wide carbon budgets and sectoral emissions ceilings over three budgetary periods in total with the first two of those focusing on the period to 2030 and allowing total emissions of 60Mt from the electricity sector.

To meet the CAP 23 renewable electricity targets, significant additional renewable generation is required to connect to the system. EirGrid has plans to enable the delivery of an additional 22 GW of renewable generation (4.5 GW onshore wind, an additional 5.5 GW utility scale solar, and 5 GW offshore wind) to meet the CAP 23 renewable electricity target. These deliverables are in addition to other technologies required to support the electricity transition (including long duration storage). The additional 22 GW of renewable generation is based on an assumed rate of increase of 50% of demand by 2030 which includes an estimate in relation to the current LEU applications on hand and which is lower than the contracted level[4]. Additional demand growth beyond this would require additional renewable and low carbon technologies unless other sub-sectors grow at a lower level than set out in Government policy objectives. Until the transition of the electricity sector to a decarbonised one has been delivered, all demand growth will add emissions.

This is a position we reflected in our submission to the Department of Enterprise, Trade and Employment (DETE) in April 2022, as part of their considerations for the July 2022 policy statement on data centres, wherein we noted that any further data centre growth will add to carbon emissions in the electricity sector.

EirGrid is processing a number of applications in line with the extant direction (CRU/21/124). However, EirGrid has noted it cannot issue connection offers to these applicants until such time as there is regulatory clarity in relation to how the direction should be considered in the context of the development of Government policy and legislation since the publication of the direction.

EirGrid has engaged with CRU and DECC on a number of occasions since the publication of the Government Statement on the Role of Data Centres in Ireland's Enterprise Strategy in July 2022 to understand how we move forward in this evolving landscape. This Call for Evidence and intention to '*…provide a pathway for new Large Energy User (LEU) connections…*' is very welcome and indeed critical to enabling the twin transitions of digitalisation and decarbonisation as referenced in the July 2022 Government Statement on the Role of Data Centres in Ireland's enterprise strategy.

[3] IDA_STRATEGY_Draft_15.pdf.aspx (idaireland.com)

[4] In the Generation Capacity Statement a median demand growth of 1.2GW is assumed in 2030 against the contracted demand growth of 1.9GW

# 3 Factors to Consider in Connection Policy

The expected growth in electricity demand from LEUs, particularly data centres, reflects Ireland's stature as a major hub in the global digital economy which has generated a significant footprint of global ICT companies and the necessary supporting ecosystem.

The scale of projects already in the process of connecting to the transmission system will make up between 25% and 33% of Ireland's electricity demand by 2030. This has been presented in some quarters as a negative development, when in fact it is a matter of ensuring that demand and renewable and low carbon generation sources are appropriately correlated as set out in EirGrid's Shaping our Electricity Future (SOEF), which allows for a 50% increase in electricity demand by 2030.

We recognise that the impact (Positive and Negative) of LEUs on the electricity industry is only one consideration in setting LEU connection policy and requires a holistic plan led approach that covers all challenges and opportunities. From an electricity perspective, SoEF provides this holistic plan and any discussion about LEUs should take place in the context of changes to the critical inputs and assumptions underpinning SoEF. This includes the impact of less or more demand from LEUs outside that which underpins SoEF.

Feedback from industry, specifically the data centre sector, confirms that there is need for further data centre growth in Ireland predicated on the rapid rate of change in the digital space. In this context it is also worth noting that digitalisation itself is a key enabler to addressing climate change and has the potential to be a key enabler of future economic growth for the country as outlined in the Government's policy statement on the sector in 2022.

In this context it is worth noting that the Government policy statement on data centres of July 2022 supports this growth, calling for clear consideration to be given to the foreign direct investment and the economic benefits that data centres bring to society. However, it clearly calls out the need to enable the twin transitions of digitalisation and decarbonisation, by requiring Data Centre growth to be balanced in a more plan led fashion with clear consideration for security of supply, climate targets and the climate action plan.

The carbon budgets and by extension, the sectoral emissions ceiling set quite ambitious targets for the decarbonisation of the economy as a whole and the electricity sector respectively. These budgets do not assign any allocations at a more granular level and hence consideration of one economic activity over another does not have a clear reference. The sectoral emissions ceilings for electricity are absolute figures, unlike the renewable target which is proportional. Until the power system is fully decarbonised, the addition of LEU demand (and critically any demand) will lead to additional emissions. This would also indicate that any review of the definition of a LEU should not be limited to solely transmission connected customers

and DG10 customers as proposed in the call for evidence. Some of the demand increases seen are as a result of the CAP 23 targets for electrification of transport and heating (especially at distribution voltage levels) and this may need consideration in the new connection policy.

It is also worth noting that there are existing consenting and licencing processes for this type of activity in Ireland that already consider emissions and hence may offer the opportunity to ensure appropriate criteria to ensure that this balance is achieved.

Fundamentally the issue of aligning the decarbonisation and digitalisation transitions is one of timing and understanding the synergies between the two . As we progress towards a decarbonised power system, the impact of additional demand on our climate targets will dissipate and has the potential, subject to its capability to provide flexibility, to become a vital component of enabling economic growth whilst utilising the vast renewable resources available to us as an island decoupling the link between economic growth and emissions.

SOEF has embraced the Government's plan led philosophy by clearly stating that additional demand should and can be accommodated outside the Dublin region for the foreseeable future. EirGrid consider that future data centre growth in Ireland should be considered in a balanced regional development perspective with the requirements for such new datacentres to be located in areas in conjunction with significant additional renewable generation which directly complements the increasing demand with a significantly larger amount of renewable generation.

The application of this connection policy requires careful consideration as outlined in questions 10 and 11 in the call for evidence, by way of determining the definition of an LEU and the scope of application. There are a number of ways to define the concept of an LEU including connection voltage, connection capacity (MW) and type of applicant. However, deep consideration needs to be given to the unintended consequences of setting a definition. This could drive activity, some of which may be inefficient, by applicants which use a different delivery model but ultimately arrives at the same outcome, i.e. multiple smaller connections with the same overall demand impact with significant inefficiencies.

In summary, in the interim until we achieve our decarbonisation goals for the electricity sector there are significant temporary challenges resulting from increasing demand from the LEU sector, namely:

- Ensuring there is enough renewable generation to meet the sectoral target of 80% of electricity to be generated renewably by 2030; and
- Ensuring demand and new renewables generation are appropriately correlated
- Keeping carbon emissions within the sectoral targets, noting that until the power system is fully decarbonised any demand will lead to additional emissions.
- Ensuring there is enough low carbon generation capacity to meet Ireland's electricity demand - Renewable energy sources are increasing their contribution to Ireland's generation fuel mix and this will contribute to the renewable targets in CAP 23. However, there will still be a need for low carbon

fossil fuel generation (preferably high-efficiency and renewable fuel ready gas generation) to ensure Ireland's electricity demands are met when the wind doesn't blow, and the sun doesn't shine. Many conventional generation units in Ireland are near their end of life or need to be closed due to emissions restrictions and appropriate new plant has not been delivered due to the ongoing failure of the Capacity Remuneration Mechanism. This is coupled with a less attractive investment space for traditional fossil fuel generation and the absence of appropriate investment signals for low carbon fossil generation. The above is the reality that we now face, and must be kept in mind when considering how to balance LEU growth with policy objectives.

- Supporting the Government policy position on regional balanced growth and hence EirGrid would propose mechanisms are considered that are consistent with a plan led model, it is the least cost approach and can provide developers with an appropriate degree of certainty before committing major investment to a region. For example, one solution as outlined in the call for evidence is that LEUs in the future may seek (or be required) to support the delivery of renewable generation, such as through CPPA approaches. Should this be the case, the relative location of the renewables will be critical when assessing its benefit in terms of offsetting the LEU's impact on renewable energy targets and network capability. We have previously advised that policy makers should consider locational signalling as a key principle underpinning future renewable support schemes to encourage development of renewable generation in proximity to large energy users. We are currently working with the CRU on introducing locational signalling for various generation technologies and system services as part of ECP 3.
- The value of demand flexibility cannot be overstated. A flexible demand profile has a critical role to play in the future decarbonised system. We note that CRU has a separate consultation out as part of the Demand Strategy call for evidence and EirGrid will make a separate submission to that call for evidence.

We welcome the call for evidence process to inform the review of LEU connection policy. We look forward to further engagement with CRU in its development and any forthcoming consultation process.

# Electric Ireland Response:

# Incentivising the Uptake of Time of Use Tariffs

**CRU202358**

**30/08/2023**

# Introduction

Electric Ireland welcomes the opportunity to respond to the CRU's Consultation on Incentivising the Uptake of Time of Use Tariffs. We strongly support the customer benefits offered by Time of Use Tariffs and the CRU's intent to increase their uptake.

Our key points are outlined below, with responses to the individual consultation questions in the following section.

- We support the proposal to allow PCWs to provide a price comparison based on smart meter data. We also believe that this functionality should be allowed for suppliers in order to show price comparisons for their own smart tariffs.
- We support the proposal to expand the requirement for EABs to all tariffs and support the demand-weighted approach.
- We feel that there are important considerations around the presentation of information to customers which we have expanded on below.
- We have no strong objections to increasing the limit of ToU Tariffs from 4 to 8, but we do not believe that this will have a significant impact on ToU uptake.
- It is not yet appropriate to schedule a review on the structure of the Standard Smart Tariff ahead of the completion of Phase 2 of the NSMP.
- Education and considerations around data are needed to increase customer readiness relating to Time of Use uptake.

# Responses to Consultation Questions

**Q1: The CRU is proposing to amend the PCW accreditation framework to allow consumers to upload their smart meter data (obtained as a HDF via the ESBN Customer Portal) to receive a price comparison based on their actual historical electricity consumption. Do you agree with this approach? If not, why not?**

We support this approach, but we note that there may be challenges for some customers to access, download and then upload this data.

We also believe that individual suppliers should be able to avail of this approach to allow customers to compare the different smart tariffs that supplier is offering, using the same rules, criteria and assumptions as the PCWs.

**Q2: The CRU is proposing not to put any restrictions on the minimum period of time that needs to be contained in smart meter consumption data that consumers can upload to the PCW. However, we propose that a warning message be included where consumers have included less than a year of data. Do you agree with this approach? If not, why not?**

We broadly agree with this approach, providing that the warning message is clear and understandable.

**Q3: Is there anything else CRU should consider with regards to this matter?**

Will the ESBN load profile be used to estimate the customer's usage for days/weeks/months where the smart meter data is not available in order to allow for an estimated annual cost (in line with the approach outlined under Q4 below)? Or will the customers consumption be extrapolated to make up the full 12 months? Whichever method is chosen should also be flagged in the warning message.

It should be flagged to customers that they should use their own HDF file, for their current property. Where a customer has moved into a new premises, they could upload their HDF file for their previous property, resulting in inaccurate results.

**Q4: In case a consumer submits a HDF containing periods of missing data, the CRU is proposing that the PCW takes the following actions:**

- **If the missing data accounts for less than 1% of the total dataset: the PCW must use the most recent ESBN load profile and calculate an estimate for the consumption during the missing period.**
- **If the missing data accounts for 1% or more of the total dataset: the PCW must inform the consumer that there is missing data, include the percentage of missing data, and ask if they wish to continue with the price comparison using an estimate for the missing data, as outlined above.**

**Do you agree with this approach? If not, why not?**

We support this approach and 1% would appear to be a suitable threshold, providing that the presence of missing data is appropriately flagged to the customer.

**Q5: Is there anything else CRU should consider with regards to this matter?**

It should be clearly flagged to the customer that missing data may impact the accuracy of their results.

**Q6: The CRU would be interested in hearing whether respondents believe there is added value or not in allowing PCWs to ask consumers additional questions to identify their consumption behaviour, and tailor price comparisons. For example, whether a consumer has an Electric Vehicle.**

**If you believe there is added value in this approach, what guidelines, if any, do you believe the CRU should implement to ensure a minimum standard across PCWs?**

Yes, there is value in this approach. Guidelines should be consistent across PCWs (and any suppliers replicating the approach).

If the customer has provided historical data via their HDF, their data will already be reflective of their consumption behaviour. More value could be obtained by asking the customer about willingness to shift flexible demand (including Electric Vehicles and Heat Pumps) which will feed into education around behavioural change.

**Q7: The CRU proposes to require PCWs to implement the functionality to allow consumers to upload their smart meter consumption data (via HDF) from 1 January 2024. Do you agree with this approach? If not, why not?**

Yes, we agree on this timeframe if it can be reliably met by PCWs. We also believe that Suppliers should be permitted to allow similar calculations within the same guidelines as the PCWs (but this functionality should not be mandated for suppliers).

**Q8: Are there any other issues that you believe the CRU should take into consideration with regards to the timeline?**

Flexibility may be required if the limit on tariffs is increased to 8, as more scenarios and testing would be required by PCWs to ensure accuracy.

**Q9: The CRU proposes to amend the PCW accreditation framework to allow consumers to access price comparisons for microgeneration export tariffs between suppliers. It proposes consumers should be able to do this in one of two ways, either by submitting their actual (historical) export volume, or by submitting their deemed calculation. Do you agree with this approach? If not, why not?**

We support this provided any calculations are clearly caveated to ensure that customer is aware that past performance is not necessarily an indicator of future performance, for example the customer may install a heat pump and no longer export at their previous volumes.

Deemed calculations are not suitable for comparing export tariffs. Customers will be moving from deemed to actual values and any information based on deemed values will not be accurate once this move occurs.

**Q10: Are there any other issues that you believe the CRU should take into consideration with regards to this functionality?**

It does not appear that the proposal as described would cover scenarios where a supplier offers a Time of Use or Dynamic Export Tariff. While these are not currently a feature of the Irish Microgeneration market, there does not appear to be anything preventing these from being introduced particularly as we move towards the enduring microgeneration solution.

**Q11: The CRU proposes to extend the requirement for an EAB to all tariffs available on the market, including time of use tariffs. Do you agree with this approach? If not, why not?**

Yes, we agree with this approach. However, all information relating to EABs for ToU Tariffs should be appropriately caveated to ensure the customer understands that behaviour changes and load shifting will lead to different outcomes and bills. ToU tariffs are designed to incentivise a change in behaviour (and it is worth noting that not all ToU tariffs will incentivise the same change in behaviour) and this will not be reflected in an EAB.

**Q12: The CRU proposes to implement an EAB for all time of use tariffs from 1 January 2024. Do you agree with this timeline? If not, why not?**

1st January 2024 appears to be a suitable timeline.

**Question 13: With regards to the methodology for calculating an EAB for all time of use tariffs, the CRU proposes to use the demand-weighted approach, which is the same that is currently used for the Standard Smart Tariff and Day/Night tariff. Do you agree with this approach? If not, why not?**

We support the demand-weighted approach as it is consistent with SST and will allow for a like-for-like comparison across the market. Information relating to EABs for ToU Tariffs should be appropriately caveated to ensure the customer understands that behaviour changes and load shifting

will lead to different outcomes and bills. ToU tariffs are designed to incentivise a change in behaviour and this will not be reflected in an EAB.

**Question 14: Are there any other issues that you believe the CRU should take into consideration with regards to implementing an EAB for all time of use tariffs?**

We do not believe that the Tariff-Specific EAB would be a fair, understandable or workable solution.

**Question 15: The CRU proposes to increase the limit on the maximum number of time of use tariffs from four to eight from 1 October 2023. Do you agree with this approach? If not, why not?**

Electric Ireland have no objections to this approach but it is not clear that this will incentivise uptake in ToU.

**Question 16: The CRU proposes to end the limit on the maximum number of time of use tariffs from 1 April 2025. Do you agree with this approach? If not, why not?**

Yes, we support this approach.

**Q17: CRU would welcome any views on whether respondents consider it appropriate to schedule a review on the structure of the Standard Smart Tariff ahead of the completion of Phase 2 of the NSMP (currently scheduled for the second half of 2024).**

Time of Use tariffs are still a new concept for many customers, and the presence of the Standard Smart Tariff offers a means of understanding and comparison for customers who are exploring this area for the first time. The original timeline for review remains appropriate.

**Q18: CRU would also welcome views from respondents on which issues should be considered in such a review. Respondents can specifically focus on the following questions, or provide their own views:**

a) **Is the Standard Smart Tariff achieving its purpose to be an easy to understand 'entry-point' to time of use tariffs for consumers?**
The Standard Smart Tariff facilitates a 'like for like' comparison as there is a consistent structure amongst suppliers and an EAB is provided. The SST acts as a tool for understanding Time of Use tariffs but is potentially not always used as the entry point and may not always be a suitable entry point.
Electric Ireland offers a "flat" 24-hour tariff for customers with a smart meter. This provides customers with insights on their electricity demand and consumption patterns. This information can then be used to allow the customer to select an appropriate ToU tariff when they are ready. This can be an ideal entry point for customers who have a smart meter but who are cautious about committing to a ToU tariff without understanding their consumption patterns.

b) **Do you have any concerns or recommendations in relation to the Day/Night/Peak structure of the Standard Smart Tariff, including the hours assigned to each time band?**
The structure and hours are appropriate for the purposes of a Standard Smart Tariff. Any significant variation to this could have knock on effects (for example, Network Tariffs are aligned with the time bands).

c) **In light of the proposed measure to extend the maximum number of time of use tariffs for each supplier from four to eight, do you see a continued need for the Standard Smart Tariff?**
Yes, see response to Q17.

d) **Are there any other issues related to the Standard Smart Tariff you believe the CRU should take into consideration in a future review?**
Electric Ireland do not have any issues related to the Standard Smart Tariff at present.

**Q19: CRU would welcome any additional suggestions to incentivise the uptake of time of use tariffs.**

A centrally coordinated awareness campaign focussing on the benefits of time of use tariffs may be useful. Customers are broadly familiar with Smart Meters, but uncertainty remains around time of use tariffs. There is a common misconception that ToU tariffs are far more expensive or that major lifestyle changes are required to reap their benefits. This should be coordinated by DECC, CRU and/or SEAI.

A significant focus has been put on "personal" data and consent which has resulted in uncertainty and customer reluctance to sign up to ToU tariffs. Whilst acknowledging that electricity consumption data collected is considered personal data for purposes of data protection laws in Ireland, [including the Data Protection Act 2018 and the General Data Protection Regulation (GDPR)], references to data and consent should put an emphasis on *consumption* data, rather than *personal* data as it is consumption data which we (as an industry) are concerned with, rather than an individual's personal behaviours (which suppliers do not have any visibility of).

We believe that there are use cases for Smart Meter Data access that would incentivise the uptake of time of use, for example allowing direct access to historical consumption data during the Sign-Up process to allow Suppliers to inform the customer on the most suitable tariff based on their consumption patterns. This would ensure a more positive experience for customers who are starting their time of use journey and will act as a barrier to customer switching. We will expand on this in the upcoming CRU Smart Meter Data Access Code consultation.

There is a requirement for customers to provide their MPRN in order to switch supplier. While this is a means of verifying that the customer is legitimate it can act as a barrier for switching and consequently signing up to a time of use tariff. Not all customers have access to their meter (to obtain their meter serial number which can be provided to ESBN in order to determine their MPRN). This is common practice in apartment blocks. PAYG customers in particular will likely be in receipt of annual statements, meaning they may not have their MPRN readily available. We request that CRU reconsiders the current approach which requires an MPRN to be provided.

# Electric Ireland Response:

# Review of Large Energy Users Connection Policy

# Call for Evidence

**CRU202357**

**30/08/2023**

# Introduction

Electric Ireland welcomes the opportunity to respond to the CRU's Call for Evidence on the Review of Large Energy Users Connection Policy. Electric Ireland is supportive of the intent of the proposals put forward by CRU and acknowledge that measures are required to ensure that continued demand growth in this area is in line with Sectoral Emissions Ceilings and climate targets. There are a number of challenges and barriers that need to be addressed in order for these proposals to be introduced successfully. We would suggest that these issues should be dealt with through a comprehensive project type approach allowing for industry to assess and input into. A detailed framework/roadmap should be developed including scenario analysis and impact assessments to prevent unintended consequences.

Our key points are summarised below:

- The proposals represent a significant change in approach for a relatively small cohort of customers.
- It is premature to impart an obligation in relation to Renewable Gas as Ireland does not yet have an established indigenous biomethane industry.
- The proposals in the consultation will likely see increased appetite for end-to-end 24/7 zero carbon offerings from energy utilities which will place standalone electricity suppliers like Electric Ireland at a competitive disadvantage compared to vertically integrated competitor suppliers
- Mandating that LEUs must provide flexible demand may dilute the opportunities for commercial Demand Side Units / providers of flexible demand.
- Levels of demand flexibility should be driven through incentivisation, rather than obligation.
- Any changes to connection policy should have a sufficient lead in time to allow adequate cost-effective solutions to develop across the industry.
- Some of the proposals, most notably the interruptible contracts for gas connections, are not directly related to decarbonisation and should be dealt with through separate work streams.

### Approach to Development of the Policy

We would suggest that these issues should be dealt with through a comprehensive project type approach allowing for industry to assess and input to. A detailed framework/roadmap should be developed including scenario analysis and impact assessments to prevent unintended consequences.

Some of the proposals, most notably the interruptible contracts for gas connections, are not directly related to decarbonisation and should be dealt with through separate security of supply work streams to ensure that the key aim of the policy is not diluted.

### Discriminatory Nature of the Policy

Putting specific requirements on new LEU connections seems overly discriminatory for a measure which will have minimal impact on national emissions. Legacy LEUs will continue to operate without restrictions with obligations imparted on new connections only. It is important to understand the impact on the economy of this policy. There is a risk that the types of LEUs which cannot meet the

requirements, such as flexible demand response, will be driven to different markets along with the benefits they provide to our economy.

**Maturity of Market Mechanisms to Facilitate Renewable Electricity and Gas Consumption**

While the Climate Action Plan sets out ambitious targets for Biomethane in Ireland, we do not yet have an established indigenous biomethane industry. Requiring new LEUs to source renewable gas and the upcoming Renewable Heat Obligation will introduce a demand for renewable gas that will far outweigh availability.

While corporate PPAs are an established mechanism, it is currently unclear how this would function at scale. An impact assessment / scenario analysis should be undertaken to investigate the impact of increasing the volume of CPPAs on the market, potential negative impacts on customers (i.e., distorted pricing and customer protection), and any knock-on effects on the wholesale electricity market. There will be a need for transparency across the market to ensure that customers are protected.

**Roles of Parties and Market Structure**

The proposals in the consultation will likely see increased appetite for 24/7 zero carbon offerings from energy utilities. LEUs will require access to renewable and zero carbon energy, wholesale market balancing, reporting, risk management, along with the comprehensive benefits provided for within a supply contract.

In this regard, the proposals will place standalone electricity suppliers like Electric Ireland at a competitive disadvantage compared to vertically integrated competitor suppliers which have integration to generation assets and so are better positioned to offer flexible / structured products. These integration benefits are in comparison to suppliers (standalone suppliers and ring-fenced supply companies) who source hedges in the highly illiquid I-SEM market. This dynamic will lower overall competition in the market in terms of offerings to LEUs.

The transition to net zero is seeing an evolution of the retail market from purely selling electricity to more integrated offerings of solar, batteries energy efficiency and other services. This highlights the need for the regulatory framework to evolve to the changing circumstances and needs of customers through a review of overall market liquidity and the ringfencing restrictions faced by Electric Ireland.

**Contract Length and Concept of Additionality**

The concept of additionality should be clearly defined in the context of Corporate PPAs and Renewable Gas and how it applies to the connection policy. This will set the precedence for how projects and contracts are structured.

The typical contract length of a Corporate PPA (10+ years) far exceeds the typical contract length an LEU will have with their energy supplier. How the presence of a Corporate PPA impacts a customer's ability to negotiate and switch supplier should be considered. Flexible arrangements may be needed but may not meet the criteria of additionality.



# Energia Response to Commission for Regulation of Utilities

***Energy Demand Strategy Project***

***Call for Evidence***

**30 August 2023**

# 1 Introduction

Energia welcomes the opportunity to respond to the Commission for Regulation of Utilities Call for Energy Demand Strategy (EDS) Project Call for Evidence. We have set our response to in the sections below. The first section of our response consists of the executive summary which provides an outline of our position, in the second section we provide general comments and alternative proposals, followed in the third section with our responses to the individual questions posed throughout the consultation paper. The response below aims to offer the Commission Energia's initial thoughts on the proposed Demand Strategy ahead of further consultation planned later this year.

Energia operates through three businesses: Renewables; Flexible Generation; and Customer Solutions. Energia is committed to playing a key role in the energy transition and decarbonisation of the energy system. Energia has a Positive Energy Programme which, launched in 2019, set out an investment of €3 billion focussed on a range of major renewable energy projects. Ongoing projects include onshore and offshore wind, solar, battery storage and green hydrogen, and it is anticipated this programme can add circa 1.5 Gigawatts of additional renewable capacity to the system by 2030 to facilitate the achievement of Government targets and keep momentum towards the overall objective of Net Zero. Our Customer Solutions business is committed to innovation and continued investment to deliver products and services to support the energy transition that will help our customers to adapt and change behaviors.

## *1.1 Executive Summary*

We welcome the CRU engaging on the EDS Project demand flexibility and smart services will be central to achieving an optimum strategy for our renewable future. Rather than limiting or reducing demand growth, the focus therefore needs to be more focussed on decarbonising consumption. Demand flexibility can be unlocked not just by shifting load but also through real time actions, therefore switching on is just as important as switching off when it comes to demand flexibility.

Demand flexibility has a role to play but the signals are not there yet, therefore the focus of the EDS needs to be on 2030 and planning for that. Notwithstanding the target to 2025 being very ambitious, Energia believe there is an opportunity in the short term to leverage high return, low risk initiatives already in train such as Smart. Accelerating high value work programmes and investments such as upgrade of dispatch systems and removing barriers to entry for technologies such as electricity storage which can deliver the fastest and largest wins for the energy system in the short term, present opportunities for Phase 1 of the EDS Project. Development of the longer-term road map and strategy important priorities for Phase 1 too. Early engagement on the plans to achieve 2030 ambitions is welcome given the size of the challenge of the ahead.

# 2 Overarching Response

## *2.1 Smart and Smart Services*

Energia welcome Area 1 Smart Services being a focus for the EDS. There has been significant investment in the National Smart Metering Programme (NSMP) to date, the adoption rate needs to higher if we are to see the active participation required from customers via system flexibility to achieve the energy transition's goals.

While the transition to smart poses challenges, there are also abundant opportunities for development and innovation of the retail market. There is an opportunity for

consumers to be exposed to, and for them to engage with the market to an unprecedented degree. An integral part of a successful transition is the ability of suppliers to innovate and offer suitable products which can entice customers. To achieve this suppliers, need access to smart data and the freedom to develop a range of products that engage the customer, taking into consideration the consumer needs and providing flexibility. There is an opportunity for the NSMP as part of the EDS however the following challenges need to be addressed:

- Unlock full benefit of smart meters by encouraging greater participation by consumers.
- Low uptake of smart meter services influenced by a level of distrust around data sharing and GDPR.
- Collective approach between Government, CRU, SO and Suppliers needed to enhance customer incentivisation and education.
- Provide price signals required to give customers incentive to switch demand to periods of low demand and high wind.
- Digitisation of services is required to optimise and leverage the benefits and support a power system of 80% renewables by 2030.

### *2.1.1 Customer Engagement & Education*

Energia believe it would be beneficial for a coordinated industry-wide awareness campaign led by ESBN/CRU/DECC and supported by suppliers to further educate consumers on what a smart meter can offer them and how it will benefit the wider economy. As well as promoting the savings available from ToU tariffs if behaviour is tweaked.

Consumer behaviour centres around control and being in control particularly when it comes to smart, be it meters, ToU tariffs, dynamic tariffs or digitisation. This control can only be exercised through knowledge and understanding. Consumers however do not share this sentiment and are afraid of being overcharged if they install a smart meter, how their data is going to be used and accessed etc. Negative press and media also greatly impact consumer perception of what “smart” capabilities are and the benefits of these. Education of customers is essential to unlock the benefits and fully leverage smart services. In addition, we should be leveraging learnings where available from others. To that end Sweden presents an interesting case study for Ireland when it comes to smart and smart services.

**Swedish Example**

The first wave of smart meters were introduced in Sweden in 2000. The main issues identified as obstacles to reducing demand during peak times and increase overall demand response were the following:

- low interest in demand side flexibility from a consumer perspective;
- customers are not educated enough to understand the benefits of flexibility;
- there is a limited range of products available for those who want to be more flexible;
- and lastly there are market barriers when it comes to exporting energy.

The key obstacle is seen to be lack of awareness or education of the potential role of smart meters and how they can improve energy efficiency and impact demand side response[1].

In terms of pricing, Sweden has implemented dynamic electricity pricing, yet this pricing mechanism has brought about little to no results in persuading consumers to shift their load to off-peak times[2].

If the wider aim is to stimulate load shifting, then price signals need to be strong in order to incentivise consumers to reduce consumption during peak times. A study conducted in 2019 by Öhrlund, Linne and Bartusch found that coupling price signals with communications and information influence behaviour positively while information presented should be simple to follow (i.e. using colours to show peak vs non-peak prices and costs)[3].

### *2.1.2 Price Signals - Network Tariffs*

Energia is conscious that while the wholesale market has a role to play in giving the correct signals to customers and suppliers play their role by reflecting these wholesale costs in the price that customers pay for their electricity supply at different times of the day, network tariffs which makes up a significant component of the electricity cost also must provide the right signals to customers. Energia believe providing financial incentivises via greater differentiation of network tariff (ie Use of System) at different times of the day and the week, would allow greater price incentives to be passed onto customers. For example, in addition to Day/Night/Peak in network tariffs, other time bands such as weekends should be considered. This solution would support achieving a greater shift in behavioural consumption. Energia welcomed the Network Tariffs 2022/23 decision adopting greater differentiating of ToU time bands for example DG1/2 customer tariffs in 2022/23, there was a 10% difference between Peak vs Day Off Peak. Greater sculpting of these network tariffs would facilitate the right incentives to be passed onto customers which would facilitate greater ToU and other smart services uptake. Energia note there is a longer-term piece of work being undertaken by CRU, the Electricity Network tariff design project, however in the short term there is an opportunity to look at the annual tariff review as a mechanism to pass on incentives to customers via the existing tariffs.

### *2.1.3 Real Time Data*

Suppliers can empower customers with insights through data access, giving customers control so that they can then take action, by changing behaviours and becoming active participants in the energy transition. This action or control can be harnessed even more by the customer with access to real time data.

Energia believe there could be a missed opportunity if the smart metering programme is not leveraged fully in the EDS. Optimisation of renewables and stabilising the grid for 2030 is key to a long-term strategy, consumers and digitisation of services is key to achieving this. Real time data access is required to allow customers to participate

[1] https://ceur-ws.org/Vol-3223/paper16.pdf

[2] https://www.iea-isgan.org/wp-content/uploads/2022/06/WG9-Dynamic-Electricity-Pricing.pdf

[3] https://www.sciencedirect.com/science/article/pii/S2214629618307199

in this next phase of the transition. Customers will be the centre of this, and it will be difficult for them to take the action needed without them getting the right signals.

Elements of the NSMP therefore need to be accelerated and should be considered as part of the EDS. Facilitation and promotion of smart meter benefits to enable further investments and opportunities for customers to participate in the energy transition must be actioned. Realtime data in the short term is imperative and should be prioritised. Having access to real time data will allow for suppliers to provide meaningful data and feedback to consumers who for example own, EVs, or who have heat pumps and microgeneration installed as these customers will be better able to shift loads.

Noting this requirement for access real time data, it should be accelerated as part of the NSMP. Currently unvalidated near real-time consumption / export data from smart meters will only be made available to customers in Phase 3 of the NSMP. This workstream should be commenced now in earnest, paralleling it with Phase 2 activities. The absence of this data hinders the consumers ability to understand their consumption to take real time action and leverage real benefits of smart.

In the longer-term digitisation of this space will be essential to help manage the dilemma we face as we get to 80% wind on the power system and how to manage it. For optimum load management we need automation with the smart meter communicating to other devices (e.g., appliances, batteries, EVs, microgen) to facilitate customers adapting usage to the most appropriate time actions from grid to home or business.

### 2.1.4 Retail Market

Considerable investment and innovation in the market is also required to fully enable electricity to play the fundamental role in providing energy services in a decarbonised energy system. The level of widescale investment required to achieve the EDS will take some time. Retail market systems and settlement systems need to change to be more dynamic to facilitate advanced smart services such as critical peak pricing, dynamic tariffs and energy sharing.

## 2.2 Technology Supporting Demand Flexibility

We are aware that there are significant challenges for some energy consumers to operating in flexible manner. Given ambition of this target, consideration should be given to leveraging technology that can accelerate the demand flexibility, leveraging renewable energy and reducing curtailment in the most efficient manner.

### 2.2.1 Scheduling and Dispatch Systems

The annual dispatch down in 2022 was 8.5%, this was an increase of 15% from 2021[4]. While the volume of wind generation accommodated by the island system has increased by 17% in this period, the level of dispatch down is still staggering considering it equates to 1,280 GWh of wind energy. Alleviating curtailment on the system must be a priority to achieving way forward for decarbonised. The TSO scheduling and dispatch systems tool updates need to be progressed as a priority and need to be progressed beyond the current envisaged scope. Energia believes this

[4] Annual Renewable Energy Constraint and Curtailment Report 2022

workstream is a low hanging fruit that can bring significant benefits in the short term to customers as part of the EDS if timelines are accelerated to deliver this by 2025.

Improvements to the scheduling and dispatch software would reduce dispatch down without the need for additional new infrastructure, more effectively sweating the assets that are already on the system. In the context of the existing physical limitations on the grid, the ability of the system to perform in a more flexible manner is currently frustrated by the lack of technical sophistication of the operating software.

Incorporating storage and demand response units into the Scheduling and Dispatch software should likewise be a major priority on the basis of the end benefit to consumers. Storage units, when sufficiently enabled, capture arbitrage opportunities in the market, alleviating peak prices and reducing the quantity of electricity that is dispatched down at times of system stress. Demand response units (including but not limited to Hydrogen production) scheduled to demand respond will help balance the system in times of high renewable production and significantly reduce curtailment. Furthermore, should the sophistication of the dispatch tool facilitate an operator's portfolio balancing (allowing them to bring on their demand unit to reduce their curtailment exposure) this would represent a key investment signal to asset developers for investment in large scale demand response units that are dis-patchable to assist the TSO in system balancing whilst significantly reducing curtailment. Once again, the benefits to consumers would be realised almost immediately and would not require the construction of additional costly transmission infrastructure that will take a number of years to deliver.

Much of how the transmission system is anticipated to evolve to 2030 depends on the successful and timely implementation of the Scheduling and Dispatch programme in its entirety. Energia is concerned that the current rate of progress and forecast timelines are insufficient to match the needs of Ireland's renewable ambitions. The failure to implement the Scheduling and Dispatch programme in a timely manner would thus have significant implications for renewable running hours. Tangible and substantial progress in implementing the programme should form a key part of the EDS. Ultimately an EDS cannot be delivered without accelerating the current envisaged timelines for this work. The end of the decade will be far too late.

### *2.2.2 Storage*

Electricity storage will be increasingly integral to achieving a renewables-led power system. Ireland is already a global leader when it comes to being able to handle high levels of non-synchronous electricity generation on the system. Electricity storage is an adaptable technology that can be deployed relatively quickly to support the flexibility and decarbonization. Electricity storage has the potential to further increase the electricity system's ability to absorb higher percentages of non-synchronous generation. Energia believe that Ireland must urgently put in place well-designed routes to market to drive the required investment into storage, flexibility and zero-carbon system services to enable bulk time shifting of energy to minimise curtailment, constraint and oversupply issues and enable the electricity system to operate at 100% renewable power. The following policies and workstreams outlined in the table below need to be progress to unlock the benefits of these technologies.

| Batteries and Storage | Name |
|---|---|
| **Hybrid Connections (Flextech)** | Over-Install MEC |

| | |
|---|---|
| | Trading behind an MEC |
| | Hybrid site dispatch |
| **Battery** | Firm Access |
| | CRM De-Rating |
| | Connections |
| | Network Charging |

## *2.3 Other Considerations*

### *2.3.1 Key Related Workstreams*

We note Climate Action Plan target, EL/23/24 CRU to establish Demand Side Strategy working group with the output being the "Publication of Electricity Demand Side Strategy and Implementation Plan". We further note key stakeholder involvement being CRU, EirGrid, ESBN, Enterprise Agencies.

Energia note there are key related workstreams which feed into the EDS but are not in scope as part of the EDS Project. More detail needs to be provided on the interaction between these key workstreams outlined in the consultation document and the planned EDS Project. While CRU has emphasised in this Call for Evidence the EDS is demand side focused, it is vital for industry to have visibility on the interaction with;

- Supply-side flexibility e.g. storage providing dynamic response, reserves, DSUs providing DS3 services, flexible technology e.g. (synch. compensation), flexible generation, and flexible renewables connections and
- the participation of Demand Side Units (DSUs) in the Single Electricity Market (SEM).

With that in mind the importance of a joined-up approach to delivering on this target is necessary to consider in the project approach. We note that with DSO responsibilities set out in the Electricity Market Directive (EU 2019/944), ESB Networks is now responsible for the development of market-based flexibility services. We note "CON1013 Beat the Peak Commercial Winter 2023 Preliminary Market Call", scope customers (industrial and commercial customers) connected to the Irish electricity distribution system or the electricity transmission system for provision of services to the DSO. The demand flexibility target is not indicated to be at system level therefore both transmission and distribution level system operator interactions and roles should be detailed with regards to demand flexibility.

### *2.3.2 Industry Engagement*

Energia believed more structured industry engagement on the EDS project should be considered to include a regular programme of workshops with industry. This would ensure that the process is inclusive, draws on industry knowledge and expertise. We note there is a number of working groups already established feeding into this project Smart Energy Services Working Group and the Demand Side Strategy working Group, consideration should be given to industry participation on the working groups, in particular on Smart Energy Services. Given the targets and rapidly changing landscape regular planned industry engagement is required to adapt and flex plans where needed and should be incorporated into the "Discovery-Led" approach.

# 3 Consultation Questions

## *3.1 Q1. What are stakeholder's views on the stated aims of the project?*

Energia believe the energy demand strategy presents an opportunity for industry to work together proactively to facilitate and support the end user to manager their energy consumption efficiently. Rather than limiting or reducing demand growth, the focus therefore needs to be more on decarbonising consumption rather than on reducing demand. Demand flexibility can be unlocked by shifting load but also through real time actions. Switching on is just as important as switching off with regard to demand flexibility. Consideration must be given to technologies both new and existing as well as any overlapping workstreams that can leveraged achieve these targets as outlined in section 2.

## *3.2 Q2. What are stakeholder's views on the proposed scope (focus areas) and approach (phasing) of the project?*

The approach to Phase 1 of the EDS project; define the project scope; prioritising the progression of work items already underway and delivering a (long term) strategic plan for the EDS project itself work, including defining demand flexibility and the approach to its measurement seems logical. As part of the long-term plan, it would be useful to understand further phases in the project as well as timelines.

Project governance needs to be outlined for industry too, we note this Call for Evidence proposes the use of phasing, paralleling of workstreams and adopting a discovery-led approach where appropriate. Given the timeframe, a clear framework and governance should be outlined from the outset, detailing roles and responsibilities.

Longer term once the transition has occurred, most people will be using energy at high renewables penetration on the system. The incentivisation to switch to times of high renewables will no longer exist as the load profile becomes flattened. Energia believe that there needs to be a plan of action or outlook beyond 2030. Considering the longer-term plan as part of Phase 1 is a prudent approach. The role of other interacting future workstreams should be considered too. For example, future scenarios of an energy market and baseload in a high wind energy system is currently not catered for. The market will require new products and alternatives to cater for customers in high wind and low gas scenario. Changes in network tariffs and levies on customer bills reflecting increased renewable support and changes in distribution and consumption patterns are also inevitable.

<u>Smart and Smart Services</u>

Energia feel leveraging the benefits of smart and smart services through ToU tariffs, dynamic pricing, microgeneration and energy sharing is a positive thing and we welcome the focus on this as they are also key elements of the Clean Energy Package. Unlocking the full potential of smart metering and services the following needs to be facilitated:

- There is a need for access to data from the meter to enable suppliers to educate their consumers.
- Financial incentives to encourage the uptake of smart services.

- Greater funding for retrofits and to facilitate affordability of EVs and heat pumps.
- Retail market system to support the uptake of these smart products and services.
- Bringing forward NSMP Phase 3 deliverable of providing unvalidated near real-time consumption / export data from smart meters.

Demand flexibility and Response

Structured industry engagement on the EDS project should be prioritised facilitating ongoing and continuous engagement (to include a regular programme of workshops) with industry. This would ensure that the process is inclusive, draws on industry knowledge and expertise. We note there is a number of existing working groups feeding into this project Smart Energy Services Working Group and the Demand Side Strategy working Group, consideration should be given to industry participation on the working groups.

While CRU has emphasised in this Call for Evidence the EDS is demand side focused, it is vital for industry to have visibility on the interaction with;

- Supply-side flexibility e.g. storage providing dynamic response, reserves, DSUs providing DS3 services, flexible technology e.g. (synch. compensation), flexible generation, and flexible renewables connections and
- The participation of Demand Side Units (DSUs) in the Single Electricity Market (SEM).

With that in mind the importance of a joined-up approach to delivering on this target is necessary to consider in the project approach. We note that with DSO responsibilities set out in the Electricity Market Directive (EU 2019/944), ESB Networks is now responsible for the development of market-based flexibility services. We note "CON1013 Beat the Peak Commercial Winter 2023 Preliminary Market Call", scope customers (industrial and commercial customers) connected to the Irish electricity distribution system or the electricity transmission system for provision of services to the DSO. The demand flexibility target is not indicated to be at system level therefore both transmission and distribution level interactions should be detailed with regards to demand flexibility.

New Demand Connections

Rather than limiting or reducing demand growth, the focus therefore needs to be more focussed on decarbonising consumption. Technology to facilitate and harness optimum system conditions for clean technologies need to be leveraged.

The early upgrading of the TSO scheduling and dispatch system tools need to progress as part of phase 1. Currently the updates are being considered for the end of the decade, which is too late considering the lead times associated with any investment decisions. The dispatching tool can unlock myriad of benefits as outlined in section 2.2.1 above. Such benefits to consumers would be realised almost immediately and would not require the construction of additional costly transmission infrastructure that will take a number of years to deliver.

## *3.3 Q3. What are stakeholder's views on energy demand profiles and the challenges arising from the associated*

***carbon emissions? Considerations may include other information and data that should be included. Or challenges, such as new demand.***

Policy and regulatory alignment are essential in order tackle the challenges and opportunity presented in the demand profiles. This alignment must ensure that rather than limiting or reducing demand growth, the focus must be on decarbonising consumption. Policies need to clear and take into consideration the various aspects of the energy landscape both supply and demand side.

The demand profiles provide further evidence to support, increasing speeding up grid delivery. The completion of network reinforcement projects therefore needs to be progressed as a matter of priority on a no regrets, proactive basis, rather than the current reactive approach.

The work items not in scope as part of this EDS also need to be considered in the context of the energy demand profiles, in particular the upgrading the dispatch systems and methodology in order to optimise the use of our growing (MWs and Duration) battery portfolio.

## *3.4 Q4. What are stakeholder's views on the definition for demand flexibility?*

***How should demand flexibility be measured and reported on an ongoing basis? What metric (annual peak system demand / total annual energy consumption / other?) should be used. How should compliance with the CAP targets be assessed for demand flexibility in 2025 and 2030?***

Energia support the broad and technology neutral approach to defining "Flexible system demand" (or "demand flexibility") is energy demand which is available to / capable of changing its demand consumption profile. This allows for a range of technologies to qualify.

The traditional concept of focusing on reducing demand at peak times no longer exists as the level of renewables on the system continues to grow and we move to a decarbonised output. The final definition should recognise the relationship between decarbonisation and that flexibility and express renewable electricity targets as a share of demand.

Consideration may also need to be given to the definition now versus down the line when we have real time data it is more dynamic flexibility rather than demand / load shifting in the absence of the real time data.

## *3.5 Q5. What should be the areas of focus for demand flexibility? Are there any policy or regulatory barriers to the introduction of technologies that could be useful in*

### *providing flexibility? What incentives should be considered?*

The early upgrading of the TSO scheduling and dispatch system tools need to progress as part of phase 1. Currently the updates are being considered for the end of the decade, which is too late considering the lead times associated with any investment decisions. The dispatching tool can unlock myriad of benefits as outlined in section 2.2.1 above. Such benefits to consumers would be realised almost immediately and would not require the construction of additional costly transmission infrastructure that will take a number of years to deliver.

Dispatchable zero gas capacity has a role to play in the demand side strategy. Consideration needs to be given to the interaction between government obligations schemes and on-site dispatchable generation is required and the fuel for this should be sourced exclusively from renewable sources. Given the limited supply of these gases and the proposed CAP targets for the obligation schemes. Government hydrogen and renewable gas policies and this EDS all need to be aligned.

With regard to smart services we need to see: data flows on smart meters enabled; funding for retrofits and better affordability of EVs and heat pumps; retail system upgrades and economic, regulatory frameworks to support the EDS aims. Barriers exist in progressing retrofitting of homes in terms of funding required but also in the workforce needed. While the uptake of EVs has been positive in 2023, there set up in the level of EVs and heat pumps is also required. To facilitate this there needs to be reduced administrative burden and better customer sentiment to invest. In addition to the Clean Export Guarantee payment to customers, the recent government decision move to reduce the rate of VAT to 0% for installation of Solar PV has facilitate a marked increase in the uptake of solar. Similar initiatives being extended to retrofit investments for homeowners too could enhance the uptake of other technologies such as heat pumps to support decarbonisation of heat. The continuation of financial incentives to support EVs should also be considered.

## *3.6 Q6. What are stakeholder's views on the attached ESBN document, 'Scenarios for 15-20% Flexible System Demand (DOC-120423-HRS)', which has been published as part of this four document package?*

While the central scenario outlined provides the most balanced approach across a portfolio of technologies and options that can deliver the flexible demand target, however there is still a significant ask from domestic, commercial and industry to take action flexible actions through demand response and curtailment reduction.

We note ESB are currently engaging on Flexibility Multi-Year Delivery Plans for the next five years with the Call For Input consultation open at present. It is very useful to understand the proposed target work programme from now to 2030 with high level timelines for the key priority focus areas to 2025. We welcome the engagement on the six key workstreams which have been identified so far.



# Response by Energia to Commission for Regulation of Utilities

***Consultation on Incentivising the Uptake of Time of Use Tariffs***

**30 August 2023**

# 1 Introduction

Energia welcome the opportunity to respond to the Commission for Regulation of Utilities' consultation paper with regards to Incentivising the uptake of Time of Use (ToU) tariffs. The first section of our response consists of the executive summary which provides an outline of our position, in the second section we provide general comments and alternative proposals, followed by the third section which outlines our responses to the individual questions posed throughout the consultation paper, and our responses to the "Call for Evidence" questions. The response below aims to offer the Commission Energia's thoughts and key concerns around the incentivisation of the ToU tariffs.

## *1.1 Executive Summary*

The transition to smart metering poses challenges, but also abundant opportunities for development and innovation of the retail market and for consumers to be exposed to and for them to engage with the market to an unprecedented degree. An integral part of a successful transition is the ability of suppliers to innovate and offer suitable products. This can only be done by allowing suppliers the freedom to develop a range of products that engage the customer, while also taking into consideration consumer needs. Essential to achieving this, is the is access to smart meter data to develop these products.

Energia support the promotion of smart through any means and welcome any developments in this regard. While industry is striving to bring about change and taking action to fulfil targets under CAP23 and ultimately net-zero by 2050, the consumer must also be empowered to engage with industry and drive change. It is common knowledge that among consumers microgeneration in the form of solar photovoltaics (PV) has seen greater success than the uptake of smart meters or smart tariffs, yet these elements along with battery storage, electric vehicles (EVs) and dynamic tariffs are not mutually exclusive but are interlinked and should be presented to consumers as elements that aid Ireland's transition to net-zero by 2050.

With regards to the four specific proposed measures the CRU presented within this consultation, Energia have summarised below our overall views.

1) Amendment to the accreditation framework of Price Comparison Websites (PCWs) to allow consumers to upload their smart meter data: Energia welcome the promotion of smart through any means, yet caution needs to be taken when granting additional market powers to unlicensed parties such as PCWs. Consideration needs to be given to GDPR requirements around access to data and the applicability of the same rigor of care by PCWs when handling data as suppliers must adopt. Stricter compliance requirements may need to be implemented if the accreditation framework is to be amended and reinstating full transparency for customers using PCWs to get a "whole of market" view.
2) Applying an EAB for all ToU tariffs: Energia feel that the extension of an EAB to all tariffs would not be suitable for all ToU tariffs as it will be challenging to easily compare like for like. As a result of the energy transition, ToU tariffs will likely include many additional variables. Furthermore, an EAB tracks past consumption patterns and behaviours and implies that behaviour will most likely remain the same. However, ToU tariffs seek to and promote change in consumption going forward, which is one of the underlying objectives of Smart and ToU. To that

extent, Energia feel that EAB is not the best calculation for the customer to compare time of use products for value and encourage behavioural change.

3) Increasing the limit of the maximum number of ToU tariffs from 4 to 8: Energia welcome this increase and we believe it will allow suppliers to innovate further and offer ToU tariffs that better suit customer needs.

4) Reviewing the structure and effectiveness of the Standard Smart Tariff (SST) under a call for evidence: Energia believe the current structure of the SST (i.e. Day/Night/Peak) is still fit for purpose. However, the SST does not necessarily constitute an 'entry point' to ToU tariff uptake. Energia believe a Smart first approach via a like for like product such as a 24-hour Standard Smart replica tariff is an easier 'entry point' and glide path to a ToU tariff for customers. It offers the benefits of smart and empowers consumers with the data and insights needed to shift behaviours.

# 2 General Comments

### *2.1.1 PCWs*

There is a strong acceptance across industry and among stakeholders that the promotion of smart through any means is a positive thing. While the incentivisation of ToU tariffs through PCWs has its advantages like educating consumers and driving market engagement, the disadvantages must also be considered in order to provide a clearer picture ahead of concrete decisions being made and implemented. We acknowledge the important role PCWs play in educating and providing customers with a platform to seek out independent information. However, balancing the need to be transparent with remaining commercially viable means that a PCW is not always operating in consumer's best interests.

Amending the PCW accreditation framework poses a number of risks and potential unintended consequences and may support third-party needs while overlooking the needs of consumers.

Since the derogation granted to PCWs by the CRU on 28 September 2022 PCWs need no longer display all data and tariffs on the market to offer the customer a full picture of the best prices available to them. This derogation has allowed PCWs to circumvent offering a "whole of market" view and currently only display offers where a supplier is advertising on their platform. This poses a transparency issue to consumers around available tariffs as they are not all present on PCWs due to questions being pre-selected, in addition to misleading language around the selection criteria. We note from the CEP that there is an alternative for the NRA to operate as the PCW and this might be more appropriate to ensure independence and impartiality.

Further to the derogation issued to PCWs on 28 September 2022, if PCWs were to receive additional market powers, and the accreditation framework amended as envisaged in this consultation, there may be a need for an enhanced compliance regime to ensure that PCWs employ the same rigor as suppliers when it comes to Codes of Practice and standards of care. We therefore believe a consultation on the overall framework should be initiated to provide clarity to the energy market going

forward. This will further strengthen and ensure that an adequate service offering as per Directive (EU) 2019/944 Article 14 Comparison Tools[1] is in place.

## 2.2 Considerations & Alternative Measures to Incentivise ToU Uptake

### 2.2.1 Challenges to Smart Adoption

Energia believe it would be beneficial for an industry-wide awareness campaign led by ESBN/CRU/DECC and supported by suppliers to further educate consumers on what a smart meter can offer them and how it will benefit the wider economy. Consumer behaviour centres around control and being in control particularly when it comes to smart products, be it meters, ToU tariffs, dynamic tariffs or digitisation. This control can only be exercised through knowledge and understanding. Consumers however do not share this sentiment and are afraid of being overcharged if they install a smart meter, how their data is going to be used and accessed etc. Negative press and media also greatly impact consumer perception of what "smart" capabilities are and the benefits of these.

There are also other challenges to selling smart that need to be considered which Energia has come across. For example, consumers fear ToU tariffs as they believe their bills will increase due to being unable to change their day-to-day habits. The fear also lies around peak-times as most people say they cannot adjust to using energy outside of these time as their energy consumption between 5-7pm is dictated by school and/or work hours. Another challenge to selling smart is that most customers do not understand smart meters. Important to note is that it is difficult for suppliers to get consumers to change their habits over a phone call. These sentiments are also shared by consumers in the United Kingdom (UK) where the roll out of smart meters began in 2008 with only 57% of smart meters installed as of yet. UK industry, too, call out the need for additional policy measures as retail suppliers can do little in terms of specific incentives, they can offer people to incentivise the uptake of smart meters and ultimately ToU tariffs.

### 2.2.2 Engaging the Consumer

Education resides as an overarching element to be given consideration. There is no silver bullet but a combination of measures that will lead to an increase in the uptake of ToU tariffs. A 2019 IRENA Report on ToU tariffs, identified several important elements to be implemented in order for consumers to take up ToU tariffs. The report echoes that consumers should be adequately educated and informed about the opportunities and risks of such tariffs in order for uptake to increase. Consumers should also be involved in the design of the tariffs (e.g. through public consultation) which will allow for greater acceptance of these[2][3]. With knowledge comes power, and consumers need to understand that EVs, smart meters, ToU tariffs, dynamic tariffs,

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[1] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A02019L0944-20220623

[2]https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2019/Feb/IRENA_Innovation_ToU_tariffs_2019.pdf

[3]https://www.ei.se/download/18.5b0e2a2a176843ef8f582/1608542148119/Measures-to-increase-demand-side-flexibility-in-the-Swedish-electricity-system-Ei-R2017-10.pdf

battery storage, solar photovoltaics etc., are not separate products but should be seen to work in tandem with one another. A communication strategy promoting these concepts as being inter-related could increase consumer engagement across all these technologies and act as either an enabler or a driver for adoption (e.g. a consumer who purchases an EV would be more likely to adopt a smart meter and subsequently sign-up to a ToU tariff). Going forward, these technologies should be viewed by consumers as offering flexible consumption and as having the greatest positive impact towards meeting our 2050 net-zero targets[4].

### *2.2.3 Smart First Approach*

Important to note, and perhaps a better approach to increasing the uptake of ToU tariffs should be provided through a glide path whereby customers who have a smart meter installed are automatically placed on a 24-hour Standard ToU tariff but provided with an 'opt-out' option and the ability to switch between ToU tariffs to suit their particular circumstances (i.e. if they own an EV, if they have solar PV installed etc.). This way the customer will automatically be granted access to consumption graphs and simplified data analysis. This will support and increase engagement with their consumption habits and patterns. Access to and visualisation of data based on behaviour patterns has been seen to support behavioural change in those who use a fitness tracker in a study of 50-long term wearable users. The digital component of the wearable provides the user with data analytics and displays this information either on the wearable itself or on another device using designated software. In essence, a wearable provides the user with details about their past and current performance, which allows users to view their progress and identify where improvements can be made thus, leading them to adjust their behaviour[5]. These views are also consistent with a study done by the University of Sydney in 2020[6] and in UCLA[7] which found that those who track and see visual representations of their activity are more active.

### *2.2.4 Network Tariffs*

Energia believe that if the CRU wants to incentivise the ToU tariff uptake, offering financial incentivises via greater differentiation of network tariff (i.e. Use of System) time bands. While the wholesale market has a role to play in giving the correct signals to customers, suppliers, too, play their role by reflecting these wholesale costs in the price that customers pay for their electricity supply at different times of the day. Network tariffs which make up a significant component of the electricity cost must also provide the right signals to customers. We believe enhanced sculpting and differentiation of the network tariffs at different times of the day and the week, would

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[4] https://www.sciencedirect.com/science/article/abs/pii/S1364032120309849

[5]https://link.springer.com/article/10.1007/s12525-021-00474-3#:~:text=Going%20beyond%20self%2Dmonitoring%2C%20wearables,social%20support%20(Lyons%20et%20al.

[6]https://www.sydney.edu.au/news-opinion/news/2020/12/22/physical-activity-levels-increased-by-smartphone-apps-and-fitnes.html

[7]https://www.uclahealth.org/news/are-fitness-trackers-enough-to-keep-you-motivated-and-turn-exercise-into-a-habit

allow greater price incentives to be passed onto customers. For example, in addition to Day/Night/Peak in network tariffs, other time bands such as weekends should be considered. This solution would support achieving a greater shift in behavioural consumption. Energia welcomed the Network Tariffs 2022/23 decision on adopting greater differentiating of ToU time bands, for example, DG1/2 customer tariffs in 2022/23, saw a 10% difference between Peak vs Day Off Peak. Greater sculpting of these network tariff would facilitate the right incentives to be passed onto customers which would facilitate greater ToU uptake.

### *2.2.5 Real Time Data*

Having access to real time data will allow for suppliers to provide meaningful data and feedback to consumers who for example own EVs, or who have heat pumps and microgeneration installed as these customers will be better able to shift loads. Realtime data in the short term is imperative and should be prioritised. Through a smart first approach consumers will have access to their data to empower them with insights so that they can change behaviours and become active participants in the energy transition.

T Accessing real time data should be accelerated as part of the NSMP however, unvalidated near real-time consumption / export data from smart meters will only be made available to customers in Phase 3 of the NSMP. This work stream should be commenced now in earnest, paralleling the workstream with Phase 2 activities. The absence of this data hinders the consumers ability to understand their consumption to take real time action and leverage real benefits of smart.

### *2.2.6 2030 and Beyond*

Lastly, once the transition has occurred, most people will be using energy at high renewables penetration on the system. The incentivisation to switch to times of high renewables will no longer exist as the load profile becomes flattened. Energia believe that there needs to be a plan of action or outlook beyond 2030.

# 3 Consultation Questions

### *3.1.1 The CRU is proposing to amend the PCW accreditation framework to allow consumers to upload their smart meter data (obtained as a HDF via the ESBN Customer Portal) to receive a price comparison based on their actual historical electricity consumption. Do you agree with this approach? If not, why not?*

Energia feel the promotion of smart through any means is a positive thing and while we understand that the incentivisation of ToU tariffs through PCWs educates consumers and improves market engagement, caution needs to be taken when granting additional market powers to unlicensed parties such as PCWs. The amendment of the accreditation framework would change the relationship between the PCW and the consumer, and we believe this relationship should be more regulated.

Amending of the framework poses a number of risks and supports third-party needs rather than those of the customers.

In theory PCWs must display all data and tariffs on the market to offer the customer a full picture of the best prices available to them, yet in reality PCWs circumvent this requirement and only show customers the best tariff options of the suppliers they conduct business with (i.e. the supplier that offers the better commission deal to the PCW) by default (applicable to Bonkers.ie and Switcher.ie who have pre-selected questions). According to the Directive (EU) 2019/944 Article 14 Comparison Tools[8] "Members States shall ensure that at least household customers […] have access, free of charge, to at least one tool comparing the offers of suppliers […]. They shall be independent, clearly disclose their owners, set out objective comparison criteria, use plain language, accessible to people with disabilities, etc."

Energia feel the CRU should consider the accessibility factor mentioned in Article 14 of EU Directive 2019/944 around those customers that are not technologically savvy. This cohort would be excluded from being able to avail of such a service if it were implemented resulting in a solution that will not benefit all consumers who wish to avail of a more personalised service that PCWs are to provide.

Ahead of the Smart Meter Data Access Code going live, it is imperative that PCWs are clear and transparent in their privacy policy with customers around how data and information gathered will be managed. They should also have a privacy statement that reflects this. Energia believe PCWs should be subject to GDPR rules and regulations as suppliers are under Articles 6 and 40, whilst also taking into consideration the security element of handling personal consumption data. Energia firmly believe that the data provided by the consumers to PCWs should be used to provide a personalised ToU tariff offering and not to be used for trend monitoring and analysis.

Furthermore, if PCWs were to receive additional market powers, and the accreditation framework amended an enhanced compliance regime would be required to ensure that PCWs employ the same rigor as suppliers when it comes to Codes of Practice and standards of care.

### 3.1.2 *The CRU is proposing not to put any restrictions on the minimum period of time that needs to be contained in smart meter consumption data that consumers can upload to the PCW. However, we propose that a warning message be included where consumers have included less than a year of data. Do you agree with this approach? If not, why not?*

Energia believe a minimum time period to be contained in smart meter consumption data consumers can upload to the PCW needs to be put in place. Without this, there may be a risk of too discrepancy and not enough accuracy of consumption, if at all. Moreover, how could the quoted figure be credible or reliable if there is data missing or if there is a need for additional inputs. Clear caveats will need to be made to customers around the price quotes in order to adequately manage customer expectations in circumstances where insufficient data has been provided.

Inaccurate quotes, which a supplier, cannot stand over will result in a negative customers experience if they proceed with using the comparison tool. Such a

[8] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A02019L0944-20220623

negative customer experience is highly likely to drive an increase in the number of complaints, if discrepancies arise between PCW quotes and actual customer consumption. Energia believes the CRU should also take into consideration that in most scenarios, due to missing information, PCWs will use load profiles (i.e. as per Option 1 outlined in the consultation: demand weighted averaging) rather than offer personalised quotes.

### *3.1.3 Is there anything else CRU should consider with regards to this matter?*

The potential unintended consequences should be considered where there is an element of doubt around the accuracy of quotes given to consumers. As an energy supplier, giving customers a wrong interpretation would be detrimental from a business perspective and does not act in the best interests of either consumers or energy suppliers. Furthermore, this could cause reputational damage to the smart metering programme, which is gathering momentum among the population albeit slowly. Where complaints arise due to consumer dissatisfaction with the product they selected, Energia believe PCWs should be responsible for handling these Suppliers cannot be held responsible for the product a customer has selected.

Because Option 1 (demand weighted averaging) assumes consumers will behave the same and is not reflective of predicted behavioural changes, Energia feel the CRU should further consider the seasonality in usage when comparing autumn / winter and spring / summer periods. If consumption was based either on a short time period or without taking into consideration the seasonality criteria, the customer will not be offered an accurate quote.

Furthermore, consideration should be given to scenarios where a customer is moving house and would like access to their consumption data from the previous property. Energia feel that this should be clearly caveated as the property may have different characteristics that will impact behaviour patterns.

### *3.1.4 In case a consumer submits a HDF containing periods of missing data, the CRU is proposing that the PCW takes the following actions:*

- ***If the missing data accounts for less than 1% of the total dataset: the PCW must use the most recent ESBN load profile and calculate an estimate for the consumption during the missing period.***
- ***If the missing data accounts for 1% or more of the total dataset: the PCW must inform the consumer that there is missing data, include the percentage of missing data, and ask if they wish to continue with the price comparison using an estimate for the missing data, as***

***outlined above.***

***Do you agree with this approach? If not, why not?***

Energia supports the proposed approach and believe that the methodology should be clearly outlined as proposed above. Where assumptions or replacement data is used, this must be clearly highlighted and caveated to customers and where there is missing data, the impact of this should be clearly communicated to them.

### *3.1.5 Is there anything else CRU should consider with regards to this matter?*

Energia has no further considerations to add.

### *3.1.6 The CRU would be interested in hearing whether respondents believe there is added value or not in allowing PCWs to ask consumers additional questions to identify their consumption behaviour, and tailor price comparisons. For example, whether a consumer has an Electric Vehicle.*

Energia believe that allowing PCWs to ask additional standardised questions is sensible and will allow for an offer to customers that better meets their needs (i.e. an offer based on consumption, but which also considers if they have an EV/heat pump/microgeneration etc.). Energia feel that there is no particular need for extensive questions to be asked by PCWs that go beyond what is required to compare one tariff to another. Energia also believe that the CRU should recognise that it may not be possible to incorporate everything from the offset with regards to additional questions, if employing this approach.

***If you believe there is added value in this approach, what guidelines, if any, do you believe the CRU should implement to ensure a minimum standard across PCWs?***

### *3.1.7 Energia feel that the CRU needs to recognise that adding more variables would cause confusion among consumers. We emphasize the importance of standardised questions, so there is consistency across all PCWs. This would look to minimise any major discrepancies in quotes offered to consumer. The CRU proposes to require PCWs to implement the functionality to allow consumers to upload their smart meter consumption data (via HDF) from 1 January 2024. Do you agree with this approach? If not, why not?*

Energia believe it is important to have an ambitious timeline to work towards to accelerate Smart. However, consideration to system requirements and consulting with industry should be carried out before implementing such a functionality to ensure that it will be fit for purpose and ready for use once it goes live.

### 3.1.8 *Are there any other issues that you believe the CRU should take into consideration with regards to the timeline?*

With regards to go-live from 1 January 2024, Energia believe the CRU should proceed only if appropriate testing has been conducted prior to the delivery of the functionality. The tool should be delivered in its entirety with a proposed testing approach and approval of the calculation engine completed. The functionality should also be consistent across all PCWs.

Energia understand the importance of encouraging the uptake of ToU tariffs but implementing the functionality without taking into consideration the above, could impact ToU tariff uptake negatively. Accuracy is of utmost importance and Energia believe there will be a need for more regular auditing to be conducted (i.e. more than once a year) with a robust and clear complaints process in place.

### 3.1.9 *The CRU proposes to amend the PCW accreditation framework to allow consumers to access price comparisons for microgeneration export tariffs between suppliers. It proposes consumers should be able to do this in one of two ways, either by submitting their actual (historical) export volume, or by submitting their deemed calculation. Do you agree with this approach? If not, why not?*

Energia generally welcome this approach. However, export tariffs cannot be compared in isolation to import tariffs. Currently in Ireland consumers have one supplier for both import and export. These tariffs are bundled offers, the customer could be disadvantaged if they look at both export and import tariffs separately. Therefore, when presenting tariffs, the import and export must be presented to customers seeking to make a price comparison. It needs to be as clear as possible to the consumer what they are comparing and where additional terms and conditions may be associated with accessing a tariff.

### 3.1.10 *Are there any other issues that you believe the CRU should take into consideration with regards to this functionality?*

Energia has no further considerations to add.

### 3.1.11 *The CRU proposes to extend the requirement for an EAB to all tariffs available on the market, including time of use tariffs. Do you agree with this approach? If not, why not?*

Energia believe that the extension of an EAB to all tariffs would not be suitable for ToU tariffs as you cannot compare like for like. Energia's experience, is that consumers enquire about unit rates and not the EAB.

The EAB, at present, indicates past performance and assumes consumer behaviour does not change, while the objective of a ToU tariff is about adaptation and changes in consumption behaviour in the future. To this end an EAB would be considered obsolete and should not be used as a benchmark to measure consumption when it is based on past consumption.

Energia feel that the EAB should not be used as a comparison of choice. The key determining factor of an EAB is based on when consumers use their energy. Yet if a

supplier would offer EV tariffs, free Saturdays / weekends, or daytime products, an EAB would therefore be required for each scenario.

Furthermore, when delivering such a service to the mass market, it needs to be simple and clear, and offering an EAB for all tariffs presents too many variables. Energia is also of the opinion that an EAB, as proposed at present, would stifle innovation in the market and may limit switching while pushing consumers onto legacy products which defeats the purpose of ToU tariff uptake.

Energia believe an EAB should not be mandatory going forward, however if a supplier does provide an EAB or alternative annual estimation the approach presented in Option 1 should be adopted by suppliers. This methodology could be reviewed again in the future once more data becomes available.

### *3.1.12 The CRU proposes to implement an EAB for all time of use tariffs from 1 January 2024. Do you agree with this timeline? If not, why not?*

Energia believe it important is to have an ambitious timeline to work towards to accelerate Smart. Energia believe that a reasonable and realistic timeline for any systemisation is required to ensure this is delivered to a high standard and to provide a fit for purpose and ready to use solution once it goes live.

Delivery of EABs for all tariffs from 1 January 2024 will not be possible as only load profiles for MCC16s are currently available. We would need load profiles for MCC12s in order to ensure this is delivered in a manner using best available information and insights. Energia feel we would need at least until January 2025 to deliver this if it is mandated.

### *3.1.13 With regards to the methodology for calculating an EAB for all time of use tariffs, the CRU proposes to use the demand-weighted approach, which is the same that is currently used for the Standard Smart Tariff and Day/Night tariff. Do you agree with this approach? If not, why not?*

While Energia agree with the CRU's preferred choice of using the demand-weighted averaging calculation methodology approach, taking into consideration the timely confirmation of load profile updates and clearly set methodology, Energia also believe is it not the correct approach. Basing the EAB calculation on time-weighted averaging which is currently employed for the SST will stifle innovation. If a supplier was to introduce a life-style product (e.g. Work from Home), an accurate estimate could not be provided to the customer unless the supplier had access to the consumer's specific usage, which again going forward may be subject to change. Thus, providing this type of EAB does not promote behavioural change as the EAB provides consumption information based on past behaviour and assumes this will not change in the future. Seasonal profiles should also be taken into consideration when calculating the EAB. Electricity demand, in Ireland, is much higher during winter months rather than summer months. These divergences in household electricity demand impacts the EAB and should not be overlooked if it is to be applied to ToU tariffs.

### *3.1.14 Are there any other issues that you believe the CRU should*

***take into consideration with regards to implementing an EAB for all time of use tariffs?***

Energia believe that there needs to be caveating and clear and transparent information around the EAB calculation for customers. Energia would also like to stress that an EAB based on any averaging approach will not be a successfully viable solution going forward. There are too many variables that need to be taken into account. The EAB will need to be individually calculated and subsequently customised to a customer's own profile. Energia also feel that microgeneration should also be included in EABs as part of the calculation as more consumers are becoming prosumers. Adequate time should be provided to allow the implementation of the EAB for all ToU tariffs, should this approach proceed.

To that effect, as the energy transition is changing, particularly with the adoption of increased electrification, the quantum and how energy is consumed in the home, Energia would also like the CRU to take into consideration what else can impact the EAB (i.e. BER ratings, living in an apartment versus a 3-bedroom house, the different size of EVs, batteries, microgeneration etc.).

### *3.1.15 The CRU proposes to increase the limit on the maximum number of time of use tariffs from four to eight from 1 October 2023. Do you agree with this approach? If not, why not?*

Energia welcome the CRU's acknowledgement that regardless of the National Smart Metering Programme (NSMP) delayed roll-out with regards to Phase II, it is timely to allow suppliers to innovate further and better customise additional ToU offers for customers.

The notions of smart, smart meters and subsequently ToU tariffs has been publicised across the Island of Ireland for the past two years, with most consumers having some knowledge of what these terms mean. However, additional efforts and work on educating the population further is still needed to ensure customer understand the benefits of smart. Energia's position, in previous consultations, was that the limit of four ToU offering was arbitrary and unsupported by evidence. Energia's view was that in order to engage the consumer, suppliers needed to be able to innovate and provide suitable products whilst taking into consideration the ever-changing energy landscape during the NSMP roll-out. We welcome this proposed initiative to support the uptake of ToU tariffs.

### *3.1.16 The CRU proposes to end the limit on the maximum number of time of use tariffs from 1 April 2025. Do you agree with this approach? If not, why not?*

Energia support the approach of ending the limit on the maximum number of ToU tariffs from 1 April 2025. This will allow for increased clarity for both consumers and suppliers around both smart meters and smart tariff options on the market and supports the longer-term design of innovative tariffs.

## 3.2 Call for Evidence

### 3.2.1 CRU would welcome any views on whether respondents consider it appropriate to schedule a review on the structure of the Standard Smart Tariff ahead of the completion of Phase 2 of the NSMP (currently scheduled for the second half of 2024).

Energia believe that the *structure* of the SST is still fit for purpose. Changing peak-times may result in the re-education of consumers around times and is an issue for Networks to take into consideration and debate. A review at this stage may be too early to conduct.

### 3.2.2 CRU would also welcome views from respondents on which issues should be considered in such a review. Respondents can specifically focus on the following questions, or provide their own views:

#### a) Is the Standard Smart Tariff achieving its purpose to be an easy to understand 'entry-point' to time of use tariffs for consumers?

In Energia's experience, the SST does not necessarily constitute an entry-point to ToU tariff uptake for consumers as peak-time rates generally deter consumers from choosing such a tariff, therefore the SST is quite a blunt instrument to encourage consumers to take up ToU tariffs. From an Energia perspective, a 24-hour Standard Smart replica tariff could be an easier 'entry point' or as mentioned above in 2.2.2 a glide path that offers consumers a like for like whilst providing consumers with the benefits of smart. Once empowered with the data and insights on their behaviour the customer can shift to a ToU. To that effect, Energia has seen an increase in the uptake in the 24-hour Standard Smart replica tariff.

#### b) Do you have any concerns or recommendations in relation to the Day/Night/Peak structure of the Standard Smart Tariff, including the hours assigned to each time band?

Energia believe that, if the CRU wants to incentivise the ToU tariff uptake, perhaps offering financial incentivises for the other time bands (e.g. Day/Night/Peak) would be a helpful solution to achieving a shift in behavioural consumption. For example, the Network Tariffs 2022/23 decision saw a greater differentiating of time bands, and we would welcome greater sculpting of the network tariffs, which could then be passed onto customers.

#### c) In light of the proposed measure to extend the maximum number of time of use tariffs for each supplier from four to eight, do you see a continued need for the Standard Smart Tariff?

Energia believe that while the SST is not an 'entry point' to ToU tariffs, it is still necessary for suppliers to be able to offer the SST to customers with low CTF

scores. MCC16 will be more suitable for these customers and allow them to benefit from a ToU tariff.

***d) Are there any other issues related to the Standard Smart Tariff you believe the CRU should take into consideration in a future review?***

Going forward, Energia consider that this should be reviewed periodically. An aspect to be taken into consideration when conducting the review would be to understand whether, for example, the peak /off-peak times are still suitable under ToU.

### *3.2.3 CRU would welcome any additional suggestions to incentivise the uptake of time of use tariffs.*

Given that smart meter installations have now reached over 1.36 million[9], it is an opportunity to review the communications and engagement strategy and see wherein gaps exist.

Energia see a need for an industry wide campaign led by the CRU/ESBN/DECC with simple and clear messaging around the benefits of ToU tariffs including environmental impacts while promoting the savings available from ToU tariffs if behaviour is tweaked, which suppliers in turn could support. For example, 57% of consumers in the UK have smart meters installed which equates to an average of £6 billion worth of savings for both consumers and suppliers. This educational piece needs to promote the benefits of smart and offer consumers the 'full picture'.

Other campaign examples could include billboards and full-page newspaper advertisements as used in the UK when they started rolling out their NSMP. Campaigns should also seek to leverage climate change and 'thinking of future generations' when advertising ToU tariffs along with the benefits of these. Energia feel that we should go back to basics around educating consumers and that the involvement of PCWs in incentivising the uptake of ToU tariffs may be too complicated and may hinder switching, especially if customers are not transparently presented with all available options when using a PCW.

Energia believe that there is an opportunity for further incentivisation of ToU uptake if linked to microgeneration. This approach should be considered as part of the enduring solution design. Consumers who want to avail of microgeneration payments should not only have a smart meter installed but also sign-up to a ToU tariff.

[9] Industry Liaison Group v2.0 27/07/2023 Slide Pack

CRU

11 August 2023

Emailed to: energydemandstrategy@cru.ie

## RE: ESBN Scenarios for 15-20% Flexible System Demand – National Networks, Local Connections Programme Paper

Energy Storage Ireland (ESI) is an industry representative association comprised of members who are active in the development of energy storage in Ireland and Northern Ireland. Our aims are to promote the benefits of energy storage in meeting our future decarbonisation goals and to work with policy makers in facilitating the development of energy storage on the island of Ireland. We represent 58 companies from across the energy storage supply chain.

Energy storage will play a significant role in facilitating higher levels of renewable generation on the power system and in helping achieve national renewable electricity targets. Storage systems can act in the energy, capacity and system services markets to deliver a wide range of benefits such as wholesale energy price reductions, reduced CO2 emissions and flexible system support services to help manage the grid with higher levels of renewables.

We would like to thank the CRU and ESBN for the opportunity to reply to the "Scenarios for 15-20% Flexible System Demand – National Networks, Local Connections Programme" Paper.

## Summary

ESI welcomes ESBN's ambition and commitment in developing the scenarios for 15-20% flexible system demand. We appreciate the recognition of the important role that storage plays in meeting our flexibility targets and the analysis that ESBN have conducted.

We agree that the central scenario outlined provides the most balanced approach across a portfolio of technologies/options that can deliver the flexible demand target. Storage is an adaptable technology that can be deployed relatively quickly to support the flexibility and decarbonization aims under the Climate Action Plan. ESI's pipeline analysis as of the end of 2022 shows that there are over 4 GW of storage projects in Ireland with planning consent.

Existing and new sites can adapt their configuration and business cases as markets develop and investment signals emerge.

We also agree with ESBN's assessment that existing markets and revenue streams available will not deliver investment in the necessary medium to long-duration storage identified in this paper. We fully support the need for longer-term investment frameworks to incentivize the deployment of energy storage technologies that can deliver value to the system and to consumers.

ESBN have carried out analysis on the current energy storage market and the range of technologies available. We support ESBN's position to carry out a technology neutral auction that provides a viable route to market for commercial developers to invest in multi-hour duration storage. It is possible that this auction process could set a minimum level of criteria to compete e.g., technology readiness level, planning status, deliverability etc. and also take into account value based assessments such as carbon abatement, congestion management, renewable dispatch down avoided etc. in addition to bid cost. This should allow storage technologies of multiple durations to compete with the auction winners being those with the greatest delta between overall value and cost. This should help ensure the process clears the technologies which have the most long-term value to the system and consumers.

In May 2022, ESI and Baringa published 'Game Changer' a report showing the benefits that various durations of energy storage can bring to the system and to end consumers on the island of Ireland by 2030.[1] The key findings from this study are as follows:

- By participating in the Irish day-ahead energy market, energy storage can reduce day-ahead carbon emissions by 50% by using long-duration storage technologies. This makes a material contribution to meeting ambitious 2030 power sector decarbonisation goals and carbon budget goals.

- Strategic deployment of energy storage in transmission constrained regions of the network reduces the dispatch-down of renewable generation from constraints without the need for network reinforcement, unlocking additional carbon savings.

- By contributing to security of supply, helping to support renewable capacity, and displacing fossil fuels in the balancing market, energy storage can deliver a net saving to end consumers in Ireland of up to €85m per year.

[1] https://www.energystorageireland.com/wp-content/uploads/2022/05/GameChanger-ESI-Report-May2022-Web-1.pdf

- These benefits are additional to the carbon, renewable curtailment, and end consumer savings offered by energy storage through the provision of zero-carbon system services.

- Energy storage helps the integration of renewables at all stages by ensuring that generation is not wasted; reducing oversupply by up to 60%, constraint volumes by up to 90%, and curtailment by 100%.

As outlined above, energy storage can provide a variety of benefits but it is important to ensure that market signals are developed that maximize the value of energy storage and do not lead to inefficient outcomes. In order for the most beneficial scenario for the system to be successfully realized, a number of points need to be considered that we outline in more detail in the following sections:

- The wider context of the 15-20% flexibility target and Ireland's Climate Action Plan;
- The 2025 timeline;
- TSO alignment;
- Principles for a procurement framework/route to market for medium to long term storage;
- Other Market Design Considerations;
- Behind the Meter Storage

## The wider context of the 15-20% flexibility target and Ireland's Climate Action Plan

As the target for increased flexibility is set out within Irelands Climate Action Plan 2023 (CAP 23), this should be progressed within the wider aim of cost effective decarbonization for Ireland. As noted in the paper the aim of flexible demand should be to enable reductions in carbon emissions and accommodate zero-carbon demand growth.

While the flexible demand target for 2025 is based on a percentage of peak demand the paper does note that there is a carbon abatement target linked to flexibility and that this will require in excess of 3 TWh of flexibility. It is not clear in the paper how the different flexibility options contribute to this carbon abatement target. The benefits of demand flexibility should be considered in terms of MWh as well as MW. It can be assumed that the longer the duration of storage capability the greater the potential carbon saving, as demonstrated in the Game Changer report. As the paper acknowledges, storage can be a very useful tool for DSO balancing and mitigating renewable dispatch down in areas of the grid. However, the paper also references some independent modelling that storage can contribute to emissions in the short-term but the analysis behind this is not provided. Without seeing this we cannot know

what capacity, duration, efficiency or locations were assumed for the energy storage considered. This highlights the points further on in our response about the importance of designing a procurement framework that maximizes the value of energy storage to the system and to consumers.

It should be made clear what this plan is intended to achieve so the most effective quantities and capabilities of energy storage can be incentivized. For instance, the use case and technology of storage could be very different whether needed to solve distribution system congestion issues or if it is needed to solve broader system level oversupply/dispatch down issues.

## 2025 Timeline

In order to deliver effective solutions to enable further emission reductions in the period 2025 to 2035, we need to send policy and market signals now to develop the appropriate technologies, and to also look at the longer term beyond 2025. In order to ensure long term investment in medium to long duration storage, it is important that post-2025 opportunities are also outlined and the incentivization of energy storage is considered with longer-term goals in mind. For instance, the demand flexibility target increases for 2030 (both MW and MWh) and our carbon budget allowance will decrease simultaneously so the framework should incentivize the quantities and capabilities of energy storage needed for 2030 and beyond that can provide the needed flexibility and contribute to carbon emission reductions.

At the same time, we note that 2025 is only around the corner, with potential calls for competition at the end of 2023. We appreciate ESBN's ambition in having a route to market for medium to long-duration storage up and running as soon as possible. We would emphasize that adequate resourcing needs to be in place in order for this to be completed successfully, with the procurement design outlined and consulted on and that industry involvement is facilitated along the way.

## TSO Alignment

While we greatly welcome ESBN's work in progressing a route to market for medium duration storage, it should be ensured that the proposed approach is aligned with the TSO in order to maintain a consistent approach to the treatment of storage in ROI and that system benefits can be maximised. We assume that the demand flexibility target applies at a system level and so it is relevant at both transmission and distribution level. Therefore, we stress the importance of a joined-up approach to delivering on this target. We note that the TSO will also be developing its approach to long-duration storage (as outlined in Shaping our Electricity Future

V1.1), so it is vital that the TSO and the DSO communicate throughout this process in order to maintain cohesion.

## Principles for a procurement framework/route to market for medium-long term storage

ESI has developed a position paper on a procurement framework for long-duration energy storage which has been shared with the CRU and ESBN.[2] We have highlighted some specific sections from this paper below.

### Changing Nature of the System

It is critically important when considering the market framework under which power generation technologies and supporting system services (including storage) are deployed, to consider the changing nature of the system. As we transition to 80% RES-E and beyond, we are moving from a system on which the largest cost component is fuel, to one where the largest cost component is capital infrastructure. Figure 2 below provides a crude illustration of the potential change in the underlying cost of providing sufficient generation capacity and fuel to meet demand in a 40% RES-E system vs an 80% RES-E system. It is noteworthy that only the fuel element of this cost is capable of responding in an economic way to short term energy market price signals i.e. through the burning of more or less fuel. The capital infrastructure component is incapable of responding to these signals economically after it has built.

[2] https://www.energystorageireland.com/wp-content/uploads/2022/11/ESI-Position-Paper-on-a-Procurement-Framework-for-Long-Duration-Energy-Storage.pdf

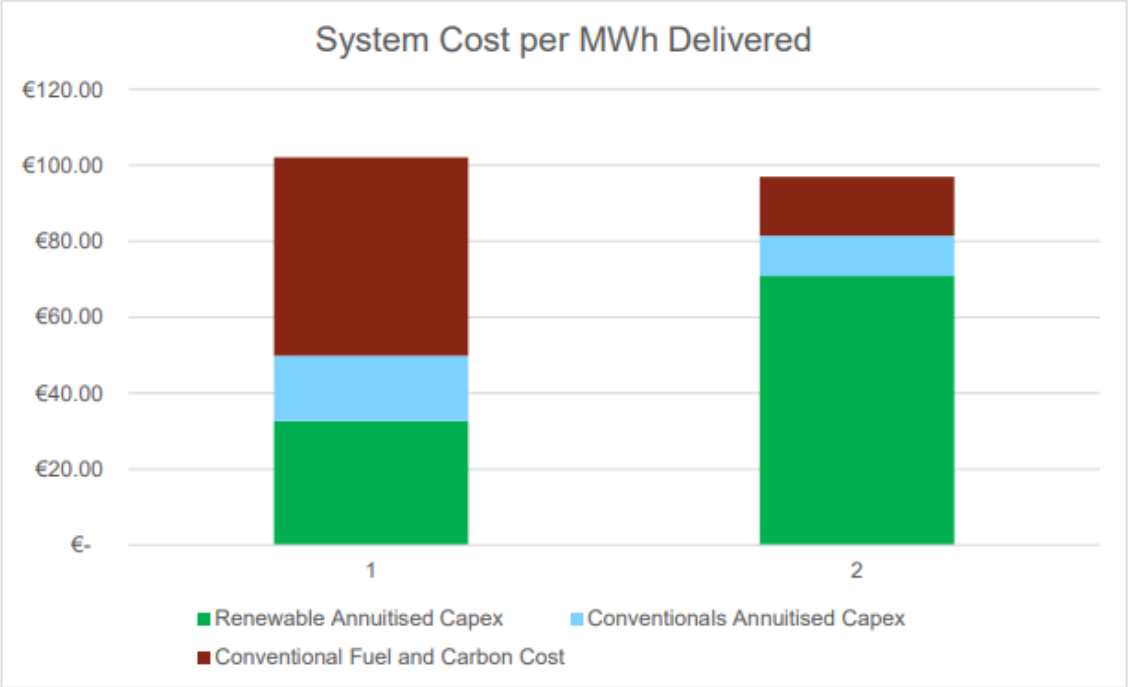



Illustration of Capital Cost Components vs Variable Operating Cost Components on a (1) 40% RES-E system, (2) an 80% RES-E system (crude estimate – for illustration purposes only)

On the basis that the clear global and national imperative is to decarbonise the grid as quickly as possible and at least cost, the following key questions emerge:

- Which technologies should be deployed?
- What market framework / process should they be deployed under?

## How to Compare Different Storage Technologies at a System Level?

Existing and new LDES technologies have very different combinations of energy capacity, duration, return trip efficiency (RTE), asset lives, capital costs and fixed operating costs. Each technology has a different floor revenue requirement in order to meet a reasonable investment hurdle rate. Under any new storage procurement framework how do policy makers compare these technologies and decide which should clear? e.g. Technology A can provide 24hr discharge, 65% RTE, and is located in a region with existing network constraints of 9% and requires a guaranteed floor revenue of €50k per MW per annum to build. Technology B can provide 6hr duration, 80% RTE, is located in an area with network constraints of 3% and requires €40k per MW per annum to build. Which of these two technologies should be procured? On what basis do you make that decision?

ESI would generally take a technology agnostic approach and believes that ensuring the creation of market frameworks that reward the delivery of critical services is important. The parameters should be defined on the basis of system need, allowing the most economically viable and preferably lower/zero carbon technologies to win, ensuring economic efficiency for both the System Operators and consumers.

## How should Locational Benefits & Interactions with Renewable Generation and Demand be Considered?

Intuitively there are interactions between the cost of available renewable energy in different locations, the level of network constraints and the value of storage services of different durations. For example, If there is a renewable generation resource with a very low cost of available energy but facing high network constraints, it is likely that longer duration storage services deployed in that location will provide greater system value, compared with the same technology deployed in an area facing demand side congestion issues, or in areas with low renewable constraints. Should policy makers be willing to procure LDES at a different price in areas of high renewable transmission constraints? If so, what should inform that decision? For example, consented wind energy projects exist with an underlying LCoE based on availability of €50.00 in the same region as technology A above. Wind energy projects in the same region as technology B have an LCoE based on available energy of €80.00. How should these interact with the storage procurement process?

Similarly, there are likely to be interactions with locational applications. E.g. In areas of high demand (Dublin), the demand side transmission congestion issues are likely to be of shorter duration. In these locations, intuitively, storage technologies of shorter durations and higher efficiencies are likely to be more optimal. Again, how should policy makers compare bids and decide what clears where?

Finally, any storage solution which targets a network constraint should be evaluated against two remaining options to deal with this constraint:

1. Building new grid infrastructure to remove all or part of the constraint, noting timelines for deployment need to be included in the evaluation. It is also noted that other jurisdictions, notably GB, are looking at encouraging System Operators to consider flexible alternatives to new grid infrastructure to see if they are cost/time effective.
2. Taking no action to alleviate the constraint and accepting that the costs associated are either built into future renewable energy auction bids or are compensated for by the System Operator.

## Remuneration Gaps / Revenue Certainty

It seems clear that existing market systems don't fully remunerate storage for the services that they provide. Some examples include:

- Network congestion management– no product or incentive exists.
- Carbon abatement (energy storage is a source of clean dispatchable capacity that displaces fossil fuels)
- Managing renewable oversupply and contributing to RES-E targets.
- Inequitable treatment in the energy market i.e. no ability to bid in negative PN or to be included fairly in scheduling and dispatch.

With the exception of capacity market revenues, the majority of available revenues come with limited medium to long term certainty:

- DS3 tariff arrangements end in 2024. No detailed design yet on future arrangements but short-term auctions are a key feature. Opportunities for long-term revenue certainty may be limited
- Energy Arbitrage – energy market revenues are volatile and difficult to forecast with accuracy
- Capacity - does allow for 10-year contracts but structural issues disadvantage long duration storage e.g. de-rating factors do not recognize LDES and price caps are based on new fossil fuel plant. The Capacity Market as currently structured will not make up the 'missing money' needed to drive investment in LDES.

These uncertainties result in higher investment hurdle rates and makes it very challenging to develop an investable business case for LDES assets.

## Operational Signals vs Investment Signals

Existing market structures are reasonably good at incentivizing appropriate / optimal operation of constructed assets but are not good at sending investment signals to the new low to zero marginal cost assets needed to decarbonize the power system.

How should policy makers provide the needed revenue certainty to new LDES assets without removing / reducing the effectiveness of short-term price signals driving optimal operation of assets? E.g. If you provide LDES with a simple Contract for Difference structure, where is the incentive to trade optimally when any revenue above the strike price will be handed back?

## Proposed Principles of the LDES Procurement Framework

In order to develop a successful route to market for medium to long term storage, a number of principles should be incorporated to ensure a transparent and effective mechanism:

- The LDES procurement framework should be technology agnostic and support investment in an appropriate broad portfolio of storage technologies and capabilities that meet the needs of the system and national decarbonisation objectives.
- The procurement process should maximise long term certainty for a floor revenue for winning technologies. This will reduce investment hurdle rates enabling easier, greater and more cost effective deployment.
- The procurement should be based on an estimation of overall system value vs cost taking account of any locational benefits.
- The selection of "winning" technologies needs to be based on a transparent full system & network model that bidders can understand and replicate. This doesn't have to be perfectly optimized, but it is critical that it is consulted on and is transparent / replicable. The process should clear projects with the highest deltas between overall system value and bid cost first.
- The process should be designed in a manner that recognises the hedging value of storage. LDES investment will be Capex driven rather than Opex which means more stable pricing and less exposure to gas price volatility.

ESBN have carried out analysis on the current energy storage market and the range of technologies available. We support ESBN's position to carry out a technology neutral auction that provides a viable route to market for commercial developers to invest in multi-hour duration storage. It is possible that this auction process could set a minimum level of criteria to compete e.g., technology readiness level, planning status, deliverability etc. and also take into account value based assessments such as carbon abatement, congestion management, renewable dispatch down avoided etc. in addition to bid cost. This should allow storage technologies of multiple durations to compete with the auction winners being those with the greatest delta between overall value and cost. This should help ensure the process clears the technologies which have the most long-term value to the system and consumers.

## Other Market Design Considerations

- We believe a connection process outside of or in parallel with ECP will need to be considered to facilitate the participation of projects in the auction process and increase competition. Examples of where this has been done are the capacity market auctions. O-RESS 1 and the upcoming low carbon inertia procurement. While the connection

agreement may not necessarily be tied to auction participation it is important that participants have certainty on connection costs and timelines prior to bidding.

- The procurement approach taken depends on the ability of assets to stack revenues. For instance, will access to the energy market, system services and capacity market be allowed? The paper notes correctly that access to the energy market is currently restricted for storage assets but the TSO are developing market IT system upgrades which should correct this. We do also expect that the new system services market will be in place sometime in the second half of the decade. ESI's preference is for a floor and shared upside mechanism which maintains the incentive for operators to optimise their assets, but this depends on access to other revenue streams besides the DSO flexibility scheme.
- The paper notes that the potential dispatch of storage assets, if done through the energy market alone, may not align with distribution system needs. If it is the case that high availability requirements for DSO services are mandated or operation of assets is managed by the DSO then this will inform the procurement approach as the revenues available to participants may be exclusively through DSO services. As such it will be important to define what will be required of participants e.g., what periods will the flexibility be required, will there be a blanket availability requirement, can participants enter other markets outside of these periods? Mandates for 24/7 flexibility may be inefficient and costly by restricting participation in other markets when the DSO services are not required.
- After the contract period ends can participants enter other markets? This is an important consideration in terms of how units finance their assets and potential auction costs. In general, we would support longer contract terms which can drive lower bid prices and more efficient auction outcomes.
- MIC considerations will also be important. Whether operated independently or by the DSO the ability of storage assets to effectively charge and maximise their availability is essential. Ideally there should be no limitations on import capability but any restrictions on import in order to manage system security or wider consumer demand should be time limited and clearly signalled to participants in advance.
- Network charges – As storage is classified as a generator under current policy, units will be liable for TUoS charges. Generation charges are currently not levied on storage but demand charges are (e.g. demand network capacity, network transfer and system services). These charges can be significant for storage units and do not reflect the fact that storage is neither generation or demand and is providing a valuable flexibility service by aiding the operation of the grid. These charges act as a barrier to the business case for storage units as high import/usage charges mean the revenues that can be earned from energy arbitrage are reduced. This could also act as a barrier to the provision of DSO services if units are disincentivised from having equivalent MIC

relative to their MEC and are paying high usage charges for regular cycling of their assets. We propose that an exemption for UoS charges is provided with units only paying on the import required for serving house loads. This could be done via metering arrangements or fixing a chargeable quantity per connection agreement.

## Behind the Meter Storage

ESI has recently published a White Paper on behind the meter storage.[3] This is an area which has significant potential in Ireland to decarbonize the commercial and industrial sector. Specifically, we fully support the following two measures outlined the paper as they relate to behind the meter storage:

- ESB Networks proposes to design and launch to market a range of (initially bespoke) carbon abatement products, to incentivise large energy users to make operational and investment decisions that reduce location-specific emissions as part of local DSO balancing, including incentivising investment in gas receipts and green certificates, behind-the-meter storage and/or process shifting.
- ESB Networks proposes to introduce local flexibility market arrangements and simple fixed price product offerings on the distribution system that target specific small- and medium-sized enterprises; these market arrangements provide commercial sites with a route to market, designed specifically to incentivise flexible demand (as opposed to providing short-term responses to supply side signals in the wholesale markets).

ESI's behind the meter storage working group is available to discuss these measures with the CRU and ESBN along with other recommendations to incentivize the development of this area.

## Conclusion

ESI would like to thank the CRU and ESBN for the opportunity to reply to the "Scenarios for 15-20% Flexible System Demand – National Networks, Local Connections Programme" Paper.

We are happy to discuss any points included in this response further.

Kind Regards.

[3] https://www.energystorageireland.com/wp-content/uploads/2023/07/Energy-Storage-Ireland-Behind-the-Meter-Storage-White-Paper.pdf

Bobby Smith
Head of Energy Storage Ireland

# 24/7 carbon-free electricity

## Response to: *Review of Large Energy Users connection policy - Call for Evidence*

Q.9 Comments are invited on real time zero carbon emissions, shifting of demand in real- time to times of high renewable energy availability. Please provide reasons and rationale for any views provided.

**Response**

**EnergyTag strongly supports a move towards real-time zero carbon emissions accounting, underpinned by the implementation of a time-stamped Granular Guarantee of Origin in Ireland. This approach is backed by robust empirical research, system operators and governments globally as the most robust carbon accounting strategy to incentivise zero carbon consumption.**

In achieving real time zero carbon emissions, the crucial aspect that has to be considered is the (sub)hourly alignment between clean electricity consumption and contracted supply. The introduction of a (sub)hourly matching and certification system, with Granular Guarantees of Origin, or Granular Certificates, is a proven and feasible way of achieving this. This mechanism incentivises consumers to 1) contract clean energy for as many hours as possible 2) to reduce demand when clean supply cannot be contracted.

The Guarantee of Origin in Europe, can provide a signal for grid decarbonisation by increasing the installed capacity mainly in solar and wind power. Today's carbon accounting standards allow a consumer to claim the use of "0 emission" electricity, if the total annual load is matched with an equivalent volume of such clean energy certificates (annual matching). These certificates can, however, come from electricity generated any time of year and from places where electricity delivery is impossible or very unlikely, providing misleading information and not incentivising the full portfolio of clean generation technologies.

Moving towards real-time zero carbon goals means that there is a need for development of technologies such as storage, flexibility, clean dispatchable generation and demand response, enabling a carbon-free electricity supply at all times, everywhere. This creates a need to move to a clean electricity purchasing framework that is more time-aligned with the physical electricity flows in the grid. This path of reaching net-zero emission power supply enables true, deep decarbonisation of electricity generation.

The benefits of 24/7 carbon-free energy (24/7 CFE) are supported by robust empirical evidence from the world's leading energy experts. Princeton University[1], TU Berlin[2] and the IEA[3] have all demonstrated, through rigorous modelling of the long-term impacts of sourcing strategies, that 24/7 CFE approaches are more effective than other approaches (e.g annual matching) for ensuring clean energy markets drive deep decarbonisation and incentivise all the technologies needed for 24/7 clean grids. In Europe, the European Network of Transmission System Operators for Electricity (ENTSO-E) "recommended the granularity target should be set to 15 minutes, in line with the target imbalance settlement period in Europe[4] ".

Hourly matching strategies also have a wide institutional support. Initiatives like the UN 24/7 Compact[5] or Eurelectric 24/7 CFE Hub[6] are helping build global awareness about the benefits of hourly matched clean energy.

Recognising the benefits of 24/7 carbon-free energy, large energy users like Google[7] and Microsoft[8] have set 100% 24/7 CFE targets for 2030, driving significant volumes of demand for carbon-free electricity on an hourly basis.

Governments have also realised the importance of implementing 24/7 CFE policies for proper carbon accounting and minimising emissions. The US Government[9] set a 50% 24/7 electricity consumption goal for 2030 and the UK and EU's hydrogen standards require hourly matching of clean production and supply in order to call hydrogen green[10].

EnergyTag maintains a database[11] of various initiatives and projects including 24/7 matching, also outlining projects that provide proof of feasibility of hourly matching schemes in real-life case scenarios.

The growing demand for hourly matched energy supply creates a need for a proper certification system to ensure reliable clean energy claims and avoid issues such as double counting. This is why EnergyTag, together with its Community

[1] System-level Impacts of 24/7 Carbon-free Electricity Procurement

[2] Technical University of Berlin - System-level impacts of 24/7 carbon-free electricity procurement in Europe

[3] International Energy Agency - Advancing Decarbonisation through Clean Electricity Procurement

[4] ENTSO-E Views on a Future-Proof Market Design for Guarantees of Origin

[5] 24/7 Carbon-free Energy Compact

[6] European 24/7 Hub

[7] Google

[8] Microsoft

[9] US Federal Government

[10] UK RTFO Guidance for Renewable Fuels of Non-Biological Origin

[11] 24/7 in Action

members, including many energy experts, proposed a Granular Certificate Standard and Guidelines, version 1 of which was published in March 2022. This Standard aims to harmonise the issuance of time-stamped certificates for carbon-free electricity around the world, accelerate the deployment of 24/7 CFE schemes and promote hourly matching as the next generation of clean electricity consumption strategy.

As research[12] suggests, the presence of a Granular Certificate market could not only contribute to decarbonisation, but also provide a price signal for clean electricity, which would encourage investments in technologies such as storage or clean dispatchable generation (for example geothermal or nuclear power). By aligning the price of hourly certificates with the availability of clean energy supply, the real cost of balancing the system would be captured, allowing for a harmonised transition to net zero grids in every hour. It would also allow for minimising curtailment of existing assets, such as variable solar and wind power and encourage demand shifting to times of high renewables output.

Finally, while reaching 100% hourly matching of clean electricity may be challenging at the beginning, tracking the progress towards this ultimate goal by gradually increasing the CFE score (the share of carbon-free supply in energy consumption measured at a (sub)hourly basis) can be already performed with the tools and data available today. Providing a regulatory signal requiring a certain matching level or recognising hourly certificates as the most precise tool of tracking and measuring the clean energy consumption and performing carbon accounting can help accelerate the transition to this system.

To summarise, requiring large energy users to follow the principles of hourly matching can lead to real time zero carbon emissions, while also creating incentives for demand side management aligned with renewable energy availability, providing signals for deep grid decarbonisation and lowering system-level emissions.

**About EnergyTag**

EnergyTag[13] is a non-profit, industry-driven organisation, with a mission to define and build a market for Granular Certificates. It currently brings together the world's largest 24/7 community, with over 500 participant organisations from all continents including many of the world's leading electricity buyers, suppliers, energy tracking providers and NGOs.

EnergyTag's ultimate goal is to enable decarbonised electricity grids, every hour, everywhere. To do this we focus on three key activity pillars - setting standards, enabling markets, and informing policies.

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[12] Electricity System and Market Impacts of Time-based Attribute Trading and 24/7 Carbon-free Electricity Procurement

[13] EnergyTag

# Call for Evidence Papers - Energy Demand Strategy Project & Review of Large Energy Users Connection Policy

Commission for Regulation of Utilities

## Enterprise Ireland Response

30 August 2023

### Context

1. Enterprise Ireland (EI) welcomes the opportunity to respond to the Commission for Regulation of Utilities' (CRU) Energy Demand Strategy (EDS) Call for Evidence Paper Consultation, including the Uptake of Time of Use Tariffs, Scenarios for 15-20% Flexible System Demand, and Review of Large Energy Users Connection Policy. EI's response is reflective of the consultation in full, and in particular, the Review of Large Energy Users Connection Policy.
2. EI acknowledges that the CRU has set out this Call for Evidence in the context of Ireland's Climate Action and Low Carbon Development Act 2015, and the subsequent Climate Action Plan 2023, which provide a framework for Ireland to meet its international and EU climate commitments to 'net-zero' greenhouse gas emissions no later than 2050, and to a 51% reduction in emissions by the 2030. EI understands the overall aim of the EDS is to match Ireland's increasingly renewables-based electricity system with flexible and low-carbon demand in order to meet 2030 climate obligations.
3. Within this context, EI recognises the aims of incentivising use of electricity at times of high renewable generation, limiting electricity use at times of low renewable generation or peak demand, and avoiding the use of higher carbon emitting generators.
4. A key element in supporting a higher proportion of renewable energy integration on the electricity system, as well as its effective management, is responsive demand flexibility. As part of the Climate Action Plan 2023, 20% - 30% of electricity demand is to be flexible by 2030 (15% - 20% flexibility by 2025), facilitating active participation by citizens and businesses in the energy market with a view to delivering on energy security and climate action ambitions.
5. EI is appreciative of the CRU's intention to undertake a more detailed consultation to be published in the third quarter of 2023, and an intention to publish a decision in December 2023. To this end, EI welcomes this initial explorative engagement and process, and would be supportive of a more joined-up engagement with DECC and DETE as key policymakers in the space, as well as agencies and others on development of the Strategy and Policy.

### Broad Observations

6. EI is supportive of an evidence-based approach to energy demand management policy and strategy formulation. To this end, further consultation could benefit from greater reference to, provision, and analysis of data on larger users of energy, their importance to the Irish economy and employment, the cost impact of mooted policy measures on Large Energy Users (LEU) broadly, and the potential economic impact nationally of imposing requirements on these enterprises.

7. It would be useful for the forthcoming consultation to include a more complete analysis of which businesses will be affected by proposed changes and the expected impacts to the Irish economy and employment. More specific detail would be beneficial, including proposed interventions, costings, and something of an impact assessment to accompany the consultation. Greater accessibility for readers beyond current references to Distribution Use of Service codes could also be helpful. Working more closely in the ideation of measures and analysis of impacts with DECC, SEAI, DETE, agencies, and others may be useful in fleshing this out. Moreover, running information sessions with industrial users ahead of time could be an effective approach in garnering feedback and informing a more detailed consultation.
8. Within the context of identifying to which energy users new measures will apply, EI notes the CRU is of the view that this review should focus on the larger end of the LEU category, for electricity at Extra Large Energy Users (XLEU) (DG10, DTS-T), rather than LEUs (DG6 – DG9). EI would caution against making a judgement on the breadth and extent of energy demand management or reduction requirements on larger users without a fuller impact assessment of such a decision. LEUs, including XLEUs, are essential contributors to the Irish economy and EI would be hesitant to endorse the imposition of additional costs being placed on LEUs without thorough analysis underpinning it. In any event, any changes to the terms under which XLEUs engage with energy suppliers should be based on credible evidence that the desired impacts will accrue.
9. EI agrees that demand management can and should play an important role in Ireland's net zero aspirations and management of the grid at times of peak demand or lower supply. However, demand side management will have limitations to the role it can play in achieving energy use emission reductions, which will rather be delivered primarily through decarbonisation of electricity, heat, and transport. To this end, a proportionate approach should be taken to demand-side regulation, with technological and cost solutions offered to businesses to support greater uptake in demand management approaches. LEUs and XLEUs will have varying abilities to power up and down according to price and grid signals, and the impact on business operations of doing so can be quite significant in some cases. This should be factored into expectations placed on businesses and the role they can play in demand side management.
10. Many LEUs are already under significant pressure with regards to high energy costs, inflation, and pressure on margins. Demand side measures should be appreciative of this in terms of limiting the scope of businesses affected and the costs imposed. Support initiatives will be needed to help businesses transition to less emission intensive alternatives and should be detailed alongside any proposed initiatives and measure in this consultation.
11. It is worth noting that LEUs are for the most part not in the primary business of energy generation, storage, and management, and will need to be supported to deliver on any decarbonisation and demand reduction objectives imposed.
12. Moreover, many LEUs are already pro-actively demonstrating green credentials to customers and adopting changes to the scale and nature of their energy use. Decarbonisation and energy security needs, including energy demand management proposals, should reflect existing efforts and challenges to business as drivers of growth and employment in the State.
13. Additionally, a clearly laid out implementation plan along a gradual timeline would also be beneficial, including a target trajectory achieving energy demand outcomes (i.e., what success looks like).
14. Incentive structures for lower carbon on-site energy solutions for businesses large and small will support greater energy demand management responses, including waste heat recovery, green and blue hydrogen, and energy management audits.

15. EI works with a number of Irish owned companies that are well-positioned to provide technological and operational services to support energy demand management and Ireland's transition to net-zero. It is recommended that the CRU engages with EI and other agencies to learn more about how these companies' offerings, and those of other Irish enterprise, can be integrated into the strategy's final recommendations, where appropriate. By utilising Irish companies' unique skills, the outcome is likely to deliver more targeted solutions for the domestic ecosystem, while supporting Irish jobs. Areas where companies operate include battery storage, demand-side response, decarbonisation solutions for light and heavy industry, and many more.
16. EI XLEU clients in the construction sector cannot quickly flex demand in response to the proposed new tariffs. Indeed, for some, a sudden shut down of electricity could cause significant damage to key capital assets such as the plant kilns.
17. Firms in both the cement and timber sectors are critical suppliers to the construction sector and challenges in the timber supply chain globally have been well documented. Important national priorities such as these should inform the proposed consultation.
18. It should also be noted that almost all of these firms are large regional employers (for example, there are over 1000 direct staff in the cement sector) and all of EI's XLEUs export a significant proportion of their output.
19. Additionally, the export capabilities of Ireland's cement sector are indicative of a significant undersupply in the UK market. If production here was to fall, it is likely that there would be shortages of cement in both the UK and Ireland, potentially impacting on critical construction priorities such as the Government's Housing for All plan.
20. The Government's Statement on The Role of Data Centres in Ireland's Enterprise Strategy highlights the importance of data centres to the Irish economy in terms of job creation, service provision to productive industry, and research and development. The Statement outlines that data centre investments form the backbone of Ireland's overall digital economy and have contributed in excess of €7 billion to the economy since 2010 through direct and indirect expenditure. While acknowledging that XLEU data centres pose challenges to planning, cost, and operation of a sustainable power system, EI wishes to emphasise the importance of balancing these challenges with the economic and societal benefits arising from data centres locating in Ireland. Government has been clear that data centres will remain a key part of Ireland's longer term digital economy offer. The Energy Demand Strategy and Large Energy Users Connection Policy should be developed with this in mind.
21. Finally, businesses in more remote parts of the country where grid connection may be limited should be catered for as Ireland seeks to decarbonise its enterprise base. This will be hugely important for green electricity but also for biogas.

STRATEGIC POLICY
Enterprise Ireland

# RESPONSE BY EQUINIX TO CRU CALL FOR EVIDENCE: REVIEW OF LARGE ENERGY USERS CONNECTION POLICY (CRU/2023057)

## Preamble

Equinix welcomes this Call for Evidence and the opportunity to contribute to CRU's body of reference in consideration of future connection policy for Large Energy Users.

Our response is structured to include, firstly, an overview of Equinix and our business activities. We then discuss how some of the factors which we understand are under consideration with regard to connection policy affect our business. We provide summary observations and recommendations and, finally, direct responses to the specific questions raised in the Call for Evidence.

We recognise the nature and scale of the challenge presented to policymakers and grid operators in setting out and achieving creditworthy targets for climate action in Ireland.

Indeed, our digital infrastructure platform business puts Equinix at the heart of much of what is driving society's collective journey to net zero. Equinix provides services in support of mass digitalisation, whilst improving our customers' energy management and energy efficiency in managing digital workloads. Our facilities underpin society's ability to continuously push technological boundaries, so that we may benefit from smart interconnected systems in health, commerce, transport, energy and almost all facets of modern society.

We are acutely aware of the fundamental importance of our facilities to a sustainable, fully-functioning and thriving local economy and society. As our socio-economic goals evolve, we strive to identify the ways in which we can help to achieve those goals, using our available resources. We look forward to continuing to play our part as an active and conscientious participant in the energy system and digital ecosystem in Ireland.

## Data centres and the Equinix business

We acknowledge that the CRU in undertaking this review of the processing of new Large Energy User (LEU) connections recognises data centres as typical of the envisaged future LEU. Reference is made *inter alia* to the Irish Government Statement on the Role of Data Centres[1] which, we note, places data centres at the "epicentre" of the "twin-transitions", digitalisation and decarbonisation. Further, data centres are deemed to be "important infrastructure enablers in an open modern economy, facilitating digital transformation of SMEs and associated productivity and competitiveness gains".

Indeed, data centres are the backbone infrastructure for the digital services we use every day - often through our smartphones, computers, vehicles and modern household devices. They help us to sustainably scale innovation and economic growth in an increasingly digital world. Colocation data centres are so essential to the functioning of modern economies and societies that countries categorise them as critical or vital infrastructure. Equinix facilities are deemed Critical National Infrastructure in a number of locations including Paris and Amsterdam among others, due to having government customers there. Equinix had exemption during Covid in Ireland and UK for all our IBX to enable our staff and our

[1] Department of Enterprise, Trade and Employment, Government Statement on the Role of Data Centres in Ireland's Enterprise Strategy, July 2022


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customer's staff, to go to work. Many other categories of customer Equinix supports in Dublin, such as telecommunications, transportation, hospitals, etc. are national critical services for the community.

Very recently, the Government of Singapore reversed their ban on data centres and awarded capacity to a small number of specific data centre providers, including Equinix, because they recognised the importance of Equinix to the Singapore economy and country.

As demand for processing and storing data continues to accelerate with businesses moving to private and public cloud and online applications, organizations seek greater digital proximity to their customers. This has resulted in the data centre industry growing rapidly and becoming the foundation of the global Information and Communications Technology (ICT) ecosystem.

The term "data centre" is often broadly applied to rooms or buildings that offer space, power and cooling to house and host servers, compute, storage and other ICT equipment. Modern data centres have evolved from efforts to house ICT components to the need to support thousands of interconnected devices efficiently and effectively.

Currently, there are two widely accepted ways to classify data centres:

## Enterprise or Single-Tenant

In the case of an enterprise or single-tenant data centre, one business owns or controls the servers and peripherals and may own the facility itself.[2]

Many of these companies are in cloud, data or digital content industries and require massive capacity and compute power. Historically, Enterprise data centres have been developed near multitenant or colocation data centres, to ensure faster and more robust connectivity to the broader ICT ecosystem. However, increasingly locations further away from the connectivity dense metros, in rural or remote areas where land and power are more accessible, are under consideration.

These public cloud-compute campuses in Ireland are hubs for Europe whereas Equinix in Dublin is directly supporting the needs of Ireland,

New remote cloud-compute campuses are often in need of much greater quantities of power than retail colocation facilities.

## Colocation or Multitenant

At Equinix, our purpose is to be the platform where the world comes together, enabling the innovations that enrich our work, life and planet. We offer a fundamentally different value proposition to single-tenant data centre operators in what is known as retail colocation or International Business Exchanges ("IBX") in 71 metropolitan cities all over the world.

These IBX facilities host multiple tenants that co-locate their IT equipment in individual secure cages within buildings that are close to various digital services, customers, vendors or mission critical partners. Hundreds of clients may be housed in the facility, allowing extensive interconnection with partners, networks, and service providers. Colocation facilities allow everyone, from start-ups and smaller firms to Fortune 500 companies, to house and power their IT infrastructure in an energy- and cost-efficient, secure, and professionally managed environment.

These facilities uniquely allow customers to "peer" or directly connect enterprise-to-enterprise. Peering enables enterprises to exchange data directly, bypassing the public internet. This is done using physical cross connects (fibre-optic cables) or software-defined networking (SDN) to facilitate private data transfer from one entity to another. Direct interconnection improves speed, performance, security, cost and latency. Equinix is the world's leader in digital interconnection, with over ten thousand customers and almost half a million cross connects. This uniquely dense ecosystem is part of the reason not only companies but government agencies, hospitals, transport etc. are housed within Equinix IBXs in capital cities to support their economies.

From an energy efficiency and sustainability perspective, colocation data centres allow customers to move on-premises IT infrastructure from inefficient locations, such as offices or warehouses, and move them into modern and highly optimized data centres. This improves security and performance and leads to a significant reduction of energy use. Almost half of all

[2] Equinix has a business unit known as xScale, a global joint venture offering large scale single tenant solution.


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global data centres are still on-premises, with inefficient power usage, often multiple times those of purpose-built Equinix IBXs. A 2018 EU funded study indicated that public on-premises data centres had a PUE of 1.5 at best, but often went as high as 5, 6 or even 7[3].

Multitenant colocation data centres typically take IT infrastructure and workloads that were already present in the region (but diffusely), and concentrate them in an energy efficient environment, reducing the total energy consumed for the same workload. Invariably customers, many of which support Critical National Infrastructure, require the IBX in which they locate their digital assets to be within 30 or 60 minutes from their Dublin offices, for the lowest latency, and so that their engineers can be on location as soon as possible.

Figure 1 below illustrates the importance of interconnection to Equinix retail colocation compared to other types of data centre.

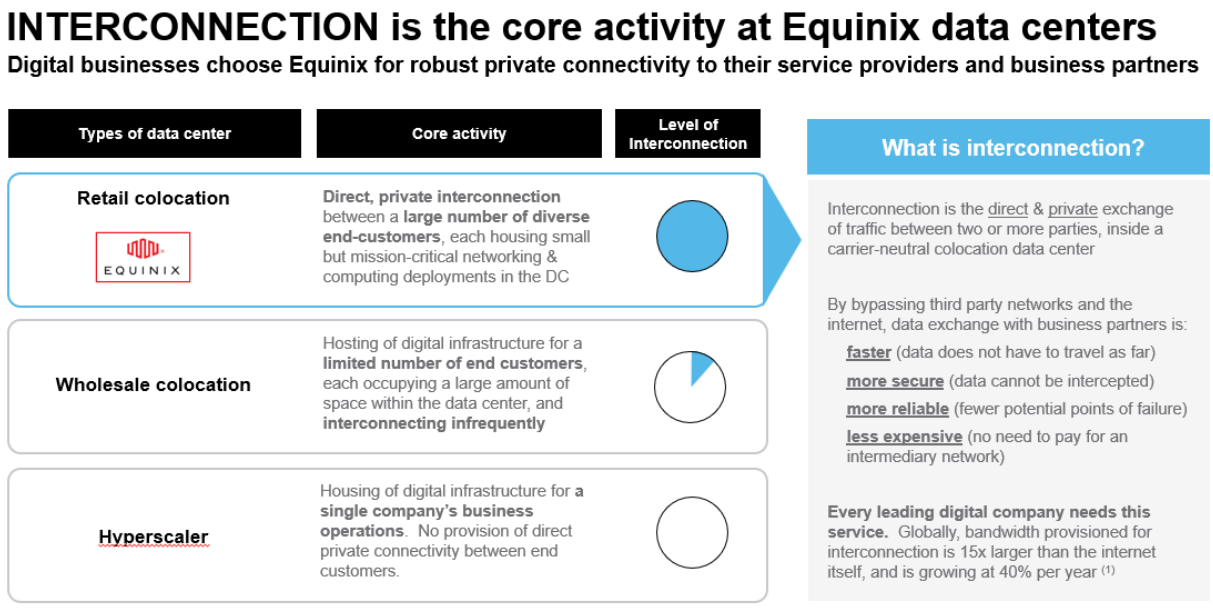



*Figure 1: the importance of interconnection to retail colocation data centres*

## Data centre demand drivers and industry growth in Dublin

The fast and secure connectivity provided through data centres - particularly colocation facilities - enables the development and deployment of emerging technologies and products, which require the ability to scale at higher speeds, greater data capacity and lower latency.

Current demand drivers behind the growth of the data centre industry include:

- Digital migration to hybrid work/online learning
- Proliferation of mobile devices
- Social media platforms
- Business applications
- E-commerce
- Cloud computing
- Financial institutions and digital payments

[3] Final report of the eureca project: https://www.dceureca.eu/

- Internet of things (IoT) / connected devices
- Autonomous vehicles and connected cars
- General ICT innovation
- Content, video and streaming entertainment
- Broadband investment and expansion; 5G
- Enterprise digital transformation
- Civic digital transformation / IT modernization / data centre consolidation
- Artificial intelligence data workloads
- Digital marketplace platforms

For enterprises seeking to grow and succeed in today's digital landscape, the collective influence of these trends is driving demand for more robust connectivity, as may be observed in Ireland. There is an accelerated demand for companies that can provide a secure, agile and global business platform that leverages interconnection-enabled private data exchange to deliver a faster and more secure global reach. For business continuity assurance, these companies require the physical location of their private digital assets to be accessible by their own digital infrastructure engineers within a short timeframe.

Dublin has a robust network infrastructure, including high-speed fibre-optic and subsea cables, making it a significant hub for data centres. It is a hive of economic activity, with a Europe-leading data centre ecosystem based on successfully attracting technology companies, Ireland's temperate climate and large wind energy resources (as reported by Bloomberg New Energy Finance[4], cited in the Government Statement on the Role of Data Centres), together with our highly skilled workforce, has helped to attract technology companies here.

Major network and internet service providers (NSPs and ISPs) choose to locate in Dublin due to its strategic position as a connectivity hub with access to subsea communications cables, internet exchange points, and a large market in Europe and the UK. Dublin offers a stable business environment, skilled workforce, and proximity to data centres, making it an attractive destination for establishing network infrastructure and serving customers efficiently.

Limitations on the availability of capacity in Dublin will constrain enterprise growth in Ireland, forcing companies to scale back their own growth plans or potentially relocate their digital infrastructure or even their enterprises overseas.

## The impact of colocation and interconnection on cloud computing

The efficiency and ease of data flows made possible by interconnection have given rise to a commercial best practice of hybrid multicloud adoption. Today, enterprises are determining which cloud services offered by top cloud service providers (CSPs) like AWS, Microsoft Azure, Google and Oracle work best for different workloads.

Consistently in all metros, certain workloads such as financial trading, utility applications, government data bases and public health applications must be kept in local, privately owned IT infrastructure (i.e. private cloud) due to performance, security, regulatory or cost considerations. The access to public cloud and to multiple public clouds (multicloud) can be facilitated in a controlled mix of infrastructure solutions to give full optionality, at best cost, on a digital architecture called Hybrid Multi-cloud.

Equinix IBX is one of the best locations for Hybrid Multi-cloud, offering a secure environment for sensitive workloads, access to cloud through CSPs network nodes and tailored digital services. Hybrid Multi-cloud solutions are increasingly being adopted across regions and the trend continues to grow: research shows that by 2025, 85% of global companies will expand their use of Hybrid Multi-cloud and will distribute their digital infrastructure over multiple physical and virtual platforms.

## Geographical requirements

Many cities and regions around the world have come to recognise that data centre investments in their communities provide the foundational digital infrastructure on which IT ecosystems and their broader economies can grow. Given the functions

[4] BloombergNEF, Data Centers and Decarbonization Unlocking Flexibility in Europe's Data Centers, 2022

and needs of modern data centres, there are several key competitiveness factors that will attract these investments.

Leaving aside energy requirements, generally acknowledged in the ongoing discussion in relation to LEU connections, data centre operators seek locations with high availability of fibre, cable and other telecommunication networks that can expand in an area. Providers often deliver long-haul fibre to an area along rail routes or locate near undersea cable landings. Where those routes come together provides the density needed to attract data centre development.

Equinix is a retail colocation data centre provider, so decisions on where to locate an IBX will also be influenced by the number of customers, and potential customers, that are in, or planning to locate in, the metro in which we are investing.

Most data centre operators seek to establish facilities within larger parcels of land with the ability to build out a campus. Data centre clusters and the resultant ICT ecosystems they create have been shown to develop primarily close to where business activity is already taking place with many end users, yet not adjacent to residential neighbourhoods. These clusters require infrastructure that allows easy access by associated employees and customers.

Several other factors, examples of which include the following, are of key consideration in determining optimal location of data centre facilities.

The presence of Equinix IBXs in a metro area has been shown to be of immediate economic benefit to the cities and countries in which they operate. In addition to the previously mentioned energy efficiency gains from moving workloads from on-premises to colocation, Equinix's customers benefit most from direct connectivity with other businesses, providing:

- Improved connectivity and reduced latency, which enables innovative services like FX trading and high-speed transaction computing;
- Dedicated bandwidth with highest throughput, with large capacity and increased reliability offering significant revenue generation for businesses;
- Significant optionality by offering companies the ability to choose between a number of different vendors for their data strategy, all of which are part of the Equinix ecosystem;
- Increased resilience by leveraging the diversity of the ecosystem to be less reliant on any single service provider;
- Unparalleled security through direct physical connections that do not cross over the public internet; and
- Cost-effectiveness as directly connecting with other partners reduces to need to pay an intermediary transit provider for connectivity.

Equinix's enterprise customers are from a wide cross-section of the local economy. A breakdown of sectors and industries within the Dublin Interconnection Ecosystem which benefit most from Equinix are shown below:

- **Technology Companies:** Dublin's interconnection networks attract a significant number of technology companies, including both established giants and innovative startups. These companies leverage interconnection to ensure reliable and fast data transfer, host applications, and provide cloud services.
- **Financial Institutions:** The city's status as a financial hub draws various financial institutions such as banks, investment firms, and insurance companies. They use interconnection to establish secure and high-speed connections for financial transactions, data analytics, and communication with global markets.
- **Telecommunications Providers:** Telecommunications companies play a crucial role in the interconnection ecosystem, offering the infrastructure and connectivity needed for seamless communication across the city and beyond.
- **Healthcare and Life Sciences:** Hospitals, medical research institutions, pharmaceutical companies, and healthcare providers rely on interconnection for efficient data sharing, telemedicine, medical imaging, and research collaboration. This connectivity was particularly useful to medical research companies during the COVID-19 pandemic, allowing thousands of researchers to work together seamlessly.
- **Educational and Research Institutions:** Universities, research centres, and educational institutions utilise interconnection to facilitate academic collaboration, online learning, research data sharing, and resource access.
- **Government and Public Services:** Government agencies and public services leverage interconnection to enhance citizen services, streamline administrative processes, and ensure secure communication across different departments.
- **E-commerce and Retail:** E-commerce platforms, retail chains, and logistics companies use interconnection to manage online transactions, inventory management, order processing, and customer engagement.

- **Manufacturing and Supply Chain:** Manufacturing companies benefit from interconnection for real-time monitoring of production lines, supply chain optimization, and data-driven decision-making.
- **Entertainment and Media:** Entertainment companies, including streaming services, gaming platforms, and media production studios, rely on interconnection to deliver high-quality content and engage audiences.
- **Energy and Utilities:** Interconnection supports the energy sector by enabling smart grid management, remote monitoring of energy infrastructure, and data analysis for efficient energy distribution.
- **Non-profit and Community Organizations:** Various non-profit organizations and community groups utilise interconnection – INEX, the Irish Internet Neutral Exchange, is a good example of this and a key customer of Equinix in Dublin.
- **Transportation and Logistics:** Transportation companies, shipping firms, and logistics providers rely on interconnection for real-time tracking, route optimization, and supply chain management.

A breakdown of the customer base by segment within Ireland is shown in the pie chart below.

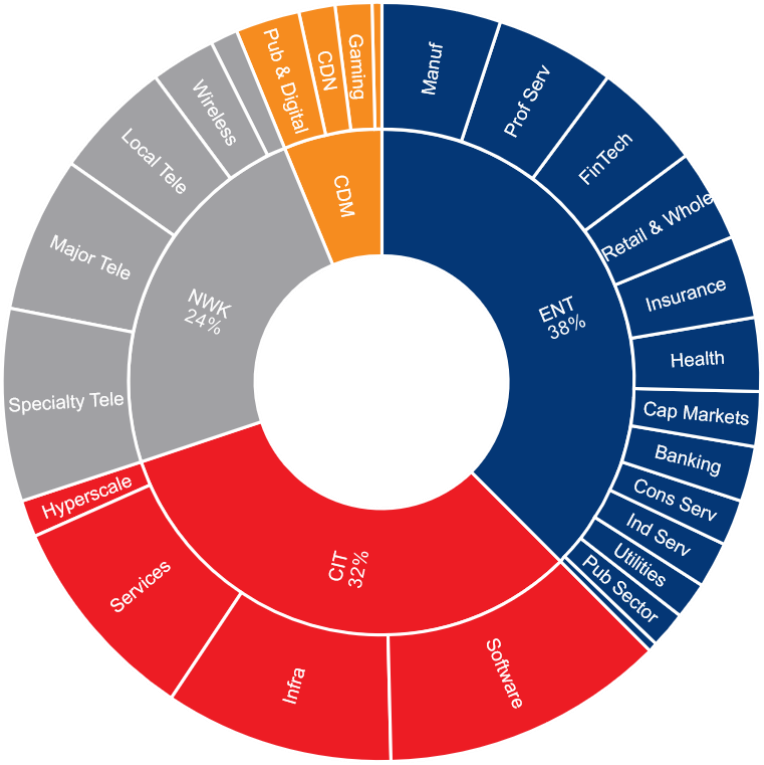



*Figure 2: breakdown of the customer base by segment within Ireland*

In Ireland, Equinix provides services to a portfolio of over 260 customers (globally over 10,000), of which the Enterprise segment covers 38%, capturing critical facilities such as financial services, health care and public sector. Ireland holds a unique position as an attractive location for international businesses, in particular large multinationals. The influence of international business is critical to Ireland's economic growth and success. The top 10 multinationals based in Ireland contribute approximately 60% of all corporation tax in Ireland[5], as well as directly employing 300,000 people, and most of them have a presence in an Equinix IBX to avail of our global interconnectivity offering and digital ecosystem.

As these businesses transform to compete and survive in an emerging digital economy there is an increased demand to support this transformation through sustainable digital infrastructure. This accelerating business transformation and digital infrastructure are mutually inclusive, they are fully dependent on each other. Digital infrastructure is the foundation for all

[5] Irish Fiscal Advisory Council, Understanding Ireland's top corporation taxpayers, June 2023

Hybrid Multi-cloud solutions and is underpinned by colocation retail data centres, particularly Equinix's interconnection dense IBX data centres, which host the computing services of the world's leading pharmaceutical, finance, technology and service companies.

Due to constrained power capacity in Dublin, we have already seen several multinationals, many who are large employers in Ireland, recently redirect these new services to other European countries as they are unable to expand in Ireland. More recently we have also seen a dramatic increase in demand for Artificial Intelligence (AI) infrastructure, a key element of the Irish Governments 'Digital Ireland' strategy, from Irish domiciled organisations and start-ups. We are now seeing these companies looking to deploy new AI services and related businesses outside of Ireland due to constraints in the local data centre market. Only those with data sovereignty requirements will need to locate in Ireland, so it is important that Ireland maintains its attractiveness for ongoing digital investment and innovation in Ireland.

## Our capacity requirements in the Irish market

Equinix colocation landscape in Dublin metro is divided across two campuses. Our North and Southwest campuses have a combined power requirement of less than 20 MVA grid capacity.

Since 2023, there is a limited Equinix colocation offering available to customers in Dublin given delays to new IBX builds, because of the lengthy permitting and grid access processes. An expansion plan for a new IBX with 9.9 MVA in the Southwest Dublin campus has been presented to the relevant authorities.

Equinix also works as part of a global joint venture on what is known as xScale, single tenant offerings. In Blanchardstown, Dublin, Equinix has developed a 40 MVA xScale campus, with a single tenant CSP. This site is fully capable of operating off grid if required, in support of the local grid flexibility and stability requirements.

Equinix is also participating in the EirGrid Static Frequency response program, and currently completing the necessary EirGrid compliance testing with the support of Enel X to actively support the grid.

## Equinix sustainability & innovation

Equinix invests heavily in climate action and environmental impact mitigation measures, many of which also support the ongoing security and stability of the electricity grid. Equinix was a founding member of the *Climate Neutral Data Center Pact* and has a 2030 Global Climate Neutral target, backed by a near-term, science-based target validated by the Science Based Targets initiative (SBTi). In 2022 the company achieved 96% renewable energy coverage globally and was both named to the Climate Change A list and recognised as a Supplier Engagement Leader by CDP (formerly the Carbon Disclosure Project). Equinix was also recognised by the U.S. Environmental Protection Agency as the top colocation data centre company for renewable energy procurement.

Equinix is one of the largest global issuers of green bonds, with a total issuance of $4.9 Billion as of 2023. With $3.7 Billion green bond net proceeds allocated to date, Equinix has achieved a total annual avoided emissions of over 600,000 mtCO2e, or equivalent to approximately 132,000 vehicles removed from the roads each year. These investments in green building design, energy efficiency and renewable energy have resulted in an annual energy savings of approximately 1,600 GWh. As we increase our use of green bonds, we are accelerating our positive environmental impact and demonstrating significant emissions reduction potential, with a global focus, including Ireland.

In Ireland, Equinix's sustainability commitments include:

- Corporate Power Purchase Agreement – under negotiation for renewable power
- Continuous operational energy use efficiency improvements of at least 5% per annum through multiple innovations and upgrade investments
- Bio-methane project engagement – with a view to injecting bio-methane to offset any gas usage
- District heating – using waste heat capture and distribution in collaboration with Codema and local County Councils
- Implementation of Battery Energy Storage Systems (BESS)
- Solar PV onsite to increase renewable energy generation onsite
- EV charging points in the parking area for electric vehicle charging
- Installation of beehives and bee habitats onsite to support biodiversity

- Planting of fruit tree orchards to support pollination and biodiversity at our IBX sites and around the wider Dublin area
- Management of grass area maintenance to support pollinator species and biodiversity
- Installation of AgriSound monitoring devices to track pollinator activity by detecting vibrations given off by pollinators, including multiple insect species, allowing reporting on progress from baseline and potential to scale the system in various ecosystems
- Utilising and supporting local businesses during the design, construction and operation of our facilities
- Partnering with organizations to advance digital inclusion at local communities via the Equinix Foundation and Equinix WeGive initiatives
- Sharing a profile of the power ramp up on the planned new IBX site over time with the grid operators

Other notable examples of Equinix's contribution to innovative and sustainable solutions to managing scarce capacity in the Dublin market include:

- Demand response – On site power generation using high efficiency gas turbines to reduce demand on the electricity grid and support the power requirements for the data halls. This provides additional capacity to meet the growing demand for Equinix's services, but also serve as a demonstration of how the data centre sector can become a stabilising component of the overall energy system by providing demand flexibility to Ireland's power grid.
- Offering gid stabilising ancillary services to the grid operator via partnership with Enel X for UPS frequency support. Equinix is participating in the EirGrid frequency response program, and currently completing the necessary compliance testing with the support of Enel X to actively support grid stability in Dublin.

Equinix IBX locations in Dublin will use energy through electricity and gas grid connections, and will optimise installation of renewable energy generation using Solar PV on IBX sites, but it is not economically feasible or appropriate from a land use perspective to install large scale renewable energy on the IBX site directly, as this would require a much larger land footprint. Equinix will ensure renewable energy additionality in Ireland via CPPA's and through the purchase of 100% renewable energy certificate coverage from our electricity and gas suppliers.

## Equinix summary observations and recommendations under the Call for Evidence

In the next section we offer responses to the specific questions raised by the CRU in the Call for Evidence. In consideration of the issues, the questions raised and our respective responses, we have identified the following emerging themes for consideration by the CRU in the development of future connection processes for LEUs.

### Balanced approach to capacity growth

Given the evidence of economic enablement from our existing capacity presented above and the clear policy intent which is reflected in various Government publications on data centres and the digital economy, we are of the view that there should be deep concern at the impasse that has been reached regarding sustaining data centre development in Dublin. Of particular concern is the apparent absence of any potential new capacity including that which would facilitate the relatively modest requirements of retail colocation like Equinix's IBX, for example. The situation is damaging for the economy and lacks credibility in that it would not appear to be the case that capacity growth in other economic sectors is affected to the same extent.

We encourage the CRU to reflect on the information presented above, particularly that relating to the geographical imperative which drives retail data centre location, in the context of our relatively modest energy requirements and the contributary, sustainable nature of our interaction with the grid.

### Infrastructure and investment enablement

We recognise a key objective from the Climate Action Plan 2023 being the removal of systemic barriers to additionality of renewable generation and the flexible technologies which support renewable integration. CAP23 actions to address private wires and hybrid connections, for example, must be advanced without delay and indeed activated in the implementation of new connections for LEUs. We welcome the Private Wires Consultation recently published by the Department of Environment, Climate and Communications.

Development of market rules should consider the real financial challenges associated with 'stepping up' to meet such measures as demand side response, energy storage and onsite power generation.

The data centre sector has demonstrated willingness and capability to implement technological solutions to address the acknowledged capacity constraints in the Irish (particularly Dublin) market. Even where grid issues were such that the implementation of crisis-avoiding measures, such as temporary suspensions to grid connection may have been justifiable, it is neither logical nor economically sensible to maintain such stringent measures in the face of easy to implement mitigation measures.

### Recognising and rewarding performance on the journey to net zero

As we aim to show in the outline of our investment and activity in sustainability and innovation above, we are ambitious and unfaltering[6] in our support of measures towards decarbonisation whilst maintaining our vital contribution to modern industry and commerce. In recent years, social policy has rightly sought to rebalance what may be seen as relative inaction on climate change mitigation over the past several decades.

Climate action is a global objective and Ireland is playing a large part in providing the vision and leadership required to make what are considerable changes across our society including in the way we, as data centre operators, carry out our business.

We must recognise progress and improvement for exactly that which it is. Overstepping to the extent that we push development which is in our control to locations where climate ambition is lacking does not serve our key objective – to reduce emissions to zero over time. We have travelled the journey from 7 times power usage effectiveness down to 1.4. Equinix alone has saved the equivalent carbon emissions of over 132,000 cars on our roads every year. We must continue to strive for better and more far-reaching solutions; not to push the problem elsewhere.

With rights come responsibilities. Newly connecting LEUs must demonstrate the ways in which they improve the status quo. Likewise, the scope within which LEUs may reduce carbon emissions reductions should not be limited. Further, those who clearly show active participation and measured results should be facilitated by relevant means including connection to the relevant energy systems.

Our sustainability initiatives, some of which are outlined above, make the Equinix investment in the Irish digital economy an exemplar solution for distribution connected colocation data centres.

## Equinix responses to questions asked in the Call for Evidence

In this final section, we offer our responses to the specific questions raised by the CRU in the Call for Evidence. Due to the nature of our business and our engagement with the LEU connection process some subject matters provoke a more detailed response than others. In all cases, we aim to be constructive and collaborative, noting the scale of the challenge facing policy makers, regulators and operators alike towards decarbonisation and climate change mitigation.

As stated in our introduction Equinix offers our available resources in support of the CRU and others in facing up to this challenge.

### Q1. Comments are invited from stakeholders on the proposed approach of decarbonising energy demand with a view to achieving net zero emissions from LEUs at time of connection.

Along with the CRU and most others, we recognise the scale of the challenge associated with decarbonisation of our society and economy. In Shaping Our Electricity Future v1.1, recently published by EirGrid, the many dependencies and extent of cross-sectoral effort are well documented. Accordingly, we have keen sense of duty to support this effort. We are ready and willing to offer the fullest extent of our engineering innovation and expertise to create solutions to forge a pathway to net zero. We do see this as a pathway, a journey.

Until we have broad consensus on the definition, technology, metrics and measurement tools for net zero, it is impractical and inadvisable to effect policy measure which require its immediate implementation. At this stage in the journey, we support

[6] Refer to the Equinix Climate Neutral Data Centre Pact commitments – see https://www.equinix.com/newsroom/press-releases/2021/01/equinix-joins-european-cloud-and-data-center-providers-to-make-historic-pledge-towards-climate-neutrality-by-2030

policy measures which focus on advancement towards and readiness for net zero.

To this end, we agree with the alignment of increases in large energy use with the additionality of renewable energy which may be achieved through co-location and/or the use of CPPAs. Grid connection access should be prioritised according to the extent of application of technological solutions which support decarbonisation (including those variously described herein). In this way, critical infrastructure created by LEU connections for physical access to the grid may be leveraged to the advantage of general customers and operators alike.

We believe net zero will be achieved through wholesale and holistic evolution of the energy systems. All parties have a role to play in achieving this and no one company can deliver Ireland's targets on its own.

Methods to achieve net zero should be as practicable as possible, drawing on the fullest extent of the energy systems. Assessment of individual applications which focusses on the operations and activities relating only to the site of the proposed development may not accurately identify and evaluate the real net effect of a given development. The interconnectivity of data centres in particular gives rise to a cluster or community effect which requires more holistic evaluation. In this regard also, we refer to the section above on recognising and rewarding performance on the journey to net zero.

Consideration must be given to the direct and indirect effects that developers and operators of LEUs may have. Examples include: requirement for carbon efficient supply chain, multi-use facilities including energy generation, storage and demand including by third parties and the public (e.g. EV charging).

## Q2. Comments are invited from respondents on the need for onsite generation and storage capability for LEU connections.

We agree in principle that new LEU demand should be matched and offset by new renewable generation. This can be achieved for example via CPPA commitments and should not be required to be onsite with the LEU, particularly in metro areas where land requirements must be considered.

The benefits of renewable generation may be accessed to a greater extent using complementary technologies relating to energy storage and dispatchable generation, as is well demonstrated on the national grid. In consideration of the most effective deployment of renewables and supporting technologies, policy must not be a constraining factor in allowing the technologies to work together.

Regulatory clarity is required regarding onsite generation and storage by LEUs. High levels of capital and operational expenditure are required to support this endeavour and it is reasonable that a reasonable return on investment may be identified and achieved. Current regulatory regime requires LEUs to participate in various regulatory processes, e.g., CRM, ECP, DS3, which were not developed with LEU participation in mind. Lack of clear pathways to connection and participation could in the future give rise to inefficient engagement between operators and LEUs and potential for perverse outcomes that are not in the interest of the consumer, operators or suppliers.

Co-located application of energy generation, storage and demand is currently constrained by several factors including non-access to private networks, hybrid connections and unfit for purpose connection processes. New policy should remove these barriers in order that access to more sustainable, resilient and economic solutions may be developed.

Whereas it can be possible to physically co-locate generation, storage and demand assets on single sites, the physical size and scale of the technology means we must allow assets at separate locations to be utilised in complementary arrangements. Grid developments should be advanced with this in mind going forward.

The reality of the benefit of dispatchable generation to flexible demand and promotion of renewable generation must be recognised. Use of low carbon fuel alternatives such as HVO, biomass and, in time, hydrogen from renewable energy, should be incentivised in connection policy.

## Q3. Comments are invited on the use of CPPAs for additionality of renewable generation outside of support schemes for decarbonising electricity consumption. What type of de-rating may be appropriate to reflect real-world performance of renewable generation during peak times.

We strongly support the promotion of Corporate Power Purchase Agreements (CPPAs) in line with the *Climate Action Plan* and the *Renewable Electricity Corporate Power Purchase Agreements Roadmap* prepared by DECC. Promotion of renewable generation in this way avoids burdening the general electricity consumer and provides and alternative route to market for renewable development with potentially improved investment returns. Accordingly, commitments to CPPAs must be considered in the assessment of the emissions of prospective connection applicants.

A key concern to LEUs is time to energisation for new renewable generation - lengthy timelines and high risk associated with grid connection and planning processes, as well as ill-defined and inconsistent dependencies between them. Policy across the relevant domains (planning, energy, etc) must focus on eliminating inefficiencies and counter-productive elements of application and offer processes.

An important consideration in the facilitation of CPPAs is the physical access to grid that must be provided respectively at the generator and off-taker sites. As activity relating to decarbonisation increases over time, intensely within the electricity industry, we are conscious of the limitation and potential constraint in system operator resources. To address this issue along with others as referenced in this response, development of policy effecting the implementation of direct lines as per *EU Electricity Directive (2019/944)* and private wire as envisaged in Ireland's *Climate Action Plan 2023* must be a priority.

Regarding de-rating, we support application consistent to that provided under current policy, e.g. RESS.

## Q4. Based on preference that renewable electricity and /or gas contributes to Ireland's emissions targets and security of supply, do respondents have a view in relation to how electricity feeding into Irish system and renewable gas credits feeding into the Irish system could be tracked?

We believe the currently licensed and respective system operators are best placed to preside over such tracking.

## Q5. Comments are invited from stakeholders on the use of renewable gas credits (feeding into the Irish natural gas system) in order to facilitate the connection of gas demand to the system.

We suggest that this topic requires further development and clarification. LEUs may require access to gas supplies for several purposes including, for example, onsite back-up generation or for demand side user market participation or even direct export to the grid (as derived of a holistic approach to most effective management of available onsite resources). We propose appropriate and respective treatment of gas demand arising from facilities which are supporting grid and market operations (e.g., DSU or dispatchable export) to that which is associated with single purpose gas-fired power generation facilities. In this sense, we propose separate treatment for gas which is providing service and benefits beyond the actual demand of the LEU.

Consideration should be given to incentivisation of renewable gas and HVO, given its nascent stage of deployment relative to renewable electricity. We understand that the high cost of establishment of key infrastructure is a barrier to entry for providers and so policy should seek to reduce or subsidise these costs.

Whilst the volume of available renewable gas builds over time as the industry grows, we caution against overextended policy measures which place undue pressure on a growing industry or indeed are unachievable due to supply chain limitations.

## Q6. Comments are invited from respondents on enabling demand flexibility requirements as described above.

We strongly support the promotion of demand flexibility in line with the Climate Action Plan. Where LEUs can show additionality of demand side responses whether at specific sites or elsewhere, this should be allowed in any relevant assessment.

Whereas there are some opportunities to directly control demand to respond to changes in generation availability or other system needs, for many LEUs, especially data centres, they are somewhat limited. The ability to 'turn down' onsite energy consumption such as cooling systems is restricted by the physical operating characteristics of our systems. For example, we are constrained by the level and length of time servers and associated equipment may be subjected to higher temperatures.

Instead, we look towards the deployment of supporting technologies such that the demand that is seen at the point of connection is reduced. We agree that demand flexibility is a key enabler to decarbonisation of the energy system. However, we must achieve this whilst maintaining resilience, reliability, and economic efficiency. This is most effectively achieved through a microgrid system which allows us to operate in the most effective mode, having regard to grid system requirements, onsite demand requirements, emissions intensity and a host of other operational, environmental and commercial metrics. In this way, policy must avoid over-simplification of the topic as a matter of ramping down consumption or ramping up storage and rather the result of the most effective deployment of generation (including non-renewable where required), storage and demand.

Consideration should be given to demand flexibility upwards to complement demand reduction. When supply is scarce, demand reduction may provide relief supported by deployment of energy storage. At times of generation oversupply, additional import capacity could facilitate battery charging for example, particularly at times of high renewable penetration. In this sense, we support the introduction of flexible demand which includes upward as well as downward flexibility.

## Q7. Are there other sources of flexibility that can be provided?

Please refer to our response to Question 6 regarding upward demand flexibility.

As stated, the opportunity to provide flexibility through direct demand reduction of our IBX facilities (i.e. reducing the power demand servicing our customers digital infrastructure) is limited due to the nature of our operations. However, Equinix would like to engage with the CRU and the SOs with a view to establishing ways in which this limited opportunity could be explored, and any benefits shared without the loss of necessary resilience in our operations. For example, where we install gas turbine capability and/or battery energy storage systems, these could provide behind the meter demand flexibility by replacing the power provided by the grid or by providing power back to the grid.

Longer duration energy storage, not based on lithium-ion technology, should be explored. However, we do not anticipate the same synergies with our operations as may exist with lithium-based batteries. The state of advancement of alternative long term storage technology is such that we expect that significant support in the form of subsidies and/or other incentives will be required to establish and advance the technology.

We are open to exploring contribution to district heating (noting recent demonstration projects in the Dublin area) and storage. Likewise, we anticipate some limitation to the district heating use case due to the low grade of heat available and severely limited heat distribution infrastructure in Ireland today.

Application of multiple electrical and thermal generation, storage and load management technologies through LEU microgrids must be incentivised/prioritised. Barriers to scale, e.g., private wire, should be removed to allow more practical application in this area.

## Q8. Comments are invited from respondents on the introduction of interruptible type supply contracts for gas connections.

Similar issues arise in the case of interruptible gas as for interruptible electricity. However, we see a need for greater caution in introducing such measures. Gas supplies which are used to fuel onsite generation in support of electricity grid connections as envisaged under CRU/21/124 are essential to the provision of a secondary or back-up source of electricity in the event of system needs. Their value in such scenarios would be undermined if subject to interruption.

In instances where gas supplies provide the basis for export to the grid, we do not believe it appropriate that such generation may be interruptible.

Furthermore, unavailability of gas supplied power may have the undesirable consequence of increasing the use of lesser

efficient and more carbon intensive alternatives.

## Q9. Comments are invited on real time zero carbon emissions, shifting of demand in real-time to times of high renewable energy availability.

LEU provided microgrids are the key enabler to net zero contributions from this customer type. Policy development and detailed engagement with the operators is required to unleash the potential to drive down carbon intensity local to the LEU and on the grid (wider community) through interconnected systems of multi-asset generation, storage and demand.

## Q10. Comments are invited from respondents on what they consider to be an appropriate definition of an LEU for electricity and gas for the purposes of this review.

Distribution Connected customers should not be considered as LEUs in the context of this review. The importance of distribution connected Equinix Retail IBX facilities locating within the Dublin metro cannot be understated. In general, we are of the view that energy users should be categorised by their energy use over time, i.e megawatt-hours and not megawatts. Whereas we acknowledge the basis for requiring locational factors to be considered, for example where the electricity grid is constrained, we urge that balanced consideration is given to the constraints and requirements which drive the user's location. We address this variously above and, particularly, in the section relating to "Data centre demand drivers and industry growth in Dublin".

Also, the way in which a prospective user proposes to interact with the grid, including reference to microgrid infrastructure, must be take into account, even prioritised. To illustrate, in a constrained area, one customer with 100 MW of genuinely flexible demand load is arguably better than one hundred customers with 1 MW non-flexible load.

## Q11. Comments are invited from respondents on whether this review should only apply to Extra Large Energy Users (XLEUs) in relation to electricity.

Please refer to our response to Question 10.

The review should have appreciation for the difference in the way the system is affected (both in terms of challenges and opportunities) by different user sizes. Positive, pro-active measures to drive de-carbonisation may be supported and achieved through the activities of XLEUs of all types. Where barriers need to be lifted or supports provided, these should be provided where the XLEU shows practical commitment to de-carbonisation.

## Q12. Comments are invited for gas LEU definition of those with a peak hourly demand greater than 50MW thermal input and a connection pressure of 16 barg or above.

Please refer to our response to Question 10.

## Q13. Comments are invited from respondents on the treatment of 'islanded' LEUs.

It seems that in the spirit of de-carbonisation, islanded loads operating on gas-fuelled electricity alone does not make sense (assuming slow advancement of renewable gas). By comparison, access to the electricity grid alone would provide for a reduced carbon footprint for the same demand. However, an islanded load connected to the gas network which also has access to other energy from renewable sources (and storage) or provides export capacity to the grid at a time when capacity margins are tight, is worthy of facilitation.

We consider it appropriate to take into account the entire scope of the user's influence on decarbonised energy sources. To illustrate by example, we recognise how an (electrically) islanded load with 100 MW (electrical equivalent) gas connection, high efficiency gas generation, 10 MW onsite solar, 25 MW HVO contribution, 200 MW wind generation through carbon offset such as a CPPA-type arrangement would likely have a lower carbon intensity than a conventional 100 MW gas/electricity grid connected load with no renewable onsite generation or CPPA equivalents.

## Q14. Should the connection of LEUs to the natural gas network focus on security and decarbonisation as per the Government Policy Statement on Security of Electricity Supply.

There is no reason the Government Policy Statement cannot be complied with for the gas network, subject to all comments herein. Recognition and consideration of the important role that the gas network provides in the support of the electricity grid generation requirements should be acknowledged and accounted for.

## Q15. Please suggest any alternative approaches not captured above that could help in meeting the challenges outlined.

Please refer to our comments on direct lines in our response to Q3 above.

In future, preference/high order of merit must be given to LEUs who can demonstrate a reduced emissions profile at a given time of dispatch.

As well as the grid support, which is discussed above in relation to this consultation, LEU size/scale introduces the possibility of local network support via the deployment of microgrid systems. With appropriate engagement and collaboration with local authorities and ESB Networks, LEUs could provide services and benefits well beyond what is possible under current regulations - private wire being a critical barrier.

Designated zones for LEUs, based on existing campus development and, as applicable, areas which meet the locational requirements as described above for new developments, which allow independently operated private networks and therefore more efficient use of shared generation and storage infrastructure with even greater opportunity to support the national grid and local communities should be considered.

## Q16. Should provisions apply to all LEUs connections, or are there are any exceptions that should apply?

All our contributions on the matter leads to a natural conclusion that overemphasis on categorisation and segmentation of user types is not conducive to efficiently, effectively and quickly meeting the decarbonisation agenda.

## Q17. Please suggest any incentives which could be applied to new LEU connections in facilitating some of the measures described above.

Expedited grid connections for those customers providing contribution to decarbonised energy demand and grid support.

High levels of capital and operational expenditure are required to support this endeavour and it is imperative that investors can see a reasonable return. Incentivise on-site storage for priority despatch at time of constraint.

Practical (i.e. non-monetary) community contribution towards microgrid-based sharing of resilience, sustainability and economic benefit.

NETWORKS

# INCENTIVISING THE UPTAKE OF TIME OF USE TARIFFS

ESB Networks' Response to CRU's Consultation on Incentivising the Uptake of Time of Use Tariffs (CRU/202358)

30th August 2023

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# 1. Executive Summary

ESB Networks welcomes the opportunity to respond to the CRU Consultation on incentivising the uptake of 'Time of Use' tariffs (CRU202358). 'Time of Use' (TOU) tariffs vary the charge for electricity to a customer according to the time of day that the electricity is consumed. These forms of tariff are based on the new service features introduced to customers since Phase 1 of the National Smart Metering Programme (NSMP) went live in February 2021. This data service and corresponding tariffs are also aligned to new TOU distribution tariffs that came into effect in October 2022. ESB Networks agrees that it is timely to review the uptake of TOU tariffs two years into the programme, and to identify what measures market participants may introduce to support customers to take advantage of the benefits that TOU tariffs provide. We agree with increasing the limit on the number of TOU tariffs from four to eight but recommend against extending the number further before a review. ESB Networks recommends against extending Estimated Annual Bill (EAB) to all tariffs because we consider that this would not be practicable. We do not consider that bringing forward a review of the 'Standard Smart Tariff' would have any significant benefit to supporting customers' uptake and benefit from TOU tariffs. Furthermore, any implementation of a new revision of the SST (and the associated DUoS tariff structure to which it is aligned) would require significant re-planning of the existing delivery programme and will inevitably impact on Phase 2 timelines. Instead, we propose two further measures which may improve customers' awareness and understanding of the benefits of TOU tariffs.

Since November 2022, customers with a smart meter have had access to their metering and consumption data from ESB Networks Customer Portal. The data appears in graphical representation and the customer can download a Harmonised Downloadable File (HDF) with half-hourly usage for up to two years (or from when the data was first collected if shorter than two years). Now that customers have access to this consumption data, it is timely to amend the Accreditation Framework for Price Comparison Websites (PCW) to allow for customers to compare prices in reference to the customer's historical consumption data instead of using the national average annual consumption of 4,200 kWh.

ESB Networks understands that CRU is proposing three potential measures to provide customers with information to help them decide whether TOU tariff is of benefit to them and to compare tariffs. CRU is also calling for evidence on a fourth potential measure and requesting suggestions for further measures. CRU plans to publish a decision paper on these potential measures later this year.

ESB Networks welcomes CRU's first proposal "to amend the accreditation framework of Price Comparison Websites (PCWs) to allow consumers to access price comparisons using their smart meter consumption data." ESB Networks notes that there are two potential methods for a customer with a smart meter to permit access to their historical consumption data. A customer can upload the HDF file which they have downloaded from ESB Networks Customer Portal – and this method is available now. Additionally, customers should into the future be able to permit access for a price comparison website to access the customer's consumption data directly via an Application Programming Interface (API) under the Smart Meter Data Access Code (SMDAC). ESB Networks suggests that the latter method should be the preferred choice into the future as it provides more immediate, integrated access.

ESB Networks agrees that PCWs should make customers aware with a warning message where there is less than 12 months of smart meter data available on which to develop a tariff

comparison; that the PCW will use the most recent ESB Networks load profile where less than 1% of data is missing and if in excess of 1%, inform the consumer that there is missing data, include the percentage of missing data, and ask the customer if they wish to continue. ESB Networks notes that an individual customer's profile may not align with the ESB Networks load profile and therefore, the use of the ESB Networks' load profile in place of missing data may create inaccuracies in the price comparison.

ESB Networks has no objections to the proposal that PCWs could ask customers questions about their consumption behaviour, but it may only be relevant if the customer is expecting to change their consumption behaviour or install an appliance that consumes significant electricity quantities otherwise the historic electricity consumption provided via HDF or API should be sufficient. The same approach should apply to electricity suppliers. ESB Networks has no objections to introducing the facilities to provide price comparison based on a customer's consumption data. (ESB Networks notes that the proposed date is feasible for access where it involves the customer uploading the HDF file but that access by API may not be available before the end of 2024 - coinciding with the possible implementation date of Smart Meter Data Access Code.)

CRU's second proposal is "to apply the Estimated Annual Bill (EAB) for all time of use tariffs." ESB Networks prepares standard profiles each year for standard tariffs. This provides a statistically robust allocation of consumption across each period of the year. This would not be possible for every possible tariff construct and therefore the EAB calculation would not be a robust basis for tariff comparison. Therefore, ESB Networks believes that this proposal would not be practicable and recommends instead that tariff comparisons are based wherever possible on the use of actual smart meter data, and preferably, interval data.

ESB Networks welcomes CRU's third proposal, which is "to increase the limit on the maximum number of TOU tariffs retail suppliers are allowed to offer on the market," moving the limit from four to eight at an earlier time than intended. While ESB Networks agrees with the increase to a limit of eight tariffs - providing sufficient, but not excessive, choice - we recommend that CRU review the effectiveness of the increase from four to eight tariffs before deciding on removing the limit. A review in December 2024 would provide sufficient time for CRU to publish a decision in Q1 2025.

CRU's fourth proposal is to bring forward a review of the 'Standard Smart Tariff,' with the aim of the review being to "identify whether the Standard Smart Tariff is achieving the intended objective as acting as an 'entry-level' time of use tariff, which is easily compared between suppliers." ESB Networks does not consider it appropriate at this stage to schedule a review on the structure of the Standard Smart Tariff (SST). Customer surveys that we have conducted on the uptake of TOU tariffs have not indicated any concerns amongst customers with the construct of the SST. As such, ESB Networks would not consider a review of the SST could significantly impact the uptake of TOU tariffs. In our view, the SST provides a good entry level TOU tariff. It is based upon the familiar Day/Night Tariff timings with the only addition being the Peak Hours between 5-7pm. Re-opening the design of the SST will have significant, market design, market system and meter firmware implications as each meter is configured to record the Day, Night, and Peak registers. Any implementation of a new SST would require re-planning of the existing NSMP delivery programme and will inevitably impact on phase 2 timeline. It is also expected to require changes to all Market Participants systems.

ESB Networks notes that there is some evidence that customers are reluctant to move to a TOU tariff as they are under the impression "that once you move, you can't go back". However,

while the change to meter configuration is irreversible, the new configuration doesn't constrain the type of tariff that can be designed using Interval or SST (D/N/P) register services. To address this potential barrier, CRU should consider re-emphasising (via the Supplier Handbook) that Suppliers may design tariffs which have a single unit rate for each half-hourly (HH) interval or each Register (Day/Night/Peak - D/N/P).

ESB Networks suggests that CRU review the regulatory requirements on use of the TOU Primer in the supplier handbook - Electricity and Gas Suppliers Handbook 2023 (CRU202324) - to improve the primer's effectiveness. For example, CRU could review the timing of the initial primer and the reminder; review the content of the "generic" timer; and consider extending the need for the TOU Primer and Reminder beyond 2025. Research has shown that customers who receive information from their supplier about TOU tariffs are more likely to avail of them while a customer survey conducted by ESB Networks in June 2023 found that just one in five customers recall being contacted by their supplier about TOU tariffs.

# 2. Introduction

ESB Networks welcomes the opportunity to respond to the Commission for Regulations of Utilities' (CRU) consultation on the on incentivising the uptake of 'Time of Use' tariffs (CRU202358).

ESB Networks' primary function is the provision of universal, affordable access to electricity, providing capacity and reliability, via the electricity distribution system, to support social and economic development across Ireland. This is as defined within its Distribution System Operator (DSO) licence.

ESB Networks has responded to each of the consultation questions *and has included wider concepts to illustrate some areas where the code may impact existing operations and compliance activities*. This submission is made on behalf of ESB Networks DAC in its capacity as the distribution system operator (DSO) as stated in the DSO Licence (2009).

ESB Networks appreciates the opportunity to respond to CRU's consultation and remains available to engage further with CRU regarding any elements of our consultation response at any time.

## 2.1 Role of ESB Networks

As Distribution System Operator (DSO), Distribution Asset Owner (DAO) and Transmission Asset Owner (TAO), ESB Networks works to meet the needs of all Irish electricity customers, providing universal access to the electricity system, and delivering and managing the performance of a system of almost 157,000 km of overhead networks; 26,000 km of underground cables; 800 high voltage substations; significant amounts of connected generation, including ~5.4 GW of renewable generation connected to the Distribution and Transmission systems; 2.5 million demand customers; and now several thousand "active customers" – including but not limited to domestic premises with microgeneration (a rapidly increasing number), demand side management, houses with battery storage, etc.

ESB Networks is also a key party to the delivery of CRU's National Smart Metering Programme (NSMP). To date, ESB Networks has installed over 1,400,000 smart meters in homes and small business throughout Ireland.

ESB Networks also delivers a range of services to the Irish retail electricity market serving over 2.5 million customers. It manages relationships with market participants and provides data in a timely and accurate fashion on a daily basis. It supports the wider market through the ringfenced Meter Registration System Operator (MRSO) and Retail Market Design Service (RMDS) and supports the wholesale Single Electricity Market through the provision of aggregated meter data.

ESB Networks' role in Ireland's move to net zero is pivotal and its role in the National Smart Metering Programme will enable and support visibility of consumption and power across the electricity network and customers.

Smart meters play a key role within the Clean Energy Package, particularly around the modernisation of the electricity market design and its focus on distribution network digitalisation to support the development of demand side services. As such, new obligations are set out for the distribution system operator in the Clean Energy Package relating to:

- Its role to enable more efficient wholesale market operation, as a result of distribution connected customers' active participation in wholesale markets and ancillary services;
- Its role with respect to the integration of renewables;
- Its role with respect to enabling the activities of individual customers, and communities, in their interaction with the electricity system.

Directive (EU) 2019/944 on common rules for the internal market for electricity sets out in Article 23 requirements for data management. Specifically, in Article 23 (2), that "Member States shall organise the management of data in order to ensure efficient and secure data access and exchange, as well as data protection and security."

Time of Use tariffs are among the new service features introduced to customers since Phase 1 of the National Smart Metering Programme (NSMP) went live in February 2021. ESB Networks is keen to support the measures which will further customers' awareness of the benefits of these tariffs and considers it timely to focus attention on measures to facilitate customer's use of their own metering and consumption data to compare suppliers' offerings on Price Comparison Websites.

# 3. ESB Networks' response to consultation questions

## 3.1 Response to Question 1

**Question 1: The CRU is proposing to amend the PCW accreditation framework to allow consumers to upload their smart meter data (obtained as a HDF via the ESB Networks Customer Portal) to receive a price comparison based on their actual historical electricity consumption. Do you agree with this approach? If not, why not?**

ESB Networks supports the use of actual smart meter data to inform the choice of tariff by customers.

However, ESB Networks considers the use of the HDF as a potential barrier and that a better solution would be for PCWs to access a customer's smart meter data directly via an API. Access via API would simplify the logistics of a final customer authenticating themselves, granting permission, and then the third party organisation gaining access to the data on the basis of that authentication and permission, and the final customer gaining access also – this would be carried out in a manner where there is one integrated experience for the final customer through - authentication, permission, access by final customer to data, and access to price comparison information. This could be achieved through systems integration of the price comparison website with ESB Networks smart meter data access solution (while the final customer could also carry out the same steps for authentication and permission directly on the ESB Networks site if they so choose). This would remove potential hurdles for the customer, such as the need to login to the portal account, download the HDF, navigate back to the PCW, and downloading the HDF and subsequently uploading it.

ESB Networks suggests that if resources are focused on developing the systems and processes that enable an API connection between the PCWs and smart meter data this will result in more customers receiving tariff advice based on actual consumption patterns than the proposed process.

## 3.2 Response to Question 2

**Question 2: The CRU is proposing not to put any restrictions on the minimum period of time that needs to be contained in smart meter consumption data that consumers can upload to the PCW. However, we propose that a warning message be included where consumers have included less than a year of data. Do you agree with this approach? If not, why not?**

Consistent with our response to Q1, ESB Networks considers an API connection to be the best method of PCWs accessing a customer's smart meter data.

ESB Networks agrees with the proposal that PCWs must make customers aware where there is less than 12 months of smart meter data available on which to develop a tariff comparison.

## 3.3 Response to Question 3

**Question 3: Is there anything else CRU should consider with regards to this matter?**

Should an option of an API be agreed, the API would be a standard one for all its Users delivering the same dataset, rather than a scenario where ESB Networks would have to have multiple datasets to deliver depending on the end user of the smart meter data.

## 3.4 Response to Question 4

**Question 4: In case a consumer submits a HDF containing periods of missing data, the CRU is proposing that the PCW takes the following actions: • If the missing data accounts for less than 1% of the total dataset: the PCW must use the most recent ESB Networks load profile and calculate an estimate for the consumption during the missing period. • If the missing data accounts for 1% or more of the total dataset: the PCW must inform the consumer that there is missing data, include the percentage of missing data, and ask if they wish to continue with the price comparison using an estimate for the missing data, as outlined above. Do you agree with this approach? If not, why not?**

ESB Networks has no objections to this proposal.

## 3.5 Response to Question 5

**Question 5: Is there anything else CRU should consider with regards to this matter?**

The proposal set out in 3.4 assumes that an individual customer's profile is in alignment with the ESB Networks load profile. There may be unusual situations where this assumption is not correct; as a result, estimates based on missing data may result in greater inaccuracies in forecasting of the bill.

## 3.6 Response to Question 6

**Question 6: The CRU would be interested in hearing whether respondents believe there is added value or not in allowing PCWs to ask consumers additional questions to identify their consumption behaviour, and tailor price comparisons. For example, whether a consumer has an Electric Vehicle. If you believe there is added value in this approach, what guidelines, if any, do you believe the CRU should implement to ensure a minimum standard across PCWs?**

ESB Networks has no objections to this proposal; however, it may only be relevant if the customer is expecting to change their consumption behaviour or install an appliance that consumes significant electricity quantities otherwise the historic electricity consumption provided via HDF or API should be sufficient. The same approach should apply to electricity suppliers.

## 3.7 Response to Question 7

**Question 7: The CRU proposes to require PCWs to implement the functionality to allow consumers to upload their smart meter consumption data (via HDF) from 1 January 2024. Do you agree with this approach? If not, why not?**

ESB Networks has no objections to this proposal. However, consistent with our responses to Q1 and Q2, ESB Networks is of the view that an API connection between the PCWs and smart

meter data is a better option once available. Delivery Timeline is subject to the publication of the Smart Meter Data Access Code (SMDAC).

## 3.8 Response to Question 8

**Question 8: Are there any other issues that you believe the CRU should take into consideration with regards to the timeline?**

In relation to the CRU's proposal to require PCWs to implement the functionality to allow consumers to upload their smart meter consumption data (via HDF) from 1 January 2024, ESB Networks at this point in time does not have any other issues that it believes the CRU should take into consideration with regards to the timeline.

## 3.9 Response to Question 9

**Question 9: The CRU proposes to amend the PCW accreditation framework to allow consumers to access price comparisons for microgeneration export tariffs between suppliers. It proposes consumers should be able to do this in one of two ways, either by submitting their actual (historical) export volume, or by submitting their deemed calculation. Do you agree with this approach? If not, why not?**

ESB Networks does not currently provide export data measured in kWh (from the meter) to the customer via the ESB Networks Customer Portal. It is the actual export interval data measured in kW that is provided to registered microgeneration customers in the HDF via the ESB Networks Customer Portal. A calculated kWh view (using interval data) is available on the Customer Portal.

## 3.10 Response to Question 10

**Question 10: Are there any other issues that you believe the CRU should take into consideration with regards to this functionality?**

Considerations have been provided in the ESB Networks' response to Question 9.

## 3.11 Response to Question 11

**Question 11: The CRU proposes to extend the requirement for an EAB to all tariffs available on the market, including time of use tariffs. Do you agree with this approach? If not, why not?**

ESB Networks supports the CRU's objective of providing customers with tailored information on all tariffs, including TOU.

However, ESB Networks does not support the extension of EAB to all retail tariffs. To complete an EAB calculation, suppliers and PCWs would require specific guidance on how much consumption is to be allocated to each period of the year. This would not be practicable for every tariff option.

For standard tariffs, such as those based on MCC01 and MCC02 meter configuration codes, standard profiles are prepared each year by ESB Networks. This provides a statistically robust allocation of consumption across each period of the year. This would not be possible for every retail tariff construct and therefore the EAB calculation would not be a robust basis for tariff comparison.

Instead, ESB Networks suggests that tariff comparisons are based wherever possible on the use of actual smart meter data, and preferably interval data. In this way, tariff comparisons can be tailored for each customer based on their actual consumption. These comparisons could be coupled with tips and advice to help customers realise any benefits that are available.

## 3.12 Response to Question 12

**Question 12: The CRU proposes to implement an EAB for all time of use tariffs from 1 January 2024. Do you agree with this timeline? If not, why not?**

ESB Networks suggests that tariff comparisons are based wherever possible on the use of actual smart meter data. In this way, tariff comparisons can be tailored for each customer based on their actual consumption. These comparisons could be coupled with tips and advice to help customers realise any benefits that are available.

As discussed in our response to Question 1, ESB Networks' view is that API connectivity between the smart meter data system and PCWs is likely to be a more effective process than requiring the customer to provide their HDF. Delivery Timeline is subject to the publication of the Smart Meter Data Access Code (SMDAC).

## 3.13 Response to Question 13

**Question 13: With regards to the methodology for calculating an EAB for all time of use tariffs, the CRU proposes to use the demand-weighted approach, which is the same that is currently used for the Standard Smart Tariff and Day/Night tariff. Do you agree with this approach? If not, why not?**

For standard tariffs, such as those based on MCC01 and MCC02, standard profiles are prepared each year by ESB Networks. This provides a statistically robust allocation of consumption across each period of the year. This would not be possible for every tariff construct and therefore the EAB calculation would not be a robust basis for tariff comparison.

Instead, ESB Networks suggests that tariff comparisons are based wherever possible on the use of actual smart meter data. This way tariff comparisons can be tailored for each customer based on their actual consumption. These comparisons could be coupled with tips and advice to help customers realise any benefits that are available.

## 3.14 Response to Question 14

**Question 14: Are there any other issues that you believe the CRU should take into consideration with regards to implementing an EAB for all time of use tariffs?**

It is ESB Networks' view that calculating EABs based on actual consumption data is a first-best solution as it ensures that the customer gets the most accurate reflection of the different costs of retail ToU tariffs.

Any other solution (demand-weighted/time-weighted) is a second-best option that could lead to customer confusion.

## 3.15 Response to Question 15

**Question 15: The CRU proposes to increase the limit on the maximum number of time of use tariffs from four to eight from 1 October 2023. Do you agree with this approach? If not, why not?**

ESB Networks assumes that the new tariffs are based on interval data service to avoid implications on existing RMS and central market systems.

It is important that there is sufficient choice for customers and competition between suppliers in the design and development of retail TOU tariffs. Regulation should not prohibit or limit structures that are attractive to customers and which are innovative.

The proposed increase is a reasonable approach to enabling competition while mitigating the risk of overloading customers with too many choices too soon.

## 3.16 Response to Question 16

**Question 16: The CRU proposes to end the limit on the maximum number of time of use tariffs from 1 April 2025. Do you agree with this approach? If not, why not?**

The proposed end to the limit on the number of retail TOU tariffs risks overloading customers with too many choices only a few months after the rollout of final smart meters is expected to complete.

ESB Networks suggests that CRU review the effectiveness of the increase from 4 to 8 tariffs before making a decision on removing the limit. A review in December 2024 would provide sufficient time for CRU to publish a decision in Q1 2025.

## 3.17 Response to Question 17

**Call for Evidence Question 17: CRU would welcome any views on whether respondents consider it appropriate to schedule a review on the structure of the Standard Smart Tariff ahead of the completion of Phase 2 of the NSMP (currently scheduled for the second half of 2024).**

ESB Networks does not consider it appropriate at this stage to schedule a review on the structure of the Standard Smart Tariff (SST). Customer surveys that we have conducted on the uptake of retail TOU tariffs have not indicated any concerns amongst customers with the construct of the SST. As such ESB Networks does not consider a review of the SST to be a priority issue or one of the measures that could significantly impact the uptake of retail TOU tariffs.

In our view, the SST provides a good entry level retail TOU tariff. It is based upon the familiar Day/Night Tariff timings with the only addition being the Peak Hours between 5-7pm.

Re-opening the design of the SST will have significant, market design, market system and meter firmware implications as each meter is configured to record the Day, Night, and Peak registers. Any implementation of a new SST would require re-planning of the existing NSMP delivery programme and will inevitably impact on phase 2 timeline. It is also expected to require changes to all Market Participants systems.

It is ESB Networks view that the market and customers are best served where an MPRN is classified as MCC12 meaning interval data is shared by ESB Networks to the registered electricity supplier. This ensures that the electricity supplier has all the necessary meter data to offer a tariff that best suits their customer needs.

## 3.18 Response to Question 18

**Question 18: CRU would also welcome views from respondents on which issues should be considered in such a review. Respondents can specifically focus on the following questions, or provide their own views:**

**a) Is the Standard Smart Tariff achieving its purpose to be an easy to understand 'entry-point' to time of use tariffs for consumers?**

The SST provides a good entry level TOU tariff and has been embedded into the present Smart Metering Solution. Customer surveys that we have conducted on the uptake of TOU tariffs have not indicated any concerns amongst customers with the construct of the SST.

**b) Do you have any concerns or recommendations in relation to the Day/Night/Peak structure of the Standard Smart Tariff, including the hours assigned to each time band?**

In our view the SST provides a good entry level TOU tariff and has been embedded into the Smart Metering Solution. It is based upon the familiar Day/Night Tariff timings with the only addition being the Peak Hours between 5-7pm.

Re-opening the design of the SST will have significant, market design, market system and meter firmware implications as each meter is configured to record the Day, Night, and Peak registers. Any implementation of a new SST would require re-planning of the existing NSMP delivery programme and will inevitably impact on phase 2 timeline. It is also expected to require changes to all Market Participants systems.

**c) In light of the proposed measure to extend the maximum number of time of use tariffs for each supplier from four to eight, do you see a continued need for the Standard Smart Tariff?**

The SST provides a good entry level TOU tariff and has been embedded into the present Smart Metering Solution.

The SST is also a backstop TOU Tariff for customers whose smart meter has poor telecommunication connectivity. The SST is based on three registers and can be manually read.

It is important that the SST remains an option for all customers and should be offered by all suppliers.

**d) Are there any other issues related to the Standard Smart Tariff you believe the CRU should take into consideration in a future review?**

Implementation costs associated with any alternative to the SST data service will have to be taken into account.

The future roadmap for smart metering tariffs should be for those based on interval data. SST is an acceptable entry point at present.

## 3.19 Response to Question 19

**Question 19: CRU would welcome any additional suggestions to incentivise the uptake of time of use tariffs.**

**Switch back to a Flat Tariff from TOU**

There is some evidence that customers are reluctant to move to a retail TOU Tariff as they are under the impression "that once you move, you can't go back".

This is related only to the meter configuration and doesn't constrain the type of retail tariff that can be designed by suppliers using Interval or SST (D/N/P) register services.

To address this potential barrier, CRU should consider providing re-emphasising perhaps via the Supplier Handbook that suppliers may design retail tariffs which have a single unit rate for each HH interval or each Register (D/N/P).

**Effectiveness of the Time of Use Primer**

The Supplier Handbook places an obligation on suppliers to take reasonable and effective steps to migrate all relevant customers to an appropriate retail TOU tariff in a timely manner.

In this regard, suppliers must provide customers who have a smart meter installed with a "Time-of-Use Primer" through an appropriate channel of communication, no more than three months after their smart meter installation.

Further, suppliers must contact customers who have not transitioned to a retail TOU tariff after each subsequent 12-month period.

A customer survey conducted by ESB Networks on behalf of the NSMP in June 2023 shows that only one in five customers with a smart meter recall being contacted by their Supplier in relation to Time-of-Use tariffs – up from 10% in December 2022 and 18% in June 2022.

The research shows that where the customer has received information from their Supplier this is effective in encouraging sign up. In the June 2023 survey, 33% of those contacted have signed up for a Time-of-Use tariff versus just 21% among those not contacted.

ESB Networks therefore suggests that CRU review the regulatory requirements in this area to improve its effectiveness. For example,

- Review the timing of the initial primer and the reminder
- Review the content of the "generic" timer
- Consider extending the need for the TOU Primer and Reminder beyond 2025

# 4. Conclusion

ESB Networks welcomes the opportunity to respond to the CRU Consultation on incentivising the uptake of 'Time of Use' tariffs (CRU202358). The energy sector is undergoing transformative change under the Clean Energy Package, Climate Action Plan and changing consumer preferences.

ESB Networks has a central role to play in facilitating this transformation. We aim to support customers in the transition towards being active participants in the energy markets.

ESB Networks agrees that it is timely to review the uptake of TOU tariffs two years into the programme, and to identify what measures market participants may introduce to support customers to take advantage of the benefits that TOU tariffs provide.

It should be noted that electricity suppliers and their engagement with customers is key to successfully encouraging customers to move to a TOU tariff. ESB Networks looks forward to working closely with CRU and Market Participants to ensure the successful amendment of the accreditation framework for Price Comparison Websites with the outcome of supporting customers to move to and benefit from Time of Use tariffs.

ESB Networks appreciates the opportunity to respond to this consultation and we remain available to discuss any element of our response with CRU at any time.

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30 August 2023

**Re: Commission for Regulation of Utilities' Energy Demand Strategy call for evidence**

To whom it may concern,

ESB Networks welcomes the Commission for Regulation of Utilities' (CRU) publication of a call for evidence on its Energy Demand Strategy CRU/202356 (EDS) which is a key action in the 2023 Climate Action Plan. ESB Networks is proud to support CRU on the development of the EDS and will continue to work closely and collaboratively with CRU on its design and implementation – in particular with regard to the areas of Demand Flexibility and Response whose implementation falls within the remit of ESB Networks.

ESB Networks is committed to the delivery of the Climate Action Plan and Ireland's journey to net zero emissions. Our own Networks for Net Zero Strategy[1] launched in January 2023 is aligned with this, with a key focus of connecting renewables to the electricity system and enabling the electrification of other parts of society including heat and transport. This will be underpinned by a reliable, resilient, and flexible electricity network, which will also facilitate customer-centric solutions for citizens to become active participants in the energy system.

Our National Network, Local Connections (NNLC) programme, which was established to work with and for our customers, has developed and made available Scenarios for 15-20% Flexible System Demand[2] and this is a key component of CRU's EDS considerations. Our Scenarios for 15-20% Flexible System Demand represents a significant body of evidence-based scenarios exploring possible pathways to achieve our national target of 15 - 20% flexible demand by 2025 and we look forward to sharing our stakeholders' perspectives which will help inform our next steps.

As part of this drive towards 15-20%, ESB Networks' role as DSO will continue to transform as mandated by the Price Review Five determination. We will accelerate this transformation to deliver the new solutions needed.

**Stated aims / project objectives** – We support the overall stated aims of the EDS project and would welcome the following in the next steps of this process:

networks-for-net-zero-strategy-document.pdf (esbnetworks.ie)

[2] ESB Networks – Scenarios for 15-20% Flexible System Demand – National Network, Local Connections Programme (divio-media.com)

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- The overall EDS project structure, workstreams, timelines, etc. ESB Networks has considerable relevant technical and industry experience and will use this to contribute to this process.
- It will be vital that all EDS project stakeholders align to its stated aims and project objectives and continue to adopt a collaborative approach as it evolves – this will be important to the overall success of the EDS project.
- Interactions and engagements between the EDS project and other, existing industry groups / fora will need to be considered too, for example, identifying any interdependencies, avoiding silos, etc. ESB Networks participates heavily in many existing industry groups / fora and remain available to support CRU in this regard.

**Project scope** – ESB Networks supports CRU's proposed project scope, and we consider the proposed phasing to be a sensible approach.

ESB Networks notes CRU's proposal to adopt "a discover-led approach" allowing for decisions to be made when new information becomes available. This is consistent with the NNLC's own "evidence-based, discovery-led approach" and we remain of the view that it is the best approach to what is inherently an adaptive challenge, in a rapidly evolving industry environment. It will be important to strike the right balance in this regard so that industry can begin to invest with a reasonable degree of regulatory certainty.

**Demand Flexibility** – As stated in our Scenarios for 15-20% flexible system demand, ESB Networks has worked closely with CRU and this working definition for demand flexibility. We remain broadly aligned with CRU's definition on the basis that it aligns with the original intent of a standalone target for flexible demand, as distinct from supply-side flexibility. However, should the definition be adapted, we will re-assess the scenarios and resultant action plan accordingly.

ESB Networks is proud to support the CRU on the development of the EDS and will continue to work closely and collaboratively throughout the forthcoming stages of the EDS. We will continue our extensive engagement with customers and stakeholders as we develop and work towards implementing the necessary initiatives to meet our 15-20% flexibility targets as set out in CAP 2023.

Kind regards,

Donal Crean.

Manager,

Strategy & Asset Management,

ESB Networks.

NETWORKS

# REVIEW OF LARGE ENERGY USERS CONNECTION POLICY

ESB Networks' Response to CRU's Review of Large Energy Users Connection Policy – 30/08/2023

Call for Evidence

CRU/202357

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# 1. Introduction

ESB Networks welcomes the opportunity to respond to the Commission for Regulation of Utilities' (CRU) Call for Evidence on "Review of Large Energy Users connection policy."

ESB Networks recognises that Large Energy Users (LEUs) are a fundamental aspect of the success of the Irish economy and that they will have an important role in Ireland's transition to a low-carbon economy. The issues that arise are well covered in the CRU's Call for Evidence relating to its Energy Demand Strategy.

Whilst large energy users can play a central role in carbon reduction through participating in flexible electricity demand, without urgent action there is growing public concern about the potential impact of the growth of LEUs on Ireland's binding climate emissions targets. ESB Networks recognises the importance of this call for evidence on how policy might be developed in the coming years to alleviate any such impacts.

ESB Networks recognises the importance of achieving a closely aligned strategy between Ireland's gas and electricity networks, to reduce carbon emissions and achieve our Climate Action targets. Furthermore, as new strategies for low or zero carbon demand growth are developed, there is the potential to accelerate solutions by looking for complementarities between flexible demand policy and connections policies.

For the purposes of this response, we refer to the ring-fenced business unit of ESB known as ESB Networks, and ESB Networks DAC collectively as 'ESB Networks'.

As Distribution System Operator (DSO), Distribution Asset Owner (DAO) and Transmission Asset Owner (TAO), ESB Networks serves the needs of all Irish electricity customers, providing universal access to the electricity system, and delivering and managing the performance of a system of almost 157,000 km of overhead networks; 26,000 km of underground cables; 800 high voltage substations; significant amounts of connected generation, including ~5.4 GW of renewable generation connected to the Distribution and Transmission systems; 2.5 million demand customers; and now several thousand "active customers" – including but not limited to domestic premises with microgeneration (a rapidly increasing number), demand side management and houses with battery storage.

# 2. Executive Summary

ESB Networks is committed to ensuring that the most timely and cost-effective connections to the grid are provided to all our customers including large energy users while ensuring that we are compliant with all regulatory and licence compliance obligations. We share the CRU's concern regarding the impact of electricity demand growth on Ireland's ability to meet greenhouse gas emission reduction targets, and the critical importance of introducing strategies for low or zero carbon demand growth.

Therefore, ESB Networks agrees that it is appropriate that we consider how best to balance these considerations in the development of policy for the connection of Large Energy Users to the electricity system.

ESB Networks recognises the importance of a closely aligned strategy between electricity and gas to achieve these objectives and agrees that it is suitable to consider policy changes for large gas and electricity customers together given that gas demand (and associated emissions) is likely to fluctuate depending on access to electricity capacity. ESBN has provided detailed answers to most of the questions below however, in summary, there are a number of key points that ESBN would emphasise. These are:

1. Any policy that is developed or proposed as a result of this Call for Evidence must be clearly defined and transparent. Any policy which could potentially impact on connections would need to be carefully considered in regard to EU and Irish law, should have a strong legal basis and must be clear and unambiguous, so that any such policy is capable of implementation in a fair and non-discriminatory manner. The potential requirement for legislative change to support any proposed policy changes should be kept under review.
2. It is important to define XLEU (as DG10 and Transmission connected) and LEU (DG7 – DG9) and that the initial focus of any measures should be limited to the XLEU cohort which will have a far greater impact on the system, and lower risk of unintended adverse impacts. In putting in place new policy it is important to be cognisant of the number and type of customers that are in each of the DG groups, their sizes and impact, along with their ability to meet any new requirements i.e. policy must be workable for the connecting customers.
3. Depending on the policy changes there may be an impact on the speed at which offers can be created and the cost associated with undertaking assessments, at least initially.
4. There is substantial potential to accelerate policy delivery and implementation, efficiently and effectively, if the solutions for connections policy are aligned with and/or apply developments underway to incentivising flexible demand amongst extra-large energy users. We set out later in this response how this could be achieved.
5. It should be acknowledged that connection policy is one very specific policy area that impacts on large demand users however it should not be considered in isolation. There are other areas of policy/regulation that impact on addressing climate concerns associated with such developments including, for example, the planning, environmental and market frameworks. ESBN would expect to see that developments would continue to be considered at the appropriate levels in these areas in a complementary manner, and that this is not being exclusively addressed through connection policy and energy regulation.

Solutions for low or no carbon connections and demand growth may rely on increasing cross-sector integration. The first practical example of this is electricity-gas integration, to the extent that bio-methane matching of flexible electricity demand can be realised in the coming years, in an accelerated manner, by extra-large energy users. It is vital that the necessary gas infrastructure and regulatory frameworks are in place in a timely manner to support this.

## 2.1 General Observations on Specific Issues Raised in the Paper

Before answering the specific questions raised in the paper, there are a number of observations that ESBN wishes to make about the general commentary included as part of the Call for Evidence.

### Statement regarding the obligations of System Operators:

ESB Networks notes the CRU's observations regarding the System Operators' (SOs) responsibility to assess applications considering obligations set out in the Climate Action Act. ESBN is supportive of using the connection process on an enduring basis to add value and aid in the delivery of policy and climate targets. We are working to see how this could be achieved and are committed to working with CRU to determine what is required to ensure that an implementable and grounded regulated process can be put in place. We also note that CRU suggest that the SOs will be required to implement a change to the assessment criteria for applications in the interim. Any changes in the interim period would require thorough consideration and engagement between CRU and the System Operators which is beyond the scope of this Call for Evidence and ESB Networks will engage with CRU separately in this regard.

### Aligning solutions for flexible demand and LEU connections policy:

In 2023 ESB Networks commenced the development of a range of innovative new flexible demand products, in response to the CAP 2023 target for 15-20% flexible demand by 2023. Pursuant to CRU direction, a number of these products target flexible demand designed to abate carbon (for example by shifting demand from periods when electricity carbon intensity is high to periods when it is low or storing electricity from periods and locations of renewables' oversupply, for efficient use at other times or locations). Further, pursuant to CRU direction, amongst the first of these products expected to be launched to market by the end of 2023 are targeting flexible demand from extra-large energy users. At the time of writing, the DSO is collaborating with representatives of the large energy and extra-large energy user (XLEU) industries to develop a range of initially bespoke flexible demand products, which can be replicated on a market basis once introduced.

Examples of the kinds of product in question involve XLEUs identifying substantial investments or actions which could be taken to make their demand flexible, for example through process shifting, electricity storage, or matching demand with zero carbon generation. To increase or accelerate the XLEU in taking these actions, they will be offered a range of incentives including:

- Flexible demand schedules which result in material and measurable carbon abatement;
- Robust measurement and reporting of abatement achieved, aligned with carbon measurement and reporting frameworks governing corporate investment activities;
- Market based financial incentives, where required to make projects commercially viable quickly and efficiently.

- The inability to secure increased connection capacity at existing sites is perceived as a barrier to making the requisite investments;
- The ability to secure increased connection capacity on a flexible basis would be perceived as a valuable incentive to participate in flexible demand schemes.

As such, notwithstanding any proposed direction that emissions profiling would be undertaken in processing connections applications, the alignment of connections and flexible demand policy could deliver accelerated impacts. Whereas the products described above initially target existing or already-contracted XLEU demand, the same tools, approaches, and methods could be used for the introduction of low/no carbon flexible demand connections or MIC increases.

It is important to acknowledge that such connections would place a high burden on the participant; any new or increased MIC would be subject to strict requirements regarding demand flexibility, potentially without financial compensation (on the basis that the incentive provided is access to increased MEC). Furthermore, while this work is underway (as regards flexible demand products), the complexity and challenge of introducing these low/no carbon demand products is high, and the timeframe available is short. Continued and consistent support and regulatory decisions from the CRU will be needed to ensure their introduction in a timely manner.

However, pending XLEUs' appetite for investment in low/no carbon demand growth, this proposal might address the CRU's policy objectives for demand growth and LEUs in a manner which better reflects the role and views of the DSO than any application of emissions profiling in isolation would.

# 3. ESB Networks' response to Call for Evidence questions

ESB Networks welcomes the opportunity to respond to this Call for Evidence. We note that this paper, which is focused on new demand connections for Large Energy Users, addresses one of three areas contained within the Energy Demand Strategy, the other two being linked to the uptake of Smart Services, and Demand Flexibility and response. As mentioned previously, ESB Networks recognises the need to consider the role of gas networks in the proposed measures, and in that context wants to draw attention to the potential role of gas – and specifically biogas – in enabling electricity flexible demand.

In our response, ESB Networks carefully considers the different categories under which questions are posed by the CRU and is cognisant of the need for consistency across each policy area. Where relevant, published ongoing work relating to these issues is cited to provide further context and clarity, in particular referencing developments from the National Networks, Local Connections (NNLC) programme.

There are six areas across which the seventeen questions are asked - decarbonisation of energy demand; demand flexibility; real time zero carbon emissions; definition of an LEU; islanded connections on the gas network; and general questions. ESB Networks' responses to these questions are set out sequentially below.

## 3.1 Decarbonisation of Energy Demand

**Question 1: Comments are invited from stakeholders on the proposed approach of decarbonising energy demand with a view to achieving net zero emissions from LEUs at time of connection. Please provide reasons and rationale for any views provided.**

The timing of having Net Zero emissions requires careful consideration by CRU in the development of regulatory policy changes and rulesets. A key part of that that consideration is the size of the customer's connection and so the customer type and volume of those customers and their ability to meet any new requirements including for example flexibility i.e. putting in place a workable solution for all customers.

Given their high level of energy demand, and an openness to investment which has been indicated to date, the participation of XLEUs in products of this nature – including to achieve net zero emissions from the time of connection – could have a material impact on overall capacity management and carbon emissions. This is as set out in Section 2.1. Our understanding is that regulatory policy changes and rulesets will in the first instance apply to XLEUs i.e. DG10 and transmission connections.

**Question 2: Comments are invited from respondents on the need for onsite generation and storage capability for LEU connections. Please provide reasons and rationale for any views provided.**

Despite significant progress in realising close-to-emission-free data centres, research undertaken by ESB Networks in developing *Scenarios for 15-20% Flexible System Demand* indicates that some sites' legacy dependence on carbon-intensive back-up generation has hindered efforts to achieve fully renewable operations. Onsite diesel generation remains a common backup power supply solution, thus not suitable for flexible demand due to environmental considerations and the operational limits applied to these resources as a result. ESB Networks is currently working with extra-large energy users to explore their readiness and appetite for introducing alternative sources of flexibility, including:

- Process shifting – this is suited to some XLEU business models, though this varies substantially between XLEUs. Furthermore, innovators in the field of data centre process shifting have emphasised that the technical potential for demand management through process shifting is nascent and not as large as occasionally reported.

- Behind the meter or locally sited storage – this is suited to some XLEU development plans, however whilst it may meet decarbonisation and flexible demand objectives, it would not be able to simultaneously meet site-reliability objectives for the XLEU.

- Behind the meter gas generation matched by domestic biogas injections (remotely from the site but to the Irish gas grid) – this is suited to some XLEU development plans and business models, however, will require extensive collaboration between ESBN, GNI, the CRU and the relevant XLEUs, potentially along with gas wholesale / retail market participants to facilitate.

While the solutions identified above can support net zero demand growth, and enable demand growth using existing network infrastructure, it should be noted that ESB Networks is required to complete technical studies relating to the new resources connecting, and some changes in connections policy may be needed to facilitate flexible connections with respect to the impact on or alternative use of the customers' MIC.

**Question 3: Comments are invited on the use of CPPAs for additionality of renewable generation outside of support schemes for decarbonising electricity consumption. What type of de-rating may be appropriate to reflect real-world performance of renewable generation during peak times? Please provide reasons and rationale for any views provided.**

In the absence of a service which enables demand customers to match their demand with renewable generation output, coincidence between the peak demand contribution of the demand customer and generation output from the new renewables' resources cannot be reliably anticipated. This is particularly the case where the CPPA-supported renewable generation is remote from the customers' new / additional demand. As such, to the extent that CPPAs are adopted as a mechanism to support capacity for LEUs, it would be necessary to couple these CPPAs with the LEU's participation in a flexible demand product. The products which ESB Networks is developing currently could facilitate this.

**Question 4: Based on preference that renewable electricity and /or gas contributes to Ireland's emissions targets and security of supply, do respondents have a view in relation to how electricity feeding into Irish system and renewable gas credits feeding into the Irish system could be tracked?**

As set out above, ESB Networks is currently developing a range of products to enable carbon abatement by means of matching localised carbon intensity of electricity with flexible demand. The products in development include a simple domestic demand shifting product for introduction in Q3 2023, and products targeting the XLEU and commercial storage development markets from the end of 2023. Further products targeting the participation of other commercial segments (initially industrial electric heat) will be introduced from 2024 onwards.

Amongst the more promising sources of net zero carbon demand growth and flexible demand is matching behind-the-meter gas generation facilities (for example a 40 MW gas reciprocating generator at an XLEU demand site) with domestically produced biogas injections into the Irish gas grid. At the time of writing, ESB Networks is engaging with stakeholders on a potential scheme whereby:

- ESBN contracts with XLEUs for demand flexibility. The XLEU provides this demand flexibility in part or in full through the use of on-site gas generation;
- The XLEUs contracts with domestic biogas producers through a PPA or similar for renewable gas injections matching their onsite generation activities. This might be done either directly (XLEU bilaterally contracts with a number of domestic biogas producers) or through an intermediary (XLEU contracts with an energy company who contracts directly with a number of biogas producers and aggregates these contracts into a single larger contract for the XLEU).
- Prospective domestic biogas producers can secure capital based on the revenue certainty provided by their PPA or similar supply contract with the XLEU (or intermediary energy company).

To facilitate all of these products, including where this involves the use of gas / biogas matching, ESB Networks is in the process of developing methods and tools to forecast, measure, and report the time-varying locational carbon intensity of electricity consumed, and the impact of flexible demand actions in reducing this. We are in the early stages of engagement with the SEAI on collaborating to align this development with the framework for XLEU emissions reporting that the SEAI is leading under the Climate Action Plan. Expert resources have been assigned and work is commencing in late Q3 2023. We would welcome the opportunity to further engage with the CRU on the point raised in this question as this development progresses.

**Question 5: Comments are invited from stakeholders on the use of renewable gas credits (feeding into the Irish natural gas system) in order to facilitate the connection of gas demand to the system. Please provide reasons and rationale for any views provided.**

ESB Networks is in the process of developing a range of (carbon abatement products, to incentivise large energy users to make operational and investment decisions that reduce location-specific emissions as part of local DSO balancing of flexible demand. It is intended that this could incentivise accelerated investment by XLEUs in behind-the-meter gas generation whose demand is matched by

domestically produced biogas injections (at a remote location) into the Irish gas grid. It is likely that this would only be viable subject to the availability of a robust mechanism for issuing and trading domestic green gas certificates.

The proposed approach, whereby an XLEU enters into a commitment to purchase substantial volumes of domestic biogas certificates could facilitate:

1. The stimulation of the Irish biomethane production market, by providing a "bankable" source of revenue for prospective biomethane producers, and

2. The stimulation of new business models supporting the aggregation and trade of domestic green gas certificates, to reduce the administrative and trading burden for small biogas producers and biogas certificate consumers;

3. The reduction of demand on the electricity network during peak hours, supporting carbon abatement and enabling additional electricity demand to be supported on the existing network infrastructure.

As such, as a matter of urgency, we would support the establishment of a robust and legally recognised system of green gas certification and trade in Ireland.

**Question 6: Comments are invited from respondents on enabling demand flexibility requirements as described above. Please provide reasons and rationale for any views provided.**

ESB Networks acknowledges and welcomes the potential sources of demand flexibility outlined in the CRU's *Review of Large Energy Users Connection Policy Call for Evidence Paper*, including:

- Deployment of onsite generation and/or storage
- Shifting of demand in real-time to times of high renewable energy availability
- Shifting of demand by location

These sources of demand flexibility are broadly in line with the proposals and evidence set out in Section 6.3 of *Scenarios for 15-20% Flexible System Demand*. To enable this demand flexibility, ESB Networks is in the process of developing a range of (initially bespoke) carbon abatement products, to incentivise large energy users to make operational and investment decisions that reduce location-specific emissions as part of local DSO balancing of flexible demand. At the time of writing, we are engaging with XLEUs on the potential for investment in bio-gas matched gas generation, behind-the-meter storage and/or process shifting to participate in these products.

New commercial arrangements are in development to facilitate these new schemes, and ESB Networks and the TSO are progressing an operating model to ensure the coordinated scheduling and dispatch of these services.

There is substantial potential to accelerate connections policy delivery and implementation, efficiently and effectively, if the solutions for connections policy are aligned with and/or apply developments underway to incentivising flexible demand amongst extra-large energy users, as set out in Section 2.1.

Regarding the shifting of demand by location, the potential for locational benefit is greatest prior to the connection of a new LEU, by providing transparency of the expected carbon intensity of generation behind individual grid connection nodes and encouraging customers to locate in relevant parts of the network. However, there is a risk that the connection of an XLEU in a remote network location may

drive higher levels of network reinforcements especially in more remote parts of the country, notwithstanding the potential for matching with renewable generation output. Furthermore, once an LEU is connected to the system, the potential for location specific demand-renewables matching will be determined by their network location.

**Question 7: Are there other sources of flexibility that can be provided?**

The sources of flexibility from LEUs identified in this document – behind the meter generation or storage, and process shifting, in particular where an LEU is located proximate to renewable generation oversupply – represent the main sources of flexibility from LEUs identified to date by ESB Networks. Additional, alternative sources of flexibility – some that could be implemented at industrial and data centres sites – are discussed in Section 6.9.3 of *Scenarios for 15-20% Flexible System Demand*.

An emerging area of focus within ESB Networks' National Network, Local Connections programme is the potential for flexible demand from industrial heat installations, however this technology is more likely a fit for LEU segments including food and drink production and pharmaceutical, which are typically smaller than the larger data centres associated with XLEU connections.

**Question 8: Comments are invited from respondents on the introduction of interruptible type supply contracts for gas connections. Please provide reasons and rationale for any views provided.**

ESB Networks notes that both globally at scale, and on a locational basis, sudden interruption to gas supplying on-site generation could result in a step change in electrical load to be supplied to the site(s). Depending on the size and ramp-rate, this could have adverse electricity network consequences, and at a minimum would result in unexpected increases in electricity demand. These would need to be considered when drafting suitable interruption arrangements. This may require limiting the ability of customers who have had gas supply interrupted immediately switching to importing power from Distribution or Transmission systems, even if this is within customers contracted MIC. This is because it is likely that gas interruption will be required at times of high gas demand / low supply which has the potential to have knock on impact on power generation availability.

Furthermore, if future gas contracts were interruptible, there is the risk of negative interactions between these interruptions and the use of behind the meter gas to provide electricity demand flexibility. As such, we urge that a careful and nuanced approach is taken to any such development. For example, if a gas demand connection were matched with contemporaneous bio-gas injections, could supply interruption of the gas connection be avoided?

## 3.3 Real time zero carbon emissions

**Question 9: Comments are invited on real time zero carbon emissions, shifting of demand in real time to times of high renewable energy availability. Please provide reasons and rationale for any views provided.**

ESB Networks' development of carbon abatement products, initially targeting XLEUs, is heavily influenced by the CAP23's focus on supporting "extra-*large energy users to achieve carbon-free demand*" and "*increasing the demand flexibility of LEUs through matching of demand with usage of low-carbon energy sources*". The products being introduced by ESB Networks will differ materially from the existing DS3 system services in which LEUs can currently participate in this regard. Firstly, the focus of ESB Networks' flexible demand product development is on services contracted from LEUs being provided through low- or no- carbon sources of flexible demand (as identified in earlier responses in this document). Secondly, whereas in general DS3 services incentivise demand to be available to

deliver the reserve providing characteristics of generation (i.e., infrequently dispatched, and relatively short duration responses), the products introduced will focus on the delivery of sustained responses which materially reshape demand, to a time when system congestion is less likely and/or renewables-based generation is more abundant.

As such, the products ESB Network is developing should enable real time net zero emissions from XLEUs. We believe that the products currently being developed to incentivise carbon abatement of existing or contracted XLEU demand could be extended to facilitate new net zero demand connections or demand increases for XLEUs.

The timing of having Net Zero emissions requires careful consideration by CRU in the development of regulatory policy changes and rulesets. A key part of that that consideration is the size of the customers' connection and so the customer type and volume of those customers and their ability to meet any new requirements including for example flexibility i.e. putting in place a workable solution for all customers.

Given their high level of energy demand, and an openness to investment which has been indicated to date, the participation of XLEUs in products of this nature – including to achieve net zero emissions from the time of connection – could have a material impact on overall capacity management and carbon emissions. This is as set out in Section 2.1. Our understanding is that regulatory policy changes and rulesets will in the first instance apply to XLEUs i.e. DG10 and transmission connections.

## 3.4 Definition of an LEU

**Question 10: Comments are invited from respondents on what they consider to be an appropriate definition of an LEU for electricity and gas for the purposes of this review. Please provide reasons and rationale for any views provided.**

ESB Networks considers that it is vitally important that measures that are contemplated by this call for evidence are focussed on the intended customer cohort, accounting for the impacts and costs of any new requirements applying to LEUs/XLEUs and their ability to meet same i.e. a workable policy.

The term Large Energy User (LEU) is used in various contexts and may be understood to mean different things to different stakeholders. ESB Networks is aware of one published definition of LEU which is contained in the Eirgrid's Statement of Charges. This defines LEUs as "*A Large Energy User (LEU) is generally a user that is connected at a voltage of 10kV or greater. An LEU is defined as a User in either DUoS (Distribution Use of System) tariff group DG7 or DG8 or DG9 or is connected to the 110kV network or is connected directly to the transmission system"* (source- EirGrid-_____.)

ESBN's view is that this definition is reasonable for DG7, DG8 and DG9 and given that it is part of the basis of TUoS charging, it may not be efficient to redefine LEU for the purposes of any new obligations.

ESBN notes however that the number of current and potential customers that will be affected if this definition of LEU is used as the basis for any new obligations will be considerably larger than if these new obligations are limited to XLEUs (DG10 and transmission connected). This is discussed further in our answer to the next question.

For clarification purposes, ESB Networks recommends that the CRU formally define LEUs as any customer between DG7 and DG9 and that XLEUs are defined as DG10, and transmission connected.

**Question 11: Comments are invited from respondents on whether this review should only apply to Extra Large Energy Users (XLEUs) in relation to electricity. Please provide reasons and rationale for any views provided.**

ESBN is supportive of the proposal to limit the application of new provisions to the XLEU category. The efficacy of applying any new provisions to smaller LEUs is discussed below.

A key part of the development of regulatory policy changes and rulesets is consideration of the size of the customers connection and so the customer type and volume of those customers and their ability to meet any new requirements, including for example flexibility i.e. putting in place a workable solution for all customers.

Smaller LEUs (for example a 10kV connected customer) may be subject to far higher commercial constraints than those that apply to an XLEU and by their nature may be less flexible/less capable of meeting new more onerous requirements. The Irish economy is dominated by micro, small and medium enterprises, many of which would meet the definition of LEU as set out above. Typically, these enterprises operate to tight margins and may not have high levels of capital available. Our primary concern is that the introduction of new obligations may not be proportionate for application to all LEUs and may have avoidable economic impacts. Our view is that the objectives of any such obligations might be met in a more proportionate and constructive manner through the introduction of incentivised flexible demand products which LEUs can participate in on a voluntary basis.

The feasibility of assessing and monitoring all LEUs under this definition should be considered as this will impact on the costs associated with the offer process and will inevitably increase the amount of time that is required to complete the creation of an offer. It is possible that customers (some of whom while being categorised as LEUs may be relatively small) will be required to incur extra costs to compile the information to allow ESBN to make the required assessment.

On this basis, ESB Networks agrees in general with the approach suggested in the Call for Evidence, the focus of any measures should be limited to the XLEU cohort as these will have a far greater impact on the system, and lower risk of unintended adverse impacts. Per above, ESB Networks recommends that the CRU formally define LEUs as any customer between DG7 and DG9 and that XLEUs are defined as DG10 or transmission connected.

This could be further refined to take account of customer location, demand profile and possibly a de-minimis level of MIC.

**Question 12: Comments are invited for gas LEU definition of those with a peak hourly demand greater than 50MW thermal input and a connection pressure of 16 barg or above. Please provide rationale for any views provided.**

ESB Networks cannot reply specifically to gas LEU policy. ESB Networks can only comment on gas use as it applies to an electricity demand management response.

## 3.5 Islanded Connections on the Gas Network

**Question 13: Comments are invited from respondents on the treatment of 'islanded' LEUs. Please provide reasons and rationale for any views provided.**

By way of technical clarification, ESB Networks would note that it is assumed that in such cases, the generation is located on the LEU site and is not parallelable with the ESBN distribution network.

Electricity generation and demand, as well as gas generation and demand, should increasingly be considered as related to each other, and as sources of flexibility on the energy system as a whole. In this context, ESB Networks' strong view is that islanded LEUs as described would significantly forfeit the potential for flexible electricity and gas demand, and carbon abatement achieved by leveraging the synergies of a cross vectoral approach of this nature.

**Question 14: Should the connection of LEUs to the natural gas network focus on security and decarbonisation as per the Government Policy Statement on Security of Electricity Supply. Please provide reasons and rationale for any views provided.**

ESB Networks, as Distribution System Operator, notes and understands how gas security of supply is intimately linked to electricity security of supply. As such, ESB Networks' proposals with regard to the coupling of electricity and gas through XLEU flexible demand would be on the basis of matching any gas consumption associated with electricity demand flexibility with the injection of domestically produced biogas into the gas grid. Solutions of this nature would be at worst net neutral in terms of gas security of supply, and net positive in terms of gas decarbonation. Furthermore, given the impact of these proposals on stimulating the Irish market for biogas production, we believe it likely that the net impact of these proposals would be positive both for security of supply (introducing new indigenous sources) and decarbonisation.

## 3.6 General questions

**Question 15: Please suggest any alternative approaches not captured above that could help in meeting the challenges outlined.**

At this time, we have no alternative approaches to those already outlined in the consultation and this response, however it is an area that we are focused on and will continue to explore alternatives and will engage with CRU and other stakeholders as alternatives are proposed and as policy develops.

**Question 16: Should provisions apply to all LEUs connections, or are there any exceptions that should apply? Please provide reasons and rationale for any views provided.**

ESBN's view is that provisions should apply only to the X-LEU sector. While it is possible that there could be specific types of customers within this sector that merit specific consideration (e.g., those customers providing essential services – e.g., electric transport of large electric vehicle charging services) – the bar for availing of any exemptions should be high, given the over-riding importance of the objectives of the proposed provisions.

ESBN's approach to the introduction of flexible demand is discovery led i.e. to the extent that a given solution works well for a given customer or industry segment, we believe it is important to replicate what works well. As such, subject to the successful introduction of provisions for XLEUs, policy changes which demonstrate societal and customer benefits and are proportionate / technologically feasible for LEUs could potentially to be extended to LEUs also. Again, and even more importantly for LEUs, consideration would need to be given to the type of customer when considering any policy changes to ensure they are workable.

**Question 17: Please suggest any incentives which could be applied to new LEU connections in facilitating some of the measures described above. Please provide reasons and rationale for any views provided.**

ESB Networks is in the process of introducing proposals to incentivise LEU connections to increase their demand flexibility and their potential for net zero carbon demand growth. We have prioritised the development of proposals in response to the priorities identified in Climate Action Plan 2023 and based on direction from the CRU. The evidence available to us indicates that this makes sense; in addition to their large electricity demand, industrial customers (including data centre operators) often have an appetite to invest in storage (or other flexible technologies behind the meter); high volumes of carbon can be abated if these operators of large energy user sites make the investments and/or operational decisions to shift large proportions of their site demands for multi-hour durations, from periods of high-carbon intensity (typically peak times) to periods of high renewables output (in their network location, in particular). The right incentives are needed and are in development, as set out earlier in this document.

An accelerated connection process for new LEUs with net zero carbon demand growth (i.e., demand which is matched fully by coincident renewable generation, including through the use of storage, process shifting, biogas matching etc) from the time of connection could incentivise industrial and data centre operators to make the investments and/or operational decisions outlined above.

# 4. Conclusion

ESB Networks is supportive of the CRU's Call for Evidence on this topic and considers it a timely point to carry out such a review. The growth of LEUs in the context of Ireland's climate action targets continues to be an area of scrutiny for both policymakers and the public, and all efforts to mitigate the associated carbon emission impact of this growth are to be welcomed. It is ESB Network's view that any new directives that occur as an output of this consultation should apply to XLEUs only, at least initially. ESB Networks remains committed to further defining and shaping policy as events progress.

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# Responses to three CRU Call for Evidence Papers

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## This document provides a response to the following call for evidence papers:

1) "Call for Evidence – Energy Demand Strategy Project"
2) "Consultation Paper – Incentivising the Uptake of Time of Use Tariffs"
3) "Call for Evidence Paper – Review of Large Energy Users Connection Policy"

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**Introduction**

We welcome the opportunity to contribute to the CRU's consultation on four evidence papers, relating to energy demand and flexibility. In this document, we respond to a subset of the question in the Call for Evidence in the Energy Demand Strategy document, the Incentivising Uptake of Time of Use Tariffs document, and the Review of the Connection Policy for Large Energy Users document.

**Energy Demand Strategy**

*Q1. What are stakeholder's views on the stated aims of the project? Are there barriers to achieving a successful outcome of implementing an energy demand strategy to meet project climate objectives (viz. carbon emissions reduction)? Are there areas that could benefit from greater policy and regulatory clarity? Are there areas where further alignment between the relevant entities (e.g. state agencies, corporate obligations) to coordinate and enable the delivery of an energy demand strategy would be beneficial?*

*Q2. What are stakeholder's views on the proposed scope (focus areas) and approach (phasing) of the project?*

The following excerpt is relevant in evaluating the stated aims of the energy demand strategy (emphasis ours):

*"In order for Ireland to meet its carbon emissions targets, it is necessary for electricity demand to become more flexible, in order to optimise the use of renewable generation* ***and to minimise demand during times of high carbon intensity on the electricity grid****. This will require new demand connections,* ***especially large energy users****, to invest in flexibility capability from the outset, and for all customers to increasingly shift their consumption away from peak-times and times of high-carbon intensity on the grid and towards times of high-renewable output.*

*Accordingly, the core project objectives are:*

*1) Co-ordinate measures aimed at ensuring overall electricity and gas demand is consistent with Ireland's carbon sectoral emissions ceilings.*
*2) Deliver demand flexibility and demand response initiatives, as outlined in CAP23, which sets a target of 15-20% demand side flexibility by 2025 and 20-30% by 2030.*
*3) Support the delivery of Irelands transition to reach net zero emissions by 2050."*
We agree with the broad objectives of the project. However, it would be useful to clarify the rationale behind the aspects highlighted in bold.

***"…Minimise demand during times of high carbon intensity"***

This is a desirable outcome; however it is an outcome that should be naturally achieved if there is efficient pricing in the market. This would be the preferred means to achieve this outcome. Time-varying cost-reflective tariffs can guide consumption away from periods of high cost. If there is a fully internalised carbon price, these periods coincide with periods of high carbon

intensity. Cost-reflective tariffs will therefore optimise demand during times of high carbon intensity. The first priority should therefore be ensuring there is an efficient carbon price and that barriers to shifting of demand/supply are minimised (e.g. such as behavioural or investment barriers).

***"…Especially large energy users"***

In order to achieve the flexibility objectives in a welfare-maximising manner, consumption must shift between time periods. Societal welfare is maximised when the portion of total consumption that must shift is that portion for which the benefit of consuming at a different time period is less than the cost of shifting this consumption. While it may be the case that large energy users could be the consumers for whom the benefit of shifting exceeds the cost of doing so, it is not guaranteed that this will be the case in all circumstances. Furthermore, if this is the case, an objective policy instrument that treats all consumption equally will result in demand response being provided by large energy users. If that is not the case, and other consumption types can deliver the required flexibility at a lesser cost in certain time periods, then it will allocate demand response accordingly.

In summary, if a cost-effective system is the stated objective, then targeting large energy users specifically is not required. If there are other objectives that result in large energy users being the preferred provider of flexibility, then this rationale should be provided.

*Q4. What are stakeholder's views on the definition for demand flexibility? How should demand flexibility be measured and reported on an ongoing basis? What metric (annual peak system demand / total annual energy consumption / other?) should be used. How should compliance with the CAP targets be assessed for demand flexibility in 2025 and 2030?*

Given the absence of an agreed-upon definition of demand flexibility in the literature, the definition proposed by the EDS project (energy demand which is available to / capable of changing its demand consumption profile) is a reasonable one. We note that it differs from the definition given in the ESBN paper, "Demand with the ability to respond to changing states of generation, demand, storage and network conditions", and so clarity on which definition will be pursued and why would be welcome.

In the context of a target for flexible demand, consideration should be given to the characteristics/capabilities required from flexible demand. In particular, the definition explicitly notes that there is no intention of flexible demand being available at peak demand. Furthermore, there is no detail on the timescales at which flexible demand should be capable of changing its consumption profile. Finally, the common question of how to measure/define the baseline is not addressed.

The source of the target (15-20% by 2025) of flexible demand would be instructive here. Demand may meet the technical definition of flexible demand chosen and yet not be available at the times and/or timescales necessary to achieve climate targets and/or facilitate secure system operation. For this reason, the specific characteristics of flexible demand and/or services that flexible demand should deliver should be considered alongside the definition of flexible

demand. In short, the policy target should be disaggregated according to system requirements, with demand flexibility evaluated against the ability to deliver/meet the requirements. In the absence of such disaggregation, the current definition of flexible demand may meet the general policy target but with a limited impact on system emissions and/or security.

Ideally, market forces would incentivise the right types of flexibility in the right amounts. Failure to do so represents a market failure and the source of the failure should be investigated. In the medium to long term, policy should focus on implementing the price signals that best facilitates this. This will be especially important as targets become increasingly binding and marginal changes in a certain type of flexibility will have relatively greater impacts on system performance.

*Q5. What should be the areas of focus for demand flexibility? Are there any policy or regulatory barriers to the introduction of technologies that could be useful in providing flexibility? What incentives should be considered?*

As stated above, it is important to note that demand flexibility is important to the extent that it provides valuable services to system operation. These services, and the extent to which each will be required, should be identified and targets specified accordingly. From this, the demand flexibility obligation may be achieved in a way that best serves the system.

In the short term, where policy wishes to focus on flexibility specifically, the services that flexibility will provide should be identified and incentives, if required, designed accordingly. In particular, system services revenues should incentivise some flexibility and so may naturally increase the level of demand flexibility on the system.

The most efficient and effective way to incentivise flexibility is to give efficient price signals. Not only will this incentivise existing consumers to adopt demand response in the efficient amounts, it will incentivise innovation in new solutions to meet these requirements.

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**Incentivising the Uptake of Time of Use Tariffs consultation paper**

**PRICE COMPARISON WEBSITES**

*Question 1: The CRU is proposing to amend the PCW accreditation framework to allow consumers to upload their smart meter data (obtained as a HDF via the ESBN Customer Portal) to receive a price comparison based on their actual historical electricity consumption. Do you agree with this approach? If not, why not?*

This allows consumers to make more informed decisions and therefore represents a positive development.

*Question 2: The CRU is proposing not to put any restrictions on the minimum period of time that needs to be contained in smart meter consumption data that consumers can upload to the PCW. However, we propose that a warning message be included where consumers have included less than a year of data. Do you agree with this approach? If not, why not?*

In question 4, below, it is suggested that the PCW provide an estimate for missing data. It is not clear whether an estimate will be calculated for any months excluded from a data submission. A warning plus an estimate for the missing data to construct an annual profile would appear to be a prudent approach.

There is a strong seasonality associated with energy consumption. A consumption profile that does not reflect consumption in all seasons may bias decision-making. For instance, if suppliers vary on their night tariff, and night consumption is proportionally greater during certain seasons, partial data may guide consumers towards a certain supplier depending on the portion of data presented. A warning message may be insufficient to overcome this bias in some cases as it will be difficult for the user to identify the bias and correct for it themselves.

*Question 3: Is there anything else CRU should consider with regards to this matter?*

It may be worth noting that engaging with the PCW by downloading their data from an ESBN portal and then uploading this to the PCW will probably only be utilised by the most engaged consumers, given that it requires several steps via different platforms/websites. Thus any incremental switching to smart tariffs as a result of these measures, while welcome, is likely to be low.

*Question 4: In case a consumer submits a HDF containing periods of missing data, the CRU is proposing that the PCW takes the following actions:*

- *If the missing data accounts for less than 1% of the total dataset: the PCW must use the most recent ESBN load profile and calculate an estimate for the consumption during the missing period.*
- *If the missing data accounts for 1% or more of the total dataset: the PCW must inform the consumer that there is missing data, include the percentage of missing data, and ask*

*if they wish to continue with the price comparison using an estimate for the missing data, as outlined above. Do you agree with this approach? If not, why not?*

This approach would solve the issues raised above in relation to Question 2. Note however that this agreement with the estimation constitutes an extra step, and so (some small) attrition is expected as a result.

*Question 6: The CRU would be interested in hearing whether respondents believe there is added value or not in allowing PCWs to ask consumers additional questions to identify their consumption behaviour, and tailor price comparisons. For example, whether a consumer has an Electric Vehicle. If you believe there is added value in this approach, what guidelines, if any, do you believe the CRU should implement to ensure a minimum standard across PCWs?*

Incomplete information can bias consumption estimates. Therefore, inclusion of such information would aid PCWs in providing more accurate recommendations, as predicted consumption values can better reflect an individual consumer's circumstances.
Using anonymised data received from consumer submissions (or data from other sources), price comparison websites should be able to predict the influence of factors such as EV ownership on expected consumption using statistical models. The precise model specification is something which cannot be specified ex ante, and so it is difficult to enforce a minimum standard. There is a strong incentive for PCWs to give an accurate estimation so the requirement for regulation in this area is expected to be of lesser concern.

Requiring PCWs to include this facility would again constitute an extra step which would increase attrition and so any move to solicit and include this information from households by PCWs should be optional.

*Question 16: The CRU proposes to end the limit on the maximum number of time of use tariffs from 1 April 2025. Do you agree with this approach? If not, why not?*

There is a trade-off with regard to the number of tariffs that are offered and the extent with which consumers can choose a suitable tariff. On the one hand, more tariff options can help consumers find a tariff that suits them best. On the other, there is a choice overload issue, where too much choice can make it difficult for consumers to weigh up the relative pros and cons. PCWs, which may offer bespoke calculations based on individual metered consumption, can overcome this. In order for this to remedy the choice overload problem, the majority of consumers would have to avail of the PCWs. Measures to encourage the use of PCWs when deciding on a tariff could help in this regard.

*Question 18: CRU would also welcome views from respondents on which issues should be considered in such a review. Respondents can specifically focus on the following questions, or provide their own views:*
*a) Is the Standard Smart Tariff achieving its purpose to be an easy to understand 'entry-point' to time of use tariffs for consumers?*
*b) Do you have any concerns or recommendations in relation to the Day/Night/Peak structure of the Standard Smart Tariff, including the hours assigned to each time band?*

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*c) In light of the proposed measure to extend the maximum number of time of use tariffs for each supplier from four to eight, do you see a continued need for the Standard Smart Tariff?*
*d) Are there any other issues related to the Standard Smart Tariff you believe the CRU should take into consideration in a future review?*

One aspect of smart tariffs that is of potential concern is whether suppliers are willing to offer a competitive rate. Lower competition means there is a lower incentive to offer the most attractive rate for consumers, and therefore a rate that can incentivise efficient demand profile. The standard smart tariff can provide this incentive. Therefore, there may be a continued role for a standard smart tariff that is calibrated effectively to the varying marginal costs of the system.

**Review of Large Energy Users Connection Policy**

**Q.1 Comments are invited from stakeholders on the proposed approach of decarbonising energy demand with a view to achieving net zero emissions from LEUs at time of connection. Please provide reasons and rationale for any views provided.**

The context of decarbonisation, and in particular meeting the legally binding targets under the Climate Act, is well put throughout the document. Any increase in electricity demand, from any source, puts emissions reductions and carbon budgets in doubt and this point is well made.

The specific focus on achieving net zero emissions from LEUs at the time of connection is not justified in the document. It is difficult to understand the focus on LEUs at time of connection, thereby distinguishing between new and existing LEUs. It is also difficult to understand the focus on LEUs vs other types of demand.

In determining optimal demand reduction, the marginal societal benefit from electricity usage should govern policy decisions. By targeting demand reductions from those sectors with the lowest marginal benefit of electricity usage, the sector best able to reduce their demand is targeted. Given the high cost associated with energy usage for an LEU, they have a very strong incentive to use energy efficiently, and so it is doubtful that the marginal benefit of electricity usage by an LEU is lower than any other sector. Indeed, the converse may well be true: households or small businesses may have a greater capacity for energy reduction and efficiency compared to LEUs.

Given this background, specific requirements regarding carbon emissions from new entrants to one particular sector is not economically justified. While such a move may be welcome insofar as it may assist in reaching climate goals, an alternative policy that (a) targets the sectors most able to reduce demand/emissions and (b) does not discriminate against new entrants would be preferable.

**Q.2 Comments are invited from respondents on the need for onsite generation and storage capability for LEU connections. Please provide reasons and rationale for any views provided.**

The document states that "*the CRU will consider the possibility of requiring prospective LEUs seeking connections to the electricity or natural gas grid to achieve net zero emissions at time of connection*". It is not clear from the document whether this will merely require that any on-site generation must be zero carbon, or whether new LEUs will be required to have on-site generation **and** that it must be zero carbon. These requirements are presumably in addition to the requirement that new LEUs secure CPPAs to match their electricity generation and to secure renewable gas certs to match their gas consumption.

Requiring any demand and/or on-site generation from new LEUs to be zero carbon again assumes a qualitative difference between new and existing demand which is not economically justified (instead, the marginal benefit framework above applies).

Requiring LEUs to **have** on-site generation (in addition to its being zero carbon) implies that new LEUs should bear (at least some) responsibility for contributing to system adequacy in a way that existing demand or new demand from other sources does not. The imposition of the requirement for ensuring adequacy on specific consumer groups represents a departure from the status quo (where responsibility for adequacy rests with the Regulators and System Operators). There is no apparent rationale for this departure.

Requiring specific consumer groups to contribute to adequacy introduces discrimination in the market and shifts the responsibility for adequacy provision from the economic optimum. If any specific user group is using a disproportionate share of system resources, such that they increase the probability of missing adequacy targets relative to other consumer groups, this is best addressed by increasing network charges on that particular group, rather than requiring that group to have on-site generation. Increasing charges rather than requiring additional generation has the added benefit of allowing the System Operators to invest in adequacy resources in the locations that most require it, rather than having grid investments situated where new LEUs are situated.

**Q.3 Comments are invited on the use of CPPAs for additionality of renewable generation outside of support schemes for decarbonising electricity consumption. What type of de-rating may be appropriate to reflect real-world performance of renewable generation during peak times? Please provide reasons and rationale for any views provided.**

Again, requiring new entrants to one subsector only to purchase CPPAs to cover their demand is not justified. Instead, the marginal cost/benefit framework should apply.

The requirement for derating applies only if one accepts the premise that all new LEU demand must be zero carbon. If this is the goal, then derating at peak times is not optimal, and instead firms should be required to match 100% of their demand with 100% zero-carbon supply, at all times. Any derating will fall short of this goal and will therefore not ensure the goal of zero carbon impact of new LEU demand.

Should a derating policy be pursued nonetheless, any derating should (a) apply in a uniform manner across all users and (b) should be based on the marginal, rather than the average, contribution to supply.

**Q.6 Comments are invited from respondents on enabling demand flexibility requirements as described above. Please provide reasons and rationale for any views provided.**

The rationale for requiring a higher contribution towards demand flexibility from LEUs is not justified. If LEUs are not better able to provide demand flexibility than other users, requiring a greater response from them is not efficient. If LEUs are better able to provide demand flexibility than other users, they should have a natural incentive to do so, based on market signals. In this case, if the demand response from LEUs is not greater than other users, the market is not designed correctly, and so the source of this inability to naturally incentivise LEUs to provide demand response should be determined before supplemental policies or regulations are imposed.

**Q.8 Comments are invited from respondents on the introduction of interruptible type supply contracts for gas connections. Please provide reasons and rationale for any views provided.**

Interruptible contracts for gas and electricity alike are always welfare-improving if they are voluntary. An energy user who can accommodate supply interruptions will provide this flexibility only if they have an incentive to do so, and so facilitating this via interruptible contracts is optimal. Requiring, as opposed to facilitating, interruptible type supply contracts would not be welfare-improving unless it can be shown that there is a market failure.

**Q.9 Comments are invited on real time zero carbon emissions, shifting of demand in realtime to times of high renewable energy availability. Please provide reasons and rationale for any views provided.**

Any move to requiring zero carbon emissions in realtime would impose significant costs and would require sophisticated markets not just for supply and demand but also for guarantees of origin of renewable energy in realtime. Any future move to real time zero emissions requirements, without significant detail on the exact requirements and enforcement, would therefore require current investors to bear significant regulatory risk at investment stage. The benefits of requiring new connections to move to real time zero emissions at an unspecified future point and under unspecified future circumstances should be shown to outweigh the costs of doing so before such a move is contemplated.

Furthermore, the wholesale market should incorporate price signals that incentivise shifting demand to low-carbon (and therefore low-price) periods. If the market does not currently incentivise this behaviour, either the marginal costs of shifting outweigh the marginal benefits, or there is a market failure. If the former case holds, requiring LEUs to shift would result in a welfare loss. If the latter case holds, the market failure should be identified and resolved, at which point explicit interventions can be considered, assuming the marginal benefits outweigh the marginal costs.

Finally, balancing demand and supply in realtime is the responsibility of the system operator. Requiring a subset of energy users to actively shift their demand ventures into the realm of requiring a subset of demand to deliver on system operator responsibilities and so should be justified.

**Q.10 Comments are invited from respondents on what they consider to be an appropriate definition of an LEU for electricity and gas for the purposes of this review. Please provide reasons and rationale for any views provided.**

The rationale provided by the CRU for focusing on a particular classification of energy user according to their size is that “the connection of LEU demand is having a far greater impact on the system than smaller demand sites”. The observation that larger users have larger system impacts is self-evident and does not, by itself, constitute evidence that this user group should play, or be required to play, a particular role in decarbonisation. The marginal impact of demand

on emissions, rather than the scale of the demand from a particular user, should be the governing factor.

If LEUs, however defined, are found to impose greater system costs relative to other types of users, resulting from their demand profile or some other feature specific to LEUs, it is appropriate to have this extra cost reflected in specific policies or charges. The revenue raised from these charges can be utilised by the System Operators to invest in appropriate measures to mitigate the impacts of the specific features of LEUs that lead to extra costs.

**Q.13 Comments are invited from respondents on the treatment of 'islanded' LEUs. Please provide reasons and rationale for any views provided.**

The appropriate counterfactual in determining whether an "islanded" LEU will place strain on gas security is whether or not a requirement to connect to the electricity network would (a) cause the LEU to proceed with both a gas and an electricity connection, or (b) cause the LEU to simply not connect. There is no exploration of the relative likelihood of either counterfactual in the supporting documents. As things stand, the vast majority of LEUs are connected to, and put strain on, the power system, and so islanded LEUs may actually ease, rather than endanger, power system security.

An LEU that would otherwise be "islanded", but that is incentivised or required to connect to the power system, may substitute electricity for gas usage. The overall impact on energy security (including gas and electricity security) depends on the marginal increase in gas security compared to the marginal decrease in electricity security. Given that the marginal electricity generator at times of system stress is almost always a gas generator, it is highly unlikely that requiring an LEU to connect to the power system would reduce gas demand (as the LEU will use gas either directly or via the power system to meet its electricity requirements), but it may increase electricity demand at times of system stress (if the LEU meets its demand via electricity rather than via its own gas generation). Thus, the overall impact on security is likely to be negative.

Requiring islanded LEUs to have interruptible gas contracts would mitigate any gas security concerns without imposing on electricity security and would also incetivise the possible purchase of off-grid biomethane by the LEU.

**Q.15 Please suggest any alternative approaches not captured above that could help in meeting the challenges outlined.**

When setting policy targets, the required flexibility services should be incentivised in the context of timescale of responsiveness and in the quantities that best serve the system. If appropriate incentives are provided, the sources will emerge in the right amounts. Policy should anticipate the sources where there may be investment, innovation or behavioural factors limiting the provision of flexibility that require additional intervention.

**Q.16 Should provisions apply to all LEUs connections, or are there are any exceptions that should apply? Please provide reasons and rationale for any views provided.**

Any exceptions to any policies or provisions should be based on either economic or other grounds of importance. Economic grounds should be based on demonstrated market failures, eg, locational issues. If an LEU is present in a constrained location where they do not receive price signals that reflect local network constraints, additional policies may be required to align the LEU demand profile with that which suits local network constraints. Ideally, this will be based on a locational marginal price.

Alternatively, exemptions may be made on grounds of public good. If an LEU is providing an important public service, the benefit of this may outweigh the additional cost of exemption from flexibility provision.

**Q.17 Please suggest any incentives which could be applied to new LEU connections in facilitating some of the measures described above. Please provide reasons and rationale for any views provided.**

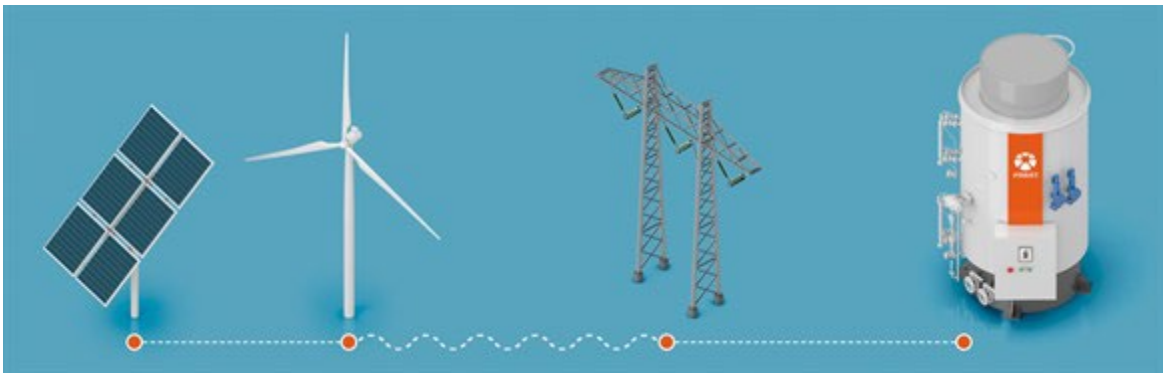
Incentives should be based on the market failure, with external benefits internalised via a subsidy and external costs internalised via a charge.

Dear CRU,

Thank you for giving us the opportunity to give our feedback to this Energy Demand Strategy.

Flex Power Solutions are specialising in electrification of high temperature heat in Irish Industry. In our opinion, electric boilers are the best tool to reduce GHG emissions in industry and district heating. We intend installing numerous electric boilers that convert excess renewable electricity into useful heat, only in times of ample generation. By operating these boilers flexibly, we can help our clients to achieve significant carbon reduction while saving money. Using our proven technology in new ways we maximise the use of existing grid infrastructure to minimise dispatch down of wind turbines, while providing valuable zero carbon grid services to Eirgrid.

Electrode boiler technology, when rolled out smartly to industry, can deliver dispatchable demand equivalent to an interconnector on the west coast and at zero cost to the state. The boilers are available now and are proven in the field. Due to the reduction of dispatch down of wind generators, future wind turbine investors will be able to enter the RESS auction at more competitive prices. Ireland will reach it's 2030 targets with less assets built, faster and with a reduced cost to the electricity consumers of the island.



Wind is Irelands best natural resource to help tackle the climate change emergency as part of the energy revolution. Ireland's success in wind generation is unmatched anywhere in the world. This low-cost indigenous energy will benefit our economy as we move towards a net zero carbon future. In time, the gigawatts of offshore power will be used to produce green fuels and we will become an exporter of energy on a huge scale. In the meantime, towards 2025, our resource can be used to support Irish jobs in cities and rural economies alike. The fast deployment flexible electric boilers will give the dairy, pharmaceutical, drinks and other industries a competitive advantage, thereby securing jobs in Ireland while also reducing our reliance on imported fossil fuels.

I am available to discuss further how our core technology can help sustainably decarbonise the Irish economy by 2025 and beyond. Overleaf are more details.

Kind regards,

Helen O'Sullivan, Operations Manager
T: +353 (0)87 9078061
E: helen.osullivan@flexpowersolutions.com
W: www.flexpowersolutions.com

Questions

Q1. What are stakeholder's views on the stated aims of the project? Are there barriers to achieving a successful outcome of implementing an energy demand strategy to meet project climate objectives (viz. carbon emissions reduction)? Are there areas that could benefit from greater policy and regulatory clarity? Are there areas where further alignment between the relevant entities (e.g. state agencies, corporate obligations) to coordinate and enable the delivery of an energy demand strategy would be beneficial?

The aims of the project are good but need to be expanded to couple the heat sector with the electricity sector. Trying to move existing electricity demand (and future data centre demand) to flexible consumption is worth doing in the medium term however greater carbon saving can be achieve at scale and quickly by introducing flexible electricity consumption to produce heat and displace fossil fuels.

Flex Power are working with a range of existing heat demand clients who have over 1GW of constant heat load which could be used to absorb would-be-wasted renewable electricity in a hybrid delivery of heat model. These sites are leaders in delivering Ireland's carbon reduction but they need the electricity market to move into the future of flexible demand and dispatchable demand.

Areas for greater policy clarity:

1. Government supports should be technology neutral and be awarded on Euro/tCO2 abated.
    a. Policy makers should not be burdened with having to pick the best technology. If the incentives are correctly aligned with government ambitions, then industry will deliver the most sustainable technology.
2. Carbon ceilings applied to the electricity sector should not act as barriers to sensible decarbonisation of the whole economy. The heat and transport sectors need the electricity grid as the back bone of Irelands decarbonisation.

Areas for greater regulatory clarity:

1. The System Operators update their EDIL software and give flexible consumers access to the electricity balancing market.
    a. Currently the TSO Scheduling and Dispatch software cannot give a signal to flexible consumption units (it can only schedule generation units). This excludes electric boilers, batteries & thermal storage from the real-time Balancing Market.
    b. This will also reduce the problematic dispatch down of wind and solar generation assets
2. Request that the electricity System Operators make non-firm electricity grid import capacity available.
    a. In times of ample renewable generation there is a saturation of zero carbon power in our existing grid. This is not currently available to Irish industry who are willing to substitute fossil fuel boilers with electric boilers for high temperature heat.
3. Network & Market charges
   Legacy charging structures and levies are compounding Irelands reliance on imported fossil fuels, and exacerbate dispatch down of our wind fleet. They hide the true wholesale price of electricity from new flexible consumption. Realignment of charging structures with the Government's 2030 ambitions can lead to the rapid deployment of multi megawatt scale electric boilers while reducing Irelands reliance on imported fossil fuels. Leveraged on the success of wind generation this existing technology can decarbonise heat and help us reach our 2030 emission targets. This technology is available now and can have a positive return on investment.

Network tariffs must focus more on SNSP (System Non-Synchronous Penetration or the percentage of renewable power generation in any given hour) rather than consumption trends. In the future the biggest variable in the electricity market will be the amount of wind/solar generation. Current government targets aim to have over 22GW of RESe generation with only a small fraction of that needed for consumption.

Further alignment between the relevant entities is needed. Specifically the SEAI need to work with the DSO , TSO and CRU to understand how the heat sector can be a service provider to solve the problems Ireland is trying to overcome in delivering 80% renewable power generating on a poorly connected island. Sector coupling and hybrid delivery of heat will accelerate Ireland's decarbonisation with the least cost to our citizens.

Q2. What are stakeholder's views on the proposed scope (focus areas) and approach (phasing) of the project?

No response

Q3. What are stakeholder's views on energy demand profiles and the challenges arising from the associated carbon emissions? Considerations may include other information and data that should be included. Or challenges, such as new demand.

Flex Power would caution against hindering our economy by under investment in dispatchable generation assets. These units will have very little run time when we achieve our 80% renewable targets but none the less, they are an important part of Irelands security of supply. If smaller behind the meter generation units were deployed, they might be more costly and less environmentally friendly than a coordinated grid connected generation capacity.

Q4. What are stakeholder's views on the definition for demand flexibility? How should demand flexibility be measured and reported on an ongoing basis? What metric (annual peak system demand / total annual energy consumption / other?) should be used. How should compliance with the CAP targets be assessed for demand flexibility in 2025 and 2030?

Flexibility should be considered against the do nothing scenario.

Flexibility will come in two forms:

1. Demand turn down - to elevate peak loads
2. Demand turn up – to elevate dispatch down of wind and solar generation and offset fossil fuel consumption

Q5. What should be the areas of focus for demand flexibility? Are there any policy or regulatory barriers to the introduction of technologies that could be useful in providing flexibility? What incentives should be considered?

The fasted and biggest delivery of flexible demand will be from the deployment of electric boilers on industrial (and district heating) sites, co-located with their existing thermal boilers in a 'hybrid deliver of heat'. This will:

- Decarbonise our economy quickest
- Provide dispatchable flexible demand at scale
- Reduce the amount of new grid needed
- Reduce the amount of wasted renewable electricity
- Support Irish jobs for the green future
- Reduce the cost on citizens of achieving our GHG reduction targets




**Q6. What are stakeholder's views on the attached ESBN document, 'Scenarios for 15-20% Flexible System Demand (DOC-120423-HRS)', which has been published as part of this four document package?**
**Respondents are encouraged to provide detailed responses by referencing specific sections of ESBN's document.**

The document is too focused on moving existing demand, which is difficult. It has missed the biggest opportunity to deliver the governments flexibility demand fast and at large scale. Flexible electrification of industrial heat can be delivered cheaply and quickly if all parties coordinate on a shared decarbonisation plan. Flexible Power Solutions submitted a response to the consultation 'Scenarios for 15-20% Flexible System Demand' on 30/08/2023.

See Appendix 1 for Flex Power's detailed reply to the ESBN 2021 consultation

Benefit of electric boilers:

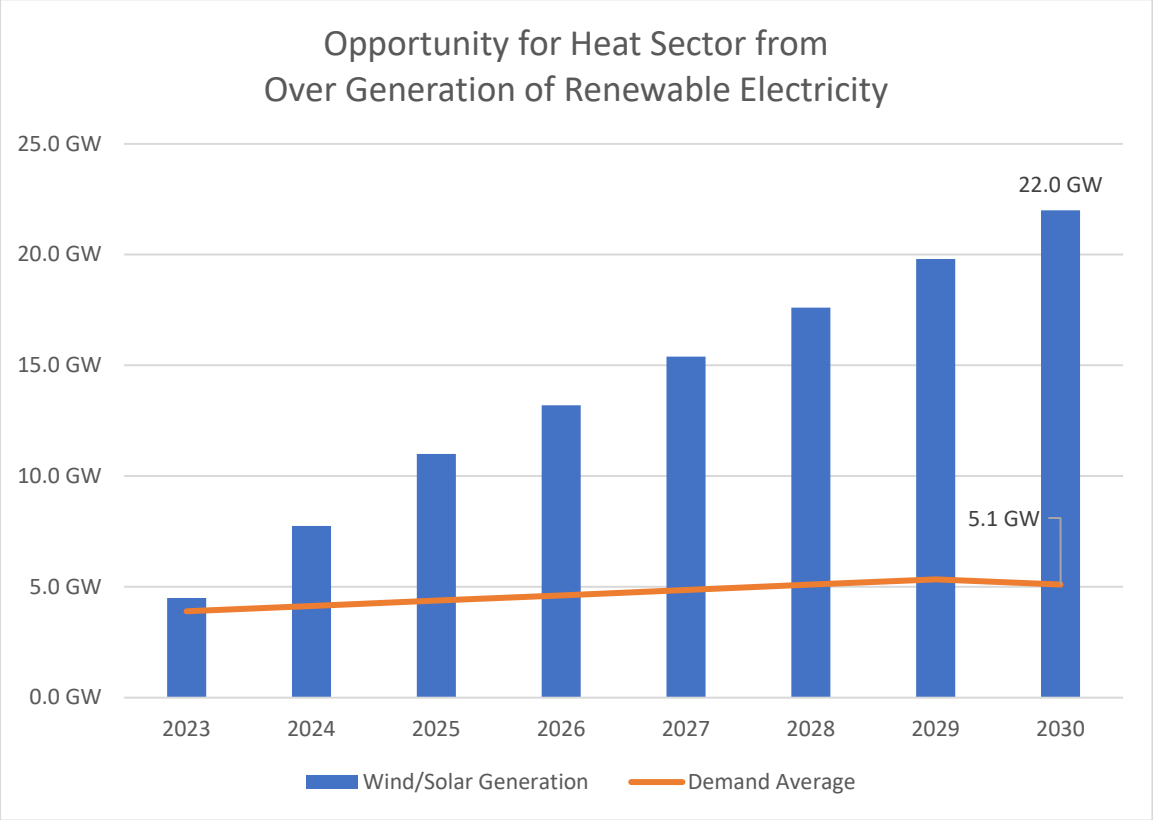
- Flexible operation
- Dispatchable by the System Operator
- Zero Carbon Steam
- High pressure and temperature steam up to 85 barg
- 0MW up to 60MW (90tph steam) in one unit
- From cold to full load in less than 5 minutes
- 0.2Second POR turn down (provide zero carbon grid frequency regulation)
- Compact foot print
- Minimum maintenance required

- Steam and/or hot water (combined in one unit)
- Low load capability
- 6 kV - 24kV
- Pure resistance load
- Superheater option
- Electrical grid regulation

Q7. Comments are invited from respondents on any other associated areas that they consider materially relevant to the project.

Below is an indication of the opportunity to decarbonise Irelands whole economy due to the success of our indigenous renewably electricity. Average demand is forecast in the Eirgrid median scenario to reach 5GW in 2030 [1] while we will have up to 22GW of renewable generation.

The heat sector can act like a virtual interconnector to absorb this excess generation when it is available. This will reduce our importation of fossil fuels currently needed in industry. It will also reduce the amount of onsite grid infrastructure and reduce the need to unload our recourse through sub sea interconnectors.




[1] https://www.eirgridgroup.com/site-files/library/EirGrid/EirGrid_SONI_Ireland_Capacity_Outlook_2022-2031.pdf

## Appendix1: Flex Power detailed reply to ESBN 2021 consultations

Flex Power Solutions
INDUSTRIAL DECARBONISATION

Dear ESB Networks,

Thank you for giving us the opportunity to reply to this Overview of the National Network, Local Connections Programme (DOC-230921-GYL). At the end of this document we have also specific comments on 1) the Power system requirements, 2) the Piloting road map and 3) the Phased Flexibility Market Development Plan.

Similar to ESB Networks we at Flex Power Solutions (FPS) are committed to the 2030 climate targets. We believe the electricity network will be the most critical aspect of our low carbon future. Wind is Ireland's best natural resource to help tackle the climate change emergency as part of the energy revolution. Ireland's success in wind generation is unmatched anywhere in the world. This low-cost, indigenous energy will benefit our economy as we move towards a net zero carbon future. In time, the gigawatts of offshore power will be used to produce green fuels and we will become an exporter of energy on a huge scale. In the meantime, towards 2030, our resources can be used to support Irish jobs in cities and rural economies alike. The integration of flexible, electrically produced steam will give the dairy, pharmaceutical, drinks and other industries a competitive advantage, thereby securing jobs in Ireland.

High temperature power-to-heat can be used to reduce the fossil fuels used in Irish industrial sites in times of high renewable generation. With boilers from 0.5 to 60MW (0.75 to 90tph steam), Irish industrial sites can become like virtual interconnectors to stabilise the grid while allowing ever increasing renewable generation. What is more, 500MW of dispatchable flexible demand spread across Ireland will eliminate the need for major grid reinforcement. A staged roll-out, prioritising areas of highest constraint can maximise benefits to the grid, to industry and to the environment.

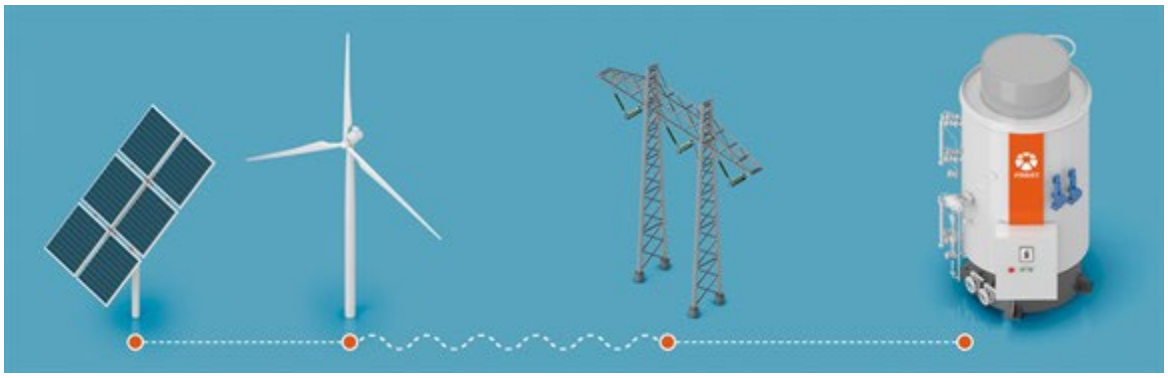



Flex Power Solutions specialise in flexible electrification of heat to Irish Industry and are the agent for Parat Halvorsen AS (Norway). Norway is a world leader in electrification of heat due to its abundance of hydroelectric power. Flex Power Solutions is leveraging Parat's decades of experience to bring this Norwegian solution to Ireland. We intend installing numerous electrode boilers alongside existing fossil fuelled boilers, converting excess renewable electricity into useful heat. By operating these boilers flexibly, our clients achieve significant carbon reductions and lower costs. Using our proven technology in new ways, we maximise the use of existing grid infrastructure to minimise dispatch down of wind turbines, while providing valuable zero carbon services to the System Operators.

However, there are barriers. Legacy charging structures and levies hide the true wholesale price of electricity from new flexible consumption. Realignment of charging structures along with the government's 2030 ambitions will lead to the rapid deployment of multi-megawatt scale electrode boilers while reducing

Ireland's reliance on imported fossil fuels. Leveraged on the success of wind generation, this existing technology can decarbonise heat and help us reach our 2030 emission targets and beyond.

Electrode boiler technology, when rolled out smartly to industry, can deliver dispatchable demand equivalent to an interconnector on the west coast and at zero cost to the state. The boilers are available 6 months from placing an order and are proven in the field. Due to the reduction of dispatch down of wind generators, future wind turbine investors will be able to enter the RESS auction at more competitive prices. Ireland will reach it's 2030 targets with less assets built, faster and with a reduced cost to the electricity consumers of the island.



The investment made by the citizens of Ireland in renewable power generation has resulted in unprecedented decarbonisation of our electricity grid. However due to poor connectivity to international energy grids, at times of high wind, we see wind turbines being turned down. This is lost potential. It is a loss of revenue for the wind energy industry and increases future financing cost. Smart metering and electrification of domestic heat and transport will help to alleviate this wastage but will take time, massive investment, and a cultural shift in energy use. Using Electrode boilers flexibly to complement the periods of excess generation can deliver the same benefits but without the need for mass buy-in from the public. It can be done almost immediately and without large capital investment from state agencies. The displaced fossil fuel can remain in the ground and Ireland's carbon footprint for heat can be reduced substantially.

We ask that ESB Networks help us demonstrate this technology to Irish industry. Help us prove this OPEX positive decarbonisation opportunity by piloting a flexible dispatchable 20MW (30tph steam) boiler powered from a 10KV connection positioned side-by-side with an existing fossil fuel boiler on an Irish industrial site. It is a zero-regret investment and will prove how industry can use high temperature power-to-heat to absorb excess indigenous renewable power, provide sub 1 second frequency response and dramatically decarbonise industrial heat. In so doing we will help the Government meet its 2030 targets, reduce the cost grid upgrades, reinforce Irish jobs for the low carbon future and reduce the overall cost to the citizens of Ireland.

In FPS we have expertise in industrial heat demand and in the wholesale electricity market. We can collaborate with one of our partner sites and with ESB Networks to prove this novel application of an existing and well proven technology to a uniquely Irish situation.

I am at your service to discuss further how our technology can help ESB Networks achieve their goals.

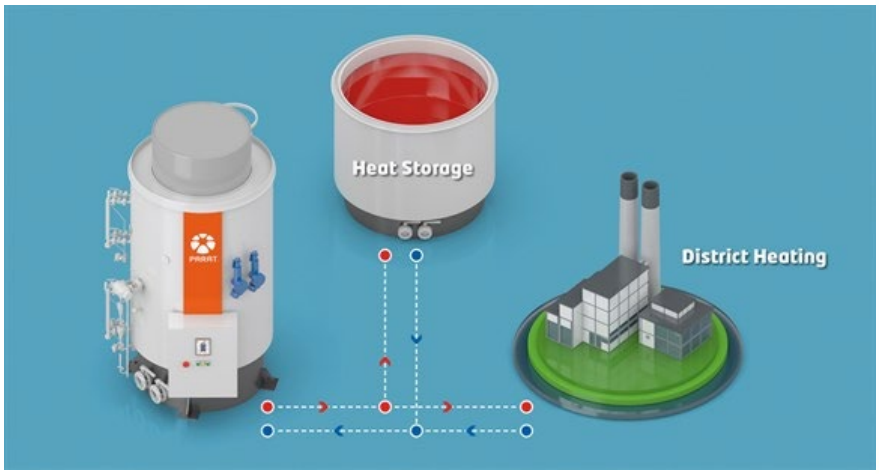
Kind regards,
Helen O'Sullivan, Operations Manager, Flexible Power Solutions Ltd.
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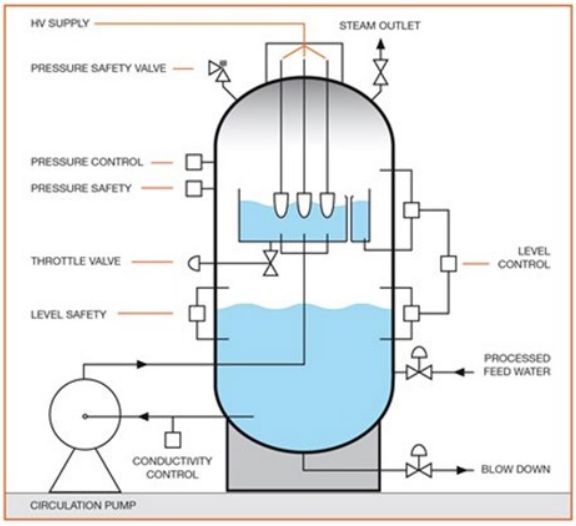
**Appendix 1: Electrode Boiler Specifications:**

- Flexible operation
- Dispatchable by the System Operator
- Zero Carbon Steam
- High pressure steam up to 85 barg
- 0MW up to 60MW (90tph steam) in one unit
- From cold to full load in less than 5 minutes
- 0.2Second POR turn down
- Compact foot print
- Minimum maintenance required
- Steam and/or hot water (combined in one unit)
- Low load capability
- 6 kV - 24kV
- Pure resistance load
- Superheater option
- Electrical grid regulation




Brochure here




| Capacity (MW) | 0-5 | 0-15 | 0-30 | 0-45 | 0-60 |
|---|---|---|---|---|---|
| Steam (t/h) | 7,5 | 22,5 | 45 | 67,5 | 90 |
| D (mm) | 2.100 | 2.350 | 3.000 | 3.600 | 3.700 |
| H (mm)* | 4.800 | 5.800 | 6.700 | 7.000 | 7.400 |
| Transport weight (kg) | 6.500 | 8.000 | 13.500 | 20.000 | 23.000 |
| Operating weight (kg) | 8.500 | 11.000 | 21.500 | 34.000 | 38.000 |
| Test weight (kg) | 13.800 | 21.000 | 38.500 | 60.000 | 66.000 |

*Weight data is given for 16 barg design pressure. Size based on 10kV. Steam based on 100°C Feedwater temperature. Changes may occur.*

https://www.esbnetworks.ie/who-we-are/national-network-local-connections-programme/our-consultations

https://www.esbnetworks.ie/docs/default-source/publications/esb-networks-national-network-local-connections-programme-power-system-requirements-.pdf?sfvrsn=ab27ba5f_10

## Power system requirements

- Flex Power Solutions celebrated the Climate Action Plan 2021, where the the Government aim to save 500,000t CO2 / year from enterprise by "Enable electrification of high temperature heat generation" in delivering " 100% of steam production from gas electric hybrid heating". This in our opinion is the single best use of our indigenous renewable electricity as part of our drive to a zero-carbon economy. What is more this is existing proven technology which can be deployed at massive scale, at least cost to Irish citizens, using existing grid infrastructure.

- Industrial flexible dispatchable high temperature heat from electrode boiler would not consume power if the grid was tight on energy. In fact, they would not consume power unless there was an excess of renewable power on the grid. They would never add to the Irish peak load. While domestic electric vehicles and heat pumps will be able to optimise the time of day which they consume power they will require energy on days when fossil fuels are the main source of power generation. Flex Power Solutions supports ESBN in developing a road map for EV and HP. However large-scale industrial steam delivery from a hybrid of electricity and fossil fuels will reduce Irelands dependence on fossil fuels quicker in this decade and at less cost to Irish citizens.

Who we need to work with?

- Flex Power Solutions suggest ESBN need to work closely with industrial heat users in areas of constraints.
- The network has constrained areas with excess generation. There is a huge opportunity for industrial users of heat to switch from fossil fuel renewable electricity in hours of excess generation. By consuming indigenous renewable electricity in the area it is produced it would:
  - Reduce the spend needed in grid infrastructure.
  - Support Irish jobs for the green future.
  - Give Irish industry a competitive advantage, by switching to low-cost RES-E
  - Improve the profile of renewable power generation within the local community.
  - Reduce Irelands dependence on fossil fuels.
  - Provide zero carbon system services, down to 0.2second fast frequency response, exactly when the system needs them.
  - Give RES-E investors better up-time
  - Reduce the costs on Irish citizens, lower PSO levy, less imperfection costs, less Use of Service costs.
  - Allow the government to reach it's 2030 80% RES-E target with less assets built.

Call for demand up – to facilitate renewable generation

- Demand up service provision could be available next year through electrode boiler and on huge scale.
- 10kv and 22kv electrode boilers consuming up to 20MW of flexible demand could be rolled out to sites in constrained areas quickly and further into other areas in time.
- There are barriers to efficient delivery, for example:
    - Increased MIC cost to get a 20MW increase
    - PSO levy based on MIC
    - Access to the wholesale electricity price to provide consumption signals
    - Use of Service charges designed for autonomous consumption of power, not suitable for dispatchable consumption.
    - Capacity charges designed for consumption during peak demand, when demand turn up would never operate.
    - Imperfection charges designed to recover cost of turning down renewable power generation, this levied on demand-turn-up which prevents turndown of RES-E.
- A payment to provide the service would overcome these barriers. It would likely require a long-term capacity payment and a utilisation payment whenever called upon. We would prefer that the barriers are removed. If charges and fees were restructured to support flexible demand to match variable generation then there would be no need for out-of-market payments. The wholesale price of electricity plus revenue from service provision would be ample motivate to industry towards flexible power-to-heat operating beside their existing fossil fuel boilers.
- The UK have trialled telephone operated demand-turn-up with up to 6hour notice periods. Ireland must do better. With the right signals we can deliver 2 minute up time and 0.2 second down time for frequency service provision. This across over 400MW of distributed flexible demand sites across Ireland could make a real difference in decarbonising our economy.

https://www.esbnetworks.ie/docs/default-source/publications/esb-networks-national-network-local-connections-programme-piloting-roadmap-.pdf?sfvrsn=6fb6011a_10

## Piloting road map

Above in the Flex Power Solutions reply to the program overview and in our reply to Power-System-Requirements we believe the cheapest and fasted route to decarbonising our economy is to merge the fantastic achievements of the electricity market with the distributed needs of large industrial heat users. In time of high wind generation our electrode boilers can be dispatched on to consume renewable electricity in the community where it is generated. In so doing it can support Irish jobs, decarbonise industry and keep the wind turbines turning. Times of high wind is also the time when the TSO is most in need of system services to manage the grid where there is little inertia. Electrode boilers can provide the sub-second fast frequency response needed, replacing carbon intensive fossil fuel providers.

Specific to FUTURE ARRANGEMENTS PILOT TSO MARKETS we suggest ESBN should fast forward pilot projects to prove the benefits of this dispatchable high temperature power-to-heat technology which has been in use in other countries for years and is ready now to solve problems unique to Ireland.

The best locations are large industrial users of heat in areas of high wind generation. Likely to be dairy's, food processers, pharmaceutical, drink manufacturers along the north, west and south coasts. The list of ideal locations is substantial. The most likely customers will be those who are committed to climate change and are looking to build a sustainable low carbon vision for their facility.

Considering each of our partners would be consuming 5MW to 20MW of power to produce 7.5 to 30 tph high temperature steam through our 10kv or 22kv electrode boilers it is likely a small number of customers would make a dramatic difference and prove the concept for other participants. Smaller sub-5MW electric element boilers consuming 400v or 690v power could also be considered in smaller applications.

The technology needed could be leveraged off what is available to the DSO and the TSO. EDIL dispatch controls could provide the real-time dispatch instructions and locally automated controls can deliver the sub 1 second frequency response required to keep the grid safe in times of high RES-E penetration.

We have partners ready to commit to high temperature power-to-heat in 2022. We need ESBN to remove the barriers to make this happen.
The learning objective should include how the technology aids some of the policy measures including:

- Decarbonise heat
- Facilitate more RES-E from the same number of wind turbines through higher capacity factors
- Volume towards CAP2021 saving 500,000t CO2 / year from enterprise by "Enable electrification of high temperature heat generation" in delivering " 100% of steam production from gas electric hybrid heating".
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## Phased Flexibility Market Development Plan

The CRU will want best value for electricity customers as we transition to a low carbon future. The electricity market and its System Operators are pioneers in integrating variable wind generation. Achieving over 40% RES-E in 2020 should be celebrated. The next challenge to approach an average of 80% RES-E will be a challenge of another order. In time of high wind generation, it is likely RES-E will have to approach or exceed 100% of our base consumption. None of the service providers needed in 2030 exist today.

The current market arrangements were not designed for active customers. They were designed for customers who could switch on the light switch as they pleased knowing our fossil fuel generation fleet could move to facilitate them. The consumers of the future will still want light on demand but they will also be willing to move load or create load and turn off load when the system needs it. In time these will penetrate down to individual households but this will take time. A holistic approach to leverage the decarbonisation needs of the heat sector with the excess generation of the electricity sector can deliver big gains early in the decade while ESBN and other pave the road for harder to reach active consumers.

In 2030 when we have 14GW of RES-E generation and only 7GW of base demand there will be massive wastage of our indigenous zero carbon energy. This is wastage of the PSO supports paid by the industry and citizens of Ireland. Even today wind generation is being turned off. This at a time when industry has no option but to burn fossil fuels to provide their high temperature steam demand. Using Irish wind power to decarbonise Irish industry and support existing jobs into the green future in our opinion would deliver best value for money to Irish citizens. This can happen.

Unlike EV or heat pumps the demand from dispatchable industrial power-to-heat will be perfectly aligned to the variability of the RES-E. It can remain off for days on end when there is little wind and can consume massive volume of power when the wind is blowing. This would never lead to additional scarcity because it is designed to provide the service to the SO's when they want it. Unlike batteries there's no volume limit to the amount of energy they can consume. If the average windy period lasts for 22 hours, then our industrial heat consumers can consume 100's of MW for 22 hours.

The procurement process needs to offer investor certainty. The services which could be procured are zero regret investments and will be needed towards 2025 targets, 2030 target and more in the next decade. ESBN should be empowered to offer 10-year capacity contracts to cover the associated fixed costs. A 20MW increase of MIC is not an insignificant investment for a small milk processor in the west of Ireland who is trying to support Government decarbonisation ambitions. Utilisation payments could then be used to cover any OPEX costs cost associated with dynamic delivery.

In terms of costs, consideration should be given to the availability of non-firm MIC connection solely for the purpose of delivering dispatchable demand turn up only in times of excess generation.

Funding – little, and in some circumstances zero funding would be required if the barriers are removed. In time of high wind generation, the wholesale price of electricity is already less than the cost of natural gas plus carbon. If consumers are given access to the wholesale price they will switch dynamically between their traditional fuel and the zero-carbon electricity which would otherwise be turned off. This is further incentivised through DS3 system service payments. If legacy barriers cannot

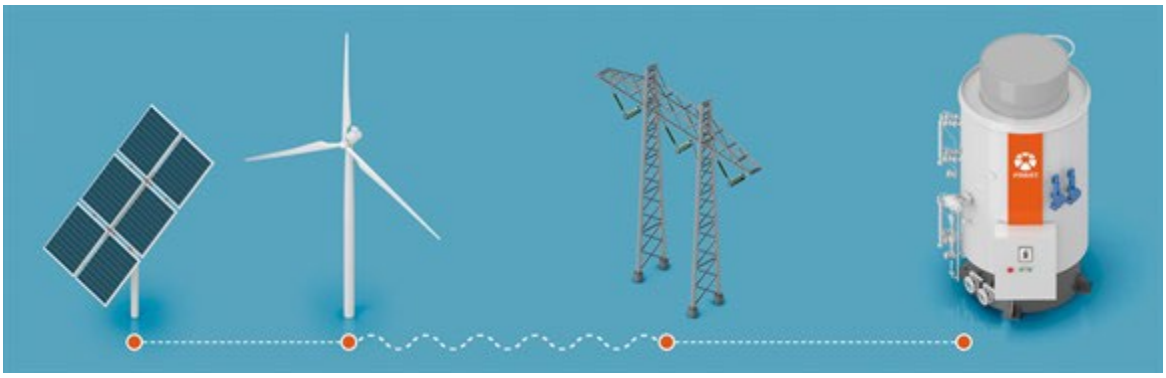
be redesigned then a utilisation payment would be required to act as make whole payment. Barriers already listed include PSO levy, UoS charges, Imperfection charges and capacity charges.

Dear CRU,

Thank you for giving us the opportunity to give our feedback to this ESBN "Scenarios for 15-20% Flexible System Demand - National Networks, Local Connections Programme".

Flex Power Solutions are specialising in electrification of high temperature heat in Irish Industry. In our opinion, electric boilers are the best tool to reduce GHG emissions in industry and district heating. We intend installing numerous electric boilers that convert excess renewable electricity into useful heat, only in times of ample generation. By operating these boilers flexibly, we can help our clients to achieve significant carbon reduction while saving money. Using our proven technology in new ways we maximise the use of existing grid infrastructure to minimise dispatch down of wind turbines, while providing valuable zero carbon grid services to Eirgrid.

Electrode boiler technology, when rolled out smartly to industry, can deliver dispatchable demand equivalent to an interconnector on the west coast and at zero cost to the state. The boilers are available now and are proven in the field. Due to the reduction of dispatch down of wind generators, future wind turbine investors will be able to enter the RESS auction at more competitive prices. Ireland will reach it's 2030 targets with less assets built, faster and with a reduced cost to the electricity consumers of the island.



Wind is Irelands best natural resource to help tackle the climate change emergency as part of the energy revolution. Ireland's success in wind generation is unmatched anywhere in the world. This low-cost indigenous energy will benefit our economy as we move towards a net zero carbon future. In time, the gigawatts of offshore power will be used to produce green fuels and we will become an exporter of energy on a huge scale. In the meantime, towards 2025, our resource can be used to support Irish jobs in cities and rural economies alike. The fast deployment of flexible electric boilers will give the dairy, pharmaceutical, drinks and other industries a competitive advantage, thereby securing jobs in Ireland while also reducing our reliance on imported fossil fuels.

I am available to discuss further how our core technology can help sustainably decarbonise the Irish economy by 2025 and beyond. Overleaf are more details.

Kind regards,

Helen O'Sullivan, Operations Manager
T: +353 (0)87 9078061
E: helen.osullivan@flexpowersolutions.com
W: www.flexpowersolutions.com

**Chapter 6 sources of flexibility**

The ESBN section listing technology developers is overly focused on volume limited technology such as:

- Batteries in the electricity sector
- Batteries in transport
- Batteries combined with solar
- Demand shifting of existing load
- Behind the meter power generation

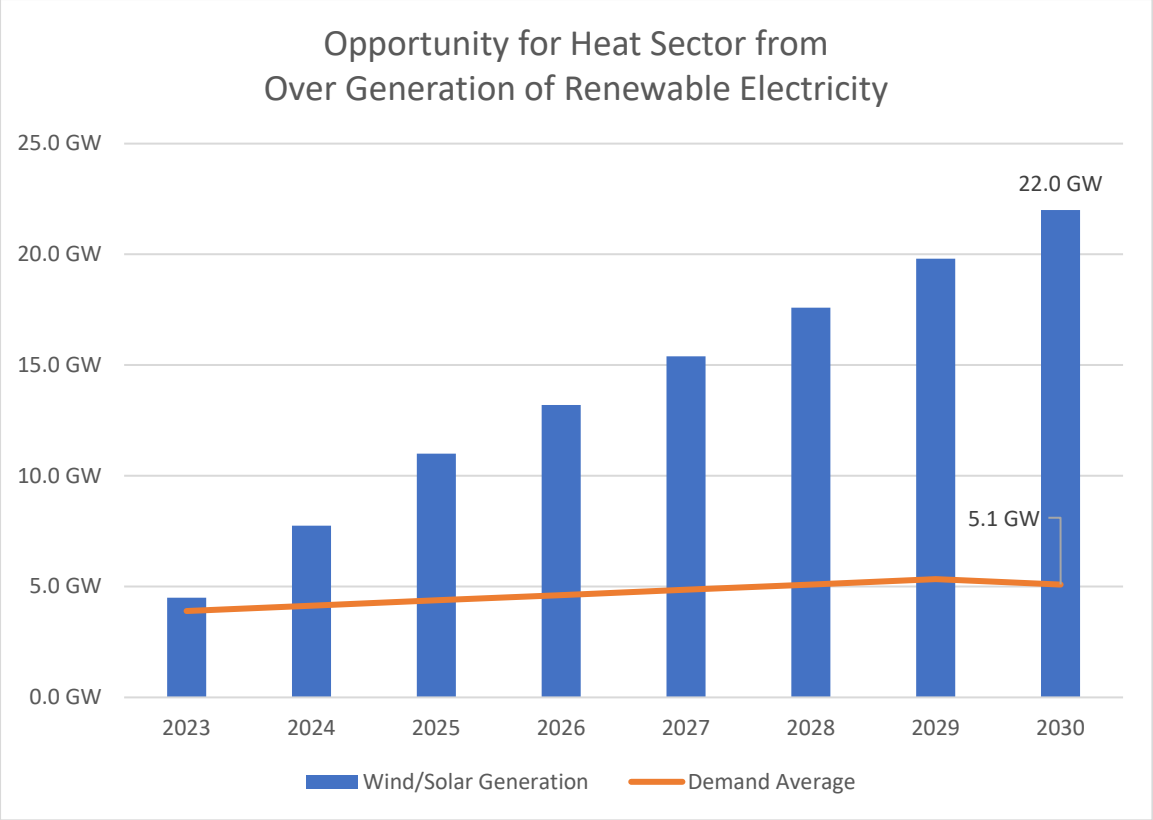
These technology, while important in the long term, will not have a big impact on Ireland's GHG reduction in the short term. Section 6.3 'Sources of flexibility in Industry' appears to solely consider data centres with no consideration given to the heat sector which is substantially bigger than the electricity sector and currently predominantly reliant on fossil fuel burning.

The heat sector can offer bigger carbon saving faster. By 'sector coupling' the heat and electricity sector ESBN have the opportunity to unlock synergies. The heat sector can offer zero-carbon services such as grid frequency response and demand turn up in times of high renewables; and the electricity sector can be the vector for decarbonising our heat sector. Irish industry is already leading the way in deploying this technology.

The fastest and biggest delivery of flexibility will be from the deployment of electric boilers on industrial (and district heating) sites, co-located with their existing thermal boilers in a 'hybrid deliver of heat'. This will:

- Decarbonise our economy quickest
- Maximise use of indigenous renewable energy
- Provide dispatchable flexible demand at scale
- Reduce the amount of new grid needed
- Reduce the amount of wasted renewable electricity
- Reduce the cost of energy to industry
- Support Irish jobs for the green future
- Reduce the cost on citizens of achieving our GHG reduction targets
- Deliver on targets quickly
- Unlimited duration of consumption






Above is a graph showing Eirgrid's forecast demand for 2030 and also the Governments 22GW of renewable generation capacity in 2030. In Eirgrid's Shaping our Electricity Future modelling they are discovering there will be unprecedent opportunity, not seen anywhere in the world, to use would-be-wasted indigenous zero carbon energy to offset fossil fuel consumption. This opportunity goes beyond the electricity sector, without coordination of the heat and transport sectors this variable source of energy will be wasted.

**Chapter 7 Next Steps**

Flex Power ask ESBN and the CRU to consider the following next steps to sustainably decarbonise our economy with flexible consumption of renewable electricity in hours of oversupply.

1. Hybrid electrification of heat
   We ask ESBN to consider including dispatchable, direct electrification of heat in their flexibility work plan.
   Appendix 1 is some details on the flexible electric boilers promoted by Flex Power to support the Irish Governments Climate Action Plans.
   Appendix 2 is Flex Power's detailed reply to ESBN 2021 consultations.

2. Scheduling and Dispatch software
   The System Operators must update their software. Currently flexible consumers are excluded for participant in the real-time balancing market due to out of date software. The TSO Scheduling and Dispatch software cannot give a signal to flexible consumption units (it can only schedule generation units). This excludes electric boilers, batteries & thermal storage from the real-time Balancing Market.

3. Non-firm grid import capacity
   Flex Power request that the ESBN make non-firm electricity grid import capacity available. In times of ample renewable generation there is a saturation of zero carbon power in our existing grid. This is not currently available to Irish industry who are willing to substitute fossil fuel boilers with electric boilers for high temperature heat.

4. Network & market charges
   Legacy charging structures and levies are compounding Irelands reliance on imported fossil fuels, and exacerbate dispatch down of our wind fleet. They hide the true wholesale price of electricity from new flexible consumption. Realignment of charging structures with the Government's 2030 ambitions can lead to the rapid deployment of multi megawatt scale electric boilers while reducing Irelands reliance on imported fossil fuels. Leveraged on the success of wind generation this existing technology can decarbonise heat and help us reach our 2030 emission targets. This technology is available now and can have a positive return on investment.

5. Tariffs
   Network tariffs must focus more on SNSP (System Non-Synchronous Penetration or the percentage of renewable power generation in any given hour) rather than historic day/night consumption trends. In the future the biggest variable in the electricity market will be the hourly amount of wind/solar generation. Current government targets aim to have over 22GW of RESe generation with only a small fraction of that needed for existing consumption. We suggest that new Use of Service (DUoS and TUoS) charges are designed for flexible consumption who do not need firm grid import capacity and who will provide services to the ESBN and Eirgrid.

6. Sector coupling
   Further alignment between the relevant entities is needed. Specifically, ESBN need to work with the SEAI, the TSO and the CRU to understand how the heat sector can be a service provider to solve the problems Ireland is trying to overcome in delivering 80% renewable

power generating on a poorly connected island. Sector coupling and hybrid delivery of heat will accelerate Ireland's decarbonisation with the least cost to our citizens.

7. Policy:
   Government supports should be technology neutral and be awarded on Euro/tCO2 abated. Policy makers should not be burdened with having to pick the best technology. If incentives are correctly aligned with government ambitions, then industry will deliver the most sustainable technology.

## Appendix 1 electric boilers promoted by Flex Power

5 to 90MW large e-boiler details

https://www.flexpowersolutions.com/high-voltage





0 to 5MW industrial e-boiler details

https://www.flexpowersolutions.com/low-voltage

90 second video on the benefits of e-boilers to Ireland

https://youtu.be/66EG_idd9IE



## Appendix2: Flex Power detailed reply to ESBN 2021 consultations

Flex Power Solutions
INDUSTRIAL DECARBONISATION

Dear ESB Networks,

Thank you for giving us the opportunity to reply to this Overview of the National Network, Local Connections Programme (DOC-230921-GYL). At the end of this document we have also specific comments on 1) the Power system requirements, 2) the Piloting road map and 3) the Phased Flexibility Market Development Plan.

Similar to ESB Networks we at Flex Power Solutions (FPS) are committed to the 2030 climate targets. We believe the electricity network will be the most critical aspect of our low carbon future. Wind is Ireland's best natural resource to help tackle the climate change emergency as part of the energy revolution. Ireland's success in wind generation is unmatched anywhere in the world. This low-cost, indigenous energy will benefit our economy as we move towards a net zero carbon future. In time, the gigawatts of offshore power will be used to produce green fuels and we will become an exporter of energy on a huge scale. In the meantime, towards 2030, our resources can be used to support Irish jobs in cities and rural economies alike. The integration of flexible, electrically produced steam will give the dairy, pharmaceutical, drinks and other industries a competitive advantage, thereby securing jobs in Ireland.

High temperature power-to-heat can be used to reduce the fossil fuels used in Irish industrial sites in times of high renewable generation. With boilers from 0.5 to 60MW (0.75 to 90tph steam), Irish industrial sites can become like virtual interconnectors to stabilise the grid while allowing ever increasing renewable generation. What is more, 500MW of dispatchable flexible demand spread across Ireland will eliminate the need for major grid reinforcement. A staged roll-out, prioritising areas of highest constraint can maximise benefits to the grid, to industry and to the environment.

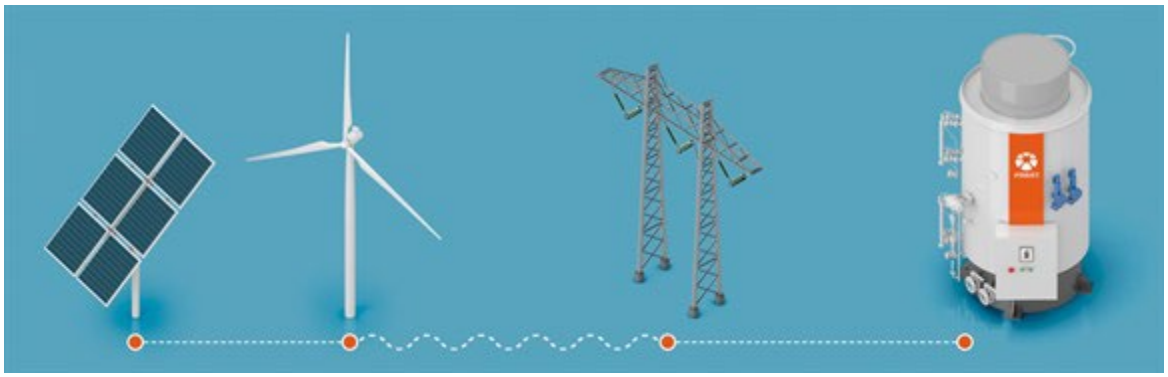



Flex Power Solutions specialise in flexible electrification of heat to Irish Industry and are the agent for Parat Halvorsen AS (Norway). Norway is a world leader in electrification of heat due to its abundance of hydroelectric power. Flex Power Solutions is leveraging Parat's decades of experience to bring this Norwegian solution to Ireland. We intend installing numerous electrode boilers alongside existing fossil fuelled boilers, converting excess renewable electricity into useful heat. By operating these boilers flexibly, our clients achieve significant carbon reductions and lower costs. Using our proven technology in new ways, we maximise the use of existing grid infrastructure to minimise dispatch down of wind turbines, while providing valuable zero carbon services to the System Operators.

However, there are barriers. Legacy charging structures and levies hide the true wholesale price of electricity from new flexible consumption. Realignment of charging structures along with the government's 2030 ambitions will lead to the rapid deployment of multi-megawatt scale electrode boilers while reducing

Ireland's reliance on imported fossil fuels. Leveraged on the success of wind generation, this existing technology can decarbonise heat and help us reach our 2030 emission targets and beyond.

Electrode boiler technology, when rolled out smartly to industry, can deliver dispatchable demand equivalent to an interconnector on the west coast and at zero cost to the state. The boilers are available 6 months from placing an order and are proven in the field. Due to the reduction of dispatch down of wind generators, future wind turbine investors will be able to enter the RESS auction at more competitive prices. Ireland will reach it's 2030 targets with less assets built, faster and with a reduced cost to the electricity consumers of the island.



The investment made by the citizens of Ireland in renewable power generation has resulted in unprecedented decarbonisation of our electricity grid. However due to poor connectivity to international energy grids, at times of high wind, we see wind turbines being turned down. This is lost potential. It is a loss of revenue for the wind energy industry and increases future financing cost. Smart metering and electrification of domestic heat and transport will help to alleviate this wastage but will take time, massive investment, and a cultural shift in energy use. Using Electrode boilers flexibly to complement the periods of excess generation can deliver the same benefits but without the need for mass buy-in from the public. It can be done almost immediately and without large capital investment from state agencies. The displaced fossil fuel can remain in the ground and Ireland's carbon footprint for heat can be reduced substantially.

We ask that ESB Networks help us demonstrate this technology to Irish industry. Help us prove this OPEX positive decarbonisation opportunity by piloting a flexible dispatchable 20MW (30tph steam) boiler powered from a 10KV connection positioned side-by-side with an existing fossil fuel boiler on an Irish industrial site. It is a zero-regret investment and will prove how industry can use high temperature power-to-heat to absorb excess indigenous renewable power, provide sub 1 second frequency response and dramatically decarbonise industrial heat. In so doing we will help the Government meet its 2030 targets, reduce the cost grid upgrades, reinforce Irish jobs for the low carbon future and reduce the overall cost to the citizens of Ireland.

In FPS we have expertise in industrial heat demand and in the wholesale electricity market. We can collaborate with one of our partner sites and with ESB Networks to prove this novel application of an existing and well proven technology to a uniquely Irish situation.

I am at your service to discuss further how our technology can help ESB Networks achieve their goals.

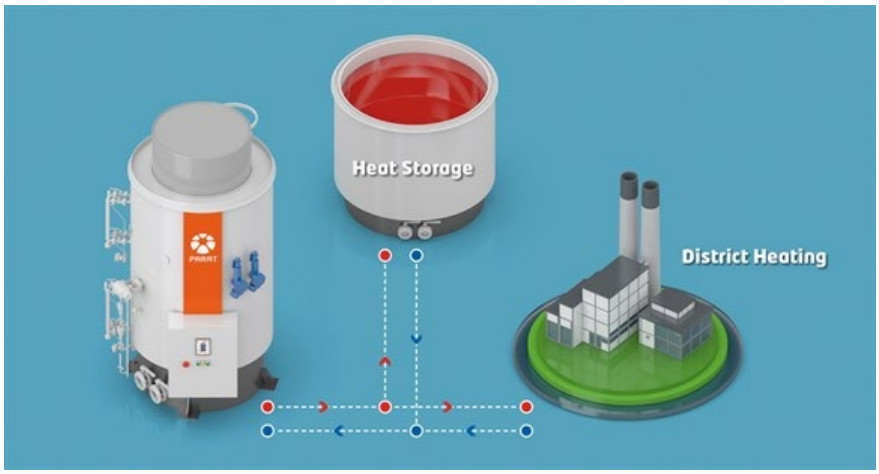
Kind regards,
Helen O'Sullivan, Operations Manager, Flexible Power Solutions Ltd.
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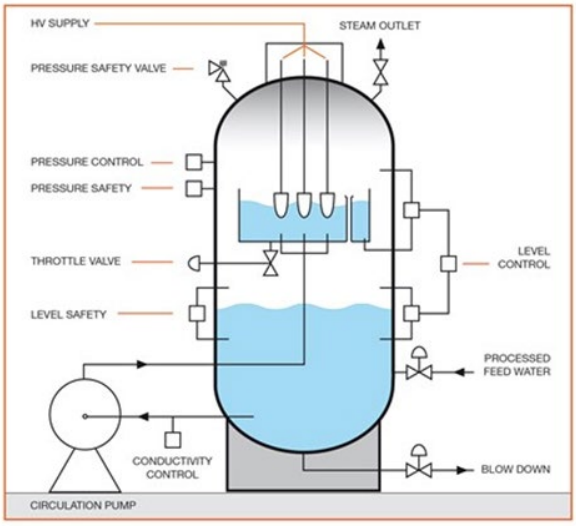
**Appendix 1: Electrode Boiler Specifications:**

- Flexible operation
- Dispatchable by the System Operator
- Zero Carbon Steam
- High pressure steam up to 85 barg
- 0MW up to 60MW (90tph steam) in one unit
- From cold to full load in less than 5 minutes
- 0.2Second POR turn down
- Compact foot print
- Minimum maintenance required
- Steam and/or hot water (combined in one unit)
- Low load capability
- 6 kV - 24kV
- Pure resistance load
- Superheater option
- Electrical grid regulation




Brochure here




| Capacity (MW) | 0-5 | 0-15 | 0-30 | 0-45 | 0-60 |
|---|---|---|---|---|---|
| Steam (t/h) | 7,5 | 22,5 | 45 | 67,5 | 90 |
| D (mm) | 2.100 | 2.350 | 3.000 | 3.600 | 3.700 |
| H (mm)* | 4.800 | 5.800 | 6.700 | 7.000 | 7.400 |
| Transport weight (kg) | 6.500 | 8.000 | 13.500 | 20.000 | 23.000 |
| Operating weight (kg) | 8.500 | 11.000 | 21.500 | 34.000 | 38.000 |
| Test weight (kg) | 13.800 | 21.000 | 38.500 | 60.000 | 66.000 |

*Weight data is given for 16 barg design pressure. Size based on 10kV. Steam based on 100°C Feedwater temperature. Changes may occur.*

https://www.esbnetworks.ie/who-we-are/national-network-local-connections-programme/our-consultations

https://www.esbnetworks.ie/docs/default-source/publications/esb-networks-national-network-local-connections-programme-power-system-requirements-.pdf?sfvrsn=ab27ba5f_10

## Power system requirements

- Flex Power Solutions celebrated the Climate Action Plan 2021, where the the Government aim to save 500,000t CO2 / year from enterprise by "Enable electrification of high temperature heat generation" in delivering " 100% of steam production from gas electric hybrid heating". This in our opinion is the single best use of our indigenous renewable electricity as part of our drive to a zero-carbon economy. What is more this is existing proven technology which can be deployed at massive scale, at least cost to Irish citizens, using existing grid infrastructure.

- Industrial flexible dispatchable high temperature heat from electrode boiler would not consume power if the grid was tight on energy. In fact, they would not consume power unless there was an excess of renewable power on the grid. They would never add to the Irish peak load. While domestic electric vehicles and heat pumps will be able to optimise the time of day which they consume power they will require energy on days when fossil fuels are the main source of power generation. Flex Power Solutions supports ESBN in developing a road map for EV and HP. However large-scale industrial steam delivery from a hybrid of electricity and fossil fuels will reduce Irelands dependence on fossil fuels quicker in this decade and at less cost to Irish citizens.

Who we need to work with?

  - Flex Power Solutions suggest ESBN need to work closely with industrial heat users in areas of constraints.
  - The network has constrained areas with excess generation. There is a huge opportunity for industrial users of heat to switch from fossil fuel renewable electricity in hours of excess generation. By consuming indigenous renewable electricity in the area it is produced it would:
    - Reduce the spend needed in grid infrastructure.
    - Support Irish jobs for the green future.
    - Give Irish industry a competitive advantage, by switching to low-cost RES-E
    - Improve the profile of renewable power generation within the local community.
    - Reduce Irelands dependence on fossil fuels.
    - Provide zero carbon system services, down to 0.2second fast frequency response, exactly when the system needs them.
    - Give RES-E investors better up-time
    - Reduce the costs on Irish citizens, lower PSO levy, less imperfection costs, less Use of Service costs.
    - Allow the government to reach it's 2030 80% RES-E target with less assets built.

call for demand up – to facilitate renewable generation

- Demand up service provision could be available next year through electrode boiler and on huge scale.
- 10kv and 22kv electrode boilers consuming up to 20MW of flexible demand could be rolled out to sites in constrained areas quickly and further into other areas in time.
- There are barriers to efficient delivery, for example:
    - Increased MIC cost to get a 20MW increase
    - PSO levy based on MIC
    - Access to the wholesale electricity price to provide consumption signals
    - Use of Service charges designed for autonomous consumption of power, not suitable for dispatchable consumption.
    - Capacity charges designed for consumption during peak demand, when demand turn up would never operate.
    - Imperfection charges designed to recover cost of turning down renewable power generation, this levied on demand-turn-up which prevents turndown of RES-E.
- A payment to provide the service would overcome these barriers. It would likely require a long-term capacity payment and a utilisation payment whenever called upon. We would prefer that the barriers are removed. If charges and fees were restructured to support flexible demand to match variable generation then there would be no need for out-of-market payments. The wholesale price of electricity plus revenue from service provision would be ample motivate to industry towards flexible power-to-heat operating beside their existing fossil fuel boilers.
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The current market arrangements were not designed for active customers. They were designed for customers who could switch on the light switch as they pleased knowing our fossil fuel generation fleet could move to facilitate them. The consumers of the future will still want light on demand but they will also be willing to move load or create load and turn off load when the system needs it. In time these will penetrate down to individual households but this will take time. A holistic approach to leverage the decarbonisation needs of the heat sector with the excess generation of the electricity sector can deliver big gains early in the decade while ESBN and other pave the road for harder to reach active consumers.

In 2030 when we have 14GW of RES-E generation and only 7GW of base demand there will be massive wastage of our indigenous zero carbon energy. This is wastage of the PSO supports paid by the industry and citizens of Ireland. Even today wind generation is being turned off. This at a time when industry has no option but to burn fossil fuels to provide their high temperature steam demand. Using Irish wind power to decarbonise Irish industry and support existing jobs into the green future in our opinion would deliver best value for money to Irish citizens. This can happen.

Unlike EV or heat pumps the demand from dispatchable industrial power-to-heat will be perfectly aligned to the variability of the RES-E. It can remain off for days on end when there is little wind and can consume massive volume of power when the wind is blowing. This would never lead to additional scarcity because it is designed to provide the service to the SO's when they want it. Unlike batteries there's no volume limit to the amount of energy they can consume. If the average windy period lasts for 22 hours, then our industrial heat consumers can consume 100's of MW for 22 hours.

The procurement process needs to offer investor certainty. The services which could be procured are zero regret investments and will be needed towards 2025 targets, 2030 target and more into the next decade. ESBN should be empowered to offer 10-year capacity contracts to cover the associated fixed costs. A 20MW increase of MIC is not an insignificant investment for a small milk processor in the west of Ireland who is trying to support Government decarbonisation ambitions. Utilisation payments could then be used to cover any OPEX costs cost associated with dynamic delivery.

In terms of costs, consideration should be given to the availability of non-firm MIC connection solely for the purpose of delivering dispatchable demand turn up only in times of excess generation.

Funding – little, and in some circumstances zero funding would be required if the barriers are removed. In time of high wind generation, the wholesale price of electricity is already less than the cost of natural gas plus carbon. If consumers are given access to the wholesale price they will switch dynamically between their traditional fuel and the zero-carbon electricity which would otherwise be turned off. This is further incentivised through DS3 system service payments. If legacy barriers cannot

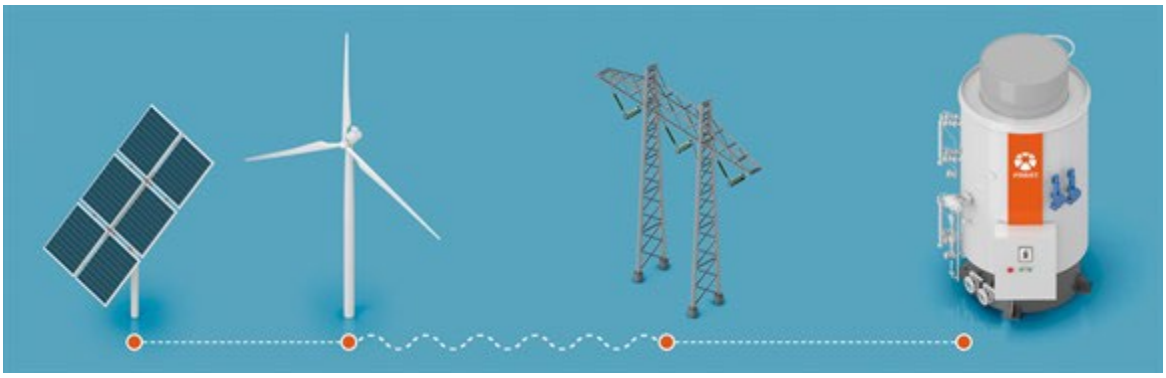
be redesigned then a utilisation payment would be required to act as make whole payment. Barriers already listed include PSO levy, UoS charges, Imperfection charges and capacity charges.

Dear CRU,

Thank you for giving us the opportunity to give our feedback to this Review of Large Energy Users connection policy.

Flex Power Solutions are specialising in electrification of high temperature heat in Irish Industry. In our opinion, electric boilers are the best tool to reduce GHG emissions in industry and district heating. We intend installing numerous electric boilers that convert excess renewable electricity into useful heat, only in times of ample generation. By operating these boilers flexibly, we can help our clients to achieve significant carbon reduction while saving money. Using our proven technology in new ways we maximise the use of existing grid infrastructure to minimise dispatch down of wind turbines, while providing valuable zero carbon grid services to Eirgrid.

Electrode boiler technology, when rolled out smartly to industry, can deliver dispatchable demand equivalent to an interconnector on the west coast and at zero cost to the state. The boilers are available now and are proven in the field. Due to the reduction of dispatch down of wind generators, future wind turbine investors will be able to enter the RESS auction at more competitive prices. Ireland will reach it's 2030 targets with less assets built, faster and with a reduced cost to the electricity consumers of the island.



Wind is Irelands best natural resource to help tackle climate change as part of the energy revolution. Ireland's success in wind generation is unmatched anywhere in the world. This low-cost indigenous energy will benefit our economy as we move towards a net zero carbon future. In time, the gigawatts of offshore power will be used to produce green fuels and we will become an exporter of energy on a huge scale. In the meantime, towards 2025, our resource can be used to support Irish jobs in cities and rural economies alike. The fast deployment of flexible electric boilers will give the dairy, pharmaceutical, drinks and other industries a competitive advantage, thereby securing jobs in Ireland while also reducing our reliance on imported fossil fuels.

I am available to discuss further how our core technology can help sustainably decarbonise the Irish economy by 2025 and beyond. Overleaf are more details.

Kind regards,

Helen O'Sullivan, Operations Manager
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**Questions:**
**3. Comments are invited on the use of CPPAs for additionality of renewable generation outside of support schemes for decarbonising electricity consumption. What type of de-rating may be appropriate to reflect real-world performance of renewable generation during peak times. Please provide reasons and rationale for any views provided.**

Irish industry wants to be a leader in Irelands decarbonisation, however they cannot compete against government backed RESS contracts for Irish renewable generation assets. Irish industry competes on a world market and must be kept sustainable. The Government should continue to build more renewable assets through the RESS and ORESS; to reduce the burden on Irish citizens consideration should be given to then reselling these contracts to Irish industry. The renewable developers will benefit from secure government backed contracts while industry can procure these same assets in smaller clip sizes and for shorter durations.

**Demand flexibility**
**7. Are there other sources of flexibility that can be provided?**

The ESBN Paper on Scenarios for 15-20% Flexible System Demand has focused too much on volume limited technology such as:

- Batteries in the electricity sector
- Batteries in transport
- Batteries combined with solar
- Demand shifting of existing load
- Behind the meter power generation (data centres)

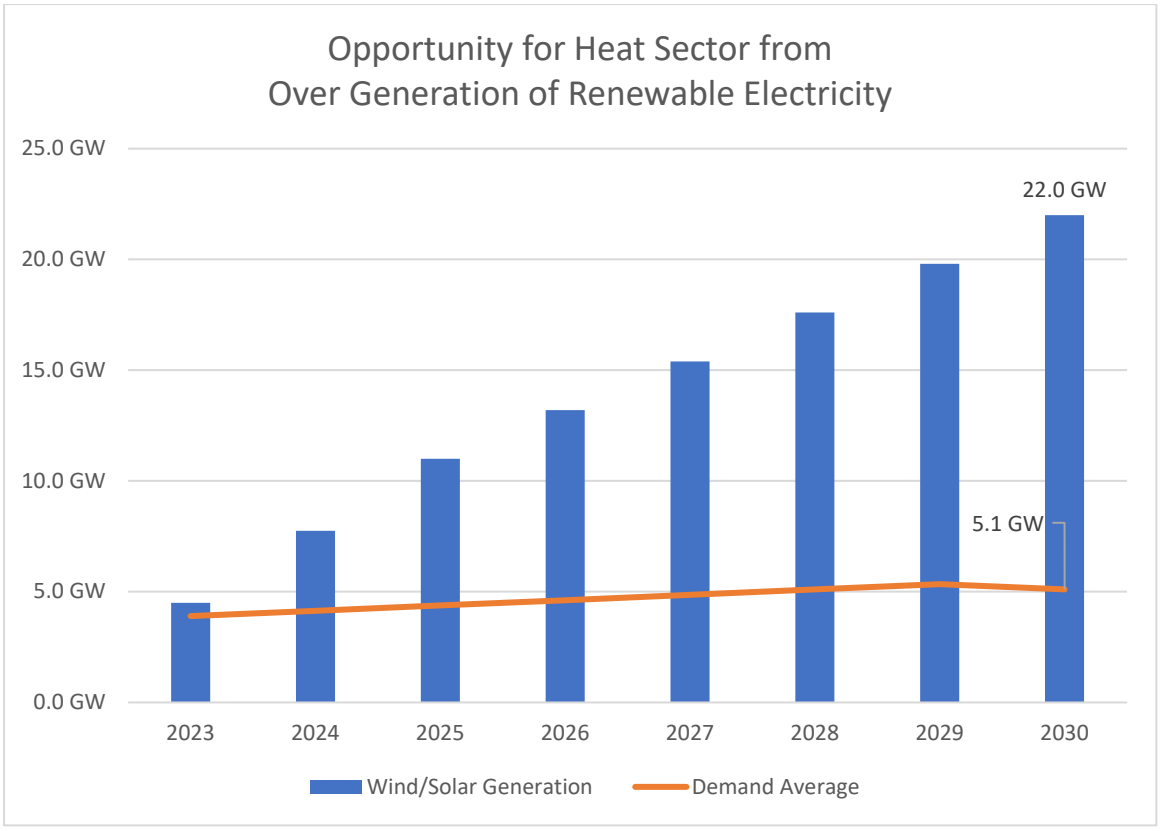
These technologies, while important in the long term, will not have a big impact on Ireland's GHG reduction in the short term. Section 6.3 'Sources of flexibility in Industry' of the paper appears to solely consider data centres with no consideration given to the heat sector which is substantially bigger than the electricity sector and currently predominantly reliant on fossil fuels burning.

The heat sector can offer bigger carbon saving faster. By 'Sector coupling' the heat and electricity sector Ireland has an opportunity to unlock synergies. Where the heat sector can offer zero-carbon services such as grid frequency response and demand turn up in times of high renewables; and the electricity sector can be the vector for decarbonising our heat sector. Irish industry is already leading the way in deploying this technology.

The fastesd and biggest delivery of flexibility will be from the deployment of electric boilers on industrial (and district heating) sites, co-located with their existing thermal boilers in a 'hybrid deliver of heat'. This will:

- Decarbonise our economy quickest
- Maximise use of indigenous renewable energy
- Provide dispatchable flexible demand at scale
- Reduce the amount of new grid needed
- Reduce the amount of wated renewable electricity
- Reduce the cost of energy to industry
- Support Irish jobs for the green future
- Reduce the cost on citizens of achieving our GHG reduction targets
- Deliver targets fastest
- Unlimited duration of consumption




Above is a graph showing Eirgrid's forecast demand for 2030 and also the Governments 22GW of renewable generation capacity in 2030. In Eirgrid's Shaping our Electricity Future modelling they are discovering there will be unprecedent opportunity, not seen anywhere in the world, to use would-be-wasted indigenous zero carbon energy to offset fossil fuel consumption. This opportunity goes beyond the electricity sector, without coordination of the heat and transport sectors this variable source of energy we be wasted.

**General questions**

**17. Please suggest any incentives which could be applied to new LEU connections in facilitating some of the measures described above. Please provide reasons and rationale for any views provided.**

Flex Power ask ESBN and the CRU to consider the following next steps to sustainably decarbonise our economy with flexible consumption of renewable electricity in hours of oversupply.

1. **Hybrid electrification of heat**
   We ask ESBN to consider including dispatchable direct electrification of heat in their flexibly work plan. Already in Ireland there is a 3MW and a 25MW e-boiler connected. Future flexible Large Energy Users will require new import capacity but crucially non-firm which should be utilised in hours of ample renewable generation.
   Appendix 1 contains some detail on the flexible electric boilers promoted by Flex Power to support the Irish Governments Climate Action Plans.

2. **Scheduling and Dispatch software**
   The System Operators must update their software. Currently flexible consumers are excluded from participating in the real-time balancing market due to out-of-date software. The TSO Scheduling and Dispatch software cannot give a signal to flexible consumption units (it can only schedule generation units). This excludes electric boilers, batteries & thermal storage from the real-time Balancing Market.

3. **Non-firm grid import capacity**
   Flex Power request that the ESBN make non-firm electricity grid import capacity available. In times of ample renewable generation there is a saturation of zero carbon power in our existing grid. This is not currently available to Irish industry who are willing to substitute fossil fuel boilers with electric boilers for high temperature heat.

4. **Network & market charges**
   Legacy charging structures and levies are compounding Irelands reliance on imported fossil fuels, and exacerbate dispatch down of our wind fleet. They hide the true wholesale price of electricity from new flexible consumption. Realignment of charging structures with the Government's 2030 ambitions can lead to the rapid deployment of multi megawatt scale electric boilers while reducing Irelands reliance on imported fossil fuels. Leveraged on the success of wind generation this existing technology can decarbonise heat and help us reach our 2030 emission targets. This technology is available now and can have a positive return on investment.

5. **Tariffs**
   Network tariffs must focus more on SNSP (System Non-Synchronous Penetration or the percentage of renewable power generation in any given hour) rather than historic day/night consumption trends. In the future the biggest variable in the electricity market will be the hourly amount of wind/solar generation. Current government targets aim to have over 22GW of RESe generation with only a small fraction of that needed for existing consumption. We suggest that new Use of Service (DUoS and TUoS) charges are designed for flexible consumption who do not need firm grid import capacity and who will provide services to the ESBN and Eirgrid.

DG7, DG8, DG9, DG10 and TCON connection should be complemented with flexible counterparts:

- DG7 f (flexible)
- DG8 f (flexible)
- DG9 f (flexible)
- DG10 f (flexible)and
- TCON f (flexible)

The facilitation of non-firm capacity would allow better utilisation of our existing grid. The lower tariffs should reflect the lower burden on the grid and the useful services flexible consumption can provide. For the industrial flexible power users, the cost of zero carbon electricity would be lower than that of natural gas in hours of abundant generation when the non-energy tariffs are realigned with Government targets.

6. **Sector coupling**

Further alignment between the relevant entities is needed. Specifically, ESBN need to work with the SEAI, the TSO and the CRU to understand how the heat sector can be a service provider to solve the problems Ireland is trying to overcome in delivering 80% renewable power generating on a poorly connected island. Sector coupling and hybrid delivery of heat will accelerate Ireland's decarbonisation with the least cost to our citizens.

7. **Policy:**

Government supports should be technology neutral and be awarded on Euro/tCO2 abated. Policy makers should not be burdened with having to pick the best technology. If the incentives are correctly aligned with government ambitions, then industry will deliver the most sustainable technology.

## Appendix 1 electric boilers promoted by Flex Power

5 to 90MW large e-boiler details

https://www.flexpowersolutions.com/high-voltage





0 to 5MW industrial e-boiler details

https://www.flexpowersolutions.com/low-voltage

90 second video on the benefits of e-boilers to Ireland

https://youtu.be/66EG_idd9IE



# Scenarios for 15-20% Flexible System Demand

Form Energy response

## Introduction:

Form Energy welcomes the opportunity to respond to ESB's proposed scenarios for a system with more flexibility. System flexibility will allow Ireland to integrate an ever increasing level of renewable generation into our grids, while lowering emissions and reliance on fossil peaking assets. This relies, however, on a framework which uses economically efficient mechanisms to incentivise truly low carbon flexibility sources.

## Defining Flexibility:

Fundamentally, flexibility is a tool to meet localized supply and demand imbalances at the lowest possible cost over a variety of timeframes. As Ireland integrates an ever growing portfolio of variable renewable generation, within a physically constrained network, flexibility will perform an increasing role on a number of fronts, for example:

- Short (c.1 hour) moments of high demand can be alleviated through demand response, or short duration storage technologies.
- Periods of renewable energy oversupply and undersupply in terms of overall system demand can be captured by long duration energy storage. Modeling by LCP Delta for the UK market, which shares a number of characteristics with Ireland in terms of wind penetration and their island nature, underlines the growing duration of these weather driven events. Specifically, they expect that by 2030, 60% of such events will last longer than 24 hours.[1] As such, while energy demand can be managed by demand response, managing energy supply will depend on tools which can reliably deliver over longer periods of time.
- Energy storage can also play a role in reducing localized congestion, and associated dispatch down of renewables. Here again, long duration energy storage delivers best outcomes, as described in the following section.

[1] LCP Delta study on long duration storage requirements, results previewed here: https://us06web.zoom.us/rec/play/mew6KZlMnE4rusKfR4YVauRAVjYuHbHK7n_yn7SIA_nl3R7khl0ych90457dS_HzHE_RiMEUwIPwaVRD.Hzc7fS01UffwHw9D?autoplay=true&startTime=1681977859000

Taking account of the multiple roles played by flexibility, including those above and others like resilience and ancillary services, it is clear that a single definition is challenging to find. Furthermore, a definition which is too narrow may accelerate the delivery of one service, while undermining others.

It is important therefore to be clear about the problems which are being addressed, respecting localized specificities, and from there define best outcomes on the basis of system value. All flexibility technologies will have a significant role to play in a decarbonized electricity system, and any structuring of flexibility targets should remain focused on the delivery of that system at the lowest possible costs.

## Setting Objectives:

Addressing specifically the KPIs set out in the document:

**Level of renewables at any one time on grid: 85%:** The challenge of integrating such large volumes of renewables requires an ambitious approach from the outset. It is not enough to take intermediate steps to transition towards a zero-carbon system, but rather make investments today which are fully compatible with a decarbonised grid. Long Duration Energy Storage, including assets capable of discharging over multi-day periods are an essential component of this.

**Dispatch down (excluding oversupply) of renewables below 7%:** With grid constraints driving a growing level of dispatch down in Ireland, this target is highly ambitious. It is clear that new transmission and distribution infrastructure is not likely to be deployed at a fast enough rate to achieve this target, meaning new solutions must be found. To that end, multi-day energy storage can play a significant role.

**Minimise oversupply:** The island of Ireland saw nearly 1TWh of curtailed wind electricity in 2021, a figure which is growing rapidly. To capture this, storage will need to expand substantially in terms of both power and capacity, meaning assets must hold a lot more energy than is currently the case. To that end, assets with longer storage durations can play a crucial role.

**Required long term storage (4 hour plus) in place:** For reasons outlined above, storage durations of significantly longer than 4 hours must be prioritised.

## The value of multi-day energy storage

Form Energy has extensively modeled decarbonised electricity systems, consistently finding that multi-day energy storage delivers lowest-cost outcomes. This is driven by a number of factors, including provision of reliability over multi-day renewable lulls, and reduction of curtailment. In the context of the abovementioned KPIs, it is worth considering the specific

value that multi-day storage can provide and ensuring the right framework is put in place for it to deliver.

Modeling done in collaboration with the UK's ESO studied the impact multi-day storage can have on network constraints. Form Energy used its proprietary Formware capacity expansion model to assess the buildout of multiple long duration storage technologies on highly constrained points in the UK Grid.[2] Taking the most significant findings, which looked at the B7a boundary in a high price scenario for 2030 developed in conjunction with ESO, Form found that cost-optimal installation of iron-air batteries could reduce curtailment by 89%. This results in up to 2TWh of renewable energy that would be consumed rather than curtailed.

While Form Energy is yet to carry out similar modeling for key points in Ireland, the alignment of results for ESO with other studies carried out in the United States gives us confidence in the system benefits for the Irish grids. Form Energy would be pleased to share further insights on how such an exercise could be conducted, and indeed to collaborate with organizations interested in assessing the implications for the Irish market.

Beyond constraint management, Form Energy has worked with partners to assess how multi-day energy storage can enable a fully decarbonised grid. A recent exercise, undertaken with Great River Energy and the Humphrey School of Public Affairs at the University of Minnesota, found substantial benefits from including a multi-day storage asset in time-matched, clean energy portfolios.[3] Specifically, we found that for Great River Energy, iron-air batteries

- Reduce the total resource needed in a 400 MW peak load 24/7 carbon-free portfolio by 723 MW, or 25 percent, relative to a lithium-ion only portfolio
- Lower renewable curtailment in time-matched renewable portfolios by 80 percent relative to portfolios that depend exclusively on lithium-ion storage
- Meet 69 percent of the net load during renewable lull period, despite providing only roughly 50 percent of the power capacity in the least-cost portfolios
- Reduce the cost to deliver time-matched renewable energy by 25 percent relative to lithium-ion only portfolio
- Enable the increase from 98 percent to 100 percent time-matched renewable energy at an incremental cost increase of only 13 percent, as opposed to a lithium-ion only portfolio in which the cost increase is approximately 60 percent
- Provide resiliency benefits across weather years by reducing the variance in year to year optimal resource builds

While again similar modeling should be done to fully identify Irish system needs, the results remain compelling. While there will undoubtedly be variations in the exact outcomes, Form's

[2] Energy Storage to Support the UK Transmission Grid, available at https://formenergy.com/insights/energy-storage-to-support-the-uk-transmission-grid/
[3] Enabling a True 24/7 Carbon-Free Resource Portfolio for Great River Energy with Multi-Day Storage, available at https://formenergy.com/wp-content/uploads/2023/04/24-7-Carbon-Free-Resource-Portfolio-4.24.23.pdf

exercises have consistently shown that without multi-day energy storage, the costs of achieving a zero-carbon electricity system can scale substantially. Furthermore, in order to deploy the required volumes, early action is essential. This will lead to both a more rapid achievement of zero-carbon grids, while also lowering the costs for consumers and cumulative emissions.

# Form Recommendations

Following from the objectives set by the Irish Government and ESB Networks, reflecting the substantial role that multi-day storage can play in achieving these objectives, Form Energy puts forward the following recommendations for the establishment of supports for flexibility.

**Clearly frame the problem:** The document currently put forward for consultation does not do enough to establish either the problem or proposed solution which 'flexibility' is supposed to provide. While targets for flexibility can be a useful tool to stimulate rapid investment in an essential part of the energy system, they are not ends in and of themselves. As such, Form Energy underlines the need to clearly focus on the ultimate objective (80% renewable grid by 2030, 100% in the 2030s), and work backwards to identify the lowest cost route to that objective. We believe that this approach will ensure the highest value for customers and system operators, and demonstrate clearly the need for multi-day energy storage.

While there is some modeling of technology mixes included in the consultation document, there is not enough detail on either approach or results to assess their reflectiveness of real system needs.

**Start with system value:** Flexibility needs are defined by the lowest cost trajectory to a zero-carbon grid. Following from this, any support scheme should be driven by the need to achieve least-cost decarbonisation. If an auction clearing process can be developed which is capable of determining the holistic system value of individual projects, ESB Networks can guarantee lowest cost outcomes for system operators. This has the compound benefit of incentivising developers to identify and deliver solutions to system problems and meet system needs.

**Location is critical:** Closely linked to the preceding point, it is worth underlining the criticality of locational signals. Without appropriate signals, projects can lead to higher costs and higher emissions - especially when incentivised to charge off baseload thermal generation as opposed to curtailed renewables. This can be solved by starting with a system value approach, which would naturally tend towards projects which leverage zero/very low cost renewable generation which would otherwise be curtailed.

**Support design:** Form Energy welcomes the establishment of long term visibility for projects through support schemes. This visibility is key to the timely implementation of projects which

can materially benefit the Irish system. Form notes its preference for upside sharing and a floor, which would further incentivise project operators to deliver value to the system.




**Friends of the Earth**

**CRU Consultation on Energy Demand Strategy Project**
**Call for Evidence**
**30 August 2023**

## 1. Introduction

1.1 Friends of the Earth Ireland is a community at the heart of the growing movement for a just world with zero pollution. We campaign and build movement power to bring about the system change that is needed for a just world where people and nature thrive. We promote education and action for environmental sustainability and justice and focus on Ireland's response to the big environmental challenges of our time, including the climate emergency and the achievement of the Sustainable Development Goals. We support people and group working autonomously to connect their local work to the bigger national and international picture. We have particular experience in participatory education, campaign strategy, shaping public debate and driving policy change.

1.2 Friends of the Earth welcomes the opportunity to respond to the CRU's consultation. A central message of this response is that we strongly welcome and encourage the CRU's clear focus on the climate change and emissions context, in particular obligations under the 2021 Climate Act. We consider this approach essential to preventing continued development and expansion of fossil gas infrastructure and usage which is incompatible with climate targets.

1.3 Friends of the Earth strongly supports a new demand strategy and LEU connection policy which can prevent further use of fossil fuel infrastructure and carbon lock-in risks. The climate crisis requires a rapid and major intervention in response — the must include phasing down gas connections and usage. Allowing further investment in gas infrastructure (even where partially decarbonised) also represents a major consumer issue. If capital continues to be invested into gas infrastructure, those costs will need to be recovered via consumer bills. Current gas network regulation is based on a 50-year asset depreciation meaning that consumers face paying for gas network assets for decades to come notwithstanding decreasing use of gas assets from the 2030s.

1.4 We are unclear as to the CRU's intentions regarding the use of the term 'low-carbon' in this and accompanying consultations. We fully recognise the prominence of fossil methane gas in the Irish energy system and that it may be challenging for certain industries to reach full decarbonisation. However, this term is both ambiguous and potentially misleading; 'low carbon' is understood in many quarters as a mere euphemism for 'continued gas dependency'. While fossil gas is less emitting than other fossil fuels, international and national authorities are clear that fossil gas cannot continue to be supported given the climate emergency, the well-known adverse impacts of methane on the atmosphere, impacts on the environment and public health, as well as the particular risks for Ireland from increased dependence and associated stranded assets. The CRU's choice of language is impactful. The CRU should be empowered to describe fossil methane gas as currently a temporary fuel of last resort which will be phased out in accordance with climate obligations. The risk is that Ireland's fossil gas dependency continues to be misinterpreted as a type of benign necessity or its highly polluting effects largely passed over by certain players.

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Friends of the Earth has responded to information provided and questions raised in the subsequent sections.

**Q1. What are stakeholder's views on the stated aims of the project?**

*Are there barriers to achieving a successful outcome of implementing an energy demand*



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*strategy to meet project climate objectives (viz. carbon emissions reduction)? Are there areas that could benefit from greater policy and regulatory clarity? Are there areas where further alignment between the relevant entities (e.g. state agencies, corporate obligations) to coordinate and enable the delivery of an energy demand strategy would be beneficial?*

- We commend the CRU for clear outlining alignment with the electricity sector's SEC and for the objective to ensure electricity and gas demand is consistent with the SEC. We also welcome the clear statement regarding compliance with the Climate Action and Low Carbon Development (Amendment) Act, 2021. It is important to note that the 'legally binding commitment' does not only relate to 2050; carbon budget obligations require increased flexibility from the electricity system and more fundamentally active reductions in GHG through reductions in fossil fuel use in the short, medium and long-term.

- We wish to support the CRU with this workstream. The CRU should oppose arguments which seek to downplay or defer the need to meet such legally binding obligations. This is particularly the case as certain players and vested interests continue to erroneously frame demand reduction measures, and/or reduced gas use, as simply equating to security of supply risks. To be clear, the main threat to long-term energy security is a mismanaged transition, through overinvestment in, and expansion of, fossil fuel infrastructure, while renewables and energy efficiency expands at pace, resulting in significant stranded asset risks.

- We recognise that the purpose is to shift consumption patterns to periods of greater renewable generation, thereby reducing carbon intensity. It is important however that the CRU has an objective of supporting actions which can serve to reduce demand outright in the long-term. The latest EPA emissions data released on 14 July highlights that decarbonisation actions are "being outpaced by increased energy demand across the economy and dependence on fossil fuels for energy generation." It is recognised that in the medium term electrification of heat and transport will preclude near-term reductions in electricity demand. However, in order to align with Ireland's carbon budget programme there is a need for longer term policy coherence and active prioritisation of measures to prevent demand increases, namely through requirements and incentives for users to invest in onsite energy efficiency and storage.

- We call on the CRU to examine UCC MaREI research on Irish electricity and gas demand to 2050 in the context of climate commitments for this energy security consultation.[1] This UCC research examines the requirement for new gas-fired power generation capacity and future gas demand in the context of these challenges. The research report also compares a carbon budget-consistent energy system with projections and forecasts of electricity and natural gas demand from network operators, EirGrid and Gas Networks Ireland. The analysis is based on the TIMES Ireland Model (TIM). A summary of some of the main conclusions and recommendations from this independent research is provided below:

- *Meeting the carbon budget programme means that, compared with 2020, natural gas demand in 2040 is reduced by 93% in the power sector, 85% in the residential sector and 67% in enterprise.*

[1] https://www.friendsoftheearth.ie/assets/files/pdf/ucc_marei_-_research_report_-_final.pdf



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- *Strong growth in data centre electricity demand, for example a trajectory aligned with the "High" or "Median" electricity demand forecasts set forth by EirGrid in its Generation Capacity Statement in 2022, would substantially increase the challenges for the achievement of Sectoral Emissions Ceilings in the power, transport and buildings sectors. To remain within emissions ceilings, data centre demand growth represented in EirGrid's "High" scenario – a 500% in growth in electricity demand from data centres this decade – would require deployment of renewable electricity capacity at implausibly rapid rates: a quadrupling of renewable electricity generation this decade.*
- *If significant growth in future renewable electricity generation is ultimately required mainly to serve strong data centre demand growth, this will further limit the potential for transport, buildings and industry sectors to meet their decarbonisation commitments. This is the case as replacing fossil fuels through electrification is also among the most cost-effective and achievable mitigation measures available in these other sectors.*
- *New natural gas-fired power capacity is urgently necessary to meet climate commitments to replace older, more carbon-intensive generation capacity, but to meet carbon budgets, the annual power generation from natural gas plants (i.e. the actual operation of these plants annually) must fall by more than half by 2030. Around 2 GW of additional natural gas capacity must be deployed as quickly as possible. High data centre demand growth 2 necessitates an additional 0.2 GW of natural gas power generation capacity. Failure to ensure compliance with Sectoral Emissions Ceilings would risk higher investment in and operation of gas generation (and associated risk of emissions lock-in).*
- *While additional natural gas-fired power capacity is necessary in all scenarios, the share of time that natural gas capacity is used must be more than halved this decade for natural gas usage and CO2 emissions to reduce in line with the Sectoral Emissions Ceiling. This cannot be achieved without a very rapid acceleration in renewable electricity capacity deployment – around 15 GW of new wind and solar capacity this decade – and this challenge is amplified with higher demand growth from data centres.*
- *To adequately plan for the rapidly energy transition required to meet the national climate objective, and to avoid a lock-in to fossil fuel infrastructure, state agencies must make carbon budget planning explicit within energy projections and forecasting.*
- *It is necessary to shift focus from examining and addressing technology deployment only in terms of long-term targets to immediately reducing fossil fuel use in line with carbon budgets to 2025 and 2030.*
- *While electricity demand growth from data centres is not the primary driver of increased gas-fired generation capacity, it creates an upwards pressure on power generation, which will drive additional fossil fuel usage and associated CO2 emissions until the power grid is fully decarbonised. All else being equal, EirGrid's "High" demand growth scenario would require a quadrupling of renewable electricity generation this decade – significantly beyond policy targets – and 31% more renewable energy generation than the "Low" demand growth scenario in 2030. However, even the "Low" growth scenario requires that 80% of electricity demand be derived from renewables in 2030.*
- *This modelling analysis shows that around 2.4 GW of additional gas-fired power generation capacity is necessary to deliver security of electricity supply while displacing older, more carbon-intensive thermal generation capacity. However, the power sector can only remain within its Sectoral Emissions Ceiling if the operation of gas plants rapidly reduces, particularly from 2025 onwards. This cannot be achieved without a broad set of mitigation measures, including rapid deployment of onshore*



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*and offshore wind and solar PV at unprecedented rates in Ireland. Concurrently, reducing electricity demand growth from data centres and large energy users will reduce reliance on gas plants while enabling zero carbon electricity to be directed at displacing fossil fuels in industry, heat and transport.*

**Q2. What are stakeholder's views on the proposed scope (focus areas) and approach (phasing) of the project?**

- It is essential that the CRU does not regard the current gas network price control as a separate or distinct concern. We have major concerns regarding further expansion of gas assets under PC5 which risks locking-in long-term gas use. This may serve to directly undermine the CRU's efforts to reduce carbon intensity. The Energy Demand Strategy should be considered as an active means of reducing gas dependency and risk of stranded gas assets.

- We support the CRU's emphasis on seeking to avoid carbon emitting generators. We underline that in order to align with carbon budget obligations demand flexibility and reduction must be prioritised from a regulatory perspective over and above fossil gas development. Equally it is not only necessary for the CRU to support reductions in connections to the gas network but also for the CRU to plan for active phase out of gas connections.

- This is also the case as new gas connections, particularly large industrial customers, inevitably entail higher gas demand and associated calls for further gas network expansion. The evident challenge is that decarbonisation of the gas network and gas demand is (unlike electricity) at best challenging and uncertain (see also response to question 7), with the risk that new gas network infrastructure and associated emissions will be locked-in for years to come. We request that analysis under this consultation in accordance with SECs, in particular measures to support reduced gas demand, inform PC5 particularly its demand scenarios.

**Q3. What are stakeholder's views on energy demand profiles and the challenges arising from the associated carbon emissions? Considerations may include other information and data that should be included. Or challenges, such as new demand.**

- We strongly support analysis carried out by MaREI of electricity generation and alignment with the electricity SEC indicating reductions in gas-fired generation such that it halves over the next 10 years (section 2.1). It is important to note that current gas dependency and the challenges associated with such reductions should not be used as a simplistic means to discount or deprioritise such planning and analysis on the electricity sector's SECs. Progress on gas phase out can only take place where the CRU's regulatory approach ensure SOs integrate scenario planning and demand projections which align with SECs.

- We consider transparency on fossil fuel use and associated emissions to be equally significant in this regard. It is important that the public has access to information on annual electricity sector CO2 from power generation, including onsite generation, and equally that emissions reductions due to new demand side measures are transparently reported.



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- We have major concerns with any analysis based on GNI's Gas Forecast Statement (GFS) 2022. GNI network plans to date do not align with Sectoral Emission Ceilings nor do they properly take account of wider energy system decarbonisation and longer-term reductions in gas supplies through electrification and demand-side measures. GNI's role in both putting forward network development plans while at the same time promoting expansion of the gas network raises conflict of interest risks. GNI is responsible for both assessing gas system and supply, while at the same time it continues to promote connections to the gas network. Delivery of new connections are based on projected gas demand scenarios which are produced by GNI.

- UCC MaREI has noted that '*EirGrid and Gas Networks Ireland…project future electricity generation capacity and natural gas demand without taking explicit account of Sectoral Carbon Budgets or the long-term net-zero commitment. The result is projections of demand which risk being misinterpreted by policy and industry as being compatible with legally-binding climate commitments. This provides poor policy messaging that does not factor in legally-mandated carbon budgets and risks locking in fossil fuel-intensive infrastructure and a CO2 emissions pathway which exceeds legally-binding carbon budgets*.'[2]

- The consultation should take account of the revised gas market Directive which notes the creation of an obligation for network operators to base investment decisions also on a joint scenario between electricity and gas (Article 51).

**Q4. What are stakeholder's views on the definition for demand flexibility?**

*How should demand flexibility be measured and reported on an ongoing basis? What metric (annual peak system demand / total annual energy consumption / other?) should be used. How should compliance with the CAP targets be assessed for demand flexibility in 2025 and 2030?*

- At this stage, we only note that the ultimate overriding metric, given the stated objectives, must relate to delivery of carbon savings (as already noted in the consultation paper). We would have concerns with a metric which showed, for example, increasing flexibility but ultimately facilitated increased usage of (e.g.) gas-fired generation, thereby ultimately increasing Ireland's overall emissions.

**Q5. What should be the areas of focus for demand flexibility?**
*Are there any policy or regulatory barriers to the introduction of technologies that could be useful in providing flexibility? What incentives should be considered?*

- Demand-side management at domestic level should go beyond smart-mater rollout and usage. This is not to downplay the important role of smart meters and smart services. However, the benefit of increased microgeneration and battery storage at domestic and/or community level (alongside smart meters) should equally be considered, particularly in reducing peak-demand and support electricity security. This consideration should go beyond export tariffs to also addressing barriers to microgeneration and batteries in conjunction with other relevant state stakeholders.

[2] https://www.friendsoftheearth.ie/assets/files/pdf/ucc_marei_-_research_report_-_final.pdf



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- We strongly support the focus on large energy users. It is essential that new obligations not only apply to new data centre developments but also existing (see separate response to Review of Large Energy Users Connection Policy consultation).

**Q7. Comments are invited from respondents on any other associated areas that they consider materially relevant to the project**

- We are greatly encouraged by the CRU's clear application and consideration of the electricity sector's SEC. We strongly encourage that this approach is followed as part of other consultations, in particular GNI's PC5 price control and revenue review.

- It may be the case that biomethane and hydrogen injection is raised in the context of reducing fossil methane gas demand. Friends of the Earth's submission to the LEU connections policy addresses our concerns regarding such developments. To briefly summarise, it is important that the CRU examines the wide-ranging uncertainties and risks regarding biomethane and green hydrogen development and injection in Ireland and addresses the likelihood that sufficient volumes will not be generated to sufficiently decarbonise the gas grid. A robust, independent, science-based analysis is needed, i.e. not merely GNI projections. Previous UCC analysis notes that '*Although biogas is viewed as positive from a renewable energy perspective, it may have the unintended consequence of increasing the gas RAB and ultimately increasing the long-term stranded asset risk and barriers to change*.'[3] There is a major risk that if biomethane and/or green hydrogen development is less successful than expected, subsidies and supports and long-term investment may continue to facilitate an expanding gas network and simply equate to the state underwriting the vast majority of the risk with little responsibility on GNI itself.

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[3] EPA Research Report No 302, Fossil Fuel Lock-in in Ireland: How Much Value Is at Risk? (2015- CCRP-MS.27) Prepared by University College Cork (Authors: Celine McInerney, Conor Hickey, Paul Deane, Joseph Curtin and Brian Ó Gallachóir)



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Ireland FutureEnergy

# Response to CRU / ESBN consultation on “Scenarios for 15-20% Flexible System Demand

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# 2 Executive Summary

FuturEnergy Ireland (the Group) is a Joint Venture Group owned jointly by Coillte and ESB. The Group has been established with the initial high-level ambition of leveraging Coillte's significant landbank and development team to support the deployment of 1GW of onshore wind by 2030 and to deploy solar and storage technologies where these are complimentary to the core onshore wind objective.

We would like to thank you for the opportunity to respond to this consultation. We have set out below our detailed response and would summarise the key points therein as follows:

- There needs to be greater clarity as to what 15-20% demand flexibility means and what it is expected to achieve. A *power* or *MW* based interpretation of this target is relatively meaningless if the underlying intent of this target is to support cost effective decarbonisation of Ireland's power system.
- In the context of the distribution system, shorter duration storage or demand side response (DSR) can provide meaningful technical benefits but these would not include meaningful reductions in emissions or dispatch down of renewables.
    - We acknowledge and support deployment of short and medium duration storage to tackle specific local technical challenges on the distribution and transmission systems (related to demand side network congestion), provided these are supported by an appropriate specific local cost benefit analysis and assessed against reasonable alternative solutions.
    - Such solutions should be based on a minimum viable product to tackle the specific problem identified and should not be conflated with procurement of flexibility and storage to tackle system wide emissions reductions, renewable generation curtailment, oversupply, or network congestion associated with renewable generation. These problems are of a fundamentally different nature to demand side network congestion and require fundamentally different solutions.
    - Material improvements in emissions and RES-E can only be cost effectively tackled with storage and flexibility solutions that have significantly larger energy capacities / durations and very low capital investment costs per MWh.
    - Due to the potential costs and complexity involved, procurement of these longer duration solutions needs to be relatively more sophisticated as outlined in more detail in section 9 below. Any procurement of these services needs to be completed in close consultation with or led by the TSO, as these services relate more to renewable constraints on the transmission grid and system wide renewable integration challenges.
    - In all circumstances, we are supportive of measures to empower consumers to alter their consumption of energy in response to short term price signals. This should always provide system benefits, and doesn't require significant additional investment, but we would note its contribution to emissions reductions may be relatively modest due to modest energy volumes likely involved.
- It is critically important that we do not deploy significant capital to hit a 15-20% flexibility target by 2025 for its own sake. If particular investments are not

supporting the underlying intent of this target, then such investments shouldn't be supported. If investments are being made in shorter / medium duration technologies to solve demand side distribution network congestion, then procurement of these solutions should be framed around this use case, and benefits assessed on this basis.

The entire consultation is framed around a 2025 time horizon. This is a very short timeframe within which to consider material new energy policy initiatives. This creates a material risk of implementing ineffective policy to deliver on a very near term target, the underlying intent of which is not yet well or widely understood.

- Meaningful improvements in system emissions and dispatch down of renewables requires the bulk time shifting of very significant amounts of energy. Existing established storage technologies with short / medium durations (relatively limited energy capacities) will struggle to economically solve this problem.
- On a power system trending towards net zero emissions, the ability to time shift very large amounts of excess available energy from solar and wind becomes a critical enabler. This will require a material capital investment at the system level, and as such it is important that an appropriate level of sophistication is brought to any competitive procurement to ensure value for money for consumers.
    - The problems that an efficient procurement mechanism need to solve are:
        - How to compare different storage technologies with different costs, durations and return trip efficiencies on a like for like basis.
        - How should locational benefits & interactions with renewable generation and demand be considered?
        - How do we bridge existing remuneration gaps and provide an appropriate level of revenue certainty?
        - In providing revenue certainty and delivering efficient investment signals, how do you also preserve efficient operational signals?
        - We need to address existing operational issues in scheduling and dispatching (S&D) storage projects for energy at all, and in particular to further enhance S&D systems to allow storage projects to solve local network constraints; and
        - We need to address existing issues with renewable procurement. Procurement of renewables and flexibility needs to be complimentary. Allocating network constraint risk to generators locks in these costs for the tenor of the RESS contract. Deployment of flexibility solutions to solve network constraints then results in more revenue for renewables and less savings for consumers.
    - The principles that should apply to any efficient procurement process are:
        - The procurement process should be technology agnostic and support investment in an appropriate broad portfolio of storage technologies and capabilities that meet the needs of the system and national decarbonisation objectives.
        - The procurement process should maximise long term certainty for a floor revenue for winning technologies. This will reduce investment hurdle rates enabling easier, greater and more cost effective deployment;
        - The procurement should be based on an estimation of **overall system value vs cost**, taking account of any locational benefits;

        - The selection of "winning" technologies needs to be based on a transparent full system & network model that bidders can understand and replicate;
        - The procurement process should be designed in a manner that recognises the hedging value of storage. Long duration energy LDES)[1] investment will be Capex driven rather than Opex which means more stable pricing and less exposure to gas price volatility.
    - We have set out below in section 9.2 (and Appendix 2) a proposed high level design for such an auction process. This would involve utilising integrated network and market models to determine the expected marginal system value of new technology deployments, taking account of the projects technical characteristics in addition to their locations on the grid. We have also included details of one such model in Appendix 2 that would be capable of answering these questions at the transmission network level. (Commercially sensitive – not for publication);
    - An alternative approach whereby storage MW and MWh capacities are centrally defined with a view to supporting broader renewable integration and decarbonisation objectives, has the potential to be extremely inefficient and wasteful of consumers money.
- Other markets globally seeking to decarbonise the power systems are moving towards a value based approach to clearing storage / flexibility auctions, though there is room to improve considerably on the detailed execution methodologies. If we can do this properly in Ireland, we have a chance to re-establish ourselves as a global leader in decarbonisation of power systems.
- The consultation document makes a number of references to studies and modelling work, the details of which haven't been shared. We would suggest that it is important to publish the details of these studies if they are being used to inform the development of policy positions in the interest of transparency and to ensure that stakeholders can provide fully informed input to the consultation.

[1] Given to mean *day* or *multi-day* storage.

# 3 Consultation with TSO

We would note that when considering the role of flexibility in delivering on our decarbonisation objectives, the transmission system has a critical role to play and impacts of flexibility procurement on the transmission system need to be considered. As such, we would suggest that there is a critical role for the TSO in the development of these procurement processes. The consulta
interactions in a meaningful way. We would strongly recommend that more detailed consultation with the TSO takes place before any future procurement process is initiated.

# 4 15-20% Demand Flexibility Target

Key Point:

There needs to be greater clarity as to what 15-20% demand flexibility means and what it is expected to achieve. A power or MW based interpretation of this target is relatively meaningless if the underlying intent of this target is to support cost effective decarbonisation of Ireland's power system.

On the basis that this target was set out in our national Climate Action Plan 2023 (CAP 23), it is reasonable to assume that the primary purpose of increasing demand flexibility is to support cost effective decarbonisation. Within the consultation document we would note that ESBN / CRU are interpreting the target as a "power or MW dimensioned value" however in the context of cost-effective decarbonisation this isn't a meaningful interpretation. The benefits of demand flexibility depend as much or more on the MWh capabilities as they do on the MW capabilities. Our team has been involved in numerous studies that indicate that shorter duration (4-8hr storage or demand side response) will have a negligible impact on emissions.

We would note also that the target itself is arguably a simplification of a relatively complex topic. It is possible to interpret and meet a 15-20% flexibility target in a multitude of ways, some of which could have very significant system benefits and emissions reductions and some of which could actually have a negative impacts on system emissions (as acknowledged in the consultation document itself). We would suggest that this target requires further clarification with DECC and would further suggest that it should be treated as a potential metric to support cost effective decarbonisation and shouldn't be implemented if the tools used to implement it are either not cost effective and / or cause emissions to rise. Some increase in costs should be acceptable if the emissions benefits are material but spending significant sums of money for negligible system benefits is not acceptable.

## 5 ration storage and demand side response.

Key Point:

**In the context of the distribution system shorter duration storage or demand side response (DSR) can provide meaningful benefits but these would not include meaningful reductions in emissions or dispatch down of renewables.**

Where there are particular challenges meeting increasing demand due to network capacity limitations at either the distribution or transmission level, then short and medium duration demand side response or storage has the technical potential to help resolve these specific local constraints. In such circumstances, provided CRU / SO have satisfied themselves that this represents a cost effective solution or at least a solution to a genuine technical challenge with an acceptable cost, then we would be supportive of deployment of these solutions for this specific purpose. It is also true that shorter duration storage with higher efficiencies can contribute to capacity adequacy, however due to their limited energy capacity these technologies will very often need to charge from base load thermal generators and as such their emissions during these periods will be higher than base load thermal. On an 80% - 100% renewable system, periods of excess renewables could run to multiple days. As such, shorter duration storage will have limited ability to absorb this excess energy and make this clean energy available later at times of low renewable output. We would note that this is openly acknowledged in the consultation paper where the following is noted:

*"Recent independent market modelling has indicated a high risk that storage [2]added to the Irish electricity system today would likely result in a net increase in electricity emissions initially due to its charging needs and only marginally contribute to carbon abatement between now and 2030. As such, careful design decisions will be needed to ensure that:*

- *In the main, the flexible demand sourced contributes to the CAP23 carbon abatement target for flexible demand;*
- *Where flexible demand is sourced which does not contribute to the CAP23 carbon abatement target for flexible demand, additional volumes of flexible demand will be required to achieve the carbon abatement target."*

This would align with what we would expect based on the results of several studies that we have been involved with and our own in-house analysis.

In summary:

- We acknowledge and support deployment of short and medium duration storage to tackle specific local technical challenges on the distribution and transmission systems (related to demand side network congestion), provided these are supported by an appropriate specific local cost benefit analysis and assessed against reasonable alternative solutions.
- Such solutions should be based on a minimum viable product to tackle the specific problem identified and should not be conflated with procurement of flexibility and

[2] *We assume this refers to short / medium duration storage*

storage to tackle system wide emissions reductions, renewable generation curtailment, oversupply, or network congestion associated with renewable generation. These problems are of a fundamentally different nature to demand side network congestion and require fundamentally different solutions.

- Material improvements in emissions and RES-E with storage and flexibility solutions that have significantly larger energy capacities / durations and very low capital investment costs per MWh.
- Due to the potential costs and complexity involved, procurement of these longer duration solutions needs to be relatively more sophisticated as outlined in more detail in section 9 below. Any procurement of these services needs to be completed in close consultation with or led by the TSO, as these services relate more to renewable constraints on the transmission grid and system wide renewable integration challenges.
- In all circumstances, we are supportive of measures to empower consumers to alter their consumption of energy in response to short term price signals. This should always provide system benefits, and doesn't require significant additional investment, but we would note its contribution to emissions reductions may be relatively modest due to modest energy volumes likely involved.

# 6 Delivering the target for the target's sake

**Key Point:**

**It is critically important that we do not deploy significant capital to hit a 15-20% flexibility target by 2025 for its own sake. If particular investments are not clearly supporting the underlying intent of this target, then such investments shouldn't be supported.**

We would note the following comment included in the consultation in relation to the central scenario:

*"This scenario is heavily dependent on providing a reliable route to market to commercial investment in medium duration storage[3]. Recent modelling indicates that while storage delivers value which other sources of flexibility may not in terms of the ability to reduce dispatch down, it is a relatively costly solution, and depends on the introduction of standalone flexibility services rather than being achieved by the operational signals delivered in ISEM."*

We would note that c.a. 4+ hr storage has negligible benefits in terms of reduced constraint, curtailment and oversupply levels for renewable generation and as such has negligible emissions reduction benefits[4]. As openly acknowledged in the consultation paper these durations have at least some potential to actually result in increased emissions. As noted above, the consultation paper also acknowledged that these solutions aren't cheap. As noted in section 5 above, we accept and support deployment of technologies of shorter and medium durations where they represent the most cost

[3] Defined as 4+hr in the consultation document

[4] Other than when deployed as a zero carbon system service technology, technology deployments that support removal of system operational constraints are extremely effective at cost effectively reducing system emissions.

effective implementable solution to a specific local technical problem. However, the context of the 15-20% flexibility target is our
expensive solutions that don't contribute meaningfully to emissions reductions in the name of delivering on the "flexibility target" is not a sensible approach. Specific supports for short and medium duration storage should only be considered where there is a clear benefit, and it needs to be recognised (as was done in the consultation document) that these need to be complimented with longer duration solutions at the transmission level to deliver on the emissions reductions targets.

# 7 2025 Time horizon

Key Point:

**The entire consultation is framed around a 2025 time horizon. This is a very short timeframe within which to consider material new energy policy initiatives. This creates a material risk of implementing ineffective policy to deliver on a very near term target, the underlying intent of which is not yet well or widely understood.**

Given the fact that the consultation is focussed exclusively on meeting a 2025 flexibility target, it is correct to note that the technology options or projects that can support this target are relatively limited. However, it is also accurate to say that:

- The available technology options won't have a meaningful impact on emissions or on dispatch down of renewables due to constraint, curtailment or oversupply.
- In fact, the paper acknowledges that the available technologies have a high risk of actually increasing power sector emissions.
- They may also be relatively expensive relative to the modest benefits they provide, i.e. there is a relatively high risk that you could pay a relatively large amount of money to solve a very small part of a very big problem. In fact, the benefits provided may well be materially less than the cost of solutions available in the very near term.
- As noted above, if the target is being interpreted as a power based (MW) target rather than an energy based one, there is a risk that we hit the target for the targets sake with very little meaningful system benefits vs relatively material costs.

If we are to deliver effective solutions to enable further emissions reductions beyond 65-70% renewables in the period 2025 to 2035, we need to be sending policy / market signals now to develop the technologies that can actually work. We have set out a proposal below for how this could be done at the transmission level. Distribution connected flexibility being deployed with the objective of reducing emissions and reducing dispatch down of renewables could be aggregated up to the relevant transmission node in order to participate in such a process. Where distribution connected flexibility is being deployed to solve specific local demand side network congestion, as noted above, we would be supportive of the "minimum viable product" approach, provided CRU / ESBN are satisfied with the cost benefit analysis and have assessed it against reasonable available alternatives.

# 8 What type of flexibility do we need to support CAP objectives

Key Point:

Meaningful improvements in system emissions and dispatch down of renewables requires the bulk time shifting of very significant amounts of energy. Existing established storage technologies with short / medium durations
energy capacities) will struggle to economically solve this problem.

Members of the FEID team were involved in an SEAI funded study[5] a number of years ago which methodically examined the effectiveness of a number of renewable system integration / curtailment mitigation measures. Some relevant highlights from this study are included below.

In this work package a multi scenario analysis was conducted examining the impact of gradually increasing the "idealised" interconnector capacity and "idealised" storage capacity with varying energy limitations. In this context idealised interconnectors means that the model was always able to export up to the full available capacity to mitigate curtailment. In the context of storage, it means that the model tried every other means of mitigating curtailment before charging a storage technology (due to its energy limitation), and then once a curtailment event was over it sought to discharge the storage technology as quickly as possible to maximise its availability for the next event. i.e. The results should be considered as the theoretical maximum curtailment benefit that can be provided by each technology. The idealised interconnector could also be considered to closely represent the curtailment benefits of an energy unlimited storage technology.

These results clearly illustrate the importance of energy capacity when seeking to use storage technologies to directly absorb surplus renewables on systems with very high levels of RES-E at either a system or local network level. Due to the very large energy volumes required it is critical that the storage capex per MWh is extremely low. Techno-economic optimisations carried out by our team indicate that this can be more important than maximising the return trip efficiency of the technology.

[5] https://www.seai.ie/documents/research-projects/RDD-000326.pdf

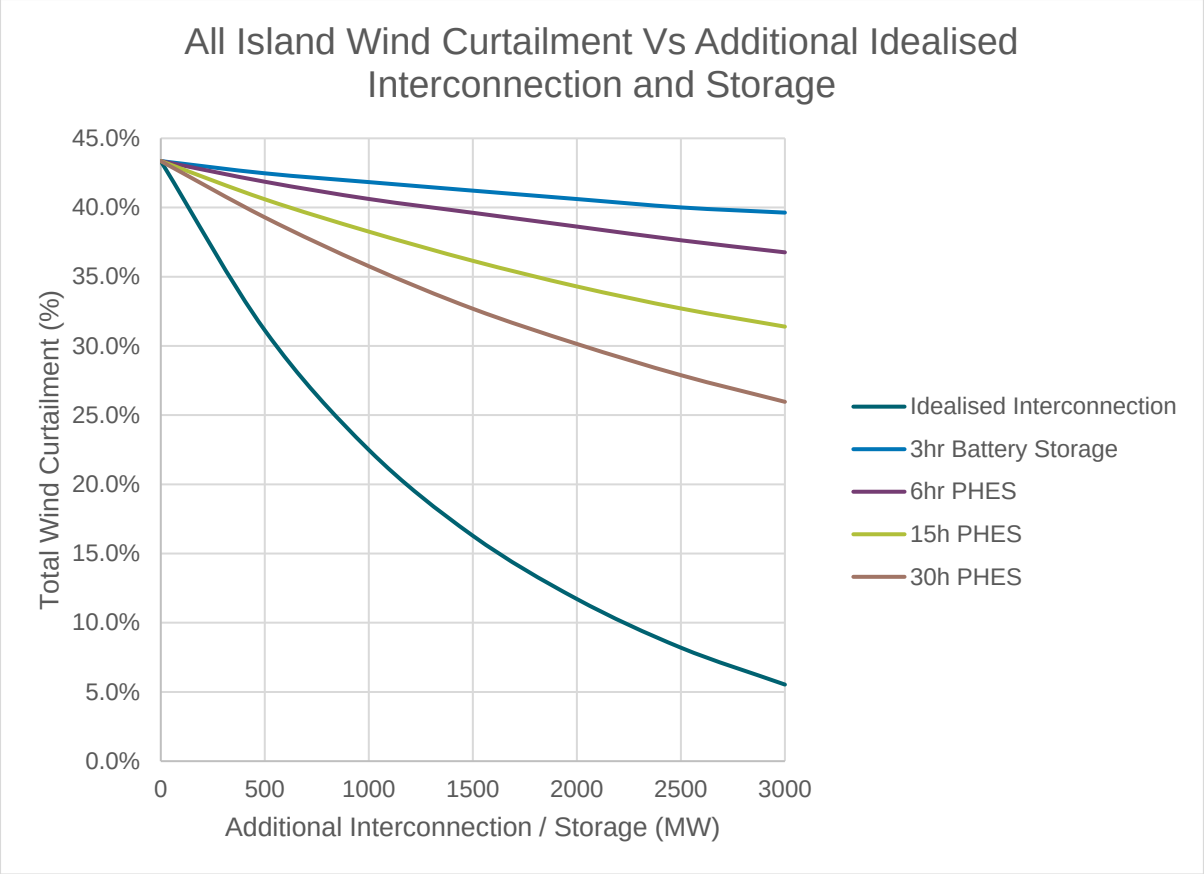



*Figure 1: Wind Curtailment vs additional storage capacity of varying durations (energy capacities) and idealised interconnection.*

We would also like to draw your attention to the work of the global "Long Duration Storage Council [6]". This body includes many technology OEM's developing new classes of low cost

curtailment in an economic manner. This group commissioned McKinsey & Company to carry out a study[7] examining the role of Long Duration Storage on net zero power systems globally. Some key conclusions from this work:

- The report is noting that LDS tech becomes particularly important on power systems attempting to reach 60-70% RES-E. Irelands 80% target means LDS could become critical in Ireland earlier than many other markets.
- Significant investor interest in recent years with c.a. €2.5b invested in new / emerging LDS contender technologies.
- LDS technologies considered in this report tends to win out in applications from 8hrs up to 150hrs. Below 6-8hr applications, Li-Ion is likely to be a better option, beyond 150hrs, hydrogen + salt cavern storage is likely better.
- In Europe they are estimating average durations of installed storage systems will need to be 20-30hrs by 2030, and 50-60 hrs by 2040. Ireland will likely be ahead of the average EU figures due to higher RES-E targets in the nearer term.

[6] https://www.ldescouncil.com/
[7] https://www.ldescouncil.com/insights

- The total addressable market is huge, but is sensitive to LDS technology delivering on cost and performance learning curves.

# 9 How should we procure / incentivise flexibility?

Key Point:

On a power system trending towards net zero emissions, the ability to time shift large amounts of excess available energy from solar and wind becomes a critical enabler. This will require a material capital investment at the system level, and as such it is important that an appropriate level of sophistication is brought to any competitive procurement to ensure value for money for consumers.

To answer this we have set out below a problem statement, principles and proposed high level design for an efficient procurement mechanism for storage and demand side response at the transmission level. As noted above distribution connected projects that are designed to support decarbonisation and reduce dispatch down of renewables could be aggregated up to the relevant transmission node and could also participate in such a process. This is very much aligned with an ESI position paper that our team contributed to, attached as Appendix 1 to this response.

## 9.1 Problem statement

### 9.1.1 Changing nature of the system

It is critically important when considering the market framework under which power generation technologies and supporting system services (including storage) are deployed, to consider the changing nature of the system. As we transition to 80% RES-E and beyond, we are moving from a system on which the largest cost component is fuel, to one where the largest cost component is capital infrastructure. Figure 2 & 3 below provides a crude illustration of the potential change in the underlying cost of providing sufficient generation capacity and fuel to meet demand in a 2035 power system – figure 2 illustrates cost breakdowns for 35% RES-E system, Figure 3 illustrates how this changes on a system trending towards net zero. It is noteworthy that only the fuel and carbon elements of these costs are capable of responding in an economic way to short term energy market price signals i.e. through the burning of more or less fuel. The capital infrastructure component is incapable of responding to these signals economically after it has built.

On the basis that the clear global and national imperative is to decarbonise the grid as quickly as possible and at least cost, the following key questions emerge:

- Which technologies should be deployed?
- What market framework / process should they be deployed under?

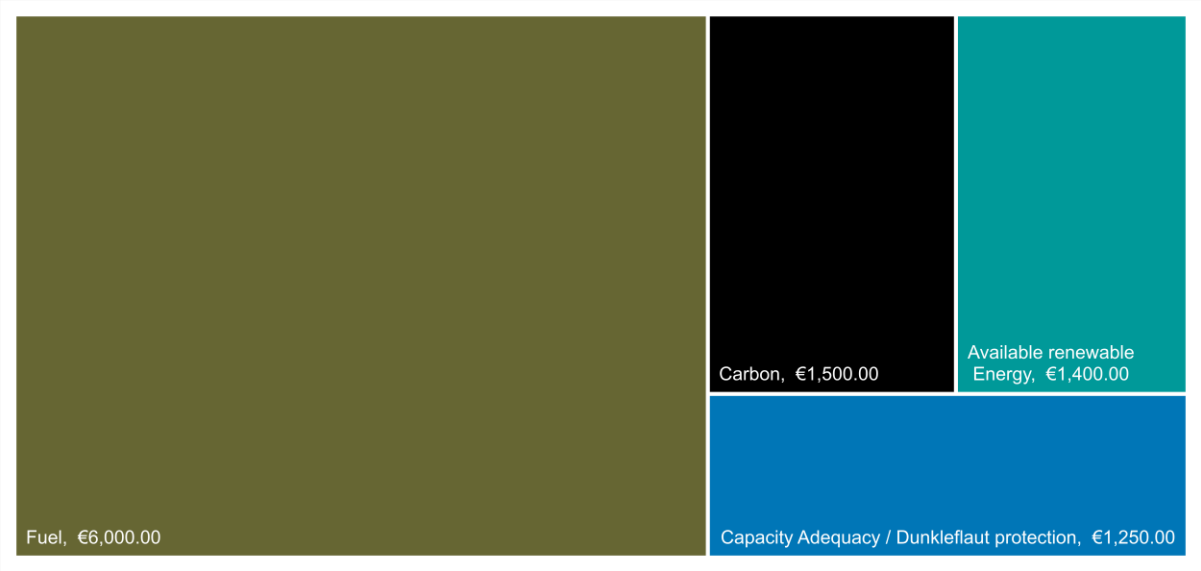



*Figure 2: Illustration of approximate fundamental underlying annuitized capex, opex, fuel and carbon cost on an all island power system at 35% RES-E in 2035 , Costs in €m p.a.*

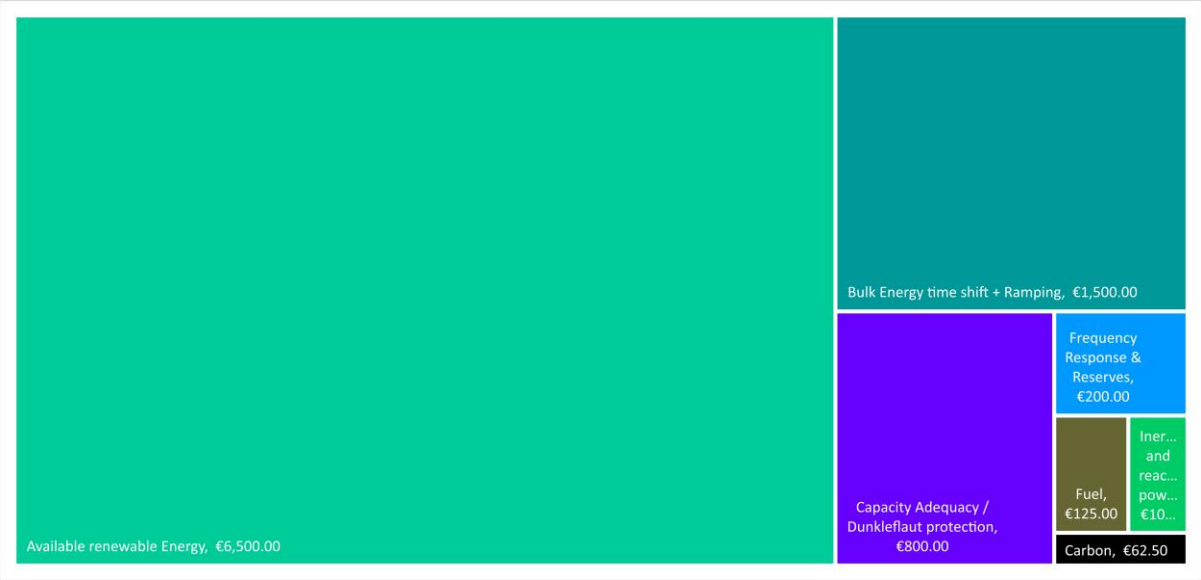



*Figure 3: Illustration of approximate fundamental underlying annuitized capex, op an all island power system trending towards net zero in 2035. Costs in €m p.a.*

Existing short term energy and system service markets are primarily focused on minimising short run operating costs, i.e. to ensure efficient operation of existing assets. Delivering a net zero power system requires market mechanisms that ensure efficient investment in an optimal blend of zero carbon technologies. The largest components of underlying costs of a net zero power system will be the technologies to provide available renewable energy and the technologies needed to bulk time shift that energy. Endless complexity is being brought to bear on future system service arrangements and wholesale energy markets to achieve optimal dispatch and minimise short run marginal operating costs. These costs will be a very small portion of our future system costs. As we transition to a net zero power

system capital costs dominate. Delivering such a system cost effectively requires much greater consideration of how we lower the cost of capital through provision of long term revenue certainty and greater sophistication in how we incentivise investment in an efficient technology mix.

### 9.1.2 How to Compare Different Storage Technologies at a System Level?

Existing and new LDES and demand side response technologies have very different combinations of energy capacity, duration, return trip efficiency (RTE), asset lives, capital costs and fixed operating costs. Each technology has a different floor revenue requirement in order to meet a reasonable investment hurdle rate. Under any new storage procurement framework how do policy makers compare these technologies and decide which should clear? e.g. Technology A can provide 24hr discharge, 65% RTE, and is located in a region with existing network constraints of 9% and requires a guaranteed floor revenue of €50k

an area with network constraints of 3% and requires €40k per MW per annum to build. Which of these two technologies should be procured? On what basis do you make that decision?

ESI would generally take a technology agnostic approach and believes that ensuring the creation of market frameworks that reward the delivery of critical services is important. The parameters should be defined on the basis of system need, allowing the most economically viable and preferably lower/zero carbon technologies to win, ensuring economic efficiency for both the System Operators and consumers.

### 9.1.3 How should Locational Benefits & Interactions with Renewable Generation and Demand be Considered?

Intuitively there are interactions between the cost of available renewable energy in different locations, the level of network constraints and the value of storage services of different durations. For example, If there is a renewable generation resource with a very low cost of available energy but facing high network constraints, it is likely that longer duration storage services deployed in that location will provide greater system value, compared with the same technology deployed in an area facing demand side congestion issues, or in areas with low renewable constraints. Should policy makers be willing to procure LDES at a different price in areas of high renewable transmission constraints? If so, what should inform that decision? For example, consented wind energy projects exist with an underlying LCoE based on availability of €50.00 in the same region as technology A above. Wind energy projects in the same region as technology B have an LCoE based on available energy of €80.00. How should these interact with the storage procurement process?

Similarly, there are likely to be interactions with locational applications. E.g. In areas of high demand (Dublin), the demand side transmission congestion issues are likely to be of shorter duration. In these locations, intuitively, storage technologies of shorter durations and

higher efficiencies are likely to be more optimal. Again, how should policy makers compare bids and decide what clears where?

### 9.1.4 Remuneration Gaps / Revenue Certainty

Existing market systems do not fully remunerate storage for the services that they provide. Some examples include:

- Network congestion management– no product or incentive exists.
- Carbon abatement (energy storage is a source of clean dispatchable capacity that displaces fossil fuels)
- Managing renewable oversupply and contributing to RES E targets.

With the exception of capacity market revenues, the majority of available revenues come with limited medium to long term certainty:

- DS3 tariff arrangements will transition to an enduring, competitive arrangement (currently targeted at2026). No detailed design yet on future arrangements but short-term auctions are a key feature. Opportunities for long-term revenue certainty may be limited;
- Energy Arbitrage – energy market revenues are volatile and difficult to forecast with accuracy;
- Capacity - does allow for 10-year contracts but structural issues disadvantage long duration storage e.g. de-rating factors do not recognize LDES and price caps are based on new fossil fuel plant. The Capacity Market, as currently structured, will not make up the 'missing money' needed to drive investment in LDES.

These uncertainties result in higher investment hurdle rates and make it very challenging to develop an investable business case for LDES assets or demand side response assets that require material capital investments.

### 9.1.5 Operational Signals vs Investment Signals

Existing market structures are reasonably good at incentivizing appropriate / optimal operation of constructed assets but are not good at sending investment signals to the new low to zero marginal cost assets needed to decarbonize the power system.

How should policy makers provide the needed revenue certainty to new LDES assets without removing / reducing the effectiveness of short-term price signals driving optimal operation of assets? E.g. If you provide LDES with a simple Contract for Difference structure, where is the incentive to trade optimally when any revenue above the strike price will be handed back?

### 9.1.6 Existing Operational Issues

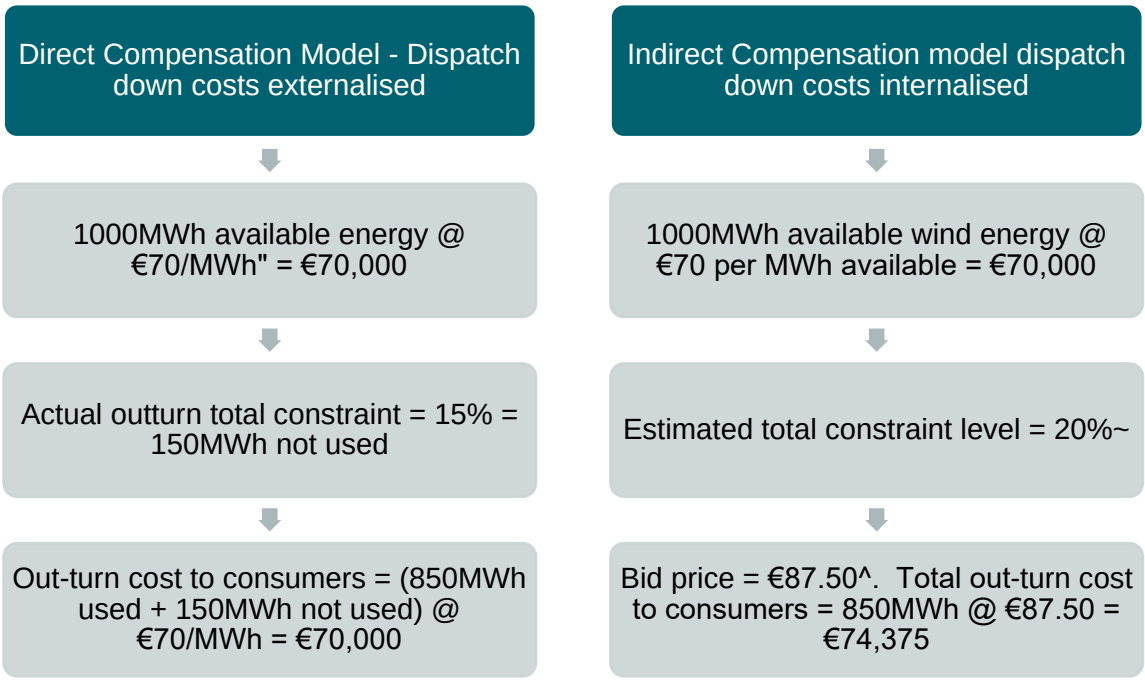
Today storage projects cannot be scheduled and dispatched (S&D) effectively for energy. We understand that the TSO have an active workstream in place to enable scheduling

on engagement with the TSO, the scope of this initial S&D project does not include dispatching storage or demand side response to address network constraints. If storage and demand side response assets are to provide network congestion solutions it is critical that they can be dispatched to charge at or close to zero cost to resolve a network constraint (or at a minimum compete against each other for the right to charge using this surplus renewable energy). Our understanding is that once the current workstream is complete, storage will be able to trade *ex ante*, secure a market position and have a reasonable expectation of being dispatched to its nominated position, but this would be based on *ex ante* market pricing. Times of network constraints are often not coincident with times of zero price *ex ante*. As such, it may not make economic sense operationally for a particular storage asset to charge even if this results in the loss of renewable energy that the storage asset would have been happy to absorb if the price was at or close to zero.

### 9.1.7 Interactions with RESS auctions and Renewable Generation Procurement

Under existing RESS auction design, constraint, curtailment and oversupply risk are principally with the generator (noting that a proposal to address curtailment and oversupply risk has been put forward in O-RESS1 and RESS 3, subject to state aid approval, no current proposal to address constraint risk). This means that generators will price in a certain level of dispatch / re-dispatch into their bids. This in turn means that subsequent storage deployments that serve to reduce levels of dispatch down will increase revenues to RESS generators and not create consumer cost savings to the extent that would otherwise be the case. This diminishes the level of incentive for regulators acting on behalf of consumers to support storage deployments as high re-dispatch and oversupply costs are baked in for the period of support.

This is illustrated in more detail below. The first figure below compares costs to consumers for renewable energy in a model where network constraint risk is taken by consumers (Direct compensation model) vs a model where this risk is assigned to generators (Indirect compensation model). As a generator has almost no ability to manage this risk a prudent bidder will tend to incorporate reasonably conservative assumptions in their financial models. In the simple illustration below this has the effect of increasing costs to consumers by 6.25%. i.e. Even before storage interactions are considered we would suggest that this is already an inefficient procurement approach.

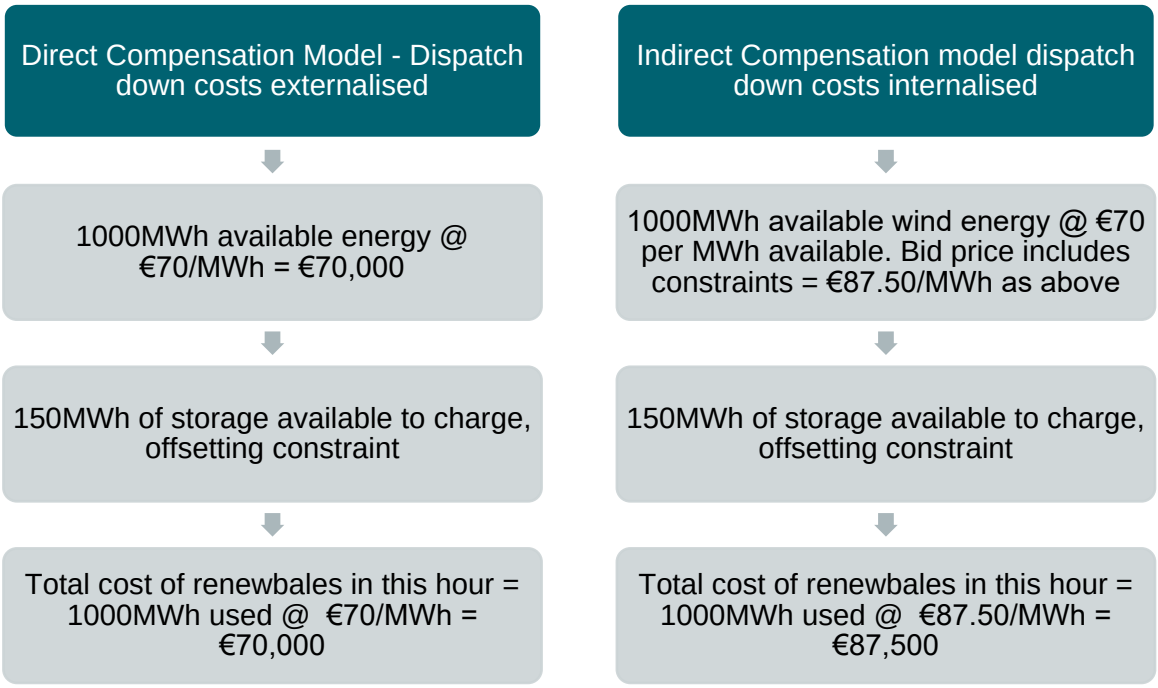



“ If constraint costs are externalised then the auction bid price should reflect the actual cost of the available energy. In this illustration we're assuming that this is at a level of €70/MWh

~ Based on very high uncertainty in forward forecasts of dispatch down levels, the assumption is that auction bidders need to be somewhat conservative and make a constraint assumption that is somewhat larger than the most likely / probable out-turn level. Obviously it is possible that the actual out-turn levels might exceed even a prudent bidders assumption, in which case consumers would benefit, but this is the less probable outcome.

^ simple illustration only – acts with RESS tenor + assumed merchant tail revenues

If we now consider the impact of a future deployment of some new long duration storage technology and how this interacts with the direct and indirect compensation models:




In this scenario, inappropriate risk allocation in the RESS auction results in costs to consumers (and revenue to RESS generators!) that are 25% higher than they need to be. This inappropriate risk allocation results in these potential consumer cost savings becoming inaccessible to storage & DSR and makes it more difficult to develop a cost benefit analysis that supports a case to provide storage with sufficient long term revenue certainty.

## 9.2 Proposed principles for an effective flexibility procurement mechanism

We propose the following principles for a storage / flexibility procurement Framework

- The procurement process should be technology agnostic and support investment in an appropriate broad portfolio of storage technologies and capabilities that meet the needs of the system and national decarbonisation objectives.
- The procurement process should maximise long term certainty for a floor revenue for winning technologies. This will reduce investment hurdle rates enabling easier, greater and more cost effective deployment.
- The procurement should be based on an estimation of overall system value vs cost taking account of any locational benefits.
- The selection of "winning" technologies needs to be based on a transparent full system & network model[8] that bidders can understand and replicate. This doesn't have to be perfectly optimized, but it is critical that it is consulted on and is transparent / replicable. The process should clear projects with the highest deltas

[8] Note there is some precedent for this approach. ECF's in RESS differentiate between the expected system value of technologies, the calculation of these ECF's had to be based on system modelling. Similarly locational scalars are considered in system service and capacity markets based on different locational values of technology deployment. This proposal would make this process more transparent in the context of storage technology procurement.

between overall system value and bid cost first. We note that, as part of the LCIS consultation, EirGrid has modelled the value of zero carbon inertia to the system, which demonstrates that the concept of modelling value to the system is now present in Ireland;

- The process should be designed in a manner that recognises the hedging value of storage. LDES investment will be Capex driven rather than Opex which means more stable pricing and less exposure to gas price volatility.

FuturEnergy Ireland have been working with a 3rd party modelling provider to develop an being used to clear the auction process envisaged above. A slide deck is attached in Appendix 2 that sets this out in more detail. We would be happy to meet with CRU and / or ESBN to run through this in more detail should this be of interest. This appendix should be treated as confidential / commercially sensitive and is flagged as such.

## 9.3 High-Level Design of a Potential Procurement Framework

### 9.3.1 Revenue Floor with Shared Upside

Bidders could bid in a required revenue floor with any upside on actual aggregated market revenues shared proportionately with consumers for the length of the contract. "Floor" revenues to be bid and cleared based on the system Cost Benefit Analysis (CBA) at the bid floor price using a full system model as envisaged above. The objective shouldn't be to minimise the gap between revenues earned under existing market arrangements and the floor price, rather to maximise the projected net system value that the LDES asset can deliver. The existing/new system services and energy markets should just be used in conjunction with the broader long-term procurement to ensure efficient near-term operation of assets.

A cap and floor mechanism has been proposed in Great Britain to incentivise long-duration storage. This is a regulated long-term contract framework, used to incentivise investment in interconnectors, which provides a guaranteed floor price, supported via Use of System charges where project revenues fall below the floor, and a cap above which excess revenues are handed back to end consumers. This type of framework could be feasible for LDES but the downside of this is that assets are only incentivised to trade optimally and manage near-term operation up to the cap. The incentive to gain more revenue and add more value to the system is lost beyond this. A floor and shared upside mechanism does not set a fixed cap but a fixed proportion of revenues above the floor price that would be shared with consumers so the incentive remains for assets to trade optimally and try to maximise revenues from existing and new services, and in doing so maximising consumer savings.

We also think there is merit in discussing whether such a system could be added to existing RESS auctions (noting that storage would be floor + shared upside rather than CfD) and allow all zero carbon energy service technologies to clear based on the marginal system value vs cost (both generation and flexibility)

### 9.3.2 New Services

New services, in addition to existing DS3 services, energy arbitrage and capacity market contracts, should be introduced to incentivize locational/strategic deployment and optimal operation of LDES. For instance:

> Congestion management service: Where technologies are being deployed as network congestion solutions, they should not be paying any TUoS charges and instead should be receiving TUoS payments based on the space they create for new renewable project connections.

Auctions for long term revenue floors would allow new storage assets to be deployed with relatively low cost of capital. The addition of new services combined with the continued operation of existing market structures will ensure that these newly deployed assets are operated in a way that maximizes their overall system value. Where revenues exceed the floor price, consumers would share in this upside as a reward for providing the floor.

### 9.3.3 Interactions with Existing Market Structures

- **RESS:** Storage and RESS procurement processes should be complementary. – e.g. Assigning very significant re-dispatch risks to RESS bidders and driving up RESS prices, and then fixing the problem with a storage procurement after the RESS assets have built, is not efficient or in consumers interests. Likewise, assigning that risk to System Operators who then pass it on to consumers is certainly not in the consumer interest. Separately, iA combined auction model that allows for the most efficiect clearing of both RESS projects and storage can resolve this problem. If we have a system model for storage procurement, should or could this be used to determine appropriate ECF's for RESS clearing. Could this involve moving to a system where bidders bid in based on availability and locational ECF's are determined that account for expected levels of re-dispatch compensation (noted that this could interact with EU energy policy and this could be very challenging)

- **Firm Access:** Storage deployment should can result in the creation of new "firm" capacity for renewable generators without the need to build any new grid infrastructure. As a result, storage should not pay network charges and, in fact, should be paid out of the USe of System Charges pot for the grid capacity created.

- **Energy Market:** Existing market structures will incentivise optimal near-term operation of LDES assets.

- **System Services:** Existing and new system services will incentivise optimal near-term operation of LDES assets.

- **Capacity Market:** It is worth considering whether a storage technology that has cleared for a revenue floor in the LDES auction be required to be a price taker in capacity auctions?

### 9.3.4 The problem with central specification of MW / MWh capacities and locations

Key Point:

An alternative approach whereby storage MW and MWh capacities are centrally defined with a view to supporting broader renewable integration and decarbonisation objectives, has the potential to be extremely inefficient and wasteful of consumers money.

- Central definition of storage requirements would have to be informed by some technoeconomic analysis in advance of an auction in order to determine the

  technologies and would require the auction designer to make assumptions about the bid prices from these technologies in advance of seeing the actual costs. This creates two material inefficiencies:

  - There may be other technologies not considered that could add more system value and if they were considered, might materially change the MW / MWh and locational specifications in the auction.
  - The assumed costs for the technologies that are considered may be wrong.
  - Central definition of MW / MWh ratios would immediately exclude many technologies from participating. This could reduce auction competition and might exclude the technologies that provide the greatest system benefits from participating.

- If you specify the MW / MWh ratio, it would seem likely that you would also need to specify the return trip efficiency in order to make a fair simple cost comparison between different bidders. Otherwise, the question would arise as to how you should differentiate between two bids for the same MW's and MWh's but different efficiencies. The less efficient technology may be materially cheaper but what is the appropriate trade off between cost and efficiency? This effectively means that the auction might be limited to a single technology. If an auction design specifies both the duration and the efficiency of the storage technologies to be procured, the majority of these technologies would from a practical perspective, be ineligible to compete.

- Noting the significant inefficiencies already in pre-determining technologies, if you assume a specific duration and a specific return trip efficiency, there is still the potential for different system values associated with different locations. The auction might specify where they want the technologies but some locations may still have more value than others.

- Depending on the nature of the analysis undertaken in advance of determining requirements centrally, there is a material risk that a solution is procured that costs

more than the problem it is solving. The single central objective function that the SO's / RA's should be solving for is to deliver a decarbonised system (in accordance with legally binding sectoral emissions ceilings) at least cost. There is always an option to reach decarbonisation targets by overbuilding the renewable and taking and absorbing the cost of the additional constraint / curtailment / oversupply. If storage requirements are centrally defined with:

- An incomplete picture of the available storage technology solutions
- Inaccurate cost estimates for the storage technologies that are considered
- Limited / no techno-economic assessments to determine the appropriate flexibility deployments;

Then the risk of the process delivering extremely inefficient or worse still, actively wasteful outcomes would be high.

Below are a series of simple examples that are deliberately extreme / hypothetical to illustrate the problem of centrally defining storage requirements:

- Let's say you decide to have an auction for 4hr storage. Technology A can provide 4h storage for €1m p.a. Technology B is designed to be able to provide 24h storage but costs E2m p.a. So the cost is 2x but energy capacity is 6x, so it is capable of solving roughly 6 times the problem (this is an over-simplification but it should be clear that presented with these two choices, the system should be procuring Technology B)

- Now lets consider two different 4 hr technologies – Technology A costs €1m p.a. and has an efficiency of 80%, Technology B costs €0.75m p.a. but has an efficiency of 40%. So technology B is 25% cheaper but would recover 50% less energy than Technology A. On a simple cost comparison technology B would win but would very likely provide much less value for money.

- If we attempt to solve this by also specifying an efficiency you have a new problem. Now lets consider an auction for 4hr storage with an 80% efficiency requirement. Technology A can provide 4hrs, 80% efficiency for €1m p.a. Technology B can provide 4hr storage, has an efficiency of 78% and costs €0.5m p.a. Technology B would almost certainly provide better value for money but would be ineligible to compete in a simple duration specific / efficiency specific auction.

- Last example: This time let's only consider technology A, but one is located at a node X where there is a lot of renewable constraints, another is located at node B where there's none. So the technology at node X would have more "surplus" renewable energy to absorb vs the same tech at the node with no constraints. As such it is likely that the tech at node X should clear ahead of the tech at node Y. A simple 4hr procurement wouldn't differentiate between these things.

- These are all deliberately extreme scenarios to highlight the issues, but there are real world versions of this, where real technologies have much longer durations,

much lower capex per MWh and often lower efficiencies, and its complicated to know which of these represents better value for money for consumers. Anywhere that you attempt to draw crude lines can cause material inefficiencies. Any storage or flexibility procurement process that isn't capable of making a fair comparison

capacities, different associated costs and located at different nodes, risks being extremely inefficient.

- Just to illustrate the challenge let's ask a more complex question: Lets consider you have technology A located at a node with 10% constraints, it has an energy capacity of 24hrs and an efficiency of 55% and requires €1m p.a. to build, Technology B is located at a node with 5% constraints, has an energy capacity of 12hrs, an efficiency of 70% and requires €1.2m p.a. to build. It is very likely that one of these technologies provides significantly more value than the other but which one would you choose to clear if you could only pick one? How would you decide?

### 9.3.5 International Context – AEMO Auctions, NSW Australia

Key Point:

Other markets globally seeking to decarbonise the power systems are moving towards a value based approached to clearing storage / flexibility auctions, though there is room to improve considerably on the detailed execution methodologies. If we can do this properly in Ireland, we have a chance to re-establish ourselves as a global leader in decarbonisation of our power systems.

AEMO have already held their first long duration energy storage auctions with further rounds anticipated over the next 2-3 years. The approach taken in this auction was relatively technology agnostic, with a minimum duration of 8 hrs specified as a pre-qualification requirement, but no maximum duration and no specific return trip efficiency requirements. Bids were assessed against both quantitative and qualitative criteria designed to take account of the holistic system value of the bidders projects. The merit criteria considered included an assessment of the overall impact of the project on the electricity system. Bidders were required to submit their own curtailment studies and network benefits studies, prepared by approved / reputable providers, to highlight the broader system benefits of their bids. Projects were expected to deliver reduced wholesale energy costs, reduce the levels of renewable constraint / curtailment and reduce the levels of unserved energy (i.e. make a contribution to generation adequacy). The bid cost parameters were assessed alongside the project's technical characteristics across multiple future scenarios. In terms of the pros and cons of this approach:

- Arguably this procurement is world leading insofar as it is the first procurement globally that we are aware of that attempts to procure storage based on a holistic assessment of the future system value of bidder's projects.
- This has the immediate benefit of signalling the market to start developing the technologies that will maximise system benefits and minimise system costs.

- However, participants in this auction commented on the lack of transparency in relation to some of the non-price criteria.
- Also the decision to allow individual bidders to effectively submit their own system cost benefit analysis creates a risk that modest differences in modelling approaches and assumptions within these CBA's could distort the results.

The proposed high level design outlined above addresses both of these concerns with a single centralised model being used to compare all technologies on equitable basis, based on the value that they are adding to the system

### 9.3.6 Detailed auction design considerations

Should the SO's / RA's / DECC be minded to support the high level design approach put forward in this paper, we would suggest that the following topics should be consulted on further to develop a detailed design:

- model) to be able to determine and compare the holistic system value of different bidding projects and technologies and should this seek to co-optimise an optimal blend of bidder's projects or compare each bidders project individually to a base case system?
- Can an open-source version of this model be made available to the market well in advance of an auction to allow bidders to enter technical and cost parameters and provide the estimated system value of their projects? This could serve as a strong signal to the market to develop optimal technologies in optimal locations and would reduce the amount of wasted development effort.
- What network scenarios should be assessed? Should this be based on a single study year or multiple study years with different future transmission network assumptions?
- Should new grid reinforcement projects be participating in the process, (i.e. so that we are making optimal decisions to build more grid vs sweat the grid we have, considering realistic timelines for the delivery of storage vs grid projects?
- What is the appropriate contract duration, and does it vary by technology?
- What technical and cost parameters should bidders be including, e.g.
  - Floor revenue p.a. (indexed or not indexed)
  - MEC
  - MIC
  - Return trip efficiency and any expected degradation of efficiency over time, how should penalties be applied.
  - Energy capacity (Duration) and any expected degradation in performance over time.
  - Connection node
  - Other? E.g How would storage technologies that interact with other sectors be treated (e.g. thermal storage technologies interacting with a neighbouring heat source or sink, hydrogen storage interacting with other end use demands for hydrogen)
- What pre-qualification requirements should be:
  - Planning grant

- Grid offer
- Technological readiness levels (TRL's). Should there be a cap on volumes procured for technologies with TRL's below a defined threshold value?

## 9.4 In summary:

- Moving to a net zero power system means moving from a system where short run marginal operating costs dominate to one where annuitized capital costs dominate

- Delivering capital intensive projects at least cost requires providing a high degree of revenue certainty.

- Delivering a net zero power system at least cost requires providing this revenue certainty to an optimal blend of technologies

- Determining an optimal blend of technologies over time requires long term auctions which clear projects / technologies based on a detailed assessment of their holistic system value.

- This implies that we need to utilise integrated network and market models to

  taking account of the projects technical characteristics in addition to their locations on physical grid systems.

- Co-optimising the procurement of variable renewable energy technologies with flexibility service technologies including LDES based on marginal system value will deliver the most efficient net zero systems. At a minimum we need to ensure generation and flexibility procurement is complimentary

- This is complex but not as complex as existing short-term markets, and the complexity is justified on the basis that these new markets would be addressing the largest part of our new net zero system.

# 10 Queries / Clarifications

There were a number of points in the consultation paper that we would suggest require further clarification:

- As noted in the main body of the response, we think there is a need to clarify with the department what the 15-20% flexibility target means, what its designed to achieve and what cost vs benefit is acceptable in delivering it.
- We would make a similar observation in relation to the CAP23 target for renewable dispatch down of 7%. In principle, this is likely a reasonable target but may not represent a cost optimal outcome. This would depend on technoeconomic interactions between the cost of creating more available energy from solar and wind vs the cost of time shifting wind and solar output to times where its needed. Depending on the technologies that emerge to solve this problem and depending on the cost of the available renewables, an optimal level of dispatch down may be higher or lower. It would be useful to clarify that both this target and the flexibility target are indicative of what we think is required to deliver an efficient decarbonised power system but aren't core objectives for their own sakes.
- Page 26 of the consultation document includes the following text: *"while less than 1 TWh of flexible demand may be necessary to manage system peaks, in excess of 3 TWh would be required at a minimum to achieve the carbon abatement target for flexible demand".* Can you clarify what is meant by 1-3TWh of flexible demand and where these figures came from. We'd note that the carbon abatement deliverables can also be delivered by overbuilding renewables and absorbing higher dispatch down costs, the question really should be what is the economically efficient combination of additional renewables and flexibility to deliver the carbon abatement target at least cost, but even in the context of a central definition of flexibility requirements, we're not clear as to the background or meaning of these figures and would appreciate if this could be clarified.
- On page 28 it is noted that: "*Recent independent market modelling has indicated a high risk that storage added to the Irish electricity system today would likely result in a net increase in electricity emissions initially due to its charging needs and only marginally contribute to carbon abatement between now and 2030."* Can you share this analysis or associated reference to these studies including input assumptions and results?
- The graphs included with the various scenarios are a little unclear. We assume the units are GW of flexibility capacity with no duration or energy dimension but perhaps this could be clarified. Again, we'd note that these units of measurement have little to no meaning in the context of supporting emissions reductions.
- On the central scenario, its noted that *"This scenario is heavily dependent on providing a reliable route to market to commercial investment in medium duration storage. "* However the graph in section 5.1 seems to indicate that the vast bulk (90%+) of the flexibility is coming from other sources. It would be useful to share a table of the MW / MWh capacities of flexibility from the various technologies along with any specific technical constraints associated with each. If the work has been done to quantify specific locational needs and volumes that are to be procured it would be helpful if this detail could be published.

- Can you clarify what benefits these procurements are intended to deliver vs costs or whether the only quantified benefit is the delivery of the 15-20% target itself? How will the proposed process ensure that consumers won't pay more for the solution than the problem it is solving costs?
- On page 34 it is noted that: *"it will likely be necessary for storage to participate in local balancing as opposed to solely operating in the SEM"* Has any consideration been given as to how this would be done? Has this been discussed with Eirgrid scheduling and dispatch teams or is it envisaged that this would be completely "out of market" and not interacting with any existing S&D systems?
- In relation to the literary review of the Baringa "Game Changer" report referenced on page 56, can you confirm that all system assumptions in both counterfactual and storage scenarios used in this report were fully replicated by the independent modelling team. Can the analysis commissioned by this team be published, including a full set of input assumptions and results in order that industry can interrogate and comment on the findings?

# Gas Networks Ireland's submission to the Commission for Regulation of Utilities Review of Large Energy Users Connection Policy – Call for Evidence

30th August 2023



## Introduction

Gas Networks Ireland welcomes the opportunity to respond to the CRU's call for evidence in respect of the connection of large energy users to the gas and electricity networks.

Gas Networks Ireland fully support the Governments emissions reduction targets of 51% by 2030 and net-zero by 2050, with the near-term targets to be achieved via last year's Sectoral Emissions Ceilings and Carbon Budgets. We believe that the gas network can and must be utilised if Ireland is to achieve these ambitious targets, and that the gas network can and must transport increasing volumes of renewable gases over this time horizon.

Gas Networks Ireland has provided specific responses to the consultation below, but here are the key messages we wish to relay:

**Firstly**, as the licensed gas network Transmission System Operator (TSO), we have legally binding obligations to connect all new industrial customers wishing to connect to the gas network on a non-discriminatory basis. Therefore, we believe that gas-fired power generations should not be excluded from a review of current connection policies. We are fully cognisant of the need for new gas fired generation plant in Ireland to underpin the continued growth of renewable generation, but this issue needs to be considered accordingly by the regulator to allow for a continued investment in new gas fired power plants in the coming period. Given the significant number of new power generation connections to the gas network over the coming years, and the likely peakiness of their demand, a comprehensive review of LEU connection policy would be incomplete without considering this class of customer.

**Secondly**, decarbonising all new connections by LEU's, whether they are connecting to the electricity grid or the gas network, will take time, particularly in the case of those seeking connections to the gas network, as **the renewable gas market in Ireland is in its infancy** and there are currently no support schemes in place for renewable gas production.

In the short-term**, it is simply not possible for all the LEUs wishing to connect to the gas or electricity networks to be net-zero emissions at the time of their connection**. However, we believe a trajectory could be set for the delivery of this important ambition, and that an appropriate connection policy regime can play a key role in achieving this. Given that the Government's target is for 80% renewable electricity by 2030, we believe a similar timeframe could be set for the renewable gas sector, with a lower initial target, given the nascent nature of the renewable gas sector in Ireland.

Gas Networks Ireland believe that such a policy, for example requiring c10% renewable gas by 2025, rising to c40% by 2030 is achievable and would drive investment in new renewable energy infrastructure in Ireland. A trajectory based on an integrated energy system could also help LEUs decarbonise over time with, in certain instances, a transition from gas as their primary fuel to electricity with gas as backup over time.

**Thirdly**, such a target and associated trajectory would require additional renewable gas investment and production beyond the 5.7TWh biomethane target set out in Climate Action Plan 2023. **Large Energy Users seeking to connect to the gas or electricity networks can drive new and additional investments in renewable energy in Ireland, including indigenous renewable gases. LEUs have indicated a willingness and an appetite** to enter into long-term arrangements with indigenous renewable gas producers in order to meet their own net zero ambitions. The availability of large offtakers to enter into gas purchase arrangements will incentivise market entry by new renewable gas projects, providing additionality in the same way as corporate power purchase arrangements in electricity have provided an economic basis for further renewable projects outside of the support schemes. Gas Networks Ireland is aware that the volume of renewable gas projects exceeds the initial ambition of Government's biomethane targets. Additional biomethane on the network will enhance Ireland's energy security by replacing imported natural gas. The Climate Action Plan 2023 has highlighted the delivery of at least 2 GW of new flexible gas fired generation as a key measure to accelerate flexibility in our electricity system. Therefore, supporting the growth in renewable gas production would be seen as a no regrets investment.

**Fourthly**, the **Renewable Gas Registry** established by Gas Networks Ireland in 2020 can support Ireland's ambitions around decarbonisation and security of supply, and it should continue to be used as the tracking system for renewable gas credits feeding into the Irish system and purchased by LEUs. Over time, the renewable gas certification scheme should be used to enable the production and consumption (buying and selling) of green hydrogen credits.

**Fifthly**, we believe that **Interruptible contracts** could be a useful tool to mitigate capacity restrictions in the natural gas interconnector system. While not a full solution, interruptible capacity contracts could assist with security of supply. A more long-term sustainable solution to Ireland's energy security demands is however needed.

**Sixthly**, energy security and decarbonisation should be key pillars of energy policy and should shape connection policy within the confines of the legal framework set by European law. Connection policy should be allied to the **delivery of indigenous renewable gases** such as biomethane and green hydrogen must be accelerated, at scale.

In summary, Gas Networks Ireland would like to see a renewable gas trajectory-based approach being adopted, where new LEUs, as with all connecting parties, are connected in line with our obligations as a TSO, and Ireland's obligations as a Member State, but are properly incentivised to progress rapidly to the use of renewable gases. It is worth noting that, where appropriate incentives are provided to secure renewable gas penetration and security of supply, we consider that these connections will also provide benefits to the network over time. As the electrification of Ireland's energy system continues, demand on the gas network will decrease, placing upward pressure on gas tariffs. LEUs would mitigate this pressure in addition to providing a development case for additional indigenous renewable energy production in Ireland and enhancing Ireland's energy security of supply. LEUs could also help to ensure a baseload of gas demand is prevalent on the network thereby limiting the amount of inefficient cycling from the compressor stations in Scotland.

## Background

Before setting out its responses to the questions raised in the call for evidence, Gas Networks Ireland notes the following context for its responses.

A. Irrespective of the source of the demand, Gas Networks Ireland is obliged to offer capacity in its network to those parties wishing to connect to it in line with the conditions set by the CRU. There are limited grounds on which Gas Networks Ireland can refuse to connect. In respect of large energy users, where there is insufficient capacity, Gas Networks Ireland is required to provide it in a reasonable timeframe. The framework under which Gas Networks Ireland provides access to its network mandates that the system of third-party access be (1) applicable to all eligible customers; (2) applied objectively; and (3) applied without discrimination.

B. The manner in which the gas network is being used is changing. Gas Networks Ireland's analysis shows that on peak days contracted capacity will reach the limit of the technical capacity at the Moffat Interconnection Point (IP) in Scotland in the coming years. Our analysis shows that outside of these peaks there is ample capacity available. This is driven by a number of factors, including the depletion of domestic sources of gas (previously Kinsale, and Corrib over the course of the decade) pushing marginal demand to Moffat, together with a growing peak day demand for gas, in particular arising from the connection of new power stations and other large energy users. Our analysis shows that while annual demand will grow over the course of the next small number of years, it is forecast to begin to level off and even decrease by the end of the decade, in line with energy policy. However peak day demand is increasing and by the end of this decade will remain in excess of the current peak day demand.

C. The partnership between flexible gas-fired power generation and intermittent renewable generation is key to optimising Ireland's renewable energy production into the future. Whilst new power stations form part of the overall government policy / climate action plan ambitions, other sectors of the economy are also highly dependent on additional or new large scale gas connections to provide significant volumes of energy for space heating, process steam generation or highly efficient on-site electricity generation using Combined Heat and Power (CHP) plants. The gas network, especially when transporting increasing proportions of renewable gases, can provide the most efficient source of energy for high heat users for whom electrification is simply not feasible. While the electrification of demand will be efficient for large sectors of the economy, this will not always be the case. Connection policy, as with energy policy generally, must ensure that incentives on gas and electricity networks are aligned to achieve optimal levels of decarbonisation and security of supply, and must not impose incorrect or unintended consequences on the other network.

These key points of context are reflected in our responses below. It is for this reason that we believe that gas-fired power generation should not be excluded from a review of current connection policies. We are fully cognisant of the need for new gas fired generation plant in Ireland to underpin the continued growth of renewable generation, but this issue needs to be considered accordingly by the regulator. Given the significant number of new power generation connections to the gas network over the coming years, and the likely peakiness of their demand, a comprehensive review of LEU connection policy would be incomplete without considering this class of customer.

It is important to recognise that security of supply considerations must be focussed on the availability of gas on the peak day. As in the electricity market, the peak day may be addressed by responsive / strategic capacity, in this case storage coupled with demand response/management. It does not necessitate the limitation or refusal of connections in the long term.

Finally, just as the gas network should not be viewed in isolation from the electricity network, consideration must be given to the wider consenting framework when considering the appropriateness of criteria and measures to be applied to connections. LEUs in particular will, at the time of connection, have been subject to assessment by the relevant planning authority for their consistency with sustainable development. To the extent that they are large users of gas, their emissions will generally be regulated by the EPA. Connection policy should not seek to replicate and should not seek to empower TSOs to reopen or remake decisions made by other national competent authorities whose role it is to ensure sustainable development in line with environmental goals and

emissions standards. In this context, Gas Networks Ireland does not support or recommend the continuation of the 'interim requirements' on connections beyond the lifetime of this consultation.

## Consultation Questions

### Q.1 Comments are invited from stakeholders on the proposed approach of decarbonising energy demand with a view to achieving net zero emissions from LEUs at time of connection. Please provide reasons and rationale for any views provided.

Decarbonising all new connections by LEUs, whether they are connecting to the electricity grid or the gas network, will take time particularly in the case of those seeking connections to the gas network, as the renewable gas market in Ireland is in its infancy and there are currently no support schemes in place for indigenous renewable gas production.

It is for this reason we feel it would not be appropriate nor practical at this time to introduce such a hard to achieve objective as net-zero emissions at time of connection, specifically for LEUs seeking to connect to the gas network. **We fully support the implementation of a 'decarbonisation pathway' or the introduction of a 'trajectory' for those new LEU's seeking to connect to either the electricity grid or gas network**, but importantly such a pathway requires the introduction and scaling up of the production of renewable gases.

When renewable gases are available at the scale required, we believe it may then be appropriate to require all LEU's seeking to connect to the electricity or gas networks, to be partially or net-zero emissions at the time of connection, and we believe the gas network will be central to achieving this objective.

In relation to LEU's connecting to the gas and electricity networks, an obligation trajectory applying the same principle as that of the proposed Renewable Heat Obligation could be applied for both renewable gases and electricity. Some EU Member States have already introduced rules whereby a certain % of a LEU's energy must be met from renewable energy sources within a short timeframe, 2024 rising on a trajectory based on market-led intelligence out to 2030.

**Setting a trajectory for Ireland would set out a clear pathway to partial or full decarbonisation of LEUs and act as a stimulus to the renewable gas industry, de-risking projects and giving certainty to investors.** By entering into long-term contracts with producers, the LEU sector can play a key role in Ireland not only meeting but exceeding its 5.7TWh 2030 target for biomethane production.

With the identification of a total potential biomethane production of 14.8TWh, the results of the Request for Information (RFI) issued by Gas Networks Ireland in the final quarter of 2022 to prospective biomethane producers compares very favourably with and indeed comfortably exceeds the 5.7 TWh biomethane production ambition for 2030 set out in the Climate Action Plan 2023. It is nevertheless worth highlighting that while this response highlights the robustness of the Government's 5.7 TWh stated ambition, it also merely provides a snapshot of the additional appetite to produce biomethane in Ireland currently.

Engagement with prospective biomethane producers in relation to the RFI has very clearly signalled the need for appropriate policy supports to mobilise the industry and provide an appropriate level of investment certainty. We believe that biomethane and indeed renewable hydrogen can play a central role in achieving net-zero emissions at the time of connection to the gas network, once the renewable gases are available at the scale required. It is of critical importance that the renewable gas sector in Ireland is scaled up at an accelerated pace.

## Q.2 Comments are invited from respondents on the need for onsite generation and storage capability for LEU connections. Please provide reasons and rationale for any views provided.

The benefits of "decentralising" power generation and moving to a more distributed power architecture in Ireland are significant. Focussing on energy efficiency is key to reducing energy use and related emissions, with **the efficiency of onsite generation through appropriately sized Combined Heat and Power (CHP) installations reaching up to 90%, 20% to 25% higher than the combined efficiency of heat-only boilers and conventional power stations**, reducing energy losses and associated emissions. In addition, reducing the strain on the electrical grid and increasing the number of generators across all regions of Ireland can have a significant benefit to the electrical grid and reduce the reliance on lower efficiency traditional power generation.

There are currently 31 LEUs connected to the natural gas network (using the definition contained herein 50MWth and greater than 16Bar). The majority of these benefit significantly from the use of onsite generation in terms of efficiency, emissions, security of supply and operating costs. These facilities generally have high electrical and thermal demand to run their processes and this technology is the best fit when all factors are considered (relying only on a grid connection for their electrical demand and gas boilers for their thermal demand). Based on our market analysis, Gas Networks

Ireland understand that LEU's will be able (and are willing) to meet the requirement to fully decarbonise in the longer term, once the zero—carbon sources of energy are available at the scale required. Until this time, we believe that for LEUs with onsite generation and storage with electricity and gas is a far better policy outcome than the use of more carbon emissions intense off-grid fuels such as coal, oil, or diesel for onsite generation.

From our engagements with these LEUs, they see the next step is a switch to renewable gases such as biomethane and green hydrogen to further reduce their emissions while protecting the high efficiencies associated with their existing solutions. All CHP installations currently operating on natural gas can switch to biomethane immediately as this is effectively the same fuel (CH4 Methane), while blends of 20% to 30% hydrogen can also be used to run these CHP engines and turbines. By 2030 it is expected that all new CHP units will be hydrogen ready leading to the opportunity to deliver a fully decarbonised operation in generating both electrical and thermal demand.

### Q.3 Comments are invited on the use of CPPAs for additionality of renewable generation outside of support schemes for decarbonising electricity consumption. What type of de-rating may be appropriate to reflect real-world performance of renewable generation during peak times? Please provide reasons and rationale for any views provided.

Gas Networks Ireland support all mechanisms that will achieve decarbonisation of both the electricity and gas networks.

### Q.4 Based on preference that renewable electricity and /or gas contributes to Ireland's emissions targets and security of supply, do respondents have a view in relation to how electricity feeding into Irish system and renewable gas credits feeding into the Irish system could be tracked?

Gas Networks Ireland completely agree that indigenous renewable gas can contribute to Ireland's emissions targets and security of supply. Based on our market analysis, we believe that the current biomethane target of 5.7TWh is a conservative one and that it should be increased, to help meet Ireland's Carbon Budgets and Sectoral Emissions Ceilings.

We believe that the Renewable Gas Registry established by Gas Networks Ireland in 2020 can support this ambition, and that it should continue to be used as the tracking system for renewable gas credits feeding into the Irish system and purchased by LEUs.

As well as issuing Guarantees of Origin to producers of renewable gases, such as biomethane and green hydrogen, who are injecting into the gas network, **the Registry tracks the commercial and physical transactions of renewable gases through the entire supply chain, linking their production and consumption**. The EPA recognises renewable gases as a zero emissions fuel and the Registry currently plays a role in proving delivery of the renewable gas to ETS sector customers. The Registry also has specific processes for tracking renewable gases supplied to the transport sector, which is recognised by NORA and relied upon to prove that consignments of renewable gas were delivered to different fuel forecourts. SI 350 of 2022 provides a statutory basis for this Registry and appoints GNI as the official Issuing Body to comply with EU law. **It would be important to leverage this existing framework and process to track all renewable gases under a singular system/standard,** beginning with biomethane and moving to hydrogen in time**.**

Gas Networks Ireland also recommend that the tracking systems for renewable gas and renewable electricity be developed further by aligning them closer to each other, incorporating interactions between renewable electricity and green hydrogen to ensure that double counting of credits does not occur.

## Q.5 Comments are invited from stakeholders on the use of renewable gas credits (feeding into the Irish natural gas system) in order to facilitate the connection of gas demand to the system. Please provide reasons and rationale for any views provided.

Gas Networks Ireland supports the use of renewable gas credits (feeding into the Irish natural gas system) in order to facilitate the connection of gas demand to the system. **The use of these credits from indigenous renewable gas sources should be incentivised/encouraged**, acting as a stimulus to the renewable gas industry and increasing Ireland's security of energy supply. Incremental obligation rates should be applied, aligned to the trajectory of indigenous renewable gas production. However, until Ireland's renewable gas production levels mature, LEUs looking to compensate for their emissions may need to be able to purchase renewable gas credits from international markets.

**Renewable gas credits would allow LEUs with on-site generation to provide demand side flexibility, helping to reduce demand on the electricity grid during times of constraint** and would act as a catalyst

for the growth in Ireland's renewable gas sector. A reduction of demand on the electricity grid during peak hours would also support Ireland's emissions reduction targets.

As LEUs are one of the highest energy consumers in Ireland, incentivising investment in renewable gas credits and green certificates by this sector can help Ireland meet the Climate Action Plan targets set for biomethane and green hydrogen production and be an innovative and efficient way of meeting the Climate Action Plan target of 15-20% demand side flexibility by 2025 by reducing demand on the electricity network during peak hours. This approach can also help achieve the ambitious sectoral emissions ceilings for industry and Ireland's Carbon Budgets more generally.

As pointed out in our response to Q4, the Renewable Gas Registry operated by Gas Networks Ireland already issues Guarantees of Origin and Proofs of Origin certificate types. The purpose of a Guarantee of Origin is to disclose the origin of the renewable gas to the end-consumer, via a book and claim system. These certificate types cover all end-use cases and allow producers to sell renewable gas into all sectors of the economy; to meet renewable transport fuel targets, to be used by EU ETS rated companies as a zero-emissions fuel and to be used on a voluntary basis.

## Q.6 Comments are invited from respondents on enabling demand flexibility requirements as described above. Please provide reasons and rationale for any views provided.

In terms of demand flexibility, Gas Networks Ireland believes that the onsite generation of electricity using gas avoids transmission and distribution losses (compared to more conventional generation) and provides for further reduction of carbon intensity through the adaptation of CHP with district heating, biomethane and hydrogen. In the future, onsite generation of electricity using renewable and zero-carbon gases will further support the decarbonisation and security of LEU's energy requirements.

When LEUs can access low carbon gases they will help deliver the government's renewable gas targets by contracting with developers using Gas Purchase Agreements. **The provision of onsite generation at large electricity user campuses provides a significant benefit to Ireland by maximising the consumption of renewable electricity** from the electrical grid when available, reducing the need for costly additional electrical generation capacity.

Given the critical nature of energy utility infrastructure to LEU's, these LEU entities provide for a high level of diversity including diversity in connections, sources of energy and on-site energy infrastructure to provide backup sources of energy. These sources can offer additional flexibility to the wider

electrical grid / energy sector which is aligned with the Government's Climate Action Plan and statement on data centres.

## Q.7 Are there other sources of flexibility that can be provided?

Gas Networks Ireland believes that a renewable gas economy, encompassing production, demand, storage, networks and import/export, will become the lynchpin of Ireland's future, secure and resilient clean energy system, and that renewable gas networks will play a key role in this future system, similar to the role played by the natural gas network today; **supporting the deployment of increased renewable energy, providing resilience and flexibility to the electricity system and serving the heat needs of industry and businesses across the country**.

When produced at times when solar and wind energy resources are abundantly available, green hydrogen can support the electricity sector by providing storage and avoiding curtailment. The storage potential for hydrogen is particularly beneficial as it allows renewable energy to be kept not only in large quantities, but also for lengthy periods of time. This means that hydrogen can help improve the flexibility of energy systems by balancing out supply and demand but also enhancing security of supply.

Finally, additional flexibility could be provided by requiring LEUs with onsite generation to have sufficient export capacity to allow them to export electricity to the grid at times of constraint, reducing the risk of brownouts or blackouts.

## Interruptible contracts for gas connections

### Q.8 Comments are invited from respondents on the introduction of interruptible type supply contracts for gas connections. Please provide reasons and rationale for any views provided.

The introduction of an Interruptible Capacity product at Interconnection Points has been widely adopted across Europe and is clearly signposted in EU regulation. The EU Rules (CAM Network Code) prescribe when and how Interruptible Capacity at an Interconnection Point must be made available; it involves an auction process with prescribed timelines.

Interruptible Capacity, as defined in the CAM Network Code, could be leveraged to deal with contractual congestion, whereby shippers are holding additional capacity that they might not use, by releasing additional interruptible capacity where all firm capacity is sold out. The Code of Operations, in compliance with the CAM already, provides for over-subscription and buy back arrangement, together with other tests to trigger the introduction of interruptible capacity at entry points.

However, **while interruptible (entry) capacity will help to address contractual congestion, it is important to develop relevant systems and processes to deal with (and prevent) physical congestion.**

In this regard, Gas Networks Irelands analysis shows that contracted demand on the peak day will reach the limit of the technical capacity at the Moffat Interconnection Point (IP) in the coming years based on existing offtakes and those under construction/contracted. Our analysis shows that outside of these peaks there is ample capacity available. Average demand will also grow over the coming years but is forecast to drop back towards the end of the 2020s in line with Government policy to move away from fossil fuels.

It should be noted that demand for capacity at our interconnection point in Scotland (Moffat) will also be increased as the supply of gas available at the Corrib entry point reduces as the gas field depletes. As the marginal flows of gas will continue to come from the UK, this contributes to demand for capacity at Moffat. The development of indigenous biomethane, another entry point or storage (commercial or technical) would, of course, mitigate the demand at Moffat. Physical works are already being planned during the PC5 period to maximise the capacity of the Interconnector system however there will be a limit to how much additional capacity these works can deliver in the short term.

Given significant cost and lead times for incremental firm capacity at Moffat, together with longer term modelling showing a levelling off in demand at the interconnection point, it is proposed that a mitigation measure should be sought that would:

- Allow Large Energy Users to continue to connect to the gas grid in the interim, in order to allow Gas Networks Ireland to meet its obligation to connect as well as providing other benefits such as delivering new load to reduce tariffs and/or mitigate tariff increases as domestic and smaller loads drop off over time; and
- Introduce mechanisms to allow Gas Networks Ireland to interrupt / restrict supply to such Large Energy Users in certain situations of peak demand constraints to ensure that such new demand does not give rise to security of supply concerns.

One solution that may allow Gas Networks Ireland to continue to connect to its network without compromising the security of supply position would be the introduction of non-firm or interruptible capacity products and / or connections (at exit) for Large Energy Users. Such products would offer capacity which can be switched off by Gas Networks Ireland under certain conditions when the system approaches its capacity limits on a given day. It is proposed to limit these non-firm connections to large new connections as these (1) have the greatest impact on the network; and (2) will provide the most substantial and measurable (with hourly metering) mitigation in the event of a capacity shortfall. We consider that this would be consistent with our obligation not to discriminate unfairly between classes of system user when offering third party access to our network.

A non-firm connection would not endure indefinitely. Once the requisite entry deep reinforcement work is complete, or additional entry capacity becomes available by another means (e.g., additional entry point) the opportunity will be there to transition to firm capacity. This would provide confidence to those requesting new connections, giving them a pathway to a firm connection, whilst also allowing Gas Networks Ireland to maintain the stable operation of the gas network. In addition to interruptible contracts, peak day security of gas supply risk could be addressed by the availability of responsive / strategic storage rather than limiting connections outright to the network.

## Real time zero carbon emissions

Q.9 Comments are invited on real time zero carbon emissions, shifting of demand in real-time to times of high renewable energy availability. Please provide reasons and rationale for any views provided.

Gas Networks Ireland believe that accelerating the production of indigenous renewable gases for consumption in electricity generation can help achieve this goal, increasing the availability of low carbon intensity electricity.

## Definition of an LEU

Q.10 Comments are invited from respondents on what they consider to be an appropriate definition of an LEU for electricity and gas for the purposes of this review. Please provide reasons and rationale for any views provided.

The proposed definition of gas LEU is aligned with Gas Networks Ireland's Connections Policy (50MW thermal) and aligns with the EU ETS threshold of 50MW thermal which provides for reporting requirements for these larger consumers of energy. We consider it to be a consistent and pragmatic threshold which is in keeping with policy thresholds.

Q.11 Comments are invited from respondents on whether this review should only apply to Extra Large Energy Users (XLEUs) in relation to electricity. Please provide reasons and rationale for any views provided.

As a gas TSO/DSO, Gas Networks Ireland does not have a view on this point.

Q.12 Comments are invited for gas LEU definition of those with a peak hourly demand greater than 50MW thermal input and a connection pressure of 16 barg or above. Please provide rationale for any views provided.

The proposed definition of gas LEU is aligned with Gas Networks Ireland's Connections Policy (50MW thermal) and aligns with the EU ETS threshold of 50MW thermal which provides for reporting requirements for these larger consumers of energy. We consider it to be a consistent and pragmatic threshold which is in keeping with policy thresholds.

## Islanded Connections on the Gas Network

### Q.13 Comments are invited from respondents on the treatment of 'islanded' LEUs. Please provide reasons and rationale for any views provided.

We understand 'islanded' LEUs to refer to LEUs connecting to the gas network who have no or a minimal (house load only) connection to the electricity network. 'Islanded' LEUs generally come about as a result of a lack of capacity on the electricity network, and so are a response to electricity connection policy. Although Gas Networks Ireland does not consider it appropriate nor feasible to grant or refuse a connection to the gas network based on the availability of capacity in the electricity network, we very much welcome the acknowledgement that incentives on one network, increasingly, drive behaviour on another, and that electricity and gas connection policies must consider these interactions.

We understand that the strategic ambition of many LEUs, particularly in the data centre sector, is to leverage the electrical grid for their primary source of energy in the long term as and when such capacity is made available. However, for a variety of reasons, this opportunity is not always afforded leading to an entity developing as an islanded LEU. As such, a gas connection is secured, which could be a temporary source of energy until such time as electrical grid power is available.

As set out previously in this response, irrespective of the source of the demand or status of the LEUs electricity connection, Gas Networks Ireland cannot discriminate between classes of system users and we are obliged to offer capacity in our network to those parties wishing to connect to it. Where there is insufficient capacity, we are required to provide it in a reasonable timeframe. This applies equally to so-called 'islanded' LEUs and so we consider that there cannot be a distinction in the treatment of islanded connections per se. However, in the *Government Statement on the Role of Data Centres in Ireland's Enterprise Strategy* (the "**Government Data Centres Policy**"), the Government set principles for data centres to guide decisions on future data centre development, including considerations of their economic impact, grid capacity and efficiency, renewables additionality, co-location with future proof energy supply, decarbonisation by design and SME access and community benefits. We consider that these should apply equally to all data centres, and indeed all LEUs, irrespective of which network they are connected to.

In relation to islanded data centres, the Government Data Centres Policy provided that developments should be consistent with a planned trajectory to net zero emissions, including through decarbonised

gas and that they do not threaten energy security. We fully support this approach, as reflected in previous responses to this consultation. As also set out, **we consider that data centres, and all LEUs when connecting to the network and in light of the stage of development of renewable gas, should be required to connect based on a renewable trajectory** rather than a zero-emissions day one basis.

## Q.14 Should the connection of LEUs to the natural gas network focus on security and decarbonisation as per the Government Policy Statement on Security of Electricity Supply. Please provide reasons and rationale for any views provided.

As set out in the preface of this response, irrespective of the source of the demand, Gas Networks Ireland cannot discriminate between classes of system users (i.e., between powergen and other large LEUs) and **we are obliged to offer capacity in our network to those parties wishing to connect to it.** Where there is insufficient capacity, we are required to provide it in a reasonable timeframe.

This does not mean however that connecting LEUs to the gas network is at odds with a focus on energy security and decarbonisation, as per the Government's Policy Statement on Security of Electricity Supply which states that the "connection of LEUs to the electricity grid should take into account the potential impact on security of electricity supply and on the need to decarbonise the electricity grid."

Gas Networks Ireland fully believe that LEU connections to the gas network should also take account of security of supply and need to decarbonise the gas network. Connecting LEUs to the gas network can accelerate the development of the renewable gas sector in Ireland, which in turn will enable these customers to progress along a trajectory to full decarbonisation or net-zero.

To support these twin objectives, a clear and ambitious **pathway to decarbonisation** (for both existing and new LEUs) should be facilitated and supported as we continue to develop and grow our economy.

Ireland already has significant targets set of 5.7 TWh for biomethane and 2GWs offshore wind for green hydrogen production in its Climate Action Plan, and there is no reason why these targets could not be increased, in line with growing demand for renewable energy. Renewable gases are already entering the national gas network, but for it to scale up to the required volumes and to build out the supporting markets will take time. LEU connections can support, fund and drive demand for renewable energy. Therefore, the focus should be on accelerating renewable sources of energy, including wind, solar and renewable gases, to fuel our industry, overall economy, and society.

The funding of initiatives for these energy sources will ultimately provide a pathway for Ireland Inc. to decarbonise, but also to decrease its dependence on imported fuels, increasing its self-sufficiency and

address the security of supply concern. Onsite power generation will also create additional flexibility to the electrical grid and contribute to improving customers security of supply.

## General questions

### Q.15 Please suggest any alternative approaches not captured above that could help in meeting the challenges outlined.

**All opportunities to reduce emissions and increase the levels of renewable energy in the mix (including wind, solar, biomethane, green hydrogen etc.) should be explored and accelerated at scale**. A technology neutral approach will allow large energy users, existing and new, to chart their decarbonisation journey in an affordable and timely manner, helping Ireland to not only sustainably expand its industrial sector but also give fresh impetus to the renewable energy sector. Ireland has significant potential to become a global leader in renewable energy and in time to become energy independent and provide significant energy exports into Europe.

### Q.16 Should provisions apply to all LEUs connections, or are there are any exceptions that should apply? Please provide reasons and rationale for any views provided.

Irrespective of the source of the demand, **Gas Networks Ireland cannot discriminate between classes of system users (i.e., between powergen and other large LEUs) and we are obliged to offer capacity in our network to those parties wishing to connect to it.** Where there is insufficient capacity, we are required to provide it in a reasonable timeframe.

As the licensed gas network Transmission System Operator (TSO), we have legally binding obligations to connect all new industrial customers wishing to connect to the gas network. Therefore, we believe that gas-fired power generations should not be excluded from a review of current connection policies and that we as the relevant TSO are under obligation to connect any customer including large LEU's wishing to connect to the gas network. We are fully cognisant of the need for new gas fired generation plant in Ireland to underpin the continued growth of renewable generation, but this issue needs to be considered accordingly by the regulator to allow for a continued investment in new gas fired power plants in the coming period.

At European level, under Article 13 (1) of EU Gas Directive (2009/73/EC) Transmission System Operators are obliged to;

a. *operate, maintain and develop under economic conditions secure, reliable, and efficient transmission facilities to secure an open market, with due regard to the environment to ensure adequate means to meet service obligations; and*

b. ***refrain from discriminating*** *between system users or classes of system users, particularly in favour of its related undertaking.*

At national level, the Gas Act 1976 outlines the requirements regarding third party access to the GNI System. Section 10 A (2) of the 1976 Act obliges GNI to offer and enter into an agreement for access subject to terms and conditions specified in directions issued by the CRU. Section 10 A, sub-section 7 prescribes the reasons for which GNI may refuse to enter into an agreement for Third party Access (TPA). Of particular relevance, sub-section 7A states that;

> *"The transmission system operator* ***shall not be entitled to refuse the connection of a new storage facility, LNG Facility or an industrial customer on the grounds of possible future limitations to available network capacities or additional costs linked with necessary capacity increase****, the said operator shall ensure sufficient Entry and Exit Capacity for the new connection within a reasonable timeframe".*

Section 10A (15) of the 1976 Act provides that:

> *"Where providing for third party access or where offering terms for the carrying out of works for the purpose of connection to a facility of an operator, the operator shall not discriminate unfairly as between any persons or classes of persons."*

Furthermore, Ireland needs to be cognisant of the fact that large energy users that want to develop in this country and require a connection to our energy infrastructure, depending on their requirements, might not have the option to secure a net-zero energy supply at this particular moment. For example, large energy users often require energy for high heat processes that cannot be generated efficiently using electricity, so require gas instead. Renewable gas is currently entering the national gas network, however, at this point in time, the quantities, although growing, are small and might not reach the required volumes that large energy users will likely need if the requirements set out in this consultation are introduced for connecting to the network. The National Hydrogen Strategy, the proposed National Biomethane Strategy and the targets set by government for renewable gases in Ireland could have a role to play here, in addition to support schemes that might be put in place for renewable gases in the future.

Q.17 Please suggest any incentives which could be applied to new LEU connections in facilitating some of the measures described above. Please provide reasons and rationale for any views provided.

**We believe that incentives for LEUs to contract with renewable gas producers and/or renewable gas certification schemes should be urgently explored**. One possible incentive would be applying a multiplier to the purchase of renewable gas credits that are purchased from indigenous sources as this can help to develop the renewable gas sector in Ireland, reducing the risk profile of what is an emerging industry. LEUs can play a key role in developing the renewable energy sector in Ireland, both for renewable electricity and renewable gases, by entering into long-term supply contracts with renewable energy producers, stimulating the development of renewable energy projects and helping Ireland to achieve its renewable energy targets.

# RESPONSE TO THE COMMISSION FOR REGULATION OF UTILITIES (CRU)

# ENERGY DEMAND STRATEGY PROJECT - CRU/202356 and 202357

# CALL FOR EVIDENCE PAPER – REVIEW OF LARGE ENERGY USERS CONNECTION POLICY

**Prepared by Herbata Data Centre Campus, Jigginstown, Co. Kildare.**

## 1. Introduction

The CRU published three papers on the 21st June 2023 relating to discussion on an Energy Demand Strategy for Ireland's gas and electricity networks. The papers, as calls for evidence, cite three areas of focus, namely Smart Services, Demand Flexibility and Response and New Demand Connections. Herbata, a developer of data centre sites in Ireland are keen to respond and have focused their attentions on the last of the three papers, that of the review of Large Energy Users (LEUs) Connections.

The valuable input provided by the Irish Government in its paper "The Role of Data Centres in Ireland's Enterprise Strategy" published in July 2022 clearly identifies both the need for data centres in the Irish economy to provide digital services whilst at the same time requiring data centres to increase their use of energy from decarbonized sources. The Government's Climate Action Plan are also well recognized and understood in direct response to reducing the impact on the climate emergency. Herbata clearly understand these needs and has been working hard to ensure that these objectives are met.

This paper aims to provide real life project feedback as a potential consumer of both gas and electricity in all of its available forms, it is intended that this feedback be used to inform the CRU, Eirgrid and Gas Networks Ireland on the reality of obtaining connection agreements today.

## 2. Background

Herbata are proposing to develop a site to the west of Naas in Co. Kildare for the provision of multiple data centre buildings on a campus; the site has already been zoned for data centre use. The campus will contain six data centre buildings each having a total electrical power demand of 40MW, using a mix of electrical generated on-site using gas turbines/engines, solar PV arrays on roofs and renewable energy from sites within Ireland via Commercial Power Purchase Agreements (CPPAs) and potentially in the near future with private wire connections to local renewable providers. In order to enable this mix of power sources, a new 110kV grid substation is included to allow import and export of power at the appropriate times.

The proposed format for these connections to both the electricity grid and gas network in Ireland has been based on looking forward to the future and opportunities to aid the electricity grid and to decarbonize, in summary these are:

- To benefit from the gas networks being decarbonized over the next 25 years or so with the injection of bio-methane and hydrogen for example.
- Being able to accommodate the direct injection on site of bio-methane and possibly hydrogen in the future within the site.
- To provide frequency stability support by use of the battery energy storage systems (BESSs) that are directly connected at medium voltage within all of the data centre buildings.
- Being able to provide spare on-site generation capacity back to the grid.
- Being able to come off the grid when requested by Eirgrid as per an Autoproducer agreement.
- Being able to access off-site renewable energy capacity via CPPAs

It is Herbata's view that all of the measures above will aid the stability and operation of the electricity grid whilst also accessing lower carbon based energy.

**3. Assessment Criteria**

The CRU have requested that views be given on the possible assessment criteria that System Operators (SOs) should be used to assess LEU applications. Herbata have looked at this question and can provide its views, but first it is important to present the wider context of how projects are developed in particular taking into account the planning process to a local authority, in our case to Kildare County Council.

**Wider Context**

These are some of the points that have to be taken into account when formulating a planning application particularly given updates that many local authorities have made to their policies driven by the Government's Climate Action Plan:-

- All planning authorities in Ireland have a duty to develop their policies on energy by considering the strategic objectives set by Central Government as part of the overall Climate Action Plan for Ireland.
- Demonstrating that the technologies to be used for heating, cooling and ventilation are selected from low carbon types are a cornerstone of Building Regulations and must be adhered to.
- Energy policies now include a minimum content for operational energy that has to be sourced from renewable energy sources, whether on-site or off-site via CPPAs.
- Planning authorities look for evidence that CPPAs have or could be entered into for a project; however, to enter into a CPPA, an agreement to have a connection to the Irish grid is needed which cannot be completed without planning being achieved; there is therefore often an impasse.

**How should SOs assess LEU applications?**

There are number of factors to consider, including in the first instance, what is an LEU? It is suggested the following criteria are used, either singly or in combination: -

- The connection should be for a minimum of 20MW, equivalent to 50MWth as defined by GNI currently.

- The connection should be at 110kV as a minimum. This would relate to the minimum set by An Bord Pleanála planning authority as a definition for Strategic Infrastructure Development (https://www.pleanala.ie/en-ie/strategic-infrastructure-development-guide/sid-types-of-strategic-infrastructure-development).
- A minimum level of expected annual electrical energy usage, example would be 150GWh per annum.
- The available generation on the site that could be used to support the grid when in need (as requested by Eirgrid, as per an Autoproducer)
- A discussion on the amount of fuel storage required to support generation on site. Most data centres require a minimum of 48 hours.

These criteria are easily definable and provide a good base for the SO to provide a first pass of the application for a connection. However, in order for the SO to assess the likely Greenhouse Gas (GHG) emissions, there needs to be a second assessment that responds to the needs of the Climate Action Plan and should include the following:

- Identification of the sources of electricity to be used by the site in question. For example how much is to be imported from the electrical utility, how much is to be generated on site.
- Assess the profile of the energy used by virtue of the source type including the following:
    - The carbon profile of the electricity used over the years to be assessed e.g. first 15 years. This will be a national profile and dependent on the deployment of renewable energy within Ireland and imported from the UK and France. This will exclude any energy from renewable sources under CPPAs.
    - The quantum of annual energy available from signed up renewable sources either on site or via CPPAs
    - The carbon profile of the generated electricity onsite including assessing the fuel used, e.g. natural gas, hydrogen, bio-methane.
    - The overall expected GHG emissions from the assessment of the above items compared to the target level expected now and in the coming years to, certainly 2030 and beyond.

Once the analysis of the emissions has been completed, an assessor should review and advise the utilities as to whether the connection requests can be acceded to. As the assessment will very likely involve multiple sources of energy, no one utility e.g. Eirgrid or GNI, should decide as it is about the overall emissions for the site and to compare to the targets set in the Climate Action Plan. There therefore needs to be a more independent body that can assess applications for Connection Agreements in a much more co-ordinated approach. Current Eirgrid or GNI operating on their own are not able to view the whole impact on GHG emissions.

## 4. Conclusion and Recommendations

Currently applications for connections to the electricity grid or gas network is handled by individual bodies, Eirgrid and GNI, rightly to look at their networks, flows, connection formats etc. However they are not able to look at the wider context in terms of compliance with the Government's Climate Action Plan or in respect of a planning applications (new or existing).

It is recommended that a two-part process is considered: -

- First part is for the Eirgrid and GNI to consider where in their networks a connection would be made and for technical compliance. Once identified and that it could be achieved, then it passes on to the second part.
- The second part is for a new organisation to look at the overall balance of the energy mix for a project, taking into account GHG emissions, planning and national government policy.

If a co-ordinated approach between utility, projected energy usage and compliance with the Climate Action Plan is not put in place, then the current delays seen in gaining power and gas connections will continue and continue to impact investment in the digital economy as well as construction and employment.

Compiled by:

Gerry Prendergast, Director, Herbata Limited, 4C Sycamore House, Millennium Park, Naas, Co. Kildare.

To Whom It May Concern,

Please excuse the lateness of this submission and find below our responses to the above-referenced consultation, which we are submitting on behalf of some of our Data Centre clients:

**Q.1 Comments are invited from stakeholders on the proposed approach of decarbonising energy demand with a view to achieving net zero emissions from LEUs at time of connection. Please provide reasons and rationale for any views provided.**
We commend the aim of achieving net zero emissions from LEUs at time of connection. That said and as per CRU/21/214, one of the assessment criteria is based on the ability of the data centre applicants to bring onsite dispatchable generation (and/or storage) equivalent to or greater than their demand. The CRU also accepts that this generation would likely be gas-powered. Based on the current levels of green hydrogen/green hydrogen blends and biomethane currently available in the gas network, we do not believe it will be possible to achieve net zero emissions from LEUs at time of connection. This is further exacerbated by the current absence of Guarantees of Origins (GOs) for gas.

Accordingly and in line with CRU21/214, we recommend the CRU prioritises LEUs who commit to installing on-site generation which will be futureproofed to the extent that is possible at this time. We furthermore recommend the CRU prioritises those LEUs who commit to availing of NG/blends and GOs to the fullest extent possible as their availability increases. Finally we recommend the CRU amends CRU/21/214 so as not to require applicants to bring onsite dispatchable generation equivalent or greater than their demand, and as per Q.2, we recommend that the option of onsite storage as proposed in CRU/21/214 is leveraged.

**Q.2 Comments are invited from respondents on the need for onsite generation and storage capability for LEU connections. Please provide reasons and rationale for any views provided.**

**Q.3 Comments are invited on the use of CPPAs for additionality of renewable generation outside of support schemes for decarbonising electricity consumption. What type of de-rating may be appropriate to reflect real-world performance of renewable generation during peak times? Please provide reasons and rationale for any views provided.**

**Q.4 Based on preference that renewable electricity and /or gas contributes to Ireland's emissions targets and security of supply, do respondents have a view in relation to how electricity feeding into Irish system and renewable gas credits feeding into the Irish system could be tracked?**

**Q.5 Comments are invited from stakeholders on the use of renewable gas credits (feeding into the Irish natural gas system) in order to facilitate the connection of gas demand to the system. Please provide reasons and rationale for any views provided.**

**Q.6 Comments are invited from respondents on enabling demand flexibility requirements as described above. Please provide reasons and rationale for any views provided.**

**Q.7 Are there other sources of flexibility that can be provided?**

**Q.8 Comments are invited from respondents on the introduction of interruptible type supply contracts for gas connections. Please provide reasons and rationale for any views provided.**
CRU/21/214 states that one of the assessment criteria is based on 'the ability of the data centre applicants to bring onsite dispatchable generation (and/or storage) equivalent to or greater than their demand, which meets appropriate availability and other technical requirements as may be specified by the relevant SO, in order to support security of supply'. Furthermore, EirGrid's Data Centre Connection Offer Process and Policy (DCCOPP), Ver. 2.0, 17 July 2020, elaborates on these availability requirements. We do not see how the LEU could meet the criteria set out in CRU/21/214 and EirGrid's DCCOPP in the event that the gas connection was interruptible. Furthermore, it is possible that if the gas supply was interruptible, the LEU would not be able to meet the Annual Availability Requirements as set out in the DCCOPP and therefore EirGrid could determine that 'flexible demand needs to be called for upon for any associated data centre'.

**Q.9 Comments are invited on real time zero carbon emissions, shifting of demand in real-time to times of high renewable energy availability. Please provide reasons and rationale for any views provided.**

**Q.10 Comments are invited from respondents on what they consider to be an appropriate definition of an LEU for electricity and gas for the purposes of this review. Please provide reasons and rationale for any views provided.**
We agree with the CRU's proposal i.e. focus on the larger end of the LEU category.

**Q.11 Comments are invited from respondents on whether this review should only apply to Extra Large Energy Users (XLEUs) in relation to electricity. Please provide reasons and rationale for any views provided.**
We agree with the CRU's proposal i.e. focus on Extra Large Energy Users (XLEUs).

**Q.12 Comments are invited for gas LEU definition of those with a peak hourly demand greater than 50MW thermal input and a connection pressure of 16 barg or above. Please provide rationale for any views provided.**
We agree with the CRU's proposal i.e. focus on those with a peak hourly demand greater than 50MW thermal input and a connection pressure of 16 barg or above.

Thank you for this opportunity to provide responses and please let me know if you need any further information.

Kind regards,

Paul

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By email: (energydemandstrategy@cru.ie, electricityconnectionpolicy@cru.ie )

30 August 2023

**Re: Call for Evidence – Large Energy Users Connection policy**

Dear Sir/Madam,

## Overview

### Ireland's net zero opportunity and energy security challenges

Through the Climate Action and Low Carbon Development (Amendment) Act 2021, Ireland has set world-leading targets to reduce GHG emissions and establish a net zero economy by 2050. Ibec is a strong supporter of this ambition. The transition to net zero is not only an environmental objective but an economic imperative. In a world where investment, talent, and consumers increasingly follow environmental sustainability, the transition has become a driver of business value and industrial competitiveness. If Ireland's climate ambition can be delivered in a coordinated, timely, and cost-effective way, Ireland can enhance its competitive offering and establish itself as leader in sustainable enterprise. This means all future growth must be as carbon efficient as practical if not carbon neutral. Decisions about growth and development must consider the long-term lock-in of emissions and impact on carbon budget trajectories.

Ibec also recognises that Ireland faces immediate and medium-term energy security challenges. The war on Ukraine has revealed the country's overdependence on

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imported fossil fuels. While Ireland has avoided challenges to the physical supply of natural gas, our exposure to international gas prices has created an affordability crisis. The more pressing energy security challenge is domestic in nature. Ireland's electricity system is under pressure because of market and system failures to attract the necessary investment in conventional and emergency generation to meet expected demand. Overcoming these challenges requires major investment in renewables, networks, new gas generation capacity and careful management of the system.

**The role of business**

Business and large energy users can play an important and positive role in addressing both the energy security and decarbonisation challenges. Most large energy users have set, or are in the process of setting, ambitious emission reduction targets and are exploring ways to decarbonise, develop renewables, and reduce energy use. This is both a commercial and environmental imperative. Some Ibec members also participate in the demand response market. However large energy users are not dedicated, habitual market participants in the Single Electricity Market (SEM). There are limits to what LEUs can do.

Also, policies that set conditions and prerequisites on new economic development must be equitable, evidence-based, and practical. It is vital that businesses have access to affordable and viable alternatives to fossil fuels. Similarly, any demand-side measures must reward those who can do more, but not unfairly penalise those who cannot participate because of the nature of their operations. Without mitigation options and alternatives, new obligations on future demand connections could be anticompetitive and manifest as simple suppressors of economic growth.

There are also limits to what individual businesses can do. To ensure that security of supply is maintained on the Irish electricity grid, and that the national carbon budget is respected, the CRU must ensure that Irish power markets, ancillary services and other market products are designed such that they deliver the resources the power sector needs to meet these twin demands. The long-term health of the Irish power system depends on well-functioning markets and products that deliver firm and flexible carbon-free generation in a timely manner, respecting the remaining carbon budget.

**Consultation Questions**

**Q.1 Comments are invited from stakeholders on the proposed approach of decarbonising energy demand with a view to achieving net zero emissions**

**from LEUs at time of connection. Please provide reasons and rationale for any views provided.**

The pathway to net zero emissions will differ significantly across industries and individual energy users. If a requirement is introduced that new LEU connections must result in net zero emissions, particularly if required from the outset, it is important to ensure such a requirement is applicable and achievable by all classes of LEUs. The CRU should provide optionality that provides for multiple pathways to demonstrate that a facility will be 'net zero.' Optionality recognises that there are many different clean energy resources & technologies (e.g. renewables, storage, demand response), sourcing mechanisms (e.g. physical PPAs, financial PPAs, on-site generation, direct investment) and other actions that LEUs can leverage to contribute to reducing power sector emissions.

The CRU also must accept that industrial decarbonisation can sometimes be frustrated or delayed for reasons outside of the control of the business. Energy projects often take a decade to bring from pre-planning to operation because of enduring problems in Ireland's planning and licensing regimes. Financing for certain technological solutions could also be undermined by regulatory uncertainty, especially where industry has received mixed messages on certain technologies and renewable fuels like HVO, biomass, renewable gas.

Finally, in some cases, industrial sites will only be able to fully decarbonise with carbon capture technology which in turn requires increased electricity usage. Policies and conditions imposed on LEUs that inadvertently prolong fossil fuel use over potential electrification of heat and carbon capture must be avoided.

**Q.2 Comments are invited from respondents on the need for onsite generation and storage capability for LEU connections. Please provide reasons and rationale for any views provide**

Developing additional onsite storage and generation resources can be challenging for LEUs given the availability of landholdings and permitting. Limiting investments to on-site could constrain the opportunity for LEUs to deploy more cost effective and resilient solutions to support decarbonisation and better integration of renewables on the Irish grid.

**Q.3 Comments are invited on the use of CPPAs for additionality of renewable generation outside of support schemes for decarbonising electricity consumption. What type of de-rating may be appropriate to reflect real-world performance of renewable generation during peak times? Please provide reasons and rationale for any views provided**

It is unclear whether the CRU is referring to de-rating factors related to network constraints, to curtailment, or to transmission/distribution losses. CPPAs can be an effective means for industry to provide additionality and help decarbonise the Irish energy system. However, Ireland does not have as developed a corporate PPA market as other European markets. There are also enduring financial and technical barriers to the use of CPPAs in Ireland which need to be resolved.

**Q.4 Based on preference that renewable electricity and / or gas contributes to Ireland's emissions targets and security of supply, do respondents have a view in relation to how electricity feeding into Irish system and renewable gas credits feeding into the Irish system could be tracked?**

**Q.5 Comments are invited from stakeholders on the use of renewable gas credits (feeding into the Irish natural gas system) in order to facilitate the connection of gas demand to the system. Please provide reasons and rationale for any views provided**

Ibec is supportive of allowing LEUs to contract for natural gas that is not physically delivered to its site but is substantiated through a market-based 'book and claim' method through the use of renewable gas credits to encourage investment in gas decarbonisation while recognising the physical constraints of the gas system. The development of renewable gas generation needs to be distributed around Ireland and will not easily be co-located with natural gas-powered power plants or other areas of consumption. Therefore, a market-based approach that allows a customer to make a claim of enabling a decarbonised gas system based on the ownership and retirement of an attribute is a sensible approach, aligning with the system used for renewable electricity throughout the EU.

This approach can also help spur investment. The use of renewable gas credits will create a well needed market signal to trigger investment in additional renewables gas projects. This will lead the way to develop a competitive and functioning renewable gas credit market in Ireland. Biomethane producers are waiting for a clear market signal to grow their industry and we are supportive of market mechanisms that provide for clear, traceable claims. This approach will increase the supply of renewable gas on the system and allows an LEU to make an investment in decarbonising the Irish gas system without having to take physical delivery of the fuel or responsibility for burning the fuel.

Ibec is concerned that the *GHG Protocol's draft guidance on Land Sector and Removals* asserts that common carrier pipelines do not track individual molecules from injection to abstraction, and that users should therefore use grid averages for emissions reporting purposes (See Annex B on pages 130-13)1. This is not the case in Ireland. Ibec understands that Gas Networks Ireland assumes

instantaneous transfer of injected biomethane to the exit point, allowing contract counterparties to trade directly. This is an important issue that needs to be resolved. It could also set a precedent for green hydrogen injected into the network in the future. To support business decarbonisation, it is vital that market mechanisms should be allowed for renewable gaseous fuels.

**Q.6 Comments are invited from respondents on enabling demand flexibility requirements as described above. Please provide reasons and rationale for any views provided.**

Greater demand flexibility by energy consumers can contribute to managing the variability of renewable power generation. LEUs can play a valuable role by voluntarily supporting grid reliability with the right enabling framework in place. However, demand flexibility should never be a "requirement". Some business, because of the nature of their operations (e.g. 24/7 hour manufacturing) simply cannot turn down demand on request or at least not without major financial impact. Also requiring demand flexibility would be a market signal that the Irish system is incapable of providing customers with firm power and may thereby put Ireland's attractiveness to inward investment at risk.

Flexibility is delivered around the world through market-based approaches and price signals. The focus of the CRU should be on improving these incentives. As noted in EY's analysis of the DSU market "The lack of remuneration for DSUs within the wholesale market creates perverse incentives for DSUs to not offer capacity below the strike price. This severely limits the value they are able to provide to the market."

We strongly support the use of market-based approaches for achieving the flexibility goals set by the Climate Action Plan. Flexibility programmes should be implemented to send price signals that encourage demand flexibility by valuing flexibility as a system resource and considers adequate cost recovery for customers that choose to provide flexibility to the system. Successful programmes should offer both single-year and multi-year contracts that are cost competitive to further encourage participation.

Ibec supports the following measures as outlined in

- Implement baseline methodology for assessing the contribution of DSUs in reducing energy demand.
- Pay DSUs for negative generation up to the RO strike price.
- Determine energy-only stack within balancing market and compensate generators if instructed not to run for system reasons.

- Set single derating factor for DSUs regardless of size.
- Implement provision for secondary trading for capacity providers.

**Q.7 Are there other sources of flexibility that can be provided?**

N/A

**Q.8 Comments are invited from respondents on the introduction of interruptible type supply contracts for gas connections. Please provide reasons and rationale for any views provided.**

Any interruptible gas or electricity contract needs predictability for an LEU to be able to plan appropriately. However, an interruptible contract cannot be the only type of contract offered to an LEU, otherwise it is a signal that the Irish system is not capable of providing firm power to consumers. Moreover, Ibec understands that there is ample supply availability of natural gas through the twin interconnectors with Britain, so it is not clear how interruptible gas contracts would enhance security of supply for other gas users.

**Q.9 Comments are invited on real time zero carbon emissions, shifting of demand in real time to times of high renewable energy availability. Please provide reasons and rationale for any views provided.**

Currently, the technologies to enable real-time zero carbon emissions are still nascent and companies that have embarked on meeting this goal are still testing approaches to meeting this high ambition.

**Q.10 Comments are invited from respondents on what they consider to be an appropriate definition of an LEU for electricity and gas for the purposes of this review. Please provide reasons and rationale for any views provided**

**Q.11 Comments are invited from respondents on whether this review should only apply to Extra Large Energy Users (XLEUs) in relation to electricity. Please provide reasons and rationale for any views provided.**

N/A

**Q.12 Comments are invited for gas LEU definition of those with a peak hourly demand greater than 50MW thermal input and a connection pressure of 16 barg or above. Please provide rationale for any views provided.**

**Q.13 Comments are invited from respondents on the treatment of 'islanded' LEUs. Please provide reasons and rationale for any views provided**

*N/A*

**Q.14 Should the connection of LEUs to the natural gas network focus on security and decarbonisation as per the Government Policy Statement on Security of Electricity Supply. Please provide reasons and rationale for any views provided**

*N/A*

**Q.15 Please suggest any alternative approaches not captured above that could help in meeting the challenges outlined.**

Ibec is aware of developments in Denmark where the TSO Energinet has created a voluntary 'Limited Grid Access Tariff.' Customers that choose to sign up can have a portion of their supply interrupted with reasonable notice, and are compensated for this flexibility through a lower network tariff rate. The potential to develop a similar regime in Ireland should be explored. However, its value and implications on network cost recovery and distribution would have to be carefully considered.

**Q.16 Should provisions apply to all LEUs connections, or are there are any exceptions that should apply? Please provide reasons and rationale for any views provided.**

N/A

For Budget 2024 Ibec has asked for an additional €450m to drive zero carbon investment in industry by scaling up and expanding industry supports to 2026. To deliver large-scale emissions reduction in this sector, SEAI Project Assistant Grants, the Support Scheme for Renewable Heat (SSRH), and the Excellence in Energy Efficiency Design (EXEED) programme need to be expanded and made more accessible. The scale of support offered under the SSRH needs to be increased to support large scale decarbonisation. Meanwhile, the high attrition rates in all support schemes need to be addressed through enhanced guidance and training for applicants.

Ibec has also asked for an extended low-carbon super deduction. The accelerated capital allowance for energy-efficient equipment is due to end in 2023 should be maintained to ensure the uptake of low-carbon technologies. The capital allowances should be increased to a super deduction of 130% of capital outlay including other costs such as retrofitting – to bring forward investment in our low carbon future.

In respect of enhanced incentives for demand response, Ibec supports the proposals set out by EY above.

**Further engagement with Ibec**

We remain at the CRU's disposal for further engagement on these issues as needed.

Yours sincerely,

Conor Minogue

Senior Executive, Energy and Climate Policy, Ibec

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**Re: Commission for Regulation of Utilities' Call for Evidence on Energy Demand Strategy, Large Energy Users' Connection Policy, and Demand Flexibility Policy.**

To Whom it May Concern

IDA Ireland welcomes the opportunity to contribute to the Commission for Regulation of Utilities' Consultation on Energy Demand Strategy, Large Energy Users' (LEUs) Connection Policy, and Demand Flexibility Policy.

In pursuing any energy demand strategy, IDA Ireland believes that there needs to be strong recognition of the significance of enterprise development, its broad contribution to the Irish economy and society, and the interdependence of large energy use with the rapid transition to renewable energy at scale over the next decade. In an increasingly deglobalized environment, Ireland has never faced stiffer competition for high-value capital-intensive mobile investment. Effectively functioning and competitive energy markets, along with a clear and transparent regulatory environment, are critical for the continued ability of the country to support current and next generation enterprise. As enterprise transitions to 'green' enterprise, the principle that a transition period is required, should apply.

IDA Ireland's replies to selected questions are included in Appendix 1 of this communication. Overall, IDA Ireland encourages CRU that any new Energy Demand Strategy being contemplated would have realistic timelines for its implementation. Any CRU strategy needs to recognise the current supply constraints of green solutions. We strongly believe that the enduring solution to addressing Irelands energy needs is to enable growth on the supply -side with associated ambitious regulatory and infrastructure investments.

As a country that has FDI at the core of its enterprise policy, IDA also advocates that any new energy demand strategy should not have adverse impacts on Irelands mission in seeking investment, in what is now a sharply more competitive market for FDI. IDA Ireland believes that a new energy demand strategy that is too radical and impractical in the short to medium term, will adversely impact on the flow of enterprise development. For example, to deliver (real time) net zero at connection time, enterprise would need to access technologies such as biomethane, green hydrogen or long-life batteries, that are not yet either sufficiently mature or commercially available to achieve this goal. We all understand that the whole system needs to transition to green, including our policy, infrastructure and users. We maintain the need for a proactive national policy that enables rather than inhibits enterprise development across the island of Ireland.

XLEUs/LEUs do want to utilise the aforementioned technologies (most have ambitious net zero strategies), and many are proactively exploring various opportunities (e.g., undertaking R&D, test bedding, etc), but more time is needed to achieve net zero. A reasonable time period would also allow relevant stakeholders the opportunity to deliver supportive infrastructure and supply capacity (e.g., offshore wind grid infrastructure, biomethane digesters, etc), as well as allow new legislative changes to be introduced (e.g., private wire, support schemes for balancing technologies, etc).

IDA Ireland believes that any energy demand strategy should not 'single out' XLEUs/LEUs on the basis that success with LEUs/XLEUs would have a 'big bang impact' on decarbonisation and security of supply. Connection policy and demand flexibility policy needs to reflect the ability and capacity of energy consumers to deliver and furthermore the impact of demand flexibility on continuity of enterprise and national competitiveness needs to be fully assessed . For example, pharmaceutical processes cannot be turned on and off without adversely affecting production processes; neither can most data centres transfer data loads readily. Notwithstanding the challenges associated with demand flexibility, XLEUs/LEUs are open to opportunities to deliver and maximise demand flexibility.

Ireland is at a critical juncture with respect to the provision of energy to the enterprise sector. There needs to be recognition of the twin importance of enterprise development and climate action. The gap between the current strong demand for electricity and potential strong supply must be successfully bridged. In addition, we cannot lose sight of our national competitiveness, the relative cost of electricity needs to improve considerably for our country to continue to win major FDI into the future. The National Competitiveness and Productivity Council in its June 2023 bulletin noted that Ireland ranked 41st out of 64 countries when it came to electricity costs for industrial users and energy infrastructure.

CRU's Energy Demand Strategy needs to work in tandem with (rather than ahead of) the delivery of new renewable energy technologies and abatement solutions, providing enterprise energy users with the tools to respond. The forthcoming CRU direction needs to be based on a partnership approach with stakeholders. Connection policy should facilitate enterprise development while working on a pathway to net zero. Connection policy needs to be supportive of current and next-generation enterprise development in order for Ireland to continue to be at the forefront of economic development.

In conclusion we are all fully aware of Ireland and the globe's climate action challenge. Our clients fully understand this. We see first-hand the initiatives they are undertaking and how these are increasing in scale. They will be part of the solution in Ireland given the breathing space to make it happen.

IDA Ireland would welcome the opportunity to discuss its views further with the CRU.

Kind regards

Michael Lohan
Chief Executive Officer

**Energy Demand Strategy Project**:

**Q1. What are stakeholder's views on the stated aims of the project? Are there barriers to achieving a successful outcome of implementing an energy demand strategy to meet project climate objectives (viz. carbon emissions reduction)? Are there areas that could benefit from greater policy and regulatory clarity? Are there areas where further alignment between the relevant entities (e.g., state agencies, corporate obligations) to coordinate and enable the delivery of an energy demand strategy would be beneficial?**

IDA Ireland's clients are largely supportive of CRU's efforts to develop market-based mechanisms for managing energy demand. However, demand management is a relatively new phenomenon for most enterprise demand customers, who traditionally have relied on the system operators to supply them with their energy requirements, regardless of the profile of that demand. IDA Ireland clients in their respective activities worldwide have said that they generally have not encountered demand management on the scale that is being proposed/happening in Ireland.

Although demand management can have a role to play in the journey of reducing carbon emissions and in increasing the availability of energy to the enterprise sector, any demand management policy needs to reflect the real-world barriers that some IDA client LEUs experience. For example, many industrial facilities, including biopharma manufacturing, semiconductor manufacturing, and some data centres, cannot make changes to their demand profile at short notice, without serious risk to their business.

*Fundamental Principle – 'Bridging Near Term Demand with Long Term Supply'*

In assessing the context of the proposed energy demand strategy, it is important to look at the prevailing energy market. This is a market where there is very strong demand for energy, especially electricity, which is driven heavily by the expanding and evolving data centre sector. At the same time, there is particularly good potential and opportunity for the country over the long term to be a major, competitive supplier of renewable energy, especially offshore wind generated electricity and associated green hydrogen. The key challenge in the meantime is to bridge the gap between the growth in near-term demand and the long-term supply potential. IDA Ireland's concern is that any policy that does not facilitate a **realistic transition** to large scale renewable electricity will seriously impact our ability to attract investment from LEUs across a number of sectors. When Ireland will have substantial renewable power available, it will be critical to have enterprise with large stable load requirements on the grid. Any new policy which is seen as impractical, unrealistic, or uncompetitive has the potential to remove Ireland from consideration for LEU investment for several years.

**Q2. What are stakeholder's views on the proposed scope (focus areas) and approach (phasing) of the project?**

IDA Ireland believes that the energy demand strategy proposal may be too radical for the timescale being proposed (e.g., net zero at connection time) and encourages the CRU to consider timescales that reflect the ability of demand customers to comply.

**Review of Large Energy Users Connection Policy:**

1. **Comments are invited from stakeholders on the proposed approach of decarbonising energy demand with a view to achieving net zero emissions from LEUs at time of connection. Please provide reasons and rationale for any views provided.**

   In IDA Ireland's view, XLEUs/LEUs should be afforded a reasonable time period, including beyond connection time, to achieve net zero, because of the various challenges that exist in the short to medium term. The challenges include prolonged delays with getting planning permissions for renewable projects, the unavailability of sufficient commercially based solutions, the need for substantial new energy infrastructure (e.g., offshore wind grid infrastructure), and the necessity for regulatory change (e.g., private wire would benefit some demand customers). Developing solutions to the above challenges will take time, with some solutions taking longer than others (e.g., green hydrogen is not expected to be a commercial option until at least the end of the decade). Accordingly, in IDA Ireland's view, there needs to be a 'transition pathway' to net zero rather than 'net zero upfront' at the time of connection.

   With respect to data centres, CRU's direction on connection policy should reflect the *'Decarbonised Data Centres by Design'* principle in *the Government's Data Statement on the Role of Data Centres in Ireland's Enterprise Strategy (2022),* and specifically:

   *'The Government has a preference for data centre developments that can demonstrate a clear pathway to decarbonise and ultimately provide net zero data services'.*

   IDA Ireland's interpretation of the above statement is that net zero emissions from data centres at the point of connection is not necessarily being sought and that there is acknowledgement of a 'pathway to decarbonisation' and ultimately net zero data services'. It is notable that the Climate Act (2021) has set a target for the country to reduce overall emissions by 50% by 2030 and for the country to be net zero by 2050. There is also a target for industry to reduce its emissions by 35% by 2030. The principle of a transition period or pathway should apply to the data centre sector.

2. **Comments are invited from respondents on the need for onsite generation and storage capability for LEU connections. Please provide reasons and rationale for any views provided.**

   Because of site limitations (e.g., urban locations), onsite generation and storage may not be an option for many demand customers or may only be a limited option. Storage options elsewhere, which feed into the grid may be an option for some XLEUs/LEUs. Private wire is viewed as an option that would work for some energy demand customers and merits immediate consideration and support.

   Onsite generation, as a primary supply source, offer attractive opportunities to reduce the cost of electricity a key requirement for the FDI sector. It also offers a short-term option to companies that are in an area where the grid is constrained and which is being reinforced, while those reinforcements are underway. However, IDA recognises that onsite generation may be a very limited solution for customers with large demand loads and or limited land availability. It may also pose a challenge to sustainability metrics, depending on fuel source used.

   New LEU/XLEU developments could in future be co-located where large amounts of renewable energy are readily available with fewer existing grid constraints – such as the creation of energy parks proposed by Bord na Móna (https://bnmenergypark.ie/ ). Supporting balanced regional development.

3. **Comments are invited on the use of CPPAs for additionality of renewable generation outside of support schemes for decarbonising electricity consumption. What type of de-rating may be appropriate to reflect real-world performance of renewable generation during peak times. Please provide reasons and rationale for any views provided.**

   CPPA's are of major interest to XLEUs/LEUs. Accordingly, it is important that they can compete with the public support schemes. Some demand customers believe that the support schemes are more attractive than CPPA's for renewable energy providers and limit opportunities to contract.

There should be reasonable opportunity for large demand customers to agree and conclude CPPA contracts (e.g., a reasonable period for unsuccessful applicants of ORESS auctions should be given to conclude CPPA's).

**9. Comments are invited on real time zero carbon emissions, shifting of demand in real-time to times of high renewable energy availability. Please provide reasons and rationale for any views provided.**

Although appropriate and adequate market incentives should be available to facilitate real-time shifting of demand, it should be noted that shifting of demand in real-time is not currently practically or technically possible for the largest energy users. For example, in the case of data centres, shifting of demand in real-time would require moving data loads offshore. This is neither practically nor contractually possible for most data centres.

In the case of energy intensive manufacturing, shifting of demand in real-time is impossible without substantial onsite generation, which would be mostly dependent on fossil fuel-based sources.

**10. Comments are invited from respondents on what they consider to be an appropriate definition of an LEU for electricity and gas for the purposes of this review. Please provide reasons and rationale for any views provided.**

IDA Ireland believes Energy Demand Strategy should not necessarily single out XLEUs/LEUs. LEUs/XLEUs have a major role in Ireland meeting decarbonisation and security of supply targets. Connection policy and demand flexibility policy needs to reflect the ability and capacity of energy consumers to deliver. For instance, with demand flexibility, unlike in some domestic situations, the ability to be flexible can be limited. Many manufacturing processes cannot be turned on and off without adversely affecting highly valuable product; neither can most data centres reduce storage or transfer of data without significantly impacting their ability to service end users.

**13. Comments are invited from respondents on the treatment of 'islanded' LEUs. Please provide reasons and rationale for any views provided.**

Connection policy on data centres applying for gas connections should be clarified without further delay, i.e., the legal obligation of GNI (Gas Networks Ireland) to provide connections to applicants vs instruction the Minister for the Environment, Climate and Communications not to provide a connection to islanded data centres'. The uncertainty and conflicting signals from Government bodies (GNI and DECC) is impacting credibility in the FDI investment community.

It is arguable that the definition of an islanded LEU should only apply to those that would rely on onsite generation on an enduring basis. IDA believes that CRU should give consideration to those applicants that may require a gas-only connection for a short period of time, but which then intend to switch over to a grid connection as soon as practically possible. There may also be merit in considering LEUs that commit to sourcing a substantial portion of renewable fuel in the market, e.g., biomethane, and in the future, hydrogen.

**16. Should provisions apply to all LEU connections, or are there are any exceptions that should apply? Please provide reasons and rationale for any views provided.**

It is important that connection policy is supportive of current and next generation enterprise, as the loss of such investments to other international locations would result in Ireland not being at the forefront of enterprise development. For example, newer data centre types such as those that underpin generative AI, edge computing and quantum computing need to be accommodated, as failure to accommodate same will result in Ireland failing to move its tech sector forward, which in turn will impact economic development, that is increasingly digital based. Connection policy needs to support new type data centre establishment.

**Irish Energy Storage Association Response to CRU202358a**

The Irish Energy Storage Association welcomes the opportunity to provide feedback on **CRU202358a Scenarios for 15-20% Flexible System Demand** document.

We strongly support the proposal to offer 7-10yrs+ contracts for 4hr+ duration energy storage plants (5-50MW) in specific locations totalling about 450MW. The actual duration of contracts needed for this to be successful will depend on the level and certainty of revenue over the duration of the contract as well as projected capital and operating costs. The operating costs will be affected by the rules around how the plant will be operated.

As these projects are part of an ESBN program to alleviate grid congestion and minimise curtailment, connections should be provided outside the ECP program. Furthermore, as they alleviate grid congestion they should not be regarded as just generation or demand. (see 2. below)

We agree with the approach of keeping things simple for the initial procurement to avoid delays.

Experience and further analysis may indicate the benefits of longer (and possibly also shorter) duration energy storage plants in subsequent rounds.

We appreciate that these proposals are only at the stage of being developed. Clarity is still needed on the following:

1. Will storage plants which win contracts be “dispatched” solely as determined by ESBN or will they be able to operate as they wish when not required by ESBN? i.e. will they have the flexibility to operate and provide other services as long as commitments to ESBN under their contract are satisfied? What is envisaged and how will it work in practice?
2. How will such plants be assessed in relation to getting a connection? When dispatched to absorb power, they will alleviate excess generation and when dispatched to generate, they will alleviate excess demand (when renewable generation is low). This implies that a substation does not need to have any spare capacity (either generation or demand). Is that correct?
3. What criteria will be used by ESBN in determining the selected locations.? Will these be limited to 38kV?
4. It is understood that payments will be made when the plant is declared available to provide the services required by ESBN and is ready to be dispatched accordingly. It is not yet clear how the plant will be paid when actually dispatched. There is a reference to cap and floor which implies that the plant will take part in the normal energy market with costs for absorbing power (when dispatched by ESBN) being capped and revenue from exporting power having a floor price. Is that what is envisaged?
5. Will the dispatch of these plants be done by ESBN, driven by local conditions, rather than by EirGrid driven by overall system requirements, energy market bid prices and constraints. How will these 2 separate dispatch systems interact and be compatible with each other?

**ESB Networks**
engagement@esbnetworks.ie

**Commission for Regulation of Utilities**
energydemandstrategy@cru.ie

**Dear Sir / Madam** 2 August 2023

**Energy Demand Strategy – Scenarios for 15-20% Flexible System Demand**

Congratulations on developing the above discussion/consultation document, in which you rightly identify and articulate the importance for consumers, and all other stakeholders, in achieving 15-20% flexibility of demand in the electricity system.

In your Executive Summary, you ask the right high-level questions, namely:

1. Are there sources of flexibility whose potential in the next 2-3 years we have missed or underestimated across the scenarios?
2. Or are there industry or technology readiness issues which have been underestimated?
3. As regards 4+ hour storage, subject to the provision of adequate commercial terms, are there technical parameters which will materially influence its viability (for example duration, capacity, availability or other considerations).
4. And most importantly, what actions would you recommend, to support the demand flexibility described in these scenarios being realised?

We will give you our thoughts on these, although we would also like to take up your invitation to meet to discuss our high-level response.

1. Your document has indeed *missed* AGU (Aggregated Generation Unit) as a source of flexibility. AGU, we are often considered as a subset of Demand Side Units – which we believe you have *underestimated* – particularly where there is DSU with export – through your following generalisation:

"*A range of businesses across Ireland participate in demand response today, as part of a Demand Side Unit (DSU)" – a single demand site or group of demand sites capable of reducing electricity consumption to support the balancing of the electricity system. In Ireland, DSUs typically comprise of commercial and industrial electricity consumers, with demand reductions bid into the all-island wholesale Single Electricity Market (SEM). The response and the nature of demand flexibility currently provided differs from flexible demand as defined, in that it is typically short duration and/or infrequently delivered. This is valuable in terms of supporting the secure operation of the electricity system with fewer conventional sources of generation and supports the overarching purpose of reducing emissions from electricity, as it allows the system to operate at higher levels of renewable generation. However, its purpose is to support the supply side of a low carbon electricity system, rather than to reshape the demand side. To achieve the substantial emissions reductions targeted by means of flexible demand in the CAP23, very different operating characteristics are required*." (page 94)

Although you do go on, quite rightly to identify that:

"*The introduction of local flexibility market arrangements which incentivise and support the behaviour of flexible demand on the distribution system will offer commercial businesses (and potentially public sector facilities) on the Irish system a new route to market and a means of monetising a different set of energy management behaviours*." (page 94)

Our approach on fuels requires you to nuance your conclusions around your statement that:

"*To the extent that local flexibility services are targeting flexible demand and carbon abatement, it is likely that the frequency and duration of response required will exceed what can be delivered within the limitations of a <u>diesel</u> generator's environmental licence*" (page 95).

In summary, iPower Flexible Energy and similar AGUs can contribute substantially alongside EV, domestic PV and Commercial & Industrial demand side reduction – plus technologically and economically viable storage technologies – to deliver the flexibility ESBN is seeking. What we need is a Flex-type service and additional MEC at sites which already have MIC connections.

2. While we believe that the technologies your document identifies are ready to deliver flexible services, they are not economically ready – or are only so with massive subsidy. Clean and low carbon generation is technologically and economically ready and can be delivered with relatively modest grid infrastructure spend.

3. As above, 4+ hours battery duration is very expensive and because a state of charge is trying to support stacked bids into various competing markets (including, potentially into new ESBN Distribution Flex markets). Its capacity is finite – if, indeed, it has been able to recharge [overnight], so is unreliable, hence its heavy Capacity Market de-rating. The same applies, to an extent to pumped hydro, although this isn't trying to participate in call-off DS3 markets.
4. As you will hopefully see, from the above, we strongly support what ESBN is trying to achieve in its 15-20% Flexibility target, but we don't fully agree with your approach.

As stated above, we'd be most keen to meet ESBN & CRU, to explain our analysis further and discuss how we can work with ESBN & CRU on achieving their well-intended and valuable objectives.

Business Development Director
iPower Flexible Energy Limited

**Irish Energy Storage Association Response to CRU202358a**

**Scenarios for 15-20% Flexible System Demand**

The Irish Energy Storage Association welcomes the opportunity to provide feedback on **CRU202358a Scenarios for 15-20% Flexible System Demand** document.

We strongly support the proposal to offer 7-10yrs+ contracts for 4hr+ duration energy storage plants (5-50MW) in specific locations totalling about 450MW. The actual duration of contracts needed for this to be successful will depend on the level and certainty of revenue over the duration of the contract as well as projected capital and operating costs. The operating costs will be affected by the rules around how the plant will be operated.

As these projects are part of an ESBN program to alleviate grid congestion and minimise curtailment, connections should be provided outside the ECP program. Furthermore, as they alleviate grid congestion they should not be regarded as just generation or demand. (see 2. below)

We agree with the approach of keeping things simple for the initial procurement to avoid delays.

Experience and further analysis may indicate the benefits of longer (and possibly also shorter) duration energy storage plants in subsequent rounds.

We appreciate that these proposals are only at the stage of being developed. Clarity is still needed on the following:

1. Will storage plants which win contracts be “dispatched” solely as determined by ESBN or will they be able to operate as they wish when not required by ESBN? i.e. will they have the flexibility to operate and provide other services as long as commitments to ESBN under their contract are satisfied? What is envisaged and how will it work in practice?
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5. Will the dispatch of these plants be done by ESBN, driven by local conditions, rather than by EirGrid driven by overall system requirements, energy market bid prices and constraints. How will these 2 separate dispatch systems interact and be compatible with each other?

ISEA
Irish Solar Energy Association

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29 August 2023

**Re: CRU Energy Demand Strategy Consultation -ESBN Scenarios for 15-20% Flexible System Demand - National Networks, Local Connections Programme Report**

Dear CRU and ESBN Connections Teams,

ISEA would like to thank you for the opportunity to respond to the Scenarios for 15-20% Flexible System Demand - National Networks, Local Connections Programme Report.

ISEA is a trade association representing approximately 160 members, including international, regional and domestic solar energy providers with deep expertise in solar market activities across all scales (i.e. micro-generation, mini-generation, community generation and utility scale solar). ISEA's core mission is to create a framework capable of surpassing the all-island ambition to install up to 8GW solar power by 2030.

We agree wholeheartedly that if we are to progress towards our climate objectives, flexibility will be key. We support the CRU and ESBN's approach to delivering this flexibility through a variety of different sources *(e.g. Storage, Transport, Industrial, Domestic PV, Commercial Agriculture, Domestic Social Housing, Domestic Non-PV).* We also strongly support ESBN's analysis of multiple technology types in its scenario modelling for flexible system demand.

As a starting point, we would welcome a more detailed discussion of "*the Scenarios for 15 -20% Flexible System Demand Report"* and a better breakdown of the four scenarios along with information on what was included and excluded in each, to ensure the effective engagement of our members and the solar sector. We believe that this will be essential to give consultees the opportunity to properly interrogate and respond to the document. In the existing draft, there are a number of potential anomalies/areas where the assumptions underpinning the four scenarios (along with which flexibility sources are included in each) are not provided. To give two brief solar-related examples.

- It is unclear whether PV for commercial premises has been considered.
- At page 38, Domestic PV is discussed as part of the Consumer-Led Scenario. Later in Section 6.4 (the section specifically for Domestic PV) there is no discussion of the Consumer-Led Scenario. Section 6.4, does, however, discuss the role of Domestic PV in each of the other scenarios (i.e. the Central Scenario, the No-Storage and the Industry-Led Scenario).

To provide the answers sought to the questions posed on page 6 of the report *(i.e. scenarios and assumptions, additional sources of flexibility and recommended actions)* more detail and clarity is required on the inputs for each of the four scenarios.

**Conclusion**

ISEA would like to again thank the CRU and ESBN for the opportunity to respond to the Scenarios for 15-20% Flexible System Demand - National Networks, Local Connections Programme Report.

We hope to continue to engage with you on this matter in the future.

Yours sincerely,

Dr. Eva Barrett

e: eva.barrett@irishsolarenergy.org

ISEA
Irish Solar Energy Association

# CRU
# Review of
# Large Energy Users
# Connection Policy

## 29 August 2023



Irish Solar Energy Association (ISEA)
20 Harcourt Street
Dublin 2

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# 1. Who We Are

The Irish Solar Energy Association (ISEA) was established in 2013 to advance a policy and regulatory landscape promoting solar as a leading renewable energy technology that will decarbonise Ireland's electricity system and contribute to a successful and strong clean economy. As the leading voice for the Irish solar industry, ISEA works closely with stakeholders to advance the solar agenda on behalf of our members. ISEA is committed to ensuring that 8GW of solar is installed on the grid by 2030.

As the trade association for the solar industry in Ireland, ISEA is responding on behalf of our membership. We are grateful for the opportunity look forward to working with the Commission for the Regulation of Utilities (CRU) to support the development of a Large Energy Users' Connection Policy which is in alignment with CRU objectives to:

- Enable the "twin transitions" of digitalisation and decarbonisation of our economy and society;
- Move within the targets set for the electricity sector by carbon budgets 2021-2025 and 2025 -2030; and
- Develop a sustainable policy which removes uncertainty for Large Energy Users (LEUs).

# 2. Executive Summary

We are responding to this consultation in recognition of the key role for solar (along with wind and storage) in providing on-site electricity generation for LEUs and contributing to Ireland's transition to a climate neutral economy by 2050.

As this consultation has a broad remit, we have decided to focus solely on the areas of most relevance to our members, for example:

- Decarbonisation of Energy Demand (Questions 1 –4)
- Demand Flexibility (Questions 6 –7)
- Real-Time Zero Carbon Emissions (Question 9)
- Definition of an LEU (Question 10 -12)]

# 3. Consultation Questions

## Decarbonisation of Energy Demand

**1. Comments are invited from stakeholders on the proposed approach of decarbonising energy demand with a view to achieving net zero emissions from LEUs at time of connection. Please provide reason and rationale for any views provided.**

ISEA welcomes the recognition that consideration needs to be given to the *"continued connection of demand in a way that does not result in unnecessary additional emissions."* We agree with the CRU's view that with a well-designed supportive framework, LEUs could be further facilitated to decarbonise their demand at source. We support the drive to develop policies to deliver:

(i) onsite generation and/or storage;
(ii) shifting of demand in real-time to times of high renewable energy availability; and
(iii) shifting of demand by location

That said, ISEA believes that implementing a requirement for net zero emissions at time of connection for LEUs would be excessive at this point in time. Until a fully supportive policy framework is put in place, a requirement of this nature simply could not be met.

We also believe that there is a need to expand the term "onsite" to "onsite and near site generation". LEUs could have high levels of energy demand which "onsite generation" might not be able to supply. In certain cases that demand could be met by geographically close, local renewable energy and storage projects, supported by direct lines. As such, we suggest it might be worth folding these cases in with those able to generate electricity and gas immediately on site.

This brings us to direct lines. There is an urgent need to reform the law on direct lines. We welcome the ongoing consultation on this crucial matter and encourage the CRU to continue to liaise with the Department of Environment, Climate and Communications (DECC), EirGrid and ESB Networks to ensure that the ruleset for direct lines is put in place as soon as possible.

**2. Comments are invited from respondents on the need for onsite generation and storage capability for LEU connections. Please provide reasons and rationale for any views provided.**

Clearly, generating and storing electricity and heat at the place it is needed, will reduce system demand and the need for increased infrastructure. With ever-increasing gaps between our energy targets and energy resources, the business case for on-site renewables has never been more appealing or compelling. Two years ago, the SEAI outlined the case for creating a clear and certain long-term framework to mandate categories of LEUs to contract their electricity supply from renewable energy projects.[1] This case has only become more convincing. Solar, wind and storage have central roles to play in this. With a supportive framework, all three technology types could facilitate a huge reduction in LEU energy demand.

[1] SEAI, Renewable Electricity Corporate Power Purchase Agreements Consultation to Policy Options for Meeting Ireland's Targets of 15% of Demand to be met by Renewable Energy sources under CPPAs (16 February 2021).

Solar, in particular, has already demonstrated its ability to decrease energy demand onsite. Domestic electricity demand is falling (during sunshine hours) thanks to the Microgeneration Scheme. We expect the recently expanded Non-Domestic Microgeneration Scheme to lead to similar results in the business sector. For their part, LEUs have shown their appetite to meet their own demands for renewable heat and electricity generation through their increased uptake of Corporate Power Purchase Agreements (CPPAs).[2] However, to enable them to fully contribute to the CRU's "twin transition" objectives and facilitate the Government reaching the 2030 target to have 15% of energy demand met by renewable PPAs, we again stress the need to:

(i) expand the term onsite generation to onsite and near-site generation;
(ii) lift the restrictions on private wires; and
(iii) create a facilitative regime for the co-location of wind, energy and storage so that LEU demand can be satisfied by renewable energy for as many hours of the day as possible.

**3. Comments are invited on the use of CPPAs for additionality of renewable generation outside of support schemes for decarbonising electricity consumption.**
Use of Guarantees of Origin (GOO) by LEUs would be very helpful in incentivising CPPAs. At the moment only electricity generators and suppliers can hold GOO accounts, and only suppliers can "use" GOOs (for fuel mix calculation).

**3(i) What type of de-rating may be appropriate to reflect real-world performance of renewable generation during peak times. Please provide reasons and rationale for any views provided.**
No comment.

**4. Based on preference that renewable electricity and/or gas contributes to Ireland's emissions targets and security of supply, do respondents have a view in relation to how electricity feeding into Irish system and renewable gas credits feeding into the Irish system could be tracked?**

ISEA believes that metering at connection points is sufficient for enabling the tracking of renewable electricity into the Irish power system.

## Demand Flexibility

**6. Comments are invited from respondents on enabling demand flexibility requirements as described above. Please provide reasons and rationale for any views provided.**

ISEA endorses the CRU's identification of on-site renewable electricity generation and "onsite" storage as enablers of demand flexibility. However, we recognise the scale of on-site generation needed to deliver upon Governmental pledges. We note the Baringa Report on Corporate PPA Policy (2020)[3] which recognised that:

> *"A target of 15% of electricity consumption suggests that up to 6 TWh of additional electricity generation by 2030 must be underpinned by CPPAs – this is c.35% of all new generation*

[2] Ireland has 1.4GW of contracted PPAs. See Resource European Platform for Corporate Renewable Energy Sourcing. To give a few examples: MSD/ESB solar PPA for 7.3MW ground mounted solar PV to generate an estimated 7.9GWh of clean renewable electricity annually for the MSD site (2022); Statkraft/Microsoft wind/solar CPPA for 366MW (2022); NTR/AIB renewable CPPA for 21.4GwH (2022);Energia/Microsoft wind/solar CPPA for 900 MW (2022).
[3] Baringa, Corporate PPA policy in Ireland (December 2020).

*capacity. This is equivalent to 2.3 GW of onshore wind or over 6 GW of solar PV. The required deployment rate under CPPAs through to 2030 would be broadly equivalent to the average deployment rate under REFIT since 2015."*

**Onsite generation and storage capability**

Our views on onsite generation and storage capability are discussed in our answer to question 2.

**Shifting demand in real-time to times of high renewable energy availability**

We believe there are two overarching barriers to the uptake and success of smart services to support customers shifting their demand to times of high renewable energy availability. The first is public awareness of the services on offer; their benefits for consumers (e.g. the monetary rewards available for active participation in the electricity market) and the high levels of administration required to engage with these systems. Greater resources should be allocated to educating the public on the benefits of co-ordinating energy use (via smart metering) and time of use tariffs. We believe resources should also be allocated to making the engagement process simple and accessible to consumers.

We believe there is a need for co-ordinated campaigns to highlight:-

- The information which smart metering provides and how this can be used to increase efficiency of energy usage; and
- The benefits of specific Time of Use Tariffs designed to facilitate energy use at times when solar power is abundant (i.e. between 10 and 4pm).[4]

The second barrier to the success of smart services is specific to smart meters and the information which they currently provide. We believe this information should be more readily accessible in real time if behaviour is to change. Being able to download your CSV (information in text) a day after the fact is unlikely to have much impact.

This will be essential if *"50-85% of the customers with solar PV are to choose to participate in demand shifting products"* as envisaged in the Central Scenario described at page 77 of the *"Scenarios for 15 - 20% Flexible System Demand"*.[5]

**Shifting of demand by location**

The members of ISEA are broadly in favour of the Governmental preference for the location of data centre developments in locations where a renewable generation facility or advanced storage can be co-located with the data centre, supported by a CPPA, private wire or other arrangement.

**7. Are there other sources of flexibility that can be provided?**

No response at present.

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[4] See See Scenarios for 15 -20% Flexible System Demand, page 47. See also: Irish Energy Storage Association, the Missing Link (January 2022).

[5] Europe provides great examples of successful public awareness leading to greater engagement with flexibility. For example: 10,000 consumers in Switzerland react to price signals via their PV and home automation systems. In Finland, hourly retail electricity prices are offered and can be coupled to smart home controls.
Source: EU, The Potential of Electricity Demand Response (2017).For Ireland to reach these levels we will need high awareness of the benefits of flexibility.

## Real Time Zero Carbon Emissions

**9. Comments are invited on real time zero carbon emissions, shifting of demand in real time to times of high renewable energy availability. Please provide reasons and rationale for any views provided.**

ISEA believes that implementing a requirement for net zero emissions at time of connection for LEUs would be excessive at this point in time. Until a fully supportive policy framework is put in place, a requirement of this nature simply could not be met.

Before such a policy can be considered, we need to have a framework which supports:

- hybrid connections (i.e. renewable and/or storage technologies hosted on one site under a single grid connection agreement where the combined generation capacity of the on-site technology exceeds the MEC of the grid connection),
- direct lines, and
- time of use tariffs.

**Hybrid Connections**

The provision of hybrid connections will allow renewable asset owners to export to the grid in response to demand for more hours of the day – thereby ensuring that resources which are carbon zero are powering the electricity system more often.

To facilitate hybrid connections, we believe the CRU needs to:

- Allow multiple legal entities behind a single connection point.
- Remove the over-install cap on Maximum Export Capacity (MEC); and
- Allow sharing of MEC between technologies behind a single connection point.

We appreciate that the CRU is currently engaged in consulting on these aspects of hybrid connections. We support this work and are taking this opportunity to stress the need for fast action.

**Direct Lines**

There is an urgent need to reform the law on direct lines. We welcome the opening of the consultation on this crucial matter and encourage the CRU to continue to liaise with the Department of Environment, Climate and Communications (DECC), EirGrid and ESB Networks to ensure that the ruleset for direct lines is put in place as soon as possible.

**Time Of Use Tariffs**

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- The information which smart metering provides and how this can be used to increase efficiency of energy usage; and
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This will be essential if *"50-85% of the customers with solar PV are to choose to participate in demand shifting products"* as envisaged in the Central Scenario described at page 77 of the *"Scenarios for 15 - 20% Flexible System Demand"*.[7]

## Definition of an LEU

**10. Comments are invited from respondents on what they consider to be an appropriate definition of an LEU for electricity and gas for the purposes of this review. Please provide reasons and rationale for any views provided.**

ISEA is of the view that LEUs should be primarily defined in terms of their energy consumption.

A definition for LEU could also give consideration to factors such as the size of the required connection, the location of the energy user, if the connection is to the transmission or distribution system and the class of energy user.

**11. Comments are invited from respondents on whether their review should only apply to Extra Large Energy Users (XLEUs) in relation to electricity. Please provide reasons and rationale for any views provided.**

No. As LEUs will be responsible for a large of amount of growth in demand, both LEUs and XLEUs should be included within the review.

**12. Comments are invited for gas LEU definition of those with a peak hourly demand greater than 50MW thermal input and a connection pressure of 16 barg or above. Please provide rationale for any views provided.**

No response.

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[6] See See Scenarios for 15 -20% Flexible System Demand, page 47. See also: Irish Energy Storage Association, the Missing Link (January 2022).

[7] Europe provides great examples of successful public awareness leading to greater engagement with flexibility. For example: 10,000 consumers in Switzerland react to price signals via their PV and home automation systems. In Finland, hourly retail electricity prices are offered and can be coupled to smart home controls. Source: EU, The Potential of Electricity Demand Response (2017).For Ireland to reach these levels we will need high awareness of the benefits of flexibility.

# 4. Conclusion

We are responding to this consultation in recognition of the key role for solar (along with wind and storage) in providing on-site electricity generation for LEUs and contributing to Ireland's transition to a climate neutral economy by 2050.

As this consultation has a broad remit, we have decided to focus solely on the areas of most relevance to our members, for example:

- Decarbonisation of Energy Demand (Questions 1 –4)
- Demand Flexibility (Questions 6 –7)
- Real-Time Zero Carbon Emissions (Question 9)
- Definition of an LEU (Question 10 -12)]

We thank the CRU for giving us the opportunity to contribute to this consultation.

ISEA
Irish Solar Energy Association

# Response to Energy Demand Strategy Project Call for Evidence

## 29 August 2023

Irish Solar Energy Association (ISEA)
20 Harcourt Street, Dublin 2, D02 H364

www.irishsolarenergy.org

# 1. Who We Are

The Irish Solar Energy Association (ISEA) was established in 2013 to advance a policy and regulatory landscape promoting solar as a leading renewable energy technology that will decarbonise Ireland's electricity system and contribute to a successful and strong clean economy. As the leading voice for the Irish solar industry, ISEA works closely with stakeholders to advance the solar agenda on behalf of our members. ISEA is committed to ensuring that 8GW of solar is installed on the grid by 2030 and to working with the Commission for the Regulation of Utilities (CRU) to support the development of an Energy Demand Side Strategy and Implementation Plan which is consistent with Ireland's sectoral emissions ceilings.

As the trade association for the solar industry in Ireland, ISEA is responding on behalf of our membership. We are grateful for the opportunity to respond to this Call for Evidence and look forward to continuing to engage with the Commission for the Regulation of Utilities (CRU) on the Energy Demand Strategy Project.

# 2. Executive Summary

We welcome this initial Call for Evidence seeking input for a new Energy Demand Strategy with three focus areas to increase demand flexibility by:

- leveraging smart meters to incentivise further flexibility from households and SMEs;
- incentivising demand flexibility and response at the Distribution Network level; and
- ensuring that large new energy demand users connecting to the electricity and gas networks are low or zero carbon, or provide significant demand flexibility at the point of connection.

The focus of our members is currently on the electricity sector and so, our response to this Call for Evidence focuses on electricity. To summarise our submission, the key barriers to the success of smart meters are:

(i) public awareness of the services on offer;
(ii) their benefits for consumers (e.g. the monetary rewards available for active participation in the electricity market) and
(iii) the high levels of administration required to engage with these systems.

The key barriers to the success of demand response and flexibility are resource and connections bound. The key barrier to the success of large energy user low carbon connections is the lack of enabling private wire legislation and connection law and policy. We are supportive of the proposed scope and focus of the project but would prefer the broader (technology neutral) definition provided by the CRU for demand flexibility.

# Call for Evidence Questions

**Q1. What are stakeholder's views on the stated aims of the project?**

ISEA recognises the need to shape and modify energy demand to deliver a climate neutral economy by 2050.[1] Our members welcome the opportunity to engage with Phase 1 of the Energy Demand Strategy (EDS) Project, and in so doing to support the development of the EDS Project from its initial stages to the publication of the final Strategy in Q4 2023. Our members agree with the proposed scope of the EDS Project, and the CRU's proposal to prioritise the following three areas:

(i) Smart Services (i.e. smart metering and time of use tariffs);
(ii) Demand Flexibility and Response; and
(iii) New Demand Connections (i.e. schemes to incentivise Large Energy Users to incorporate low carbon /flexibility solutions in connection applications).

ISEA recognises the scale of transformation which will be required to make progress towards meeting overarching EDS objectives[2] and the logic behind the CRU's wish to keep the focus of this consultation on energy demand and items within the CRU's remit.

We are strongly in favour of the need for demand side response in the electricity and gas sectors. For the electricity sector, demand side response will facilitate more efficient use of renewables. In turn this should support increased renewable penetration. In the gas sector, demand side response could help mitigate against short-term energy supply shocks.[3]

In this submission we will focus on the electricity sector.

**Q1(a) Are there barriers to achieving a successful outcome of implementing an energy demand strategy to meet project climate objectives (viz. carbon emissions reduction)?**

Yes, there are barriers for each of the three areas targeted for phase 1 of this project, which we discuss under the headings Smart Services, Demand Response and Flexibility and New Demand Response below.

**Smart Services**

We believe there are two overarching barriers to the uptake and success of smart services to support system flexibility. The first is public awareness of the services on offer; their benefits for consumers (e.g. the monetary rewards available for active participation in the electricity market) and the high levels of administration required to engage with these systems. Greater resources should be allocated to educating the public on the benefits of co-ordinating energy use (via smart

[1] Section 3 of Climate Action and Low Carbon Development Act 2021
[2] Those objectives being to: (i) Bring our overarching electricity and gas demand in line with the carbon sectoral emissions ceilings; (ii) Deliver demand flexibility and demand response initiatives to meet the targets set in the Climate Action Plan 2023; (iii) Support the delivery of Irelands transition to reach net zero emissions by 2050.
[3] CEPA, Economics Matters Technical Analysis of the Security of Energy Supply of Ireland's Electricity and Natural Gas Systems (September 2022).

metering) and time of use tariffs. We believe resources should also be allocated to making the engagement process simple and accessible to consumers.

We believe there is a need for co-ordinated campaigns to highlight:-

- The information which smart metering provides and how this can be used to increase efficiency of energy usage; and
- The benefits of specific Time of Use Tariffs designed to facilitate energy use at times when solar power is abundant (i.e. between 10 and 4pm).[4]

The second barrier to the success of smart services is specific to smart meters and the information which they currently provide. We believe this information should be more readily accessible in real time if behaviour is to change. Being able to download your CSV (information in text) a day after the fact is unlikely to have much impact.

This will be essential if *"50-85% of the customers with solar PV are to choose to participate in demand shifting products"* as envisaged in the Central Scenario described at page 77 of the *"Scenarios for 15 -20% Flexible System Demand"*.[5]

**Demand Response and Flexibility**

We note the importance of scaling up the pilots under the National Networks Local Connections' Piloting Roadmap and building on initiatives such as "Beat the Peak". We commend ESB for their strong and continuing work on the Piloting Roadmap and the scale of the analysis they have undertaken to learn what worked and where lessons can be learned. We believe it is essential that this experience is fed into next steps. We welcome plans to use targeted messaging to prompt consumers to use at times of high renewable output (i.e. time shift).

We agree that the solutions designed to deliver demand response and flexibility should include a suite of different technologies across all sectors of society *(e.g. Storage, Transport, Industrial, Domestic PV, Commercial Agriculture, Domestic Social Housing, Domestic Non-PV).* We believe that to remove the barriers which prevent customers responding to demand signals and inhibit system flexibility, a two-step approach is needed to:

1. fully finalise, resource and administer existing and promised schemes; and
2. develop new schemes.

As a first step, we believe that greater resources should be allocated to the staffing, administration and finalisation of schemes designed to encourage the uptake of renewables, self-consumption, and the delivery of flexibility (e.g. the National Smart Metering Programme, the Microgeneration Support Scheme, the Small Scale Renewable Electricity Support Scheme, the Clean Export

[4] See Scenarios for 15 -20% Flexible System Demand, page 67. See also: Irish Energy Storage Association, the Missing Link (January 2022).

[5] Europe provides great examples of successful public awareness leading to greater engagement with flexibility. For example: 10,000 consumers in Switzerland react to price signals via their PV and home automation systems. In Finland, hourly retail electricity prices are offered and can be coupled to smart home controls.
Source: EU, The Potential of Electricity Demand Response (2017).For Ireland to reach these levels we will need high awareness of the benefits of flexibility.

Guarantee, the Clean Export Premium, the Targeted Agricultural Modernisation Schemes, the Solar Capital Investment Scheme). This is required to provide market certainty and engender consumer confidence. It is also necessary to clear existing backlogs.

As a second step, we welcome the proposals outlined in the ESBN's *"Scenarios for 15 -20% Flexible System Demand"* designed to:

- Stimulate rounds of competitions for carbon abatement products *(e.g. process shifting, behind the meter electricity storage and behind the meter gas generation matched by domestic green gas product)* for Large Energy Users (LEUs) in the Industrial Sector.
- Deliver local flexibility schemes aimed at farmers.
- Provide a mechanism permitting farmers who availed of TAMS grants to participate fully in microgeneration schemes.
- Introduce a scheme whereby all up-front PV installation costs are offset and repayable through low-interest loans or via a tariff on the excess electricity generated and sold to the national grid.

While we appreciate that this consultation does not directly concern connections, we would again like to stress the need for a more flexible connections regime. This, along with non-firm access (which we note is likely to soon be piloted under the National Networks Local Connections), are absolutely critical for the connection of the volume of renewables needed to deliver the solar connection targets endorsed by ESB for utility scale solar[6] as part of its plan for Domestic PV Flexibility, described at page 72 of the *"Scenarios for 15 -20% Flexible System Demand"* document.[7]

We would also urge the CRU to feed through the implications of the BrightWind "Wind and Solar Resource Study" which we recently submitted. Its key finding is that with smarter management of the renewables, there is space available on the network that we have.

We strongly support the drive to incorporate technology-enabled flexibility such as medium-duration storage (4+ hours) at certain locations to increase flexibility and reduce system curtailment and local constraints. The views of our members on storage and the specific barriers preventing greater uptake of storage are included in our submission to the Consultation on Developing an Electricity Storage Policy Framework (3 February 2023) and so, in this submission we have instead placed our focus solely on barriers to other sources of flexibility and demand response.

[6] Note: ESB has included utility-scale and community solar farms, mini-generation and domestic solar PV panel installations within its discussion of connection for domestic PV.
[7] It states *"ESB Networks is connecting of up to 5 GW of solar-powered generation by 2025, including utility-scale and community solar farms, mini-generation and domestic solar PV panel installations".*

Finally, we welcome the CRU engagement which has taken place to date, and would like to stress the need for continuing, close engagement with industry on the design of demand/flexibility products. This will be vital to ensure that they are attractive to both end users and service providers in the industry.

**New Demand Connections**

For new demand connections, we believe that in addition to the actions identified by ESBN and CRU,[8] we urgently need to introduce a private wire connection policy and repeal the legislative provisions which prevent private wire construction to support the optimal/co-location of renewable energy and advanced storage and data centres/Large Energy Users (LEUs).

**Q1(b) Are there areas that could benefit from greater policy and regulatory clarity?**

Yes.

It would be beneficial if there was greater alignment between the CRU consultation documents and the ESBN scenarios document *(e.g.* on the definition for *"flexibility system demand"*) to support ease of engagement in these consultations.

**Q2. What are stakeholder's views on the proposed scope (focus areas) and approach (phasing) of the project?**

We welcome the three focus areas targeted in Phase One .

**Q3. What are stakeholder's views on energy demand profiles and the challenges arising from the associated carbon emissions?**

We note that ESB Networks are planning to undertake a Call for Input on detailed assumptions and believe that it will be vital that the engagement is targeted and specific to relevant stakeholders.

As presented it is difficult to comment on the energy demand profiles are they are very high-level. It would be beneficial if we could get a base set of demand assumption scenarios from which we are all working.

**Q4. What are stakeholder's views on the definition for demand flexibility?**

**Q5. What should be the areas of focus for demand flexibility (i.e. how should this be measured and reported going forward)?**

We will take questions 4 and 5 together.

We note the two different options provided for the definition for demand flexibility and would welcome further clarification on where the settled definition is to be used (assuming it is to be used

[8] For example: (i) introducing local flexibility products; (ii) providing LEUs with site specific emissions reporting; (iii) creating opportunities for power purchase agreements or similar arrangements. See ESBN, *"Scenarios for 15 -20% Flexible System Demand",* page 65.

for additional purposes outside the scope of determining compliance with the goals of Climate Action Plan 2023.)

We note the narrower definition provided by ESBN for demand flexibility (definition 1) as:-

> *"Demand with the ability to respond to changing states of generation, demand, storage and network conditions. It is characterised by direct system operator actions, coupled with individual/collective customer behaviour. It is measured as a percentage of peak system demand (but is not necessarily available at peak system demand, or intended to be). Flexible system demand includes demand increases and decreases, which may be simultaneous or occur at different times, for different reasons".*

We also note the broader (technology neutral) definition provided by the CRU for demand flexibility (definition 2) as:-

> "*Energy demand which is available to / capable of changing its demand consumption profile.*
> *It is characterised/triggered by appropriate signals and/or incentives enabling customers to take individual/collective action.*
> *It is measured as a percentage of peak system demand, but is not necessarily available at peak system demand (or intended to be).*
> *It includes demand increases and decreases, which may be simultaneous or occur at different times, for different reasons."*

Our members note alternative approaches taken elsewhere,[9] and are generally supportive of definition 2. However, we would stress that the final definition should recognise the causal relationship between decarbonisation and that flexibility and express Renewable Electricity targets as a share of demand.

**6. What are stakeholder's views on the attached ESBN document, 'Scenarios for 15-20% Flexible System Demand (DOC-120423-HRS)', which has been published as part of this four document package?**

As a trade association representing the solar sector, we agree wholeheartedly that if we are to progress towards our climate objectives, flexibility is vital. It is inextricably linked to decarbonisation. We support the CRU and ESBN's approach to delivering this flexibility through a variety of different sources *(e.g. Storage, Transport, Industrial, Domestic PV, Commercial Agriculture, Domestic Social Housing, Domestic Non-PV).* We also strongly support ESBN's analysis of multiple technology types in its scenario modelling for flexible system demand and welcome ESBN's willingness to use a wide range of tools (e.g. the use of Conservation Voltage Reduction (CVR) to find capacity headroom last winter)

We would welcome more detailed discussion of "*the Scenarios for 15 -20% Flexible System Demand Report"* and a better breakdown of the four scenarios along with information on what was included and excluded in each, to ensure the effective engagement of our members and the solar sector. This

[9] See further: Rocky Mountain Institute, The Economics of Demand Flexibility How "Flexiwatts" Create Quantifiable Value for Customers and the Grid (2015);

would give consultees the opportunity to properly interrogate and respond to the document. In the existing draft, there are a number of potential anomalies/areas where the assumptions underpinning the four scenarios, along with which flexibility sources are included in each, is not provided. To give two brief solar-related examples.

- It is unclear whether PV for commercial premises has been considered.
- At page 38, Domestic PV is discussed as part of the Consumer-Led Scenario. Later in Section 6.4 (the section specifically for Domestic PV) there is no discussion of the Consumer Led Scenario. Section 6.4, does, however, discuss the role of Domestic PV in each of the other scenarios (i.e. the Central Scenario, the No-Storage and the Industry Led Scenario).

More generally we believe that it will be crucial to ensure that the distribution signals for demand and the transmission level demand signals sync up. There needs to be alignment across the system operators. Industry needs early visibility of the operational model for forecasting, bidding, scheduling and dispatch and ancillary services.

**7. Comments are invited from respondents on any other associated areas that they consider materially relevant to the project.**

# 4. Conclusion

We thank the CRU for the opportunity to provide input into the new Energy Demand Strategy. In this submission we have outlined what we believe are the key barriers to the successful implementation of an Energy Demand Strategy and these are bulleted below.

- **Smart Meters Barriers:** Public awareness of the services on offer; their benefits for consumers (e.g. the monetary rewards available for active participation in the electricity market) and the high levels of administration required to engage with these systems.
- **Demand response and flexibility Barriers:** Gap in resourcing and gap in connections policy.
- **Low Carbon Connections for Large Energy Users:** Lack of enabling private wire legislation and connection law and policy.

We are supportive of the proposed scope and focus of the Energy Demand Strategy project but would prefer the broader (technology neutral) definition provided by the CRU for demand flexibility.

ISEA
Irish Solar Energy Association

# CRU Consultation Incentivising the Uptake of Time of Use Tariffs

## 29 August 2023

Irish Solar Energy Association (ISEA)
20 Harcourt Street
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# 1. Who We Are

The Irish Solar Energy Association (ISEA) was established in 2013 to advance a policy and regulatory landscape promoting solar as a leading renewable energy technology that will decarbonise Ireland's electricity system and contribute to a successful and strong clean economy. As the leading voice for the Irish solar industry, ISEA works closely with stakeholders to advance the solar agenda on behalf of our members. ISEA is committed to ensuring that 8GW of solar is installed on the grid by 2030 and to working with the Commission for the Regulation of Utilities (CRU) to support the development of an Energy Demand Side Strategy and Implementation Plan which is consistent with Ireland's sectoral emissions ceilings.

As the trade association for the solar industry in Ireland, ISEA is responding on behalf of our membership. We are grateful for the opportunity to respond to this consultation on incentivising the use uptake of time of use tariffs and look forward to continuing to engage with the CRU on the Energy Demand Strategy Project. In this response we have provided answers to questions 1 -14, as those which are of direct interest to our members.

# 2. Executive Summary

We welcome this initial Call for Evidence seeking input for a new Energy Demand Strategy with three focus areas to increase demand flexibility by:

- leveraging smart meters to incentivise further flexibility from households and SMEs;
- incentivising demand flexibility and response at the Distribution Network level; and
- ensuring that large new energy demand users connecting to the electricity and gas networks are low carbon or provide significant demand flexibility at the point of connection.

To summarise this submission, we are in support of price comparison tools and believe that there is added value to allowing Price Comparison Websites (PCWs) to ask consumers additional questions to identify their consumption behaviour and tailor price comparisons. We are also in favour of an approach which enables the PCW framework to access price comparisons for microgeneration export tariffs between supplies. We support the extension of the requirement for suppliers to make an Estimated Annual Bill available for time of use tariffs but would suggest that this be standardised and compare "like for like" across suppliers. We support the demand-weighted methodology for calculating an EAB. We would request that this be subject to periodic review.

# 3. Consultation Questions

## Accreditation Framework Price Comparison Websites

**1. The CRU is proposing to amend the PCW accreditation framework to allow consumers to upload their smart meter data (obtained as a HDF via the ESBN Customer Portal) to receive a price comparison based on their actual historical electricity consumption. If not, why not?**

ISEA does not object to this in principle. In our view, the CRU is correct. Price comparison tools do enable consumers to *"benefit from competition existing in the electricity and gas markets by allowing them to easily compare energy offers, and empower them to make cost savings."*

**2. The CRU is proposing not to put any restrictions on the minimum period of time that needs to be contained in smart meter consumption data that consumers can upload to the PCW. However, we propose that a warning message be included where consumers have included less than a year of data. Do you agreed with this approach? If not, why not?**

ISEA is supportive of this approach.

**3. Is there anything else CRU should consider with regards to this matter?**
No response.

**4. In case a consumer submits a HDF containing periods of missing data, the CRU is proposing that the PCW takes the following actions:**

- **If the missing data accounts for less than 1% of the total dataset: the PCW must use the most recent ESBN load profile and calculate an estimate for the consumption during the missing period.**
- **If the missing data accounts for 1% or more of the total dataset: the PCW must inform the consumer that there is missing data, include the percentage of missing data, and ask if they wish to continue with the price comparison using an estimate for the missing data, as outlined above.**

**Do you agree with this approach? If not, why not?**
Yes.

**5. Is there anything else CRU should consider with regards to this matter?**
No response.

**6. The CRU would be interested in hearing whether respondents believe there is added value or not in allowing PCWs to ask consumers additional questions to identify their consumption behaviour, and tailor price comparisons. For example, whether a consumer has an Electric Vehicle. If you believe there is added value in this approach, what guidelines, if any, do you believe the CRU should implement to ensure a minimum standard across PCWs?**

ISEA is very supportive of and believes there is added value in this measure, as there are many factors which may influence a household's electricity consumption profile. Variables which ought to be considered as part of this proposal include (but are not limited to):

- Electric Vehicles
- Rooftop Solar
- On-Site Storage
- Purpose of property (i.e. rental property/primary principal residence/holiday home)
- Demographics of residents (i.e. single occupant/families/tenants/work from home)

Enabling consumers to provide more detail voluntarily will allow them to make informed choices about their consumption based on the experience of other households with similar consumption profiles.

In our view, solar deployment should occur within an ecosystem which allows every Irish home and business to be a full participant in the energy transition. This view supports microgeneration, storage/flexibility (batteries, EVs), and efficiency (via BER and efficiency interventions) in each dwelling or business premises. In addition, socio-economic class should not determine a citizen's ability to participate in the energy transition.

**7. The CRU proposes to require PCWs to implement the functionality to allow consumers to upload their smart meter consumption data (via HDF) from 1 January 2024. Do you agree with this approach? If not, why not?**

ISEA understands that the CRU requires an adequate amount of time to devise this measure and that PCWs need a sufficient amount of time to implement it. In view of this, we are supportive of the proposed timeline – but an earlier implementation timeline would (of course) also be welcome.

**8. Are there any other issues that believe the CRU should take into consideration with regards to the timeline?**
No response.

**9. The CRU proposes to amend the PCW accreditation framework to allow consumers to access price comparisons for microgeneration export tariffs between suppliers. It proposes consumers should be able to do this in one or two ways, either by submitting their actual (historical) export volume, or by submitting their deemed calculation. Do you agree with this approach? If not, why not?**

ISEA notes that export tariffs have become a competitive market among suppliers. The solar industry welcomes this as it creates an additional incentive for consumers to become renewable self-consumers and receive a better return on investment in line with the competitiveness of the market.

To that end, we are very supportive of amendments to the PCW accreditation framework to allow consumers to submit their export volumes to PCWs. However, we would advise the CRU that as the deemed calculation is not based on actual export figures it is not suitable as a reference figure for prospective renewable self-consumers. We would therefore request that renewable self-consumers are only permitted to submit their actual export volume.

**10. Are there any other issues that you believe the CRU should take into consideration with regards to this functionality?**
No response.

## Estimation Annual Bill for Time of Use Tariffs

**11. The CRU proposes to extend the requirement for an EAB to all tariffs available on the market, including the time of use tariffs. Do you agree with this approach? If not, why not?**

ISEA supports the CRU's proposal to require suppliers to make an Estimated Annual Bill for time of use tariffs available in their marketing materials and advertisements. This will be helpful for stimulating competition among suppliers and enabling consumers to make informed decisions. However, we would stress the need for the CRU to liaise closely with suppliers to: (i) further review how this is calculated; and (ii) ensure that it is standardised and compares "like for like" across suppliers.

**12. The CRU proposes to implement an EAB for all time of use tariffs from 1 January 2024. Do you agree with this timeline? If not, why not?**

As with the updating of the PCW to enable submission of smart meter data, ISEA understands that the CRU requires an adequate amount of time to devise this measure and that suppliers need a sufficient amount of time to implement it. In view of this, we are supportive of the proposed timeline – but an earlier implementation timeline would (of course) also be welcome.

**13. With regards to the methodology for calculating an EAB for all time of use tariffs, the CRU proposes to use the demand-weighted approach, which is the same that is currently used for the Standard Smart Tariff and Day/Night tariff. Do you agree with this approach? If not, why not?**

ISEA is supportive of the demand-weighted approach. Of the three approaches, this one is most likely to encourage consumption at times of low demand. However, we would propose that the calculation methodology is reviewed over time to account for the increasing generation capacity of connected renewable assets. For example, the projected solar and wind generation capacity at specific periods in the year could be factored into the tariff. This will allow consumers to make informed choices continuously as electricity prices drop over the course of the clean energy transition while also structuring their consumption around times of high renewable generation.

**14. Are there any other issues that you believe the CRU should take into consideration with regards to implementing an EAB for all time of use tariffs?**

No further response. See question 11 above.

# Conclusion

ISEA welcomes the CRU's consultation on Incentivising the Uptake of Time of Use Tariffs.
In conclusion, we would like the emphasise the following key points.

- We are in support of price comparison tools and believe that there is added value to allowing PCWs to ask consumers additional questions to identify their consumption behaviour and tailor price comparisons.
- We are in favour of an approach which enables the PCW framework to access price comparisons for microgeneration export tariffs between supplies.
- We support the extension of the requirement for suppliers to make an Estimated Annual Bill available for time of use tariffs but would suggest that this be standardised and compare "like for like" across suppliers.
- We support the demand-weighted methodology for calculating an EAB. We would request that this be subject to periodic review.

# Keppel Data Centres Response

30th August 2023

# CRU Call for Evidence – Review of Large Energy Users Connection Policy

To: electricityconnectionpolicy@cru.ie

## About Keppel Data Centres

Keppel Data Centres own two colocation data centre facilities in Ireland[1]. These data centres are part of the portfolio of Keppel DC REIT, which is listed in Asia on the Singapore Exchange. Keppel Data Centres owns and operates a global portfolio of more than 32 data centres located across Asia Pacific and Europe. Our Irish data centres support Irish and multinational businesses by providing efficient cloud hosting optimised to the highest standards. We have operated in Ireland since 2014. Our continued success in Ireland is limited only by energy policy uncertainty.

Keppel Data Centres is committed to environmentally sustainable business practices, focusing on enhancing energy efficiency, reducing carbon footprint in our operations, as well as reducing waste and water consumption intensity. The proactive management of our environmental impact enables us to improve resource efficiency, reduce costs and support the global climate change agenda. Keppel DC REIT is a certified (July 2021) signatory to the Climate Neutral Data Centre Pact[2]. Both our data centres in Ireland achieved LEED O+M Gold Certification[3] for existing buildings in May 2023.

Our data centres are certified under international standards such as the ISO 50001 energy management system and the Singapore Standard for Green Data Centres. We continuously adopt more sustainable building designs and materials in the development of new projects. We also invest into the use of energy-efficient technologies, such as upgrading to LED lighting, replacement of DX systems with chilled water systems and activating required CRAC units based on running IT load.

## The Call for Evidence

Keppel Data Centres welcome the opportunity to respond to the *Call for Evidence on the Review of Large Energy Users connection policy*. The purpose of the call for evidence paper is to seek views on potential assessment criteria which the System Operators (SOs) could use to assess Large Energy User (LEU) applications in the context of statutory national climate targets.

We hope that the outcome of this process delivers certainty for our business and feel that this is best achieved through a **transition**. If the energy system and digital infrastructure can evolve together, we can help Ireland to meet its climate objectives by harnessing the abundant renewable resource at our doorstep. Digitalisation is key to this for a number of reasons: (i) stable and predictable grid customers, (ii) renewable power purchase certainty backed by strong corporate credentials, and (iii) digitalisation enabling wider society to decarbonise.

[1] Keppel Data Centres: https://www.keppeldatacentres.com/locations/europe/ireland/
[2] Climate Neutral Data Centre Pact: https://www.climateneutraldatacentre.net/public-register/
[3] Keppel LEED O&M: https://www.linkedin.com/pulse/keppel-data-centres-ireland-achieve-leed-v41-om-gold-gary-watson/

We offer our views on the specific proposals contained in the call for evidence below.

## Comments on Questions:

### Decarbonisation of energy demand

**Q 1. Comments are invited from stakeholders on the proposed approach of decarbonising energy demand with a view to achieving net zero emissions from LEUs at time of connection. Please provide reasons and rationale for any views provided.**

While we are working hard to achieve net zero (scope I and II emissions) for our current operations, we believe **net zero emissions at the time of connection** would be very difficult to prove. The renewable resources and the mechanisms to pre-purchase them are not mature enough to allow this condition to be met. This approach would also place unnecessary strain on the existing state mechanisms such as RESS.

A shift to a more sustainable energy system will require a **transition period**. Complex interactions between supply and demand will take time to mature across multiple stakeholders.

**Q 2. Comments are invited from respondents on the need for onsite generation and storage capability for LEU connections. Please provide reasons and rationale for any views provided.**

On-site renewable generation does not always represent the optimum use of land or energy resources. Power densities and demand profiles are not necessarily complimentary.

We would like to highlight **our own experience** of challenges in planning of on-site storage. Often battery systems are modular, or containerised. For this reason, local authorities may only grant temporary approval for up to three years. The payback for a third-party provided battery system is 10 to 15 years.

Legislating for **private wire networks** would allow large projects to develop renewable energy projects of appropriate scale in reasonable proximity to demand. We welcome the recent launch of DECCs public consultation on private wire networks.

**Q 3. Comments are invited on the use of CPPAs for additionality of renewable generation outside of support schemes for decarbonising electricity consumption. What type of de-rating may be appropriate to reflect real-world performance of renewable generation during peak times. Please provide reasons and rationale for any views provided.**

A alternative approach might include requiring large energy users to over-procure renewable capacity against their demand in order to ensure real-world effects are countered. This could be ramped over time to allow the market to mature (e.g. 50% initially, rising to 110% over a period). The practicalities of contractual timelines and development timelines should also be catered for, especially for new connections.

## Demand flexibility

**Q 6. Comments are invited from respondents on enabling demand flexibility requirements as described above. Please provide reasons and rationale for any views provided.**

We would like to better understand the types of flexibility required to achieve specific system objectives – quantity (kWh, MWh) and duration (seconds, minutes, hours, days, weeks)? How will these requirements vary over time and geographically? – will the effect of flexibility be quantified and fine-tuned to match the transition?

The opportunity for flexible demand varies with the type of LEU. A batch-type process may lend itself to flexibility easily, where a data centre operates mostly a flat load profile. The electricity grid still needs flat predictable and stable baseload demand in order to grow with increased renewable penetration.

Whilst data centres can operate somewhat flexibly, the vast majority can only achieve this on the utility side of their operations. The data, or IT power load, remains part of wider cloud service, which is decoupled from the data centre operator's control. Flexibility also gets significantly more expensive and less optimum as it increases.

**Q 7. Are there other sources of flexibility that can be provided?**

Flexibility could be further incentivised by creating a carbon accounting mechanism to give carbon credit back to large energy users who deliver flexibility. Financial incentives are of limited value to data centres as their customer SLAs are based on power availability.

Data centres operate UPS systems coupled to batteries that can offer short-duration flexibility. Many data centres in Ireland already participate in demand response schemes.

## Real time zero carbon emissions

**Q 9. Comments are invited on real time zero carbon emissions, shifting of demand in real- time to times of high renewable energy availability. Please provide reasons and rationale for any views provided.**

At present, we are not aware of any national accounting of LEU *annual* net zero emissions for Ireland. Many corporates can demonstrate *global annual* net zero.

Ireland should first require LEUs to demonstrate *annual* procurement of *additional Irish* renewables to match their annual demand in Ireland. Once that mechanism is properly accounted for, then annual accounting could shift to monthly accounting, then daily, and so on over a number of years of operation. As the accounting period shortens, this obviously gets more expensive, and may lead to unintended consequences.

A shift to real-time zero carbon emissions will require a **transition period**.

## Definition of an LEU

**Q 10. Comments are invited from respondents on what they consider to be an appropriate definition of an LEU for electricity and gas for the purposes of this review. Please provide reasons and rationale for any views provided.**

Classification of energy users should be based on the cost of building and operating each utility system. A single definition of LEUs across gas and electricity utilities is not achievable in our view. We are not aware of any international examples.

It would be useful if the cost burden of developing and operating the electricity grid and gas system could be allocated to end users based on their demand characteristics, and how such characteristics benefit the grid. For example, flat profile, stable, and predictable baseload has a benefit in achieving higher renewable penetration.

**Q 11. Comments are invited from respondents on whether this review should only apply to Extra Large Energy Users (XLEUs) in relation to electricity. Please provide reasons and rationale for any views provided.**

The current policy for large energy users electricity grid connections (data centres specifically) represents a de-facto ban on data centre developments. This is contrary to stated government policy.

Application of new policies for large energy users should be based on optimising the overall electricity grid in favour of increased decarbonisation. Increased electricity demand is not necessarily counter to this objective, especially where such demand can support decarbonisation goals both technically and financially.

There are multiple business models in the data industry, resulting in data centres of different sizes and requirements. Not all data centres are the same.

## General questions

**Q 15. Please suggest any alternative approaches not captured above that could help in meeting the challenges outlined.**

We would like to highlight that the growth of digital infrastructure and the associated power challenge is not unique to Ireland. Policy decisions in other jurisdictions are worth monitoring as to the success or failure in the achievement of their desired effect.

We welcome DECCs private wire consultation and look forward to contributing to the detailed discussion on how private wire might enable sustainable LEU development.

Deployment of district heating networks needs to be accelerated. We have experienced frustration in trying to establish a district heating network in the vicinity of one of our facilities which is located close to a new housing development.

Business thrives on certainty – if the policies are clear then business will evaluate their options and deliver appropriate economically viable solutions.

mabs
Support CLG

# MABS Response to the CRU Public Consultation: 'Incentivising the Uptake of Time of Use Tariffs'

30 August 2023

## Introduction

MABS Support CLG welcomes the opportunity to provide feedback to the CRU regarding incentivising the uptake of time of use tariffs. Our response reflects the MABS' experience of debt and fuel poverty. In this submission, we specifically draw on the experiences of the National MABS Helpline and the national Casework Technical Support Unit (CTSU), which administers the MABS Hardship Funds with utility providers and supports MABS Money Advisers around the country in dealing with complex cases related to utility arrears and other debts.

We appreciate the CRU for taking the time to read our submission, and we welcome any opportunity to engage further in regards to any of the responses and proposed recommendations.

## Question 1

The CRU is proposing to amend the PCW accreditation framework to allow consumers to upload their smart meter data (obtained as a HDF via the ESBN Customer Portal) to receive a price comparison based on their actual historical electricity consumption. Do you agree with this approach? If not, why not?

**MABS Response: No (qualified - and should be read in conjunction with our response to Question 2)**

MABS notes the obligations on EU Member States and the subsequent requirement on the CRU, resulting from the 2019 Internal Electricity Market Directive, to ensure that household consumers will have access, free of charge, to at least one tool comparing the offers of suppliers. We welcome the availability of such a tool, especially given that it is free of charge to consumers currently facing sustained high energy prices. We also note the CRU's appointment as the competent authority for issuing trust marks to providers of such comparison tools.

We agree that with the introduction of time of use tariffs, it is becoming even more important to ensure that consumers are able to effectively and accurately compare tariffs available on the market. However, we have strong reservations regarding the period of historical usage currently provided by smart meters and acknowledged by the CRU in their Consultation Paper (see our response to Question 2 below). While the information available regarding the consumers' consumption is detailed, the period to which the information relates is too short and therefore militates against PCWs identifying the best tariffs available to the consumer. As such, we would caution against the CRU proposal to amend the PCW accreditation framework, and rather are in

favour of postponing the proposal until the period to which the usage information relates can be sufficiently broadened. We suggest that to amend the framework at this juncture may possibly damage not just the credibility of PCWs in the estimation of consumers, but also the credibility of the CRU as the competent authority for issuing trust marks to PCWs. Should this transpire, the uptake of Time of Use Tariffs would, we believe, be disincentivised.

## Question 2

The CRU is proposing not to put any restrictions on the minimum period of time that needs to be contained in smart meter consumption data that consumers can upload to the PCW. However, we propose that a warning message be included where consumers have included less than a year of data. Do you agree with this approach? If not, why not?

**MABS Response: No (qualified - and should be read in conjunction with our response to Question 1)**

The CRU is of the stated view that **one year of data** should be sufficient to provide as accurate a comparison as is possible, whilst also acknowledging that many consumers currently will not have access to a full year of data to use for price comparison purposes. Furthermore, the CRU stipulates that not having access to one year of usage data serves to limit the usefulness and effectiveness of price comparisons as it increases the risk of unreliable results.

Accordingly, MABS would again suggest that the CRU proposal not to put any restrictions on the minimum period of time that needs to be contained in smart meter consumption data that consumers can upload to the PCW, may lead to credibility issues for PCWs and the CRU that could also extend beyond consumers. As heretofore, we suggest that the CRU also reconsiders and postpones this proposal until a sufficient percentage of consumers have access to one year of energy usage data.

## Question 3

Is there anything else CRU should consider with regards to this matter?

**MABS Response: Yes**

At the moment, 93% of consumers with a smart meter have chosen to not have a time of use tariff. In our view, this high rejection rate would potentially be exacerbated if a warning message was included. Our experience at MABS is that consumers are currently experiencing immense stress due

to the effects of the current sustained cost of living crisis and therefore have depleted economic and social resources. We refer particularly to the significant annual change in electricity costs (+62.7%) and gas costs (+86.1%), as published by the Central Statistics Office in the Consumer Price Index as at February 2023.[1]

MABS recommends that the CRU engages with the "supply-side" of the energy industry, which has far greater resources than individual consumers, in order to seek resolutions to the current failure of smart meters to provide a sufficient usage period to assist consumers to better identify the best available tariffs.

## Question 4

In case a consumer submits a HDF containing periods of missing data, the CRU is proposing that the PCW takes the following actions:

- If the missing data accounts for less than 1% of the total dataset: the PCW must use the most recent ESBN load profile and calculate an estimate for the consumption during the missing period.
- If the missing data accounts for 1% or more of the total dataset: the PCW must inform the consumer that there is missing data, include the percentage of missing data, and ask if they wish to continue with the price comparison using an estimate for the missing data, as outlined above.

Do you agree with this approach? If not, why not?

**MABS Response: No**

As heretofore, MABS suggests that the CRU also reconsiders both these proposals in favour of postponing moving forward with these activities until a sufficient quantum of consumers have access to one year of data.

## Question 5

Is there anything else CRU should consider with regards to this matter?

**MABS Response: Yes**

MABS would again suggest that highest consideration must be given to ensuring that consumers trust the credibility of the CRU and the energy industry with this and other matters which are the

[1] https://www.cso.ie/en/releasesandpublications/ep/p-cpi/consumerpriceindexfebruary2023/

subject of proposals in this Consultation Paper.

## Question 6

The CRU would be interested in hearing whether respondents believe there is added value or not in allowing PCWs to ask consumers additional questions to identify their consumption behaviour, and tailor price comparisons. For example, whether a consumer has an Electric Vehicle.
If you believe there is added value in this approach, what guidelines, if any, do you believe the CRU should implement to ensure a minimum standard across PCWs?

**MABS Response:** We believe there is added value in allowing PCWs to ask consumers additional questions to identify their consumption behaviour, and tailor price comparisons.

We believe that the guideline the CRU should implement to ensure a minimum standard across PCWs (for personal data) is the General Data Protection Regulation.

## Question 7

The CRU proposes to require PCWs to implement the functionality to allow consumers to upload their smart meter consumption data (via HDF) from 1 January 2024. Do you agree with this approach? If not, why not?

**MABS Response: No (in conjunction with our response to Questions 1 and 2)**

In our response to Question 1, we noted the 2019 Internal Electricity Market Directive and the obligations therein on EU Member States and the subsequent requirement on the CRU, to ensure that household consumers will have access, free of charge, to at least one tool comparing the offers of suppliers. We also noted the CRU's appointment as the competent authority for issuing trust marks to providers of such comparison tools. However, we wish to take this opportunity to restate our strong reservations regarding the significantly curtailed period of historical usage currently provided by smart meters and acknowledged by the CRU, which militates against PCWs identifying the best tariffs available to the consumer. We therefore caution against the CRU proposal to require PCWs to implement the functionality to allow consumers to upload their smart meter consumption data (via HDF) from 1 January 2024.

## Question 8

Are there any other issues that you believe the CRU should take into consideration with

regards to the timeline?

**MABS Response: Yes (in conjunction with our response to Questions 1, 2 and 7)**

We believe that the CRU should consider postponing the proposal until the period to which the usage information relating to smart meter consumption can be sufficiently broadened to at least one year. We again suggest that to implement this requirement, in just over four months' time, may possibly damage not just the credibility of PCWs with consumers and those charged with their protection, but also the credibility of the CRU as the competent authority for issuing trust marks to PCWs, thereby further disincentivising the uptake of Time of Use Tariffs.

We therefore recommend that the CRU considers engaging with the "supply-side" of the energy industry in order to seek resolutions to the current failure of smart meters to provide a sufficient usage period to assist consumers to identify the best tariffs available to them.

## Question 9

The CRU proposes to amend the PCW accreditation framework to allow consumers to access price comparisons for microgeneration export tariffs between suppliers. It proposes consumers should be able to do this in one of two ways, either by submitting their actual (historical) export volume, or by submitting their deemed calculation. Do you agree with this approach? If not, why not?

**MABS Response: Yes (qualified)**

We note that that consumers who have a smart meter, **should** be able to input their actual metered export volume (in kWh), which they are able to access via their supplier bills or via the ESBN Customer Portal.

## Question 10

Are there any other issues that you believe the CRU should take into consideration with regards to this functionality?

**MABS Response: Yes**

We would suggest that the following procedure applies in circumstances where consumers who have a smart meter are not able to input their actual metered export volume (in kWh), via their supplier bills or via the ESBN Customer Portal. The PCW may proceed to use the deemed calculation as outlined in the 2021 CRU Decision Paper on Remuneration of Renewables Self-Consumers for

Exported Electricity, provided that this is explained to the consumer, the consumer consents and a record of each decision is retained by the PCW for a period in accordance with GDPR.

## Question 11

The CRU proposes to extend the requirement for an EAB to all tariffs available on the market, including time of use tariffs. Do you agree with this approach? If not, why not?

**MABS Response: Yes**

## Question 12

The CRU proposes to implement an EAB for all time of use tariffs from 1 January 2024. Do you agree with this timeline? If not, why not?

**MABS Response: No**

It is our view that a start date for the implementation of EAB for all time of use tariffs should be delayed post-2025 to correspond with the expected date for the issuance of load profiles for smart meter consumers as per the CRU's own estimation. The EAB for the Standard Smart Tariff is calculated using ESBN load profiles, but the CRU acknowledges that ESBN does not currently have sufficient profile data to develop load profiles for consumers on smart time of use tariffs. This would work against the primary objective of time of use tariffs which is to incentivise consumers to change their consumption behavior based on an EAB that is calculated using the predicted behavioural change of consumers on a perspective tariff.

## Question 13

With regards to the methodology for calculating an EAB for all time of use tariffs, the CRU proposes to use the demand-weighted approach, which is the same that is currently used for the Standard Smart Tariff and Day/Night tariff. Do you agree with this approach? If not, why not?

**MABS Response: No**

The CRU acknowledges that the disadvantage of using the demand-weighted approach for calculating an EAB for all time of use tariffs is because it uses the same load profile information as the Standard Smart Tariff and it assumes that consumers will maintain the same consumption pattern if they switch to the tailored tariff to which the EAB is applied. This, in our view, is clearly

counter intuitive, as the consumer will select a tailored tariff on the basis of a decision to adjust their consumption according to the tailored rates available.

## Question 14

Are there any other issues that you believe the CRU should take into consideration with regards to implementing an EAB for all time of use tariffs?

**MABS Response:**

As mentioned previously, we believe that the CRU should reflect on the appropriateness of using demand-weighted methodology when implementing an EAB for all time of use tariffs and instead reconsider the Tariff-specific EAB option, with the further requirement of CRU approval.

MABS believes that this option addresses our earlier call for innovation from suppliers (and indeed PCWs) and we note that the CRU agrees that it would allow them to develop their own EAB methodology for each tariff, based on their assumptions about consumers' consumption patterns and create the EAB accordingly.

We understand that if this methodology is applied, the CRU notes that suppliers and PCWs would continue to be expected to use either the average annual consumption set by the CRU (4,200 kWh) or an annual consumption figure provided by the consumer for their EAB calculations.

We would further support the sub-category of the requirement for CRU approval of this methodology as this approach would involve suppliers and PCWs submitting their EAB methodology to the CRU to ensure it meets basic principles around transparency, fairness, comparability and consistency.

We believe that consumers are in favour of further dynamism from Suppliers/PCWs. A major advantage of this approach is that consumers will view the CRU as a gatekeeper to ensure a minimum standard and comparability between EAB methodologies. We recognise the disadvantage cited by the CRU in the Consultation Paper – namely that it creates a time delay between development and implementation of a new EAB methodology. However, we believe this may not be as particularly relevant in a future context of a wider range of dynamic tariffs were our suggestion to postpone implementation of an EAB for all time of use tariffs to a date post 2025 be adopted.

## Question 15

The CRU proposes to increase the limit on the maximum number of time of use tariffs from four to eight from 1 October 2023. Do you agree with this approach? If not, why not?

**MABS Response: No (qualified - in conjunction with our response to Questions 1, 2, 3, 7 and 8)**

We note that the purpose of this measure would be to allow suppliers greater flexibility in offering a range of different time of use tariffs tailored to their customer base and that in the CRU's view, the advantage of this measure is that it would allow the potential for greater choice among customers in time of use tariffs. MABS always welcomes greater choice for customers, especially when such choice assists with maximising the customers' income. However, as stated previously, we have strong reservations regarding the significantly curtailed period of historical usage currently provided by smart meters and acknowledged by the CRU, which militates against PCWs identifying the best tariffs available to the consumer.

Accordingly, we believe that the proposed date of 1 October 2023 to increase the limit on the maximum number of time of use tariffs from four to eight should be postponed until the period to which the usage information relates can be sufficiently broadened.

We further note that Phase 1 of the NSMP went live on 26 February 2021 and that as of April 2023, approximately 7% of consumers with a smart meter availed of a time of use tariff (meaning that 93% of consumers did not avail of this product). We assume that there are several reasons for this rejection of the four current time of use tariffs by customers and respectfully suggest that perhaps the suppliers may not have tailored the existing tariffs to their customer base and their needs. This is worrying, and provides little reassurance that suppliers will act in this manner (as the CRU indicates they should) if the limit on time of use tariffs is doubled. We would further suggest that the CRU actively engages with all suppliers to ensure that their range of time of use tariffs, present and future, are indeed tailored to their customer base, with the prime object of such tailoring being that customers are presented with the following information as a minimum requirement:

1. Their current annual spend on their existing tariff
2. Their EAB, based on their present usage, should they move to the Standard Smart Tariff
3. Their EAB based on their present usage, should they move to a "tailored" Smart Tariff

We believe that an initiative such as this would help the CRU to achieve its stated aim of creating a more enabling environment where consumers have more information to help them decide whether

a time of use tariff is appropriate for them, and to be able to better compare tariffs.

## Question 16

The CRU proposes to end the limit on the maximum number of time of use tariffs from 1 April 2025. Do you agree with this approach? If not, why not?

**MABS Response: No (qualified - should be read in conjunction with our response to Question 15)**

We would question the CRU proposal to remove the limit on the maximum number of time of use tariffs from 1 April 2025, given the above proposal to increase the current maximum limit from four to eight time of use tariffs from 1 October 2023 (which we suggested should be postponed).

If the proposed date of 1 October 2023 is implemented, it would mean that the range of time of use tariffs presented to consumers would increase from a maximum of four as of 30 September 2023 to an unlimited number just 18 months later. We concur with the CRU's acknowledgement that the potential downside is that this might overload consumers with choice, in particular those consumers currently on a flat-rate tariff, and that a large (indeed unlimited) number of time of use tariffs being available on the market might be overwhelming and put consumers off engaging with time of use tariffs in general. We believe the fact that 93% of consumers did not avail of a time of use tariff in the 2-year period to April 2023 should act as a cautionary statistic in this regard. However, we feel ending the limit on the maximum number of time of use tariffs is a worthwhile objective in a well-functioning competitive market which maximises value for consumers. Accordingly, we suggest that this objective be postponed in tandem with the proposed date of 1 October 2023 until the effects on consumers (and in particular of the proposed 8-tariff environment, if implemented) can be gauged.

## Question 17

CRU would welcome any views on whether respondents consider it appropriate to schedule a review on the structure of the Standard Smart Tariff ahead of the completion of Phase 2 of the NSMP (currently scheduled for the second half of 2024).

**MABS Response: (see below)**

According to the Consultation Paper, the aim of this proposed earlier review would be to identify whether the Standard Smart Tariff is achieving its intended objective and acting as an 'entry-level'

time of use tariff, and a type of product that is easily compared amongst different suppliers. We believe that the Standard Smart Tariff is not currently achieving its intended objective when 93% of consumers with a smart meter have not availed of a time of use tariff. Therefore, we suggest that the proposed review should commence at the earliest possible date.

## Question 18

CRU would also welcome views from respondents on which issues should be considered in such a review. Respondents can specifically focus on the following questions, or provide their own views.

a) Is the Standard Smart Tariff achieving its purpose to be an easy to understand 'entry-point' to time of use tariffs for consumers?

**MABS Response: No**

Taking the 93% rate of non-availment in isolation, it appears that the Standard Smart Tariff has failed to act as an 'entry-level' time of use tariff.

b) Do you have any concerns or recommendations in relation to the Day/Night/Peak structure of the Standard Smart Tariff, including the hours assigned to each time band?

**MABS Response: Yes (re recommendations)**

Day: 8am to 11pm (excluding 'Peak') = 15 hours of "daytime".

We recommend that this period be amended to 8am to 7pm = 11 hours

Night: 11pm to 8am = 9 hours

We recommend that this period be amended to 7pm to 8am = 13 hours

Peak: 5pm to 7pm = 2 hours

We recommend that this period be amended to 6pm to 7pm = 1 hour

**MABS Response: Yes (re concerns)**

We have a concern that the hours currently assigned to each time band do not reflect the reality of day-day living for the vast majority of people in Ireland. For example, (and taking our above recommendations into account) currently classifying the hours between 7pm and 11pm as "Day". Accordingly, we believe that suppliers should be far more innovative and incentivise consumers to

change their usage pattern and consider switching to a product such as time of use tariff by making it cost effective for them to do so with the least disruption to their daily lives.

Is it realistic, given the reality of long work commutes in Ireland, to use just one example, to expect consumers to operate washing machines and dryers between the hours of 11pm and 8am (particularly in the November to March period), in order to avail of cheaper "Night" rates? The CRU's own figures lead us to believe that it is not realistic. We are advised that for many years, consumers have been able to make use of Day/Night tariffs using a Day/Night meter, which charges cheaper rates for electricity at night. The CRU informs us that approximately 300,000 consumers in Ireland avail of such a tariff and that at the end of Phase 2 (of NSMP), it is expected that approximately two million homes and businesses will have a smart meter installed. This ties in with our estimation that the size of the current market is circa 2.5 million electricity meters.[2]

Accordingly, 12% of consumers, i.e. 300,000/2,500,000 currently avail of Day/Night tariffs - meaning that 88% of consumers have chosen not to. Hence, our concern that suppliers have historically lacked innovation, perhaps understandable in the former near-monopoly market - but puzzling in today's market featuring many competitors which should be maximising value for consumers. Therefore, we suggest that suppliers need to incentivise consumers to change their usage pattern and consider switching to such as the Standard Smart Tariff by making it cost effective for them to do so. This can be achieved by shortening the "Day" and "Peak" bands and broadening the "Night" band to enable consumers to avail of cheaper rates for electricity during our proposed longer "Night" period which we posit reflects the reality of the pattern of daily life for the vast majority of people living in Ireland. Accordingly, we recommend amendments to the time bands as follows:

- Day to be amended to 8am to 7pm
- Night to be amended to 7pm to 8am
- Peak to be amended to 6pm to 7pm

c) In light of the proposed measure to extend the maximum number of time of use tariffs for each supplier from four to eight, do you see a continued need for the Standard Smart Tariff?

**MABS Response: Yes**

[2] https://www.cso.ie/en/releasesandpublications/fp/fp-psolom/pulsesurveyourlivesourmoney-octobertonovember2022/keyfindings/

The Standard Smart Tariff ensures that consumers have a simple form of time of use tariff to allow them to compare and contrast across electricity suppliers.

d) Are there any other issues related to the Standard Smart Tariff you believe the CRU should take into consideration in a future review?

**MABS Response: Yes**

We suggest that any future review would:

- Survey consumers to ascertain what they perceive the benefits of smart metering to be and whether the perceived benefits are sufficient to instigate a switch to the Standard Smart Tariff (or any time of use tariff).
- Survey suppliers, particularly focussing on their proposed innovations regarding reduction of the non-availment rate of the current Standard Smart Tariff (and other current and proposed time of use tariffs), given the implication from the 93% non-availment rate that Irish consumers are not availing of smart metering at almost every level – not just (Standard Smart Tariff) entry level.
- Question whether the CRU are prioritising the benefits of time of use tariffs to the environment and the electricity grid above the benefits to consumers.
- Question whether consumers prioritise the benefit of cheaper electricity, delivered to them via competitive tariffs (of whatever hue) above the claimed benefits of time of use tariffs to the environment and the electricity grid.
- Include an analysis of the changed composition of Irish households, including the increase in the numbers of "adult-children" currently residing with their parents due to the challenges in the housing market and the effects of this changed household composition on the usage of electricity.

## Question 19

CRU would welcome any additional suggestions to incentivise the uptake of time of use tariffs.

**MABS Response:**

We have four additional suggestions based on MABS clients and their experiences: (1) including a cooling off period, (2) ensuring tariff comparison information is accessible and readily available, (3)

addressing the specific challenges faced by renters, and (4) promoting energy literacy for all.

1. Including a cooling off period: In the case that a customer is out of contract and renewing or a new customer to a supplier, we argue that they should be afforded a cooling off period after accepting a tariff. In our view, until persons see the impact i.e. a first bill on the new tariff, they will not really know if it works for them.
2. Information, accessibility and tariff comparisons: While we welcome competitive tariffs, suppliers must invest and resource in an easily accessible alternative tool for consumers to compare offerings and to understand the differences between tariffs. This information may be confusing, and websites are not always accessible to everyone (in particular those who face digital exclusion). It is imperative that suppliers invest in adequate personnel and customer support teams to ensure information is accessible over the phone. In many cases, if normal phone lines are busy, people will not hold. Customer care teams should be available to discuss tariffs and time of use options in plain English, as well as have knowledge of how these tariffs engage with different systems, such as those that may require particular time of use attention (for example, heat pump systems, storage heaters, etc.) For instance, tenants in rental properties may have had a system fitted and customer does not know how to use in most efficiently.
3. Challenges for renters: We also suggest that particular attention is required where the dwelling is registered with a supplier under the landlord's name. We see this frequently with clients to MABS, as tenants may not understand the energy systems they have in their homes and the landlord receives the correspondence in relation to the usage. Efforts to reach these tenants through mail shots and sending people to websites frequently are ineffective. At MABS we do encourage clients to speak directly to suppliers to discuss usage but again we have no measure of how successful these efforts are. In such cases, it would be ideal if all suppliers had a dedicated line for MABS staff to access when working with clients (in particular during busy hours) that allowed them to speak to someone quickly and bypass being put on hold.
4. Supporting energy literacy: In our view, financial literacy and energy literacy are intrinsically linked. In the end, consumers need to be empowered with the knowledge of how to make informed choices concerning their home energy tariffs and where to access accurate and up to date information in case they have questions. At the same time, suitable and affordable home energy products and tariffs need to be available to all households.

Thank you for taking the time to read our submission, and we welcome any opportunity to engage further with the CRU in regards to our responses and proposed recommendations.

If there are any further questions on this, please contact:

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# Energy Demand Strategy Call for Evidence:
## Submission to Commission for Regulation of Utilities

August 24th 2023

*Barry Hayes, Paul Deane, Hannah Daly.*

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**Introduction**

**University College Cork and MaREI welcome the opportunity to respond to this consultation. MaREI is the SFI Research Centre for Energy, Climate and Marine research and innovation co-ordinated by the Environmental Research Institute (ERI) at University College Cork. The Centre comprises over 220 researchers focusing on defined global challenges such as the Energy Transition, Climate Action and the Blue Economy.**

**For this consultation we have provided individual feedback from three core researchers (Dr Barry Hayes, Dr Paul Deane, and Prof Hannah Daly) and have provided the feedback in the sections.**

## Input from Dr Barry Hayes

**Regarding "Incentivising the Uptake of Time of Use Tariffs"**

I wish to offer my perspective on the scenarios, and the assumptions and strategy outlined in the "Scenarios for 15-20% Flexible Demand" report. I hope that this feedback is useful and constructive. My feedback is provided in eight numbered points below.

1. Overall, this report is very important and timely and is comprehensive in terms of its scope.

3. A weakness of the report overall is a lack of discussion on the coordination of flexibility procurement between the TSO and DSO. The role of EirGrid is barely mentioned throughout the document. This was surprising, since I would have expected a very close level of coordination and interaction between the TSO and DSO in a national strategy to achieve 15-20% demand flexibility.
4. It is unclear from the document where ESBN see the present-day situation in terms of flexible demand. We are targeting 15-20% flexible demand, but what percentage flexible demand are we starting from? Without a clear understanding of the current situation, it is difficult to assess whether the scenarios and assumptions are realistic.
5. The terminology use for energy storage is unclear, particularly in the early sections of the report. In discussing various energy storage options, the phrases "long term", "medium term", "4+ hours", and "long duration" are all used, and used almost interchangeably. It may be best to clarify upfront what terminology will be used for energy storage and specify early in the report exactly what is considered "medium" and "long term".
6. In the "Industrial" section, it is very unclear how LEUs (the vast majority of which are data centres) can be motivated/incentivised to provide grid flexibility services. It is notable that

despite the extremely large penetration of data centre LEUs in Ireland, grid flexibility services are in general not provided from data centres. Much more work is required on how grid flexibility from data centres can be realised at scale, how this should be coordinated with the TSO, what is required from CRU in this context, etc.

7. In the demand response trials referenced in the report, the peak demand reduction figures are impressive, but based on a small number of demand response events (one event in the case of the Burlington study referenced). It should not be assumed that similar levels of peak demand reduction can be achieved and sustained over a long period of time in Ireland. There is a large body of international research in the field of power systems demand management which shows that demand response measures that rely on manual responses from electricity customers are not sustained in the long term. Electricity users may be motivated in the early stages of a new, well-publicised initiative to make manual/behavioural changes in response to a price signal, but will become progressively less engaged over time, or in other words, will get bored quickly. It would be much better to focus efforts on supplying or incentivising the uptake of tools to automate demand management in the residential and small-scale commercial contexts.
8. The CVR initiative is very welcome, and the CVR trial results are encouraging. It could be argued that CVR is an energy efficiency measure and not demand flexibility as such. However, CVR may have some benefit as an additional tool for achieving carbon reduction through reduced overall system demand. It would be worth considering a "Volt-Var Optimisation" (VVO) approach rather than CVR as we move towards future networks with high penetrations of DER. VVO can achieve optimal solutions that consider all the network voltage control capabilities, active/reactive power flows, and losses. It is also worth noting that CVR may not be as effective in future networks, as the electrical characteristics of the aggregate load evolve. The proportion of load that is connected via power electronics is increasing rapidly, and this load is typically considered "constant power" load, and therefore not contributing to CVR demand reduction.

**Regarding "Incentivising the Uptake of Time of Use Tariffs"**

In response to the "Incentivising the Uptake of Time of Use Tariffs" consultation paper, my feedback is as follows.

I agree with all of the proposed measures and the approaches used by the CRU in Section 2.1 "Accreditation framework Price Comparison Websites" and Section 2.2 "Estimated Annual Bill for time of use tariffs", covering Questions 1-14 inclusive.

For Section 2.3, "Limitation on the number of time of use tariffs", I believe that there is a significant risk that consumers will be overloaded with choice if a wider range of time of use tariffs are introduced at this stage. In my view, the risk of overwhelming consumers outweighs any potential

benefits from increasing the maximum number of time of use tariffs at this time, given that we are still at a very early stage in the transition to smart tariffs with relatively low consumer uptake. I believe there is value in keeping the limit on the number of time of use tariffs until the end of Phase 2 (Question 18), and there should not be any urgency in ending the limit the maximum number of time of use tariffs (Question 19).

With regard to Section 2.4 "Call for evidence on Standard Smart Tariff structure review", it is appropriate to schedule a review on the structure of the Standard Smart Tariff at the end of Phase 2. The Standard Smart Tariff should be maintained for now since it has a value in providing an easy to understand "entry-point" for consumers.

**Regarding "Review of Large Energy Users Connection Policy"**

In response to the "Review of Large Energy Users Connection Policy" consultation paper, my feedback is as follows.

I agree that this review should focus on the larger end of the LEU categorisation on the basis that XLEU demand is having a far greater impact on the electricity system. In my view, defining the scope of a LEU should be based solely on the size of the connection in MW (or MVA), since this reflects the level of impact on the electricity system. The scope of a LEU should not be defined in such a way that it discriminates specific classes of energy user (e.g., data centres), nor should it be based on whether the LEU is transmission- or distribution-connected.

CPPAs will not be effective for decarbonising electricity consumption as we reach 2030 and beyond, given the nature of the Irish electricity network and the growing challenges of oversupply and renewable curtailment. Rather than using CPPAs with some form of de-rating to account for the real-world performance of renewable generation, the focus should instead be on moving towards real time zero carbon emissions methods, with the requirement to demonstrate matching of LEU demand to available renewable energy connected to the Irish electricity system. This matching to zero carbon generation needs to be calculated as close to real time as possible and independently verified, using timesteps of one hour or less over the course of each year, i.e., the "24/7 zero carbon energy" approach[1].

It seems prudent that all new LEU connections should have a requirement to achieve net zero emissions at the time of connection. With regard to new demand flexibility measures, I agree with the approach that mandatory demand flexibility requirements should be introduced for new LEU connections. The level of demand flexibility required from LEUs should be in line with the Climate Action Plan objectives (i.e., achieving 20-30% demand flexibility by 2030). This could be achieved via a range of demand flexibility measures, and could involve a combination of on-site generation and/or storage as well as shifting of demand in real-time and shifting demand by location. Any new

[1] United Nations, The 24/7 Carbon Free Energy Compact, https://www.un.org/sites/un2.un.org/files/2021/10/24-7cfe_compact_-_v2_updated.pdf (accessed July 2023).

requirements should preclude the use of fossil-fuel based generation to provide this demand flexibility.

A significant challenge lies incentivising demand flexibility from LEUs with existing grid connection agreements. Efforts to incentivise demand flexibility from data centre LEUs have not been successful to date. The possibility of introducing mandatory demand flexibility minimum requirement for all LEUs, including both new and existing LEUs should be considered, again in line with Climate Action Plan demand flexibility targets.

Alternative approaches for LEU grid connection and integration should also be given consideration, including private wire and microgrid solutions. This could present new opportunities and alternative routes to market for future offshore wind projects and community-owned renewable energy projects. As above, it would be important to ensure that private wire or microgrid solutions do not involve fossil-fuel based generation as the primary energy source.

New types of non-firm and hybrid grid connections (e.g., the "dynamic operating envelope" concept[2]) should also be considered for application in the Irish electricity system. This could help to allow more efficient use of the limited available grid capacity for both demand and generator connections, while ensuring security of supply is maintained.

[2] ARENA, Dynamic Operating Envelopes Workstream, https://arena.gov.au/knowledge-innovation/distributed-energy-integration-program/dynamic-operating-envelopes-workstream/ (accessed July 2023).

## Input by Dr Paul Deane

**Q1. What are stakeholder's views on the stated aims of the project? Are there barriers to achieving a successful outcome of implementing an energy demand strategy to meet project climate objectives (viz. carbon emissions reduction)? Are there areas that could benefit from greater policy and regulatory clarity? Are there areas where further alignment between the relevant entities (e.g. state agencies, corporate obligations) to coordinate and enable the delivery of an energy demand strategy would be beneficial?**

**Detailed Response:** Climate action is fundamentally about reducing greenhouse gas pollution to avoid harm to our atmosphere.

Recent EPA Reports demonstrate that current policies and projected levels of energy demand will mean missing Ireland's economy wide climate targets (Climate Action and Low Carbon Development Act (Amendment) 2021 (Climate Act)) for 2030 by between 117 to 170 million tonnes of CO2eq.

The analysis also points to the power sector missing its targets under the ambitious 'With Additional Measures Scenario' by approximately 13 million tonnes of CO2eq.

For the power sector, with 49% of its allocated sectorial budget already used, annual emissions reductions of 17% are now required from 2023-25 to stay within the first 2021-25 budget.

There is a strong understanding of renewable energy targets in Ireland, but renewable targets are a poor poxy for determining progress for the recent climate legislation as the same renewable energy target of 80% will deliver different emissions outcomes (between 3.2 and 4.0 million tonnes of CO2eq) for different levels of projected 2030 demand from EirGrid.

Carbon budgets are the best measure of climate action because they reflect the science which tells us that it is the cumulative building up of emissions in the atmosphere that is the driver for climate change rather than emissions at some point in time.

The introduction of carbon budgets, which represent the total amount of emissions that may be emitted over a defined period, will profoundly shape the contours of the energy and electricity landscape in Ireland over the next 8 years.

Carbon budgets don't necessarily change what policy interventions should happen, but they do impact the timing of interventions and place an equal emphasis on demand side measures and early action rather than just supply-side technologies.

Staying within this carbon budget for the power sector will require a massive increase in renewables such as wind and solar to reduce emissions but will also require us to address growing large energy user demand.

For example, the 1.2 TWh of new data centre demand added to the Irish grid in 2022 will add approximately **1.9 Million tonnes of COeq2 in the period 2022 to 2030**. This number is based on carbon intensities from the EPA (With Additional Measures Scenario) and median electricity demand projections from EirGrid. Given that the power sector is already behind on targets, continuing to add new demand from Large Energy Users at such levels will increase the gap to targets.

Analysis (figure 1) from EirGrid's Shaping Our Electricity Future

Further modelling and analysis that informed and supported the preparation of Climate Action Plan 2023 shows the carbon budgets being exceeded when high and median demand levels are used in conjunction with different levels of renewable deployment and storage.

In UCC, I have been unable to chart a credible route to achieving the emissions budgets to 2030 with dedicated power system modelling for median (45 TWh) and high l (50 TWh) levels of demand. These outcomes point to the need to explore lower demand scenarios (40 TWh as per EirGrid's Low Demand Scenario) to the period 2030 to stay within the legislated carbon budgets for the sector as following the median and high levels of demand are not compatible with achieving our legislated carbon budgets.

Carbon budget may still be missed with a low demand trajectory but will be missed by a lower amount. For example, for the same level of emissions intensity from EPA's recent projections the carbon cost of the following a medium and high demand scenario is 4 million tonnes and 8 million tonnes higher than a low demand scenario in the period to 2030.

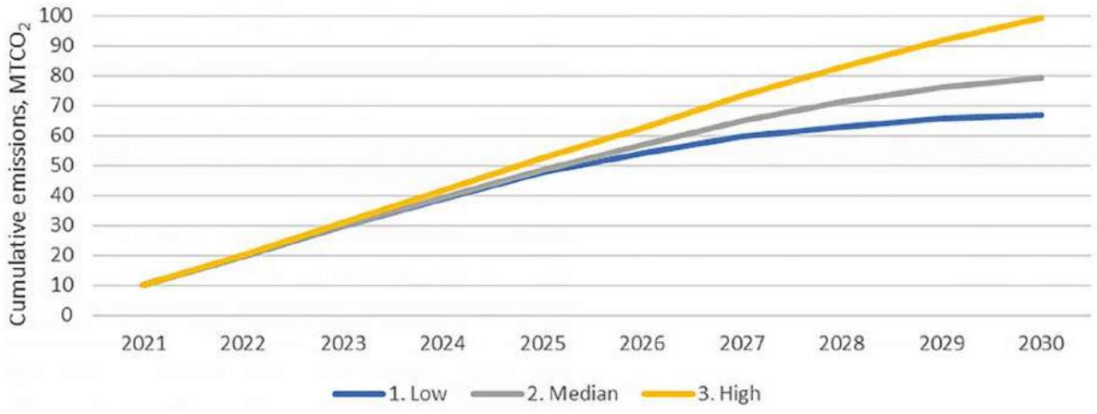



*Figure 21: Cumulative carbon dioxide emissions for the low, median and high scenarios for Ireland*

*Figure 1: Image Taken from EirGrid Shaping-Our-Electricity-Future-Roadmap_Version-1.1_07.23.pdf*

described here. The question is better framed as whether Ireland can accommodate an increase in electricity demand and meet our legislated climate targets in the timeframe to 2030. The balance of available evidence shows this is not possible.

Growing electricity demand from data centres is different to growing electricity demand from transport and heating in two distinct ways.

1) New load from heating and transport contribute to the decarbonisation to the wider economy by relacing polluting fossil fuels from existing systems whereas data centre brings new additional loads.

2) The absolute volume of heating and transport loads is gradual and becomes more significant after 2025 when the power sector will have decarbonised further. This means it has a lower cumulative emissions impact than data centre loads which have a high absolute volume in the period to 2025 when the power sector carbon intensity is still high. While Ireland has a high share of variable renewable it has a carbon intensity equivalent to the EU average meaning emissions are hight per unit of demand.

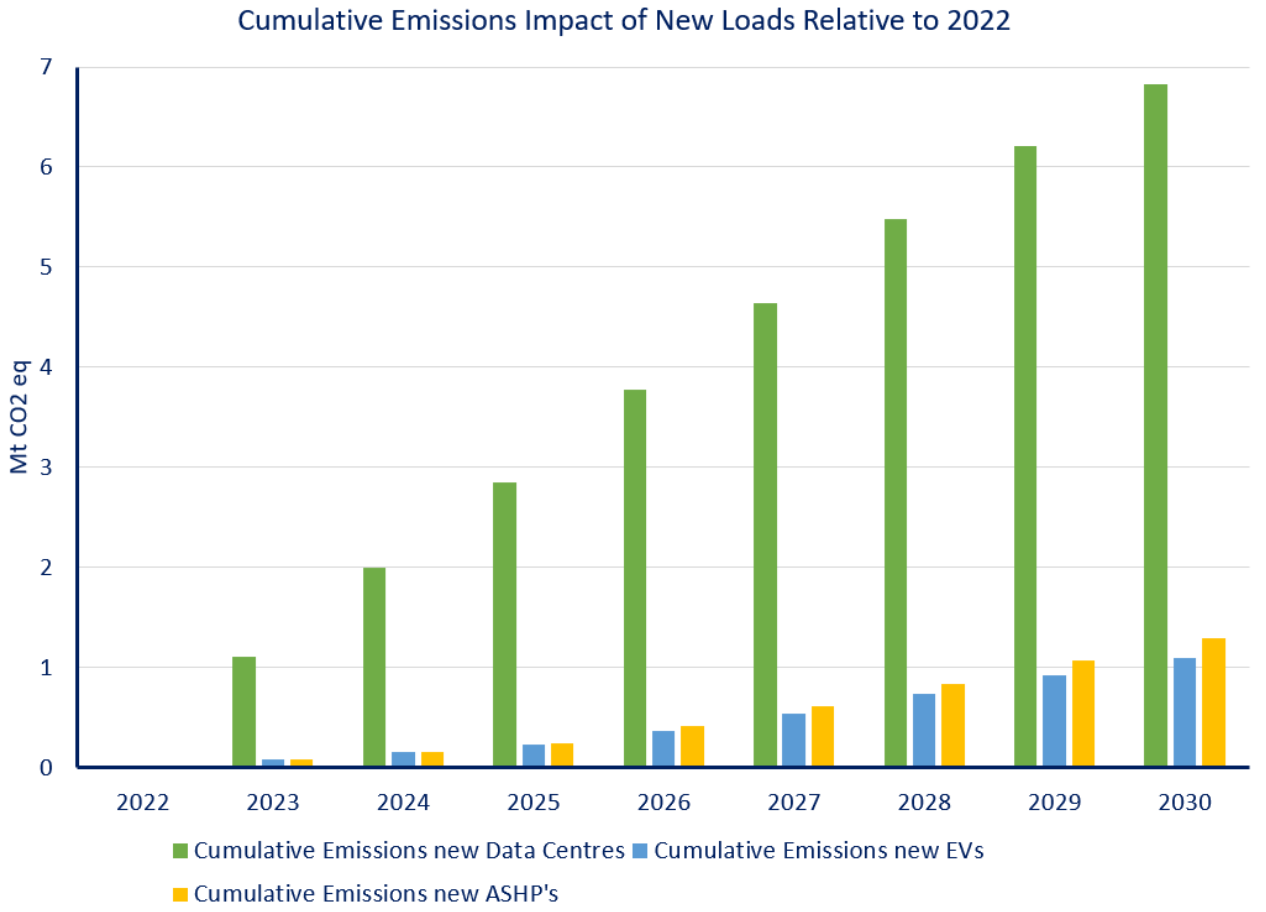



*Figure 2 Cumulative Emissions new loads based on EirGrid Median demand scenario and EPA With Additional Measures Scenario*

The analysis highlights the need for immediate remedial measures to increase supply side measures (increase renewables) while in parallel reduce demand side additional loads that do not decarbonise other sectors of the economy.

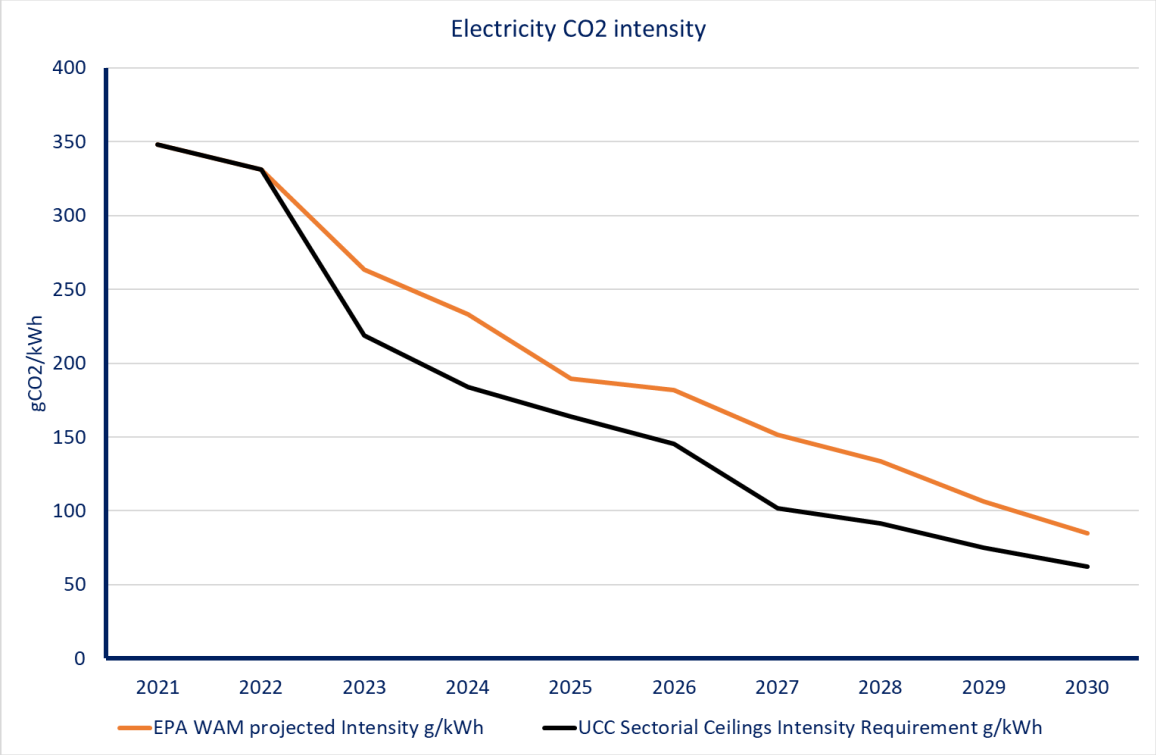



*Figure 3: Projected carbon intensity (g/kWh) of power sector in Ireland based (Orange) on EPA projections of current and additional policies and (black) UCC analysis that aligns with sectorial ceilings. Note that simplified average carbon intensities are presented rather than fuel weighted average which are slightly higher.*

On a final point, co-ordinated measures across institutions are required to ensure that overall electricity and gas demand is consistent with Ireland's carbon sectoral emissions ceilings. Climate literacy needs be improved across the energy industry and its institutions in Ireland to keep pace with climate legislation. I recommend that both Gas Network Ireland's Gas Forecasts and Statements and EirGrid electricity Demand Projections be presented in both Annual Energy (TWh) and Emission (Mt CO2eq) terms (absolute and cumulative emissions) to assist the understanding of this climate policy challenge across the sectors.

## Input by Professor Hannah Daly:

**Net-zero and GHG trajectories post-2030**

The core project objective include the support of the delivery of Ireland's transition to reach net-zero emissions by 2050. Planning to meet net-zero GHG emissions at 2050 for the electricity a is likely to lead to a mis-alignment between energy sector investments and policies, and the pace of decarbonisation that is likely to be required post-2030. The Climate Act specifies that climate neutrality should be achieved by 2050 *at the latest*: as for the period to 2030, the main binding constraint on energy system GHG emissions will be carbon budgets, which will become very restricted. Remaining carbon budgets in the 2040s could likely need to be kept for sources of emissions which have limited technical abatement potential, such as industrial processes, aviation and shipping, and agriculture. Recently the European Scientific Advisory Board on Climate Change (the EU equivalent to the CCAC) has recommended that EU greenhouse gas emissions should fall to close to net-zero by 2040, not 2050[3]. Moreover, Ireland is on track to overshoot its first two carbon budgets substantially. This overshoot will be carried forward to carbon budgets in the 2030s and based on current GHG pathways, this implies a very low carbon budget in that period. Figure 1

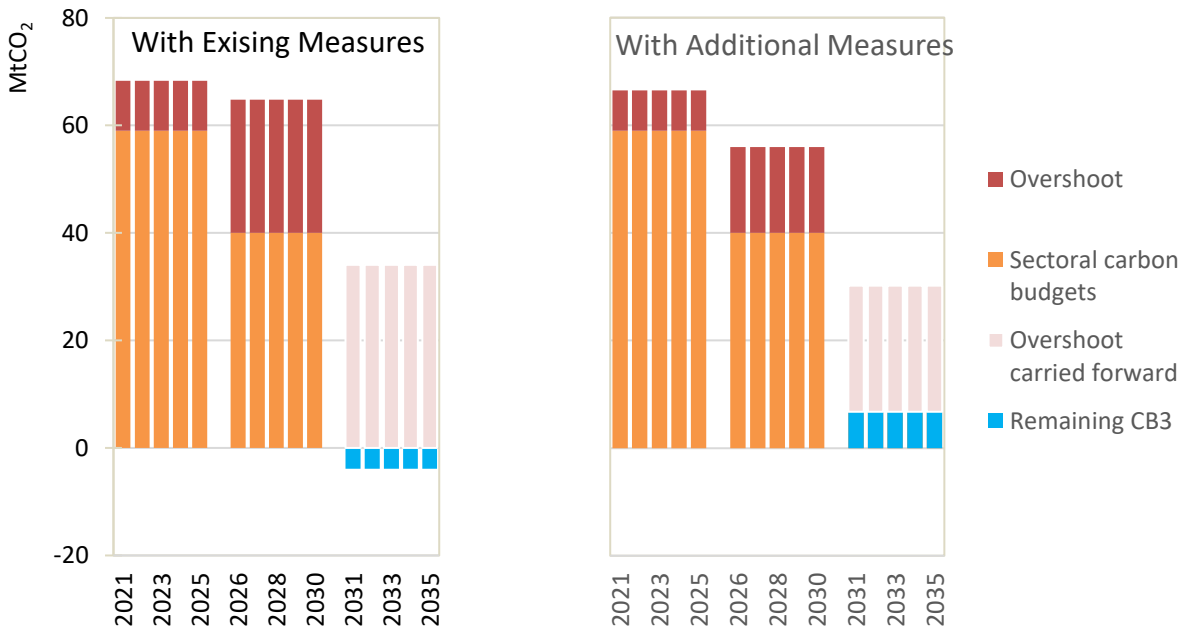



*Figure 1: Projected GHG emissions in EPA "With Existing" and "With Additional" measures, relative to carbon budgets 1-3*

[3] https://climate-advisory-board.europa.eu/news/eu-climate-advisory-board-recommends-ambitious-2040-climate-target-and-urgent-transitions-for-the-european-union

*The implications of this insight are a strong likelihood for need for the electricity and gas networks to phase out the vast majority of unabated fossil fuels in the 2030s, rather than by 2050. Therefore all demand scenarios, and new investments from now should be "future proofed", and made compatible with being zero-carbon in their lifetime.*

This is relevant for new gas turbines, which are reported to be capable of blending hydrogen at 35-50% by volume. Because of hydrogen's lower volumetric energy density, this blend will only deliver GHG savings of 15-24% relative to turbines running fully on natural gas. These GHG savings will be further diminished if the hydrogen is derived from grid electricity (in which case there may be zero or negative GHG savings) or renewable energy sources that would otherwise be directed to the grid. This is also relevant for any new capital investments which run on fossil fuels, such as vehicles and boilers. These are likely to be stranded assets should carbon budgets be adhered to.

**Distinguish between electricity demand growth that assists and threaten carbon budget delivery**

As outlined above, strong additional electricity demand growth threatens the delivery of the sectoral emissions ceiling for the power sector. However, it is important and necessary to distinguish between additional electricity demand that aids and assists carbon budget delivery, and that which threatens and risks it.

Any form of additional electricity demand growth that is as a result of shifting from fossil fuels that directly fuelled heat, industry or transport is necessary to deliver overall carbon budgets. While it creates an additional burden on the delivery of the power sector's sectoral emissions ceiling, electrification is the central mitigation lever for end-use sectors, and the availability of low-carbon power to those sectors is the key bottleneck for decarbonisation. However, it is in the interest of delivery of the power sector's emission ceiling that end-use electrification happen in the most efficient way possible. For example, directly electrifying building heating would create substantial additional burden on the power sector (and local distribution networks) relative to a strategy of electrifying heat through heat pumps combined with building thermal retrofit. Similarly, a transport decarbonisation strategy which focusses on shifting away from car use and smaller, more efficient cars along with electrification will demand less electricity than one which focuses on vehicle electrification alone. *Therefore, we recommend that the CRU endorse and support efficiency measures across end-use sectors in support of the power sector emissions ceiling.*

In contrast, any form of additional electricity (or energy) demand growth which is not from shifting demand from other sectors will threaten carbon budget delivery. This includes data centres and other large energy users, as outlined above. It also includes the production of green hydrogen from electricity that could otherwise be used to directly electrify end-use sectors or replace fossil fuels in the energy system.

Review of Large Energy Users connection policy

**LEU addition of net-zero demand.**

"The CRU is of the view that LEUs can lead the way by putting in place measures to ensure that their subsequent demand results in net zero emissions starting from the time of connection" (Section 3.1)

Any wind or solar energy projects contracted specifically for LEUs or that are brought about in a way which replaces or delays wind and solar projects that would otherwise decarbonise existing electricity supply, for example, through delays in planning, will increase greenhouse gas emissions. There would be benefit in establishing an "additionality" test to establish that the renewable generation procured for a CPPA are indeed additional, and would not have been brought about without the LEU project.

Regarding HVO, there is significant concern about its genuine sustainability, given that large quantities of HVO and its feedstocks are imported from countries where deforestation is driven by palm oil production[4]. We recommend that any HVO used to serve additional sources of energy demand should be sourced from feedstocks fully traced to wases generated in the EU.

**Renewable gas credits**

It would be welcome for the CRU to acknowledge that any new source of direct fossil fuel demand, for example through LEU connecting directly to the gas network or using diesel-powered generators, will post a significant risk to carbon budget delivery. It is not clear that a "renewable gas credit" mechanism will help reduce overall energy system GHG emissions. GHGs are accounted for within the sector they are emitted, and the Climate Act or carbon budget does not allow for a mechanism to allocate credits from one sector to another. Furthermore, any "renewable gas" (biogas or hydrogen) is likely to be needed to decarbonise harder to abate sectors, like high temperature heat for industry and/or act as a long-term store of energy to complement wind and solar energy. Diverting zero carbon fuels from other sectors will not lead to an overall decrease in GHG emissions. If "renewable gas" is sourced from hydrogen generated from wind or solar energy that would otherwise be directed into decarbonising existing supply, this would similarly raise emissions.

**Heat networks and thermal storage**

Zero-carbon district heating are increasingly likely to play a significant role in decarbonising buildings. Heat networks could play an important role in "sector coupling", flexibly balancing energy supply and demand, and storing energy through thermal sinks and batteries. A number of studies have found that heat networks are a cost-effective way of decarbonising a large share of building heating needs. Thermal batteries tend to be more energy efficient than other forms of storage.

[4] https://www.irishtimes.com/environment/climate-crisis/2023/06/01/the-trouble-with-renewable-diesel/



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# Commission for Regulation of Utilities
# Call for Evidence on Large Energy User Connection Policy

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Q.1 Comments are invited from stakeholders on the proposed approach of decarbonising energy demand with a view to achieving net zero emissions from LEUs at time of connection. Please provide reasons and rationale for any views provided.

Response
All new LEUs should be located outside of constrained and congested areas on the East coast and located adjacent to renewable energy centres on the West coast and in the Midlands.
This policy would contribute directly to decarbonizing the activities involved and would also

regional development.
By encouraging a more distributed model of generation and energy use it would assist in developing more sustainable and robust energy and transportation networks and accommodate a growing population and increasing demand for critical digital infrastructure.

Q.2 Comments are invited from respondents on the need for onsite generation and storage capability for LEU connections. Please provide reasons and rationale for any views provided.

Response
A combination of on-site generation and storage capability is a rational strategy.
It is critical that investment to upgrade both electrical and gas grids to support this strategy is plan led and seeks to deliver on national objectives including delivery of a balanced sustainable island rather than continuing to respond to consumer or developer demand.

Q.3 Comments are invited on the use of CPPAs for additionality of renewable generation outside of support schemes for decarbonising electricity consumption. What type of de-rating may be appropriate to reflect real-world performance of renewable generation during peak times? Please provide reasons and rationale for any views provided.

Response
CPPAs have the capacity to bring certainty to renewable energy projects and to support the core investment required to make these projects financeable.
This will in and of itself encourage additional generation which will support more marginal storage and conversion projects such as pumped hydro. The question of de-
usefully form part of the next phase of the discussion.

Q.4 Based on preference that renewable electricity and /or gas contributes to Ireland's emissions targets and security of supply, do respondents have a view in relation to how electricity feeding into Irish system and renewable gas credits feeding into the Irish system could be tracked?

Response
We should be looking to match best international practice in this area.
EU countries with a more developed biogas industry including Germany and Denmark would be useful models to emulate.

Q.5 Comments are invited from stakeholders on the use of renewable gas credits (feeding into the Irish natural gas system) in order to facilitate the connection of gas demand to the system. Please provide reasons and rationale for any views provided

Response
MEG would welcome the use of renewable gas credits to support the development and growth of the bio-energy sector.
This sector has the potential to contribute to delivery of national targets as part of a diverse and integrated energy portfolio. Support for the initial stages of the development of a bio-methane market will be particularly crucial to encourage and support the significant long term investments required.

Q.6 Comments are invited from respondents on enabling demand flexibility requirements as described above. Please provide reasons and rationale for any views provided.

Response
Demand flexibility is a challenging area for large infrastructure projects and LEUs.
It may bring a degree of flexibility to the overall energy demand but will need creative and flexible approaches from both LEUs and generators and is likely to be a relatively small part of the national energy portfolio.

Q.7 Are there other sources of flexibility that can be provided?

Response
A comprehensive policy on Private Wire Connection might be helpful in this regard.
It could enable deployment of private investment and resources at scale to deliver additional capacity and reduce pressure at critical points.

Q.8 Comments are invited from respondents on the introduction of interruptible type supply contracts for gas connections. Please provide reasons and rationale for any views provided.

Response
The concept of interruptible gas connections is challenging.
Most LEUs will need some certainty of supply when renewable generation is constrained and gas is one of the few viable options available. The development of robust biomass and biogas supply chains would help in this regard and needs to form part of a comprehensive energy portfolio.

Q.9 Comments are invited on real time zero carbon emissions, shifting of demand in real-time to times of high renewable energy availability. Please provide reasons and rationale for any views provided.

Response
Locating LEUs adjacent to Renewable Energy Hubs is key to moving towards real time zero carbon emissions.
A supportive suite of policies covering PPAs and extensive Private Wire Networks is needed to move towards this target.

Q.10 Comments are invited from respondents on what they consider to be an appropriate definition of an LEU for electricity and gas for the purposes of this review. Please provide reasons and rationale for any views provided.

Response
50–100MW would appear to be a reasonable range for definition as a LEU.
Beyond 100MW might be considered as XLEU and may merit a separate discussion exercise.

Q.11 Comments are invited from respondents on whether this review should only apply to Extra Large Energy Users (XLEUs) in relation to electricity. Please provide reasons and rationale for any views provided.

Response
The current uncertainty regarding connection policy is seriously damaging and the consultation process needs to be accelerated to conclusion.
Any consultation exercise for XLEUs should be undertaken as a standalone exercise and should not delay the delivery of a coherent policy solution which will unlock the current very damaging logjam.

Q.12 Comments are invited for gas LEU definition of those with a peak hourly demand

provide rationale for any views provided.

Response
This looks to be a reasonable definition.
Gas connection for backup generation needs to be available to all LEUs in this band with preference for LEUs in which are located at or near renewable energy hubs.

Q.13 Comments are invited from respondents on the treatment of 'islanded' LEUs. Please provide reasons and rationale for any views provided.

Response
Islanded LEUs connected to renewable energy hubs have the capacity to encourage additionality and provide support to the grid.

Q.14 Should the connection of LEUs to the natural gas network focus on security and decarbonisation as per the Government Policy Statement on Security of Electricity Supply. Please provide reasons and rationale for any views provided.

Response
Policy on connection of LEUs to the Gas Grid needs to balance sustainable development and growth and contribute to delivery of multiple Government policy objectives.
Focus on one area to the exclusion of others is having an extremely negative impact. A more comprehensive suite of policies which will include support for establishment of sustainable bio-gas, Hydrogen and other energy supply and conversion/storage options are urgently required.

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23 Aug 2023

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**RE: Call for Evidence Paper – Review of Large Energy Users Connection Policy**

To Whom it may concern

**Decarbonisation of energy demand**

Q1. Comments are invited from stakeholders on the proposed approach of decarbonising energy demand with a view to achieving net zero emissions from LEUs at time of connection. Please provide reasons and rationale for any views provided.

- The question of "decarbonising energy demand" is fundamentally flawed. Large Energy Users, i.e., demand customers, cannot decarbonise the electricity they get from the grid. Only electricity suppliers i.e. power plants can decarbonise the electricity[1].

- Under current policies[2], the power plants on a Data Centre site do not supply the data centre. Instead, they send their power to the grid when despatched to do by Eirgrid, for example when intermittent renewables are not available. This is correct and appropriate. Ultimately then, it must follow that as Ireland delivers a net zero electricity grid by 2040, LEU and data centres will be fully net zero.

- The Call For Evidence considers the possibility of requiring prospective LEUs seeking connections to the electricity or natural gas grid to achieve net zero emissions at time of connection. It is assumed this is to mean the power plant on the data centre site, again which do not supply the DC, should be net zero. It is noted in Ireland right now there is no large-scale hydrogen, no renewable gas at scale and only 25 MW of offshore wind (constructed in 2004). When taken together with the inherent intermittency of the current supply of renewables both within day and seasonally, it is impossible any LEU site to be net zero emissions at time of connection.

- A requirement for net zero at connection is contrary to the Climate Action Plan and Government policies, all of which allow for a **"transition"** not an immediate obligation[3]. Specifically, Ireland's Long-term Strategy on Greenhouse Gas Emissions Reduction notes: "*As we **transition** to a climate neutral future, we must ensure the pathway to decarbonisation is underpinned by affordability and security in how we access and use energy in our everyday lives…..*The exact pathways to achieving longer term sectoral targets will

[1] albeit demand users can incentivise the supply mix by the prices that they are prepared to pay for electricity supplied.
[2] Data Centre Connection Offer Process and Policy (DCCOPP), and CRU Decision, "Direction to the System Operators related to Data Centre grid connection processing" (CRU/21/124)
[3] CAP 2023: Deliver in the order of 2 GW of new flexible gas-fired power generation.

evolve over time, as some technologies mature and become more cost-effective in response to innovation and increased investment, or as new technologies emerge.

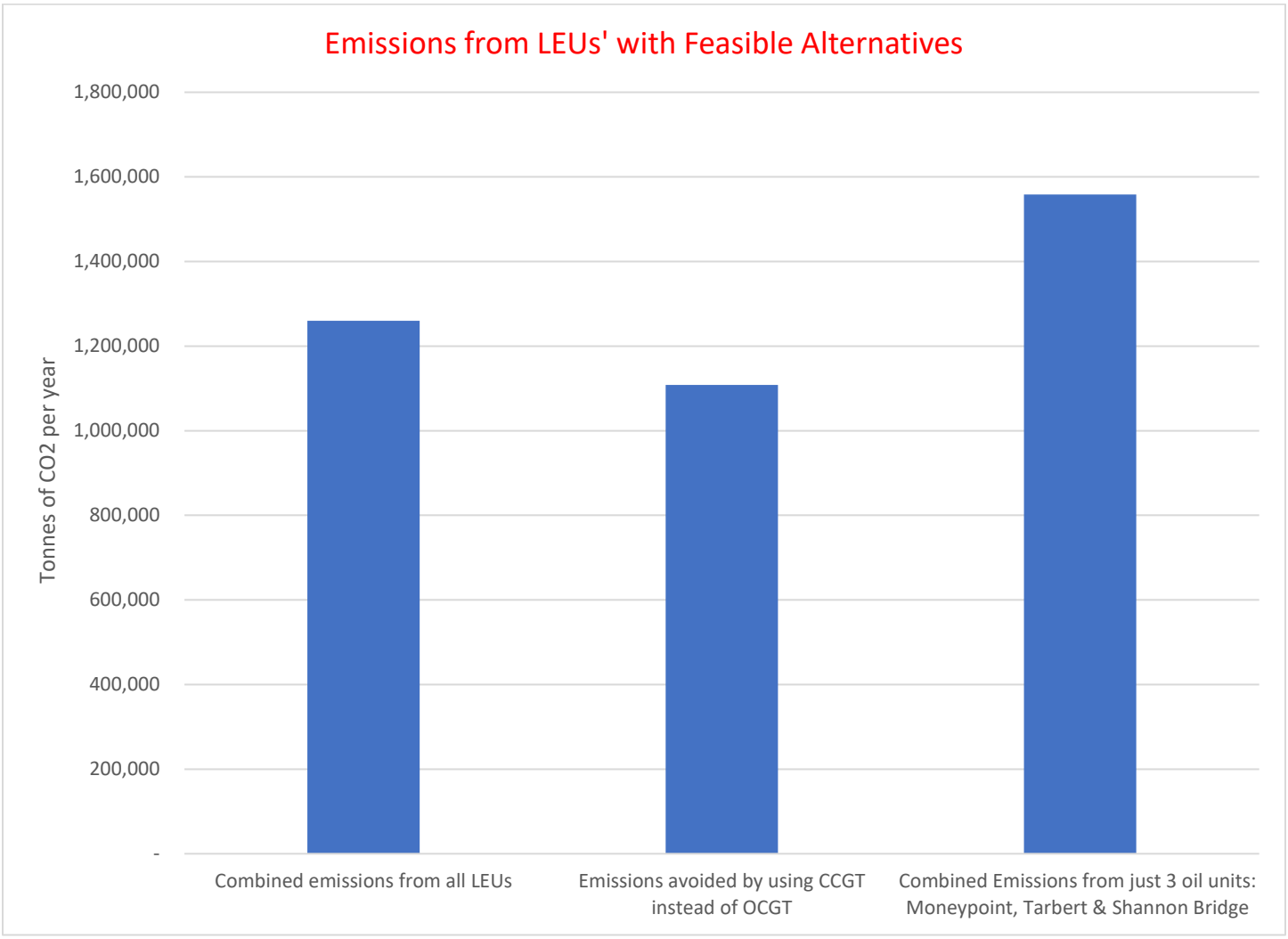
- By 2031, 28% of electricity demand will be from LEUs. To put this in context, in 2031, this would be about 1.2 million tonnes of $CO_2$ per annum from LEU's or about 3% of Ireland's total $CO_2$ emissions. Despite a contribution of about 3% of Ireland total emissions, IBEC has estimated[4] that Data Centres account for 33% of all Irish exports. With the computing industry in Ireland supporting more than 90,000 jobs in 2020. IBEC also estimate that Data centres attract over €1bn of direct investment into Ireland annually and generate €134bn of exports in 2020.

- We note the requirement for all Government policies to comply with the *"Public Spending Code: Guide to Evaluating, Planning and Managing Public Investment"* (the "Public Spending Code") published by the Department of Public Expenditure and Reform ("DPER"). We note the Call For Evidence does not outline the cost to the State for the net zero at connection approach. The CRU must therefore ensure that and Decision made in response to the Call for Evidence, shall comply with the Public Spending Code. We request the CRU ensure that the required economic appraisal will include a comparison with the feasible alternative solution.

- In the last 5 years, approximately 2000 MW of power plants were awarded capacity contracts, of which about 1600 MW was OCGT units with 35% generation efficiency. The remaining 400 MW were CCGT with 55% efficiency. If this 2000 MW was generated by CCGT alone, instead of OCGT, this would save about 1.1 million tonnes of CO2 per annum. i.e. just by ensuring new power plants are CCGT alone, we would eliminate the CO2 emissions from data centres. This could be very easily achieved by rewarding CCGTs over OCGTs in the Capacity Auction, which is common in most capacity auctions worldwide. We make this point considering the requirements to provide feasible alternative solutions.

- Since 2016, Eirgrid's generation capacity statements, and numerous capacity auctions, have all called for the urgent delivery of efficient low carbon natural gas fired power plants. However, because these units have failed to be delivered, for reasons that have yet to be disclosed in the McCarthy Report that remains unpublished, Minster Ryan was required to approve 150 MW of oil fired unit in Tarbert and a further approval for 264 MW in West Offaly Power Station, Shannonbridge. This has also led to the conversion of Moneypoint's[5] from coal to oil. Because of their poor 35% efficiency, and their high carbon fuel, these 3 plants alone will emit about 1.6 million tonnes of $C0_2$ per year. i.e. 21% more $CO_2$ emissions than the total entire emissions from the data centre industry. This fact was recognised by An Bord Pleanála in their 2019 rejection of a proposal by SSE to develop a distillate fuel oil when the possibility of running on gas was available. Again, the replacement of these high carbon oil units with CCGT gas is a feasible alternative solution than proposed in this Call For Evidence.

[4] IBEC, July 2022. Report commission report entitled: Green data, A vision for sustainable data centres in Ireland
[5] https://umm.nordpoolgroup.com/#/messages/11584687-3cdf-4d6b-97b8-db62d155480c/3




Q2. Comments are invited from respondents on the need for onsite generation and storage capability for LEU connections. Please provide reasons and rationale for any views provided.

The current policy, as outlined in the Data Centre Connection Offer Process and Policy (DCCOPP), and CRU Decision, “Direction to the System Operators related to Data Centre grid connection processing" (CRU/21/124) where LEU’s must bring onsite dispatchable generation that is also capable of running on renewably sourced fuels seems reasonable given the grid constraints and the failure to deliver sufficient dispatchable capacity.

3. Comments are invited on the use of CPPAs for additionality of renewable generation outside of support schemes for decarbonising electricity consumption. What type of de-rating may be appropriate to reflect real-world performance of renewable generation during peak times. Please provide reasons and rationale for any views provided.

No comment

4. Based on preference that renewable electricity and /or gas contributes to Ireland's emissions targets and security of supply, do respondents have a view in relation to how electricity feeding into Irish system and renewable gas credits feeding into the Irish system could be tracked?

5. Comments are invited from stakeholders on the use of renewable gas credits (feeding into the Irish natural gas system) in order to facilitate the connection of gas demand to the system. Please provide reasons and rationale for any views provided.

Incentive schemes relating to gas credits should be facilitated particularly where they also contribute to emissions reduction in sectors other than electricity, e.g. agriculture and transport. Auditing and tracking of feedstocks is important but should not be overly burdensome to implement and monitor.

**Demand flexibility**

6. Comments are invited from respondents on enabling demand flexibility requirements as described above. Please provide reasons and rationale for any views provided.

No comments

7. Are there other sources of flexibility that can be provided?

No comments

**Interruptible contracts for gas connections**

8. Comments are invited from respondents on the introduction of interruptible type supply contracts for gas connections. Please provide reasons and rationale for any views provided.

While Ireland is extremely vulnerable in terms of the security of gas supply, it is not clear that issues exist at the Exit/demand level in a situation where supplies are maintained.
Gas Networks Ireland currently has the ability to load-shed in accordance with the provisions of Code of Operations by the declaration of a Restricted Capacity Day or through the invocation of the National Gas Emergency Plan. In these scenarios, gas Exit Point can be directed to reduce usage but are not compensated despite paying firm access tariffs.
Interruptible supply tariffs should only be required in the event of a network capacity restriction which should/does not apply to the GNI network as all Large New Connections are required to pay for the full costs of their connection including applicable deep reinforcements costs.

The targeting of a particular customer type is not currently permitted under the Code of Operations as it does not distinguish (with the exception of priority/vulnerable customers) between the usage of gas at particular Exit/Supply Points. Restrictions are applied in order of annual demand with largest customers being the first to be affected (after consultation between GNI and Eirgrid).

If it is decided that a particular category of customers can be interrupted, then significant analysis must be undertaken to justify the reasons why/when that interruption might happen and also to determine the appropriate level of tariff that should be applied.

**Real time zero carbon emissions**

9. Comments are invited on real time zero carbon emissions, shifting of demand in realtime to times of high renewable energy availability. Please provide reasons and rationale for any views provided.

Given Ireland's reliance on highly intermittent renewable energy, the real time matching of supply and demand is a near impossible task, at least in the short to medium time horizon. Industry of all types operate on a 24/7/365 basis and cannot, in most cases, adjust its output to match the prevailing weather conditions. Significant care should be exercised by regulatory and policy making bodies in terms of the requirements placed on energy users in this regard.

**Definition of an LEU**

10. Comments are invited from respondents on what they consider to be an appropriate definition of an LEU for electricity and gas for the purposes of this review. Please provide reasons and rationale for any views provided.

No comments

11. Comments are invited from respondents on whether this review should only apply to Extra Large Energy Users (XLEUs) in relation to electricity. Please provide reasons and rationale for any views provided.

No comments

12. Q.11 Comments are invited for gas LEU definition of those with a peak hourly demand greater than 50MW thermal input and a connection pressure of 16 barg or above. Please provide rationale for any views provided.

No comments

**Islanded Connections on the Gas Network**

13. Comments are invited from respondents on the treatment of 'islanded' LEUs. Please provide reasons and rationale for any views provided.

The current policy, as outlined in the Data Centre Connection Offer Process and Policy (DCCOPP) and CRU Decision, "Direction to the System Operators related to Data Centre grid connection processing" (CRU/21/124) where 'islanded' LEU's with a grid connection should not be permitted is correct, otherwise these units will run 100% on fossil fuel, which is contrary to Climate Action Plan.

14. Should the connection of LEUs to the natural gas network focus on security and decarbonisation as per the Government Policy Statement on Security of Electricity Supply. Please provide reasons and rationale for any views provided.

It is impossible to answer this question given the Department of Environment, Climate and Communications has decided not to release:

- the review of the energy security of Ireland's electricity and gas networks,
- the independent review of the security of electricity supply (the McCarthy Report),
- the next steps for the National Energy Security Framework, oil security of supply

The treatment of different categories of energy users cannot be determined by an examination of a single piece of Government Policy. There are many government policies that support the introduction of the types of industries that might be affected by any changes in policy arising from the subject of this process or any related undertakings by the CRU/DECC.

**General questions**

15. Please suggest any alternative approaches not captured above that could help in meeting the challenges outlined.

The current policy, as outlined in the Data Centre Connection Offer Process and Policy (DCCOPP). And CRU Decision, “Direction to the System Operators related to Data Centre grid connection processing" (CRU/21/124) The July 2022 Government Statement on the Role of Data Centres in Ireland’s Enterprise Strategy

16. Should provisions apply to all LEUs connections, or are there are any exceptions that should apply? Please provide reasons and rationale for any views provided.

The current policy, as outlined in the Data Centre Connection Offer Process and Policy (DCCOPP). And CRU Decision, “Direction to the System Operators related to Data Centre grid connection processing" (CRU/21/124) The July 2022 Government Statement on the Role of Data Centres in Ireland’s Enterprise Strategy

17. Please suggest any incentives which could be applied to new LEU connections in facilitating some of the measures described above. Please provide reasons and rationale for any views provided.

No Comment

Sincerely,

Martin Ahern Vice President
New Fortress Energy
Mahern@newfortressenergy.com

A chara

As part of the request for submissions, I would like to make the following

We are a family owned retailer, with 15 retail sites and two warehouses

Have a strong commitment to climate change actions

Keen to decarbonize our business and supply chain

In the midst of a detailed benchmarking exercise to develop options

The most immediate impact we can invest in is solar. Since there currently is not a mechanism in place for us to export surplus energy to the grid, we are being advise to go for a lower level of installation.

With warehouse and retail roofing being ideal for solar (as compared to removing tillage land), it would seem like a win win to encourage SME's and industry to deploy the maximum coverage area of solar as practical.

Solution – to have an export tariff for the grid

Thank you for your consideration

Edmund O'Keeffe
O'Keeffes of Kilkenny Limited

PrepayPower

Corrig Road
Sandyford
Dublin 18
D18 R9C7

**CRU Smart Metering Team**

Commission for Regulation of Utilities,
The Grain House,
The Exchange,
Belgard Square North,
Dublin 24,
D24 PXW0
Tell: 01 4000 800
E-mail: smartmetering@cru.ie
Ref: CRU202358

30 August 2023

**In Re: Incentivising the Uptake of Time of Use Tariffs Consultation Paper CRU202358**

Dear CRU,

PrepayPower welcome the opportunity to provide feedback in relation to incentivising the uptake of time of use tariffs.

While ToU tariffs can benefit some consumers there is a significant percentage of consumers who will not be able to shift their consumption away from expensive peak times. Consumers moving to a ToU tariff will need to make considerable changes to their usage or their electricity costs will be higher than their previous non ToU tariff. As wholesale energy prices continue to remain at high levels, customers unable to move their consumption due to ill health or poorly insulated homes are at risk of paying more for their electricity by moving to a ToU tariff.

Please refer to the appendix below for responses to the consultation.

If you have any further questions, please do not hesitate to contact me.

Yours sincerely

_____

Aoife Coppinger

Regulatory Affairs Manager

PrepayPower

Email: aoife.coppinger@prepaypower.ie

# Appendix 1

**Question 1**

**The CRU is proposing to amend the PCW accreditation framework to allow consumers to upload their smart meter data (obtained as a HDF via the ESBN Customer Portal) to receive a price comparison based on their actual historical electricity consumption. Do you agree with this approach? If not, why not?**

Customers smart meter data is personal data and there are significant security and privacy risks associated with sharing this data. PCWs must have robust security safeguards in place for customers to ensure that their personal data being shared is from the verified customer at the meter point. Customers should also be able to enforce their GDPR rights of rectification, erasure and restrict processing in relation to their smart meter data. PWCs must ensure that customers rights are protected under GDPR and secure from cyber security attacks. PCWs should not be allowed to process customer consumption data until such time as they become signatories to the data access code and have complied with its prescribed data protection requirements.

**Question 2**

**The CRU is proposing not to put any restrictions on the minimum period of time that needs to be contained in smart meter consumption data that consumers can upload to the PCW. However, we propose that a warning message be included where consumers have included less than a year of data. Do you agree with this approach? If not, why not?**

We would agree with this approach.

**Question 3**

**Is there anything else CRU should consider with regards to this matter?**

For consumers to get the most accurate price comparison, uploaded HDF data should be from the appropriate MPRN. Where a consumer has moved properties the data will not be reflective of their usage in a new property and will lead to consumers potentially paying more for their electricity than the advertised tariff.

**Question 4**

**In case a consumer submits a HDF containing periods of missing data, the CRU is proposing that the PCW takes the following actions:**

**• If the missing data accounts for 1% or more of the total dataset: the PCW must inform the consumer that there is missing data, include the percentage of missing data, and ask if they wish to continue with the price comparison using an estimate for the missing data, as outlined above.**

**Do you agree with this approach? If not, why not?**

We would agree with this approach.

**Question 5**

**Is there anything else CRU should consider with regards to this matter?**

While PCWs are commercial entities that are not licensed by the CRU as suppliers are they should be held to the same high standards of customer protection. This includes transparency in relation to tariffs and the protection of customers' personal data including their smart meter data. It is not clear if PCWs can share customer data with other third parties or if they cease operating what rights a customer will have in relation to their personal data.

**Question 6**

**The CRU would be interested in hearing whether respondents believe there is added value or not in allowing PCWs to ask consumers additional questions to identify their consumption behaviour, and tailor price comparisons. For example, whether a consumer has an Electric Vehicle. If you believe there is added value in this approach, what guidelines, if any, do you believe the CRU should implement to ensure a minimum standard across PCWs?**

We would be concerned that simply asking customers additional lifestyle questions will not be sufficiently accurate to advise a customer on a tariff. This approach has the potential to mislead customers in choosing a specific tailored tariff as their habits are likely to change.

Stringent CRU guidance would be required to identify how the additional questions would impact on an EAB to ensure consumers are protected. If the CRU allow for additional questions to be included we would welcome a further consultation on the guidelines as to how to interpret the data.

**Question 7**

**The CRU proposes to require PCWs to implement the functionality to allow consumers to upload their smart meter consumption data (via HDF) from 1 January 2024. Do you agree with this approach? If not, why not?**

**Question 8**

**Are there any other issues that you believe the CRU should take into consideration with regards to the timeline?**

We believe something of this magnitude with a high impact on consumers should be impact assessed with robust GDPR safeguards implemented and tested prior to going live. Without full data, consumers may choose a tariff based on the PCWs' recommendation where the consumer may pay more their electricity and which they are then locked into for 12-24 months depending on their contracts.

**Question 9**

**The CRU proposes to amend the PCW accreditation framework to allow consumers to access price comparisons for microgeneration export tariffs between suppliers. It proposes consumers should be able to do this in one of two ways, either by submitting their actual (historical) export volume, or by submitting their deemed calculation. Do you agree with this approach? If not, why not?**

A customer's deemed calculation is not based on their actual export data so will not be an accurate reflection of their actual microgeneration export and if a customer receives a smart meter they are no longer able to receive a deemed calculation. This has the potential to have a negative impact on a customer as they will not receive an accurate comparison between microgeneration tariffs.

**Question 10**

**Are there any other issues that you believe the CRU should take into consideration with regards to this functionality?**

Currently consumers cannot have separate suppliers for the export and import of electricity. Prior to enduring microgen being finalised consumers should only be able to submit smart meter export data (not a deemed calculation) where import data is also required. If a consumer was capable of submitting export data without import data also being included the PCW may not outline the most suitable supplier for that consumer i.e. a

supplier with the most competitive export rate might have the best export rates for microgen but poor electricity import rates which would not be beneficial for the consumer.

**Question 11**

**The CRU proposes to extend the requirement for an EAB to all tariffs available on the market, including time of use tariffs. Do you agree with this approach? If not, why not?**

We do not believe this is beneficial for consumers. The EAB for a ToU tariff will assume large shifts of customers consumption to the cheapest time period, presenting a customer with a tariff which will appear cheaper compared to a standard 24 hour EAB. The reality for a customer is that if they do not move their consumption to off peak periods they will ultimately pay more for their electricity. Comparisons of tariffs should be made across the same 24 hour EAB to eliminate the risk of misleading customers.

**Question 12**

**The CRU proposes to implement an EAB for all time of use tariffs from 1 January 2024. Do you agree with this timeline? If not, why not?**

As noted above we do not believe the CRU should implement an EAB on all ToU tariffs. As previously stated consumers may sign up to a ToU EAB and being unable to move their consumption pay an increased amount for their electricity use.

**Question 13**

**With regards to the methodology for calculating an EAB for all time of use tariffs, the CRU proposes to use the demand-weighted approach, which is the same that is currently used for the Standard Smart Tariff and Day/Night tariff. Do you agree with this approach? If not, why not?**

We do not believe the CRU should implement an EAB on all ToU tariffs.

If a demand weighted ToU EAB is to be used (other than the overall average for 24hr Urban profile) it should also be a requirement to display, with equal prominence, the cost of the ToU tariff based on a customers 24hr Urban profile demand. We believe this is a necessary piece of information to allow customers to readily assess the difference of costs in the tariff should they not be in a position to change their consumption.

**Question 14**

**Are there any other issues that you believe the CRU should take into consideration with regards to implementing an EAB for all time of use tariffs?**

We would have serious concerns about consumers choosing a tariff based on a ToU EAB without the understanding of what is required by the consumer to benefit from the advertised savings of the ToU tariff. A ToU EAB could be constructed to appear the most

competitive but the reality for the average customer is these savings are simply not achievable.

**Question 15**

**The CRU proposes to increase the limit on the maximum number of time of use tariffs from four to eight from 1 October 2023. Do you agree with this approach? If not, why not?**

We would agree with this approach.

**Question 16**

**The CRU proposes to end the limit on the maximum number of time of use tariffs from 1 April 2025. Do you agree with this approach? If not, why not?**

Yes, we would agree with this approach as it will allow for greater innovation.

**Question 17**

**CRU would welcome any views on whether respondents consider it appropriate to schedule a review on the structure of the Standard Smart Tariff ahead of the completion of Phase 2 of the NSMP (currently scheduled for the second half of 2024).**

We do not believe it would be beneficial to schedule a review of the SST ahead of phase 2 of the NSMP. We believe an education piece for consumers is needed to explain what is required from consumers who wish to move to a ToU tariff in order to reduce their electricity costs.

**Question 18**

**CRU would also welcome views from respondents on which issues should be considered in such a review. Respondents can specifically focus on the following questions, or provide their own views:**

**a) Is the Standard Smart Tariff achieving its purpose to be an easy to understand 'entry-point' to time of use tariffs for consumers?**

Yes this is an easy entry point for consumers to understand their usage. It also provides consumers with the ability to review their consumption which allows the consumer to measure if they are in a position to shift their capacity if they were to move to an alternative ToU tariff.

**b) Do you have any concerns or recommendations in relation to the Day/Night/Peak structure of the Standard Smart Tariff, including the hours assigned to each time band?**

As noted above our concern would be in relation to consumers being misguided that a ToU tariff would reduce their electricity cost but not being in a position to significantly shift their usage away from peak times.

Yes, as noted above it is an early entry for consumers to measure if they are in a position to shift their usage during peak times.

**d) Are there any other issues related to the Standard Smart Tariff you believe the CRU should take into consideration in a future review?**

No I believe all issues have been covered in the above

**Question 19**

**CRU would welcome any additional suggestions to incentivise the uptake of time of use tariffs.**

We believe that ToU tariffs will benefit consumers with large moveable loads such as electric vehicles (EV) and well insulated homes which can shift heating times without the consumer feeling the effects to their detriment. Many consumers cannot afford an electric vehicle but all consumers should be provided with government supports to insulate their homes. Once these customers have been supported then it would be possible to incentivise the uptake of ToU tariffs for all consumers




# RedoxBlox comments on CRU 202356

# Energy Demand Strategy Project:  Call for Evidence

28 August 2023

RedoxBlox welcomes the opportunity to participate in this Call for Evidence. There has been remarkable technological progress in the past number of years in solutions to electrify and decarbonise heat. We believe this offers the opportunity to radically increase Ireland's ambition and targets for decarbonisation of industrial heat and that this can bring many complementary benefits to an electricity system with a high penetration of renewables.

As a leading solution provider, we have excellent visibility of the state of the art technology in this space. Our solution incorporates storage and can deliver a constant high grade heat output (up to 1500°C) while only consuming electricity for a few hours a day (typically 2 to 4). The solution is compact, cost effective, highly flexible, safe and enables a complete decarbonisation of continuous heat loads using only intermittent renewables. We are aware of significant technical progress from other companies in this area too. Based on this step change in solution capability we believe Ireland should target a 50% electrification of industrial heat by 2030 and 100% by 2035. With proper advance policy consideration this transition can be delivered in a way that facilitates the efficient operation of a highly renewable power grid.

If these targets are delivered under a thoughtful policy that shapes the solution to meet overall system needs we believe this will:

1. Reduce Ireland's annual CO 2 emissions by 4 Mt.
2. Reduce Ireland's dependence on imported fossil fuels.
3. Add up to 20% new fully flexible electricity demand that can provide a full range of system services and support integration of variable renewable electricity.
4. Increase electricity network utilisation and improve overall system efficiency.

To achieve this there are a number of major policy issues to be addressed, including:

1. We recommend that a structured power purchase product for new high flexibility electricity demand be introduced. This should enable the sale of surplus renewable electricity at times of excess RES to be purchased at lower prices than gas at industrial premises.
2. Connection rules for demand currently apply a static limit on Maximum Import Capacity. This discourages the use of highly flexible electrified heat solutions that would consume more electricity at times of high RES. We recommend a more dynamic system that increases overall system flexibility and network utilisation.
3. Many elements of electricity demand charging rules for network costs, PSO etc. are applied on a flat kWh basis. This means electricity is generally more expensive than gas at the industry gate even at times when there is surplus RES on the power system. We recommend that the allocation of these charges be reviewed to avoid distorting economic incentives to electrify and utilise surplus RES.
4. Many decarbonisation grant schemes are either too technology specific or business model specific. These should be reviewed to incentivise the desired output rather than a specific technology or business model.

We have provided more detail on these points and some additional issues in the body of the text. We have also provided CRU with a confidential appendix with more details on our specific technology. We would welcome an opportunity to participate further in this process as it develops.

RedoxBlox welcomes the opportunity to participate in CRU's Energy Demand Strategy Call for Evidence. We are a technology company that has made a breakthrough in long duration energy storage technology that will enable the seamless decarbonisation of industrial heat and power grids around the world. We have identified Ireland as a potential leader in industrial heat decarbonisation because of its ambitious targets in renewable electricity.

We note that SEAI's heat in Ireland survey identified that there is circa 15TWh of annual industrial heat demand in Ireland currently using non-renewable fossil fuels. We also note that EirGrid's Shaping Our Electricity Future Roadmap identifies the potential availability of a significant surplus of renewable electricity emerging as new installations of wind and solar are added in line with 2030 targets.

We believe that recent technical advances in electrification of heat, made by our company and others in the area, means there is potential for a step change in ambition for electrification of heat in Ireland. Where these electrification solutions incorporate storage, they can deliver flexibility and move the current industrial heat demand from fossil fuels to electricity demand at times of high RES. This would mean that Ireland's surplus renewable electricity could be used to substantially decarbonise Ireland's industrial heat sector. We believe that Ireland could achieve 50% electrification of industrial heat by 2030 (7.5TWh) and 100% by 2035. We believe these targets are achievable and will deliver:

- Reductions in Ireland's carbon emissions by 2Mt per annum by 2030 and 4Mt per annum by 2035 as we make industrial heat carbon free.
- Provision of substantial flexibility, storage, ramping, frequency response and other services to the electricity system.
- Increased energy security by reducing Ireland's exposure to imported fossil fuels.
- Increased attractiveness of Ireland as a location for industrial investment by providing easy access to efficient low cost carbon free heat.

We are aware that adding 15TWh of additional electricity demand will have a profound impact on the operation of the electricity market. In this response we identify the priority policy areas that we believe will need to be addressed to ensure the efficient functioning of such a future energy system.

> **Recommendation 1:** We recommend that a structured product to sell surplus RES to industrial customers that can consume electricity in a highly flexible manner is introduced. This should be priced below the costs of natural gas (excluding carbon prices) to industrial customers. The product will provide customers an incentive to decarbonise and electrify while also generating new revenue for producers/contract holders of RES that would otherwise be constrained.
>
> **Recommendation 2:** We recommend that the mechanism for charging customers for use of the network does not penalise customers for availing of surplus RES when available where that consumption is not creating a binding network constraint.
>
> **Recommendation 3:** We recommend that there is no pancaking of additional charges onto customers at times of surplus RES.

**Recommendation 5:** We recommend that the structure of grants for decarbonisation projects be reviewed to ensure they are, technology neutral, business model neutral and more closely aligned to the impact of the project.

**Recommendation 6:** We recommend that the TSO develops the ability to dispatch qualified demand sites in the same manner as generation.

**Recommendation 7:** We recommend that the network charging methodology be reviewed to incentivise increased demand side flexibility and the ability to integrate additional RES.

The solutions proposed are technology neutral and would benefit wider efficiency and electrification initiatives.

There has been a surge in the development of new technology in the storage and heat sectors in recent years. Major progress has been made in areas including hydrogen, thermal storage and thermochemical storage. We have provided a short overview of our solution here as an example of the capabilities available in the market. We have also provided the CRU additional technical details in a confidential attachment.

The RedoxBlox heat solution is based on thermochemical storage of energy. In a typical industrial heat application, the solution would consume electricity for around 3 hours in a 24 hour period and deliver high grade heat output (up to 1500°C) continuously, or on-demand as required. The thermochemical nature of the storage means that the times of consuming electricity to charge the system can be fully decoupled from the times of delivery of heat to the industrial process. During charging the solution can ramp up or down its demand or indeed stop consuming completely with no restrictions other than the speed of the control and communications systems.

The heat solution can be designed in such a way that it can also use gas as a secondary fuel in the event it is required as a back up during extended periods where RES is unavailable.

This technology can also be applied to feed a turbine and provide electricity storage in larger volumes and over longer durations than conventional approaches. We have also developed outline designs for very long duration (seasonal) storage.

## 3. Electricity Grid Impacts of large-scale Electrification of Heat

If the electrification of additional demand, such as heat, is encouraged in a policy framework that incentivises efficient outcomes it has the potential to increase the stability and ease of operation of a highly renewable based electricity system. We believe the following benefits can be realised and should be incentivised in the financial signals observed at the customer's site.

- **Flexibility to balance supply and demand**. If the new demand has one or more of:
  i. a storage component;
  ii. flexibility in the time it consumes; or
  iii. ability to efficiently use a secondary fuel that has no higher carbon emissions than the solution in place before electrification,

  it can allow demand to be moved to times when RES is abundant and to reduce relative loadings at other times. This could be particularly valuable if a substantial volume of new demand with these characteristics is added (15TWh industrial heat, for example). In this case the overall ease of operation of the power system, including meeting peak needs would be improved as the ratio of uncontrolled peak to average demand would be significantly reduced.

  The policy signal should also recognize the quantum of service provided. Solutions which deliver multi day or longer storage or flexibility should be strongly encouraged.

- **Ability to meet scheduled system ramping needs.** Many technologies that electrify demand can adjust their electricity consumption quickly and with little notice. They can also schedule consumption patterns to reduce the need for fast ramping of other resources on the power grid. If a significant block of new electricity demand with these characteristics is added it could play a substantial part in resolving this challenge.

- **System stability at times of high SNSP.** As new processes electrify there is an opportunity to encourage investment in solutions that will have the ability to provide essential services to the power grid. Most of the solutions to electrify heat and transport are capable of changing and/or ceasing consumption with minimal notice, small fractions of a second in some cases. By adding additional demand that has these characteristics at times of high RES generation the overall stability and controllability of the system is greatly improved.

- **Improve grid utilisation.** Controllable demand with flexibility and storage is often considered through the lens of its ability to support bulk system supply and demand balance. However, the flexibility can also support increased network utilisation and reduction of the need for investment in new conventional grid assets. This idea is gaining significant momentum in the UK where multiple DNOs now run flexibility tenders to secure services from demand customers to defer or avoid new grid needs.

  We note that EirGrid's shaping our electricity future strategy makes reference to techniques such as Dynamic Line Rating and Power Flow Control. Adding flexibility in the demand as a controllable resource will act as a force multiplier with these techniques in enabling higher grid utilisation. This reduces costs for all users (same network more kWhs) and reduces the impact on the environment and communities.

https://gis.seai.ie/heatdemand/). A casual inspection indicates there is a high degree of correlation between many regions of large heat need and regions with large volumes of existing or planned RES.

- **Long Duration Storage Potential.** As we approach very high levels of renewable generation the importance of longer duration storage solutions will increase. There is an opportunity to deliver these services through new technology solutions on the demand side. Where electrification solutions include a degree of storage this has the same net effect as directly adding storage on the electricity grid.

It is also possible to configure the same core technology that delivers storage in the heat system to discharge its energy into a turbine and generate electricity. This can very economically add significant volumes of electricity to electricity storage to the power grid.

It is worth noting that industrial gas, including the cost of carbon, remains relatively cheap compared to electricity for most customers. The delivered price of electricity at the customer's site is generally more expensive than natural gas, even at times when the *wholesale* electricity price is very low, or even negative and the local grid network is unconstrained. This is a major barrier to decarbonisation and efficient use of resources.

To achieve a 50% electrification of industrial heat by 2030 we believe that a measure to ensure that customers can access renewable electricity, particularly surplus renewable electricity that would otherwise be constrained, at a lower price than gas will be required. As the volume of expected annual surplus renewable electricity is very similar to the total volume of industrial heat demand there is an opportunity to develop a commercial structure that connects these in a simple and efficient manner.

In real time the product should only be available at times the TSO designates as surplus RES and in areas where the additional consumption will not create real time network constraints. But over a year industrial customers should have some certainty over the volume that will be available to support a capital investment decision on their site. The price should be fixed for a long duration and be below the price of industrial gas. The costs of carbon should not be added to the gas price for this calculation to ensure that the carbon pricing incentives are visible to customers and drive their intended policy outcomes.

The scheme should be simple to sign up to and available to all eligible customers as a standard product rather than individually negotiated deals.

**Recommendation 1:** We recommend that a structured product to sell surplus RES to industrial customers that can consume electricity in a highly flexible manner is introduced. This should be priced below the costs of natural gas (excluding carbon prices) to industrial customers. The product will provide customers an incentive to decarbonise and electrify while also generating new revenue for producers/contract holders of RES that would otherwise be constrained.

In the event of a significant increase in flexibility on the electricity demand side there will be a change to the consumption pattern of demand customers. In the event that a customer with a moderate to significant heat demand installs an efficient electrification solution incorporating storage they could consume large volumes of electricity at times of high RES generation. Under the current network charging model the costs for this very high level of peak demand would be extraordinarily high and likely render the electrification project unviable.

**Recommendation 2:** We recommend that the mechanism for charging customers for use of the network does not penalise customers for availing of surplus RES when available where that consumption is not creating a binding network constraint.

We also note that many other costs (PSO levy, imperfections charge etc.) are recovered in a flat per kWh manner or based on per kW peak demand. The effect of these when applied to surplus RES periods is to distort the marginal pricing signal to the customer between electricity and gas.

**Recommendation 3:** We recommend that there is no pancaking of additional charges onto customers at times of surplus RES.

Current connection policy on the demand side is typically driven by peak network constraints. This generally results in demand customers being allocated a static Maximum Import Capacity (MIC) based on expected system conditions at these times. However, at many other times there is significant spare network capacity available. If demand is successfully incentivised to move consumption to times of lower system (and local network) stress then it would be beneficial to maximise the consumption during those periods where it will relieve pressure at other times. However, the ability to do this is practically limited by the static MIC nature of current demand connection contracts.

**Recommendation 4:** We recommend that the structure of demand connection agreements becomes more flexible and encourages additional consumption at periods of low system stress. The static MIC nature of connection agreements should be removed. This should also be applied to sites using electricity to electricity storage to enable fast charging at times of high RES.

We note that there are multiple sources of grant aid available for decarbonisaton projects in Ireland. However, some of these are unnecessarily technology specific and many others restrict the business model that qualifies. Internationally we are seeing a growth in Energy Service Companies (ESCOS https://www.iea.org/reports/energy-service-companies-escos-2

**Recommendation 5:** We recommend that the structure of grants for decarbonisation projects be reviewed to ensure they are, technology neutral, business model neutral and more closely aligned to the impact of the project.

For the demand side to provide full value to the TSO it is important that the TSO has the ability to dispatch demand resources in a similar manner to generation resources. While there may be near term IT system limitations this should not stand in the way of designing a solution for the period 2028-2050. Demand side participants that elect to sign up to such a facility should have access to commercial treatment on the same basis as generation.

**Recommendation 6:** We recommend that the TSO develops the ability to dispatch qualified demand sites in the same manner as generation.

Demand side flexibility can also help reduce the need for new network investment. In the UK demand players can participate in flexibility auctions and share in the savings of avoided network costs. However, the current DUoS and TUoS mechanisms do not reflect this benefit and there is no additional structured flexibility product available.

**Recommendation 7:** We recommend that the network charging methodology be reviewed to incentivise increased demand side flexibility and the ability to integrate additional RES.

## 5. Conclusion

We thank CRU for the opportunity to participate in this Call for Evidence. It is a very timely process and enables thoughtful consideration of the policy needs to enable significant decarbonisation of electrical heat by 2030. We would welcome the opportunity to further engage in this process as it continues.

August 30th, 2023

Dear Colleague,

The SEAI welcomes the opportunity to respond to the consultation on Incentivising the Uptake of Time of Use Tariffs (CRU202358), published on 21/06/2023. The responses below come primarily from the Behavioural Economics Unit (BEU) and the Smart Networks team.

The BEU's remit is to encourage measurable changes to energy behaviour. To do so, we use a variety of methods such as evidence reviews, qualitative research, and online experiments. All our methods are underpinned by the latest evidence in behavioural science. There is an existing body of behavioural research that is relevant to some of the questions in this consultation. We draw on this as well as some of our own work to provide evidence-based responses where possible.

The Smart Networks team aims to represent the citizen and enable energy users to become more active and flexible. In order to this we are developing Smart Energy Services as part of Ireland's Energy Demand Strategy through getting greater smartness into standards, education/awareness and accelerating the space through applied research.

*Question 1: The CRU is proposing to amend the PCW accreditation framework to allow consumers to upload their smart meter data (obtained as a HDF via the ESBN Customer Portal) to receive a price comparison based on their actual historical electricity consumption. Do you agree with this approach? If not, why not?*

- Response: broadly, we see this as an important measure to implement, particularly when considering the increased number of options becoming available to consumers.

- There is an important point to consider here, however. The goal of time of use (ToU) tariffs from an environmental perspective is to shift more consumption to off peak times. In many cases, a PCW output might show little apparent reason to switch to a ToU tariff. PCWs will need to implement in some way an additional option to input a hypothetical change in usage behaviour.

*Question 2: The CRU is proposing not to put any restrictions on the minimum period of time that needs to be contained in smart meter consumption data that consumers can upload to the PCW. However, we propose that a warning message be included where consumers have included less than a year of data. Do you agree with this approach? If not, why not? Do you agree with this approach? If not, why not?*

- Response: our view is that a strong warning is necessary but likely does not go far enough.

  Given seasonality in energy use and individual variation in daily time of consumption, there is a risk that using a PCW with too little data at a given time will be detrimental to consumer decision making.

The BEU runs a monthly survey of energy consumption with a nationally representative sample and observes change in the proportions of reported energy use at times of days from month to month. The survey is not conducted with entirely the same sample each month, which limits the precision with which we can use the responses to inform this issue. Aggregated across the monthly samples, we see little change in the proportion of energy used between 4pm and 7pm. However, for waves that were conducted during school holidays, we see a rise in the proportion of the daily energy use occurring between 8am and 4pm. In most waves, about a third of energy from the behaviours that we measure is used during this window, but in the three waves run during school holidays, it rises to an average of 40%. If a consumer were do to a comparison during one of these periods with only a month of data, it is possible they would be recommended a suboptimal option.

Additionally, although the same participants do not complete every wave of our survey, they can complete every second wave. For this consultation, we have looked at the participants who have completed 5 waves and we observe a not insignificant amount of individual change in proportion of energy use during specific time windows across waves. Not all participants complete the survey on the same day of week in each wave. But this finding stands to support the contention that individual variation in time of use across months does occur, and that there should be a minimum period required for use of smart meter data with a PCW.

*Question 3: Is there anything else CRU should consider with regards to this matter?*
No response.

*Question 4: In case a consumer submits a HDF containing periods of missing data, the CRU is proposing that the PCW takes the following actions:*

*• If the missing data accounts for less than 1% of the total dataset: the PCW must use the most recent ESBN load profile and calculate an estimate for the consumption during the missing period.*
*• If the missing data accounts for 1% or more of the total dataset: the PCW must inform the consumer that there is missing data, include the percentage of missing data, and ask if they wish to continue with the price comparison using an estimate for the missing data, as outlined above.*

*Do you agree with this approach? If not, why not?*

- Response: of primary importance is that is it abundantly clear to the consumer that a substantial amount of missing data might result in a suboptimal recommendation.

*Question 5: Is there anything else CRU should consider with regards to this matter?*
No response.

*Question 6: The CRU would be interested in hearing whether respondents believe there is added value or not in allowing PCWs to ask consumers additional questions to identify their consumption behaviour, and tailor price comparisons. For example, whether a consumer has an Electric Vehicle. If you believe there is added value in this approach, what guidelines, if any, do you believe the CRU should implement to ensure a minimum standard across PCWs?*

- Response: we think there is definite value in allowing PCWs to ask additional questions. As mentioned above, the environmental benefit of smart tariffs comes through its incentivisation to change ToU profiles. If consumers calculate only the best tariff for how they currently use energy, then this is not necessarily conducive to – and is potentially even detrimental to the likelihood of – change.

  An option to indicate the extent of and ways in which the PCW user could change their usage patterns is necessary to promote uptake that reflects the true potential of smart tariffs. Our view is that pre-testing potential questions using experimental research would be a valuable step.

*Question 7: The CRU proposes to require PCWs to implement the functionality to allow consumers to upload their smart meter consumption data (via HDF) from 1 January 2024. Do you agree with this approach? If not, why not?*

- Response: we agree with this proposal. It is important to make things easier for the consumer as the soonest point possible. However, the deadline for PCWs should allow them reasonable time to implement the functionality to a high standard to avoid harming consumer trust with early low-quality attempts.

*Question 8: Are there any other issues that you believe the CRU should take into consideration with regards to the timeline?*

- Response: consumer education and awareness about this functionality will be essential. Consumers will need to be instructed clearly on how to access their data, upload it to a PCW, and interpret the results of the comparison.

*Question 9: The CRU proposes to amend the PCW accreditation framework to allow consumers to access price comparisons for microgeneration export tariffs between suppliers. It proposes consumers should be able to do this in one of two ways, either by submitting their actual (historical) export volume, or by submitting their deemed calculation. Do you agree with this approach? If not, why not?*

- We agree with this proposal.

*Question 10: Are there any other issues that you believe the CRU should take into consideration with regards to this functionality?*
No response.

*Question 11: The CRU proposes to extend the requirement for an EAB to all tariffs available on the market, including time of use tariffs. Do you agree with this approach? If not, why not?*

- Response: we broadly agree that the potential benefits in the longer term of EABs for all tariffs outweigh the challenges – it would be optimal for consumers to be able to compare all the tariffs

available in a simple process, and straightforwardly be able to see any difference a smart tariff could make to them.

However, we are unsure that these benefits currently outweigh the possible harmful effects, at least without further consideration to them. It seems possible that, given the limitations of methods for calculating EABs for smart tariffs, monetary loss would occur for some as a result of acting on price comparison recommendations.

Importantly, this might erode trust in the switching process; switching rates are already low. One reason for switching inertia is a high degree of complexity, real or perceived. In the context of many potential tariff options – most of which would be smart and thus uncertain in terms of ultimate cost even before potential behaviour change is accounted for – we feel that more fundamental steps need to be taken before EABs are applied to all available tariffs.

- Given the complexity involved, it would be prudent to conduct research into consumer understanding of EABs in the context of smart tariffs, and how EABs change with shifts in consumption patterns.

*Question 12: The CRU proposes to implement an EAB for all time of use tariffs from 1 January 2024. Do you agree with this timeline? If not, why not?*
See response to Question 11.

*Question 13: With regards to the methodology for calculating an EAB for all time of use tariffs, the CRU proposes to use the demand-weighted approach, which is the same that is currently used for the Standard Smart Tariff and Day/Night tariff. Do you agree with this approach? If not, why not?*
No response.

*Question 14: Are there any other issues that you believe the CRU should take into consideration with regards to implementing an EAB for all time of use tariffs?*
No response.

*Question 15: The CRU proposes to increase the limit on the maximum number of time of use tariffs from four to eight from 1 October 2023. Do you agree with this approach? If not, why not?*

- Response: we think that is would be optimal to pre-test this change using experimental research. The viability of the change will depend on the degree to which people understand ToU tariffs and their own energy consumption in general. We do not believe that there is currently a high degree of understanding amongst consumers in this regard. For example, in our monthly survey, a sizeable portion of the sample who are not on smart tariffs state that they shift their consumption away from peak times to save money.

Our view is that, currently at least, increasing the number of options available to consumers is as likely to decrease the number of people who switch to a smart tariff as it is to increase that number. The complexity of choice might increase the likelihood of avoiding the process altogether.

*Question 16: The CRU proposes to end the limit on the maximum number of time of use tariffs from 1 April 2025. Do you agree with this approach? If not, why not?*

- Response: as above, we would be concerned about the possibility of choice overload being detrimental to the rate of tariff switching.

*Question 17: CRU would welcome any views on whether respondents consider it appropriate to schedule a review on the structure of the Standard Smart Tariff ahead of the completion of Phase 2 of the NSMP (currently scheduled for the second half of 2024).*
No response.

*Question 18: CRU would also welcome views from respondents on which issues should be considered in such a review. Respondents can specifically focus on the following questions, or provide their own views:*

*a) Is the Standard Smart Tariff achieving its purpose to be an easy to understand 'entry-point' to time of use tariffs for consumers?*

*b) Do you have any concerns or recommendations in relation to the Day/Night/Peak structure of the Standard Smart Tariff, including the hours assigned to each time band?*

*c) In light of the proposed measure to extend the maximum number of time of use tariffs for each supplier from four to eight, do you see a continued need for the Standard Smart Tariff?*

*d) Are there any other issues related to the Standard Smart Tariff you believe the CRU should take into consideration in a future review?*

No response.

*Question 19: CRU would welcome any additional suggestions to incentivise the uptake of time of use tariffs.*

- Response: it is difficult to provide evidence-based suggestions given the changing landscape in Ireland with smart meter rollout currently in progress, coupled with the fact that previous research in the area has not found consistent reasons for the low uptake of ToU tariffs. Generally, behavioural science research supports the principles of making interventions easy to use or understand, attractive, social, and timely. Context specific novel research would be a useful step in formulating more specific suggestions.

Pat Casey Senator

Seanad Eireann, Leinster House,

Kildare Street, Dublin 2

E: patcasey@oireachtas.ie

31st July 2023

Commission for Regulation of Utilities,

The Exchange, Belgrad Square North,

Tallaght, Dublin 24

Submission to the Commission for Regulation of Utilities- Review of LEUs Connection Policy

Dear Commission for Regulation of Utilities,

I want to take a moment to thank the CRU team for their valuable time and active participation during the engagement with the Joint Committee on Environment and Climate Action in May. Your contribution regarding the need for legislative strengthening in the deployment of renewables to support the low carbon development and the Twin Transitions to generate transformational value for our consumers, businesses, economy and society was particularly insightful.

The dedication of the CRU to establishing an efficient framework – in line with the Climate Action Plan 2021 - that progressively decarbonizes economic growth in the form of an overarching energy demand strategy which coordinates overall demand to match Ireland's carbon budgets and net zero target is also commended.

As a public representative, I believe it is essential that this consultation should result in a clear understanding of the process and guidelines regulating the approval of a grid offer and grid connection for an LEU. As the primary regulatory authority, I would kindly request that the process and timeframe for an LEU to receive a grid offer are comprehensively detailed and the conditionalities attached to the offer are published in a manner that allow for a crystal-clear and clear-cut public awareness. Also, publishing the subsequent guidelines for finally securing a grid connection as well as further clarity as to who is final authority and decision maker regarding the grid offer in the same manner would be beneficial.

My submission also directly relates to Q.1 and Q.3 of the Review of LEUs connection policy. Although attaching the grid connection approval of LEUs to increasing the available surplus of renewable energy suppliers and generation is a sound approach to decarbonise energy demand and attain net zero emissions, this solution should be structured in a way that is workable for the functioning of those LEUs that have shown clearly – at Offer Process Stage – how they plan to comply with the sectoral emissions ceilings, CPPAs conditions and all existing regulatory requirements.

LEUs being required to have established CPPAs with a renewable energy provider before actual grid connection / energisation as well as compliance with any other conditions specified at the offer process stage – appropriately structured within the regulatory framework – will make the approval process more reasonable as it will not attach the decision of a specific LEU to a specific renewable energy provider considering they may not be aligned at the same stage of consultation, review, permission and strategy during the Offer Process Stage.

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This approach aligns with our sustainability goals, promotes grid stability, and fosters a progressive and competitive market for renewable energy to thrive and develop effectively.

Thank you for considering my input in this matter. I trust that the Commission will carefully evaluate all perspectives to make a well-informed decision.

Sincerely,

Pat Casey

Senator

# CRU Consultation on incentivising the uptake of Smart Time of Use Tariffs

## SSE Airtricity Response – 25 August 2023

SSE Airtricity welcome the opportunity to respond to the CRU's consultation on incentivising the uptake of Smart Time of Use tariffs. SSE Airtricity are of the view that following the significant investment that has been made during the National Smart Metering Programme, an uptake rate of just 7% of those customers with a smart meter shows a high level of customer inertia which must be addressed, and therefore welcome the CRU's review of measures aimed at tackling this issue.

Our key points in summary are that:

- Initiatives that aim to drive adoption of Smart are to be welcomed but must be complemented by a wider more holistic programme of work that aims to educate consumers better of the benefits of Smart when demand is moved. This must also take account of the fact that as dwellings electrify, overall electricity consumption my rise and therefore bills may also rise due to energy substitution. We have significant competition neutrality concerns that the use of this data exclusively by PCWs has not been fully considered given their short-term relationship with consumers.

- We firmly believe that the use of EABs is not fit for purpose for Smart products. This is because any realisable Smart EAB is dependent on the customer moving from a passive consumption to an active consumption. The application of EABs to such products would be misleading and in turn undermine supplier investment in the National Smart Metering Programme.

- The raising of the maximum number of tariffs from four to eight is to be welcomed. This is reflective of the diversity of our society where the energy needs of customers must be matched by different smart profiles. We support the lifting of the restriction and further welcome the removal entirely in 2025.

**The education gap leading to lack of customer empowerment.**

Along with the proposals outlined in the consultation paper, SSE Airtricity is of the view that there continues to be a high level of misunderstanding in the market on what Smart tariffs can achieve both in terms of savings for customers who load shift but also in relation to wider societal aspects such as network investment, integration of renewables and reducing overall emissions. As such, we firmly believe that there is a need for a concerted campaign to drive understanding amongst consumers of Smart. This is evidenced in recent research SSE Airtricity commissioned by Behaviours & Attitudes (B&A) which indicates that many customers simply do not understand what smart tariffs are.

This is understandable given the majority of domestic customers on 24 Hour tariffs have to date never had to engage with demand shift. At the same time, some consumers such as those on Day-Night or who use EV's are fully aware of the need to demand shift. As such, there is a strong need for industry wide education across Government, regulator and industry to drive correct information on what Smart unlocks.

A national effort is required to reduce demand on networks as we move toward both electrification of vital commodities such as heat and transport, and as we experience new levels of demand through new data centres etc. The key to unlocking the full potential of Smart is in educating customers and promoting not only the cost savings but also bringing them along on the journey of peak demand reduction. We must empower customers with knowledge on how they can best contribute to and benefit from the extensive National Smart Meter Programme.

The need for education and better understanding is also reflected in our views on the expansion of the EAB to all Smart tariffs. The use of an EAB is optimal when comparing tariffs based on non-dynamic/passive consumption. Using EABs when comparing tariffs that are aimed at incentivising specific consumption behavioural changes for a customer are not conducive to supporting customers in the energy transition but simply add to the plethora of information that a supplier must inform the customer of. In this case we believe that this is of limited use to the customer. We are concerned that with sales calls already onerous the expansion to also include EAB and explanation would result in lengthier calls that would have little tangible benefit for the customer.

**Question 1: The CRU is proposing to amend the PCW accreditation framework to allow consumers to upload their smart meter data (obtained as a HDF via the ESBN Customer Portal) to receive a price comparison based on their actual historical electricity consumption. Do you agree with this approach? If not, why not?**

SSE Airtricity agree with the principle of allowing customers to utilise their own meter data with a view to informing what tariff options work best for their needs.

The data issued via the Harmonised Downloadable File (HDF) is the most logical information to use and the infrastructure to empower customers is already readily available. However, we do have a number of concerns with the proposal as it stands.

1. Unlike suppliers, PCWs have no long-term relationship with a customer. Their focus is entirely on providing a range of tariffs which the customer must then sign up to via the supplier. The approach being proposed in the consultation assumes that PCWs will be able to guide a customer to a tariff that is right for their circumstances. Whilst this may be the case when using a simple 24-hour tariff that is being compared only on the merits of the unit/standing charge price, the ability for a PCW to guide the customer to the right Smart tariff choice based on historic information is not being evidenced in the proposals in the paper as it is unclear how the PCW will rank search results.

2. The final proposal must not focus solely on historic consumption data from a property and feeding it through a PCW without properly explaining the tariff offerings to a customer. To realise the full potential savings from a Smart product, customers will need to change their behaviour otherwise any projections of cost will be misleading. Education of customers is key to both shifting behaviour to aid peak demand reduction but also managing expectations of costs savings.

3. We are concerned that the exclusive right being given to PCWs above other market participants is anti-competitive as it puts suppliers (who are licensees of the CRU) at an economic disadvantage versus PCWs who will be privy to customer information and hold an advantage over suppliers. We are concerned that where customer behaviour does not yield the expected results, that it will be suppliers who will be expected to manage customer dissatisfaction. Rather, we are of the view that where customers are better educated and informed through engagement with a trained sales agent this drives a deeper understanding of the product suitability.

The CRU needs to address these concerns before implementation of any PCW-based comparisons (or other) go live.

***Question 2: The CRU is proposing not to put any restrictions on the minimum period of time that needs to be contained in smart meter consumption data that consumers can upload to the PCW. However, we propose that a warning message be included where consumers have included less than a year of data. Do you agree with this approach? If not, why not?***

If the purpose of this process is to incentivise customers to opt for a Smart tariff, then a series of warnings may undermine this ambition.

Rather, as indicated above there is a need for a robust information and education aspect to ensure the customer fully comprehends the potential change in behaviour, they will need to action to realise the advantage of Smart ToU tariffs. We suggest that a more customer focused approach would be to educate the customer before giving results or give notice to the customer that the results yielded are accurate based on the data that is available. Numerous disclaimers and warnings may be dissuasive to a customer and may lead to the customer abandoning the switching process.

We believe that where less than a year's data is available, then the information/education aspect which should come before results should outline that the tariffs displayed will be based on an extrapolation of your year-to-date data and will display tariffs accordingly. We believe that explanatory text that is of an informative rather than disclaimer nature is essential to drive the comprehension of smart and in turn drive adoption.

In addition, it is important to note that in many cases a Smart meter may have been relatively recently installed and as such the level of meter information may not yet reach a year. It would be inequitable to not facilitate such customers who are seeking out Smart tariffs and therefore we are supportive of data of less than a year being included. Finally, it is worth noting that this will not be an issue that persists we believe. As the NSMP reaches completion then the level of customers with less than one year of data will dissipate.

**3. Is there anything else CRU should consider with regards to this matter?**

N/A

**4. Do you agree with the proposal that a disclaimer is included where missing data accounts for 1% or more of the total data set?**

Similar to our points above for Question 2 regarding the use of warnings which may be dissuasive to a customer who is engaging with the process, we are of the view that an information and education piece is required as opposed to a warning.

Relying solely on warnings with results can lead the customer becoming desensitised to these, particularly if it is an enduring issue such as connectivity in built up or remote areas.

Again, we suggest a better approach would be to educate the customer along the journey and give notice to the customer that the results yielded are accurate based on the data that is available.

***Question 5: Is there anything else CRU should consider with regards to this matter?***

N/A

**Question 6: The CRU would be interested in hearing whether respondents believe there is added value or not in allowing PCWs to ask consumers additional questions to identify their consumption behaviour, and tailor price comparisons. For example, whether a consumer has an Electric Vehicle. If you believe there is added value in this approach, what guidelines, if any, do you believe the CRU should implement to ensure a minimum standard across PCWs?**

PCWs should not have any additional rights to access customer data beyond what is necessary to fulfil the role of providing a comparison. There are data protection implications for this information and also it may disengage the customer if the process becomes too time consuming. In addition, the CRU needs to carefully consider what cohort this tool is aimed at. Those that have EVs for example and utilise night charging are already more educated on the use of Smart tariffs, so we don't believe this is the cohort of customers that requires priority in this project.

As above, historic consumption data alone is not sufficient to generate an accurate projection of future costs so the customer should be given the opportunity to add sensitivities to better predict their next year's consumption, as appropriate. This could include owning an EV or aspiring to shift their behaviour to match time-bands of a specific product. However, any additional information should be in the pursuit of providing a more accurate comparison.

**Question 7: The CRU proposes to require PCWs to implement the functionality to allow consumers to upload their smart meter consumption data (via HDF) from 1 January 2024. Do you agree with this approach? If not, why not?**

SSE Airtricity is neutral on the basis that to determine delivery dates of any project requires milestones to be set out and reached. Our views below are based on the approach detailed in the consultation paper, noting that we have concerns on the overall competitive position being given to PCWs above Suppliers which require addressing.

As we see it, the key milestones here may include:

- CRU Decision (e.g., September)
- PCW/Supplier/CRU engagement on methodology (6-8 weeks).
- Finalisation between PCW and suppliers of data transfers. (c. 2 weeks)
- Education and communications plan.
- Go Live

Tentatively, we can see this being completed in c.3 months, but the final date should give consideration to key milestones including resourcing for stakeholders e.g. suppliers. Implementation of such a new industry process must be given the appropriate time to be developed and delivered. This includes engagement and thorough testing as well as robust governance and stakeholder management.

A key aspect of developing this PCW led comparison is understanding the methodology used so suppliers can provide the best information and CRU can provide transparency to customers. This will include sharing the methodology on how inputs were collated, the calculation methodology (including any adjustments) and how the results are presented. In addition, as per our views on the need for more informative education this aspect will require development and agreement amongst stakeholders.

**Question 8: Are there any other issues that you believe the CRU should take into consideration with regards to the timeline?**

N/A

**Question 9: The CRU proposes to amend the PCW accreditation framework to allow consumers to access price comparisons for microgeneration export tariffs between suppliers. It proposes consumers should be able to do this in one of two ways, either by submitting their actual (historical) export volume, or by submitting their deemed calculation. Do you agree with this approach? If not, why not?**

If a customer has a Smart meter, then they will receive actual export data for Microgeneration. There is no circumstance in the market where a Microgeneration customer should not be using actual metered export. Therefore, in our view this should be descoped from the project.

Of the proposals included in the consultation, the delivery of a functional comparison for consumption by PCWs will require significant resource from both industry and PCWs. This must be the priority and delivered in its entirety before the focus would migrate to any potential secondary market such as microgeneration comparisons.

Additionally, the regulatory framework for microgeneration is still at an interim phase with the enduring solution to be agreed later this year. Now is not the time to bring third parties such as PCWs into this space before a finalised enduring approach in in place. Comparison between export tariffs may be a useful tool in the future. However, these customers are not necessarily the target audience for Smart uptake initiatives given they are more likely to be able to meaningfully load shift with a suitable tariff and any deliverable for this cohort should be de-prioritised until a later point in the NSMP.

**Question 10: Are there any other issues that you believe the CRU should take into consideration with regards to this functionality?**

N/A

**Question 11: The CRU proposes to extend the requirement for an EAB to all tariffs available on the market, including time of use tariffs. Do you agree with this approach? If not, why not?**

The EAB is a useful comparator for an average bill where consumption patterns are static. However, the key differentiator with Smart is that they are intended to incentivise the customer to think about using energy in a different way. While we understand and appreciate the CRU's intention to allow an easy comparison across suppliers, the EAB for Smart cannot fulfil that role as it fails to accommodate that second integral stage that the customer must do, i.e., change behaviour. For example, a TOU product targeting charge at home EV owners would likely have a higher EAC, with a higher percentage of consumption at night.

Similarly, weekend products would have a consumption profile skewed more towards Saturday and Sunday. While the EAB gives a simple figure to compare, for TOU products it could be meaningless and therefore misleading to end consumers.

There are existing requirements on suppliers to educate consumers on the benefits of Smart. We feel a more beneficial allocation of resources would be to review and coordinate education material across the industry. This will empower the customer to make a decision about which Smart tariff best suits their needs and ultimately give them the tools to make an informed comparison including unit rates, time bands and dynamic consumption profile of the customer.

We recognise the CRU's preference for using an EAB calculation so in the circumstance where an EAB is used, it should be precisely defined to ensure uniformity across suppliers.

**Question 12: The CRU proposes to implement an EAB for all time of use tariffs from 1 January 2024. Do you agree with this timeline? If not, why not?**

As expressed above, we do not see the merit in using EABs to compare Smart tariffs and for the reasons above would not want to see these being implemented by PCWs.

Any implementation of such EABs should be carefully considered and if implemented should only be after an education campaign for customers who may rely on these comparisons which must not be taken singularly out of context. Operationally for suppliers, setting a Go-live on January 1st places additional pressure during a period in which key personal are often on annual leave and key processes/systems frozen over the Christmas period. Any go-live date should take supplier readiness into account and avoid holiday periods.

**Question 13: With regards to the methodology for calculating an EAB for all time of use tariffs, the CRU proposes to use the demand-weighted approach, which is the same that is currently used for the Standard Smart Tariff and Day/Night tariff. Do you agree with this approach? If not, why not?**

We believe consistency in methodology is crucial to allow for any price comparisons. We strongly disagree with the supplier led approach as this would lead to inconsistency between suppliers' interpretations and would also add an extra administrative step for suppliers before products could launch.

**Question 14: Are there any other issues that you believe the CRU should take into consideration with regards to implementing an EAB for all time of use tariffs?**

N/A

**Question 15: The CRU proposes to increase the limit on the maximum number of time of use tariffs from four to eight from 1 October 2023. Do you agree with this approach? If not, why not?**

Anything which facilitates launching new products to address specific cohorts of customers is to be welcomed.

**Question 16: The CRU proposes to end the limit on the maximum number of time of use tariffs from 1 April 2025. Do you agree with this approach? If not, why not?**

We are in agreement and support bringing more products to market.

**Question 17: CRU would welcome any views on whether respondents consider it appropriate to schedule a review on the structure of the Standard Smart Tariff ahead of the completion of Phase 2 of the NSMP (currently scheduled for the second half of 2024).**

Based on current uptake rates, the market is not sufficiently mature to consider a change in approach. In addition, given peak demand has always been between 5 and 7, it is not clear to SSE Airtricity what this review outcome would entail.

It should also be noted that a mandated change in the structure of SST would be a significant resource constraint on suppliers to implement and so should only be actioned if there is a clear and sustained change in peak demand observable over a number of years.

***Question 18: CRU would also welcome views from respondents on which issues should be considered in such a review. Respondents can specifically focus on the following questions, or provide their own views:***

a. ***Is the Standard Smart Tariff achieving its purpose to be an easy to understand 'entry-point' to time of use tariffs for consumers?***

As we have alluded to throughout this response, the key to Smart meter (and services) uptake and shifting demand is education of customers. This should be focused on two customer types:

1. Pre-smart services uptake to explain the benefits of Smart beyond cost savings.
2. Post-smart services uptake to ensure customers are making the most of the products on the market and shifting behaviour to realise efficiencies.

**b. Do you have any concerns or recommendations in relation to the Day/Night/Peak structure of the Standard Smart Tariff, including the hours assigned to each time band?**

No. As stated in the question above, changing the time bands would be a significant burden on suppliers and so should be considered in depth before any mandatory changes, noting again that this would require correlation with network led peak demand.

***c. In light of the proposed measure to extend the maximum number of time of use tariffs for each supplier from four to eight, do you see a continued need for the Standard Smart Tariff?***

The SST has worked as an entry point to market for many customers, so we see no concerns with it remaining in the market.

**d. Are there any other issues related to the Standard Smart Tariff you believe the CRU should take into consideration in a future review?**

No

**Question 19: CRU would welcome any additional suggestions to incentivise the uptake of time of use tariffs.**

In addition to the points made above on the importance of education and customer empowerment, the CRU should consider an alternative approach to Smart meter roll out and accelerating the process to realise the programme's full potential. While the NSMP is at the mercy of customers, there is an inherent delay in uptake. At present, industry must convince the customer of the benefits of Smart meters first and then subsequently the benefits of Smart tariffs. It would stand to reason that the greater number of Smart meters installed, then the greater the number that will opt into Smart tariffs and begin to realise the benefits.

As the majority of customers are passive when it comes to their energy consumption and engagement with the industry, the CRU should explore an opt-out model for Smart. This is a longer- term solution in our view and needs further exploration at industry.

Society of St Vincent de Paul

# Incentivising the Uptake of Time of Use Tariffs

## Commission for the Regulation of Utilities

August 2023




**Society of St Vincent de Paul**
**National Office**
**91/92 Sean McDermott St.**
**Dublin 1**

Essential action is currently underway to decarbonise our energy system – it is important that needs of households in energy poverty are considered at every stage of this transition. The Society of St Vincent de Paul supports thousands of households struggling with the cost of energy each year, and we welcome the opportunity to submit this response to the CRU on supporting people in energy poverty to navigate Time of Use Tariffs. We hope this forms part of an ongoing programme of engagement and consumer research on this matter.

Introduction

Time of use (ToU) tariffs aim to make use of consumers' ability to alter their behaviour in response to new information and new financial incentives. This brings many opportunities across information and communication, tariff design, and ultimately demand management.

We welcome improved technology that can lead to a more tailored experience of the energy market, as well as the potential to reduce costs. However, these developments are not neutral and must be 'poverty proofed' to make sure that they benefit people in energy poverty as much as other cohorts, and that the necessary protections are in place.

It is important to understand the differences and dynamics within the overarching 'residential consumer' group that will impact on different households' ability to respond to this technological development. This includes the factors that will influence awareness and selection of tariffs, and their 'flexibility capital'[1], a term used by Citizens Advice UK to refer to a households' different abilities to change their energy use patterns, which can lead to either benefit or detriment from tariff choice.

Tariffs and supporting structures (such as price comparison website, supplier comms, etc) must be designed to minimise unintended negative consequences – the key risk here being that people see bills go up from choosing an inappropriate tariff. In an increasingly complex market, it is important that the quality of communications is kept in focus, with the ability of all consumer groups to navigate new developments being the objective.

Characteristics that could influence a households' ability to benefit from ToU tariffs include:

- Customers with literacy and digital literacy barriers

[1] Citizens Advice (2023) 'A flexible future: Extending the benefits of energy flexibility to more households. Available here.

- People in energy poverty who are very sensitive to price incentives, and may be optimistic about ability to change behavior
- People with health or disability needs
- Household size and make up
- Disengaged/inactive customers
- People, such as renters, who might move frequently and so build up less data
- Tenants, when there is shared control or oversight of energy services at home (including tariff choice but also ability to invest in optimal appliances such as those with timing functions)
- Shared homes with less cohesive or adjustable schedules

When designing the tariff, as well as accompanying structures and resources, the full range of circumstances that a household may be in need to be considered.

- Different parameters to alter behavior – are there personal or household factors that mean someone cannot or should not change their energy usage patterns due to a financial incentive? There are many households who currently already use energy below safe and healthy levels, and other households who must use energy (eg. For medical equipment, or due to household circumstances) at what might be peak times on certain tariffs.

- How information is communicated before and during tariff choice – in an increasingly complex tariff marketplace, is enough emphasis and resources being put in to ensuring consumers – every consumer – understands their choice and is making an informed decision, ie. Measuring the customer outcome as well as the output. This is about the quality as well as quantity of communication. The responsibility should be on the organizations that manage the energy system, rather than the individual, to make sure customers are 'well-informed'.

- Tariff conditions and design - are tariffs designed with the necessary protections for people's different circumstances? This is important to make sure people have the best possible outcomes (ie. Reduced bills) but also that people feel confident that their circumstances are catered for, and can choose the tariff – ToU or 24hr – that is right for them. As Citizens Advice have commented in the UK context: 'Rather than simply helping customers change their behaviour to benefit from cost savings, companies can also build protection into the product design.' [2]

- If things go wrong, such as increased bills – is their sufficient planning and protections to support customers, such as from a wrong tariff choice, or a change of life circumstance, etc.[3]

[2] Kruja, K. (2019) 'What do changing energy tariff designs mean for consumer protection?' Citizens Advice blog available here.
[3] Ibid.

The above considerations lead to important questions when discussing ToU tariffs and incentivising the uptake of ToU tariffs. We believe emphasising the uptake of the 'right' ToU tariff highlights the need - in both regulation and practice - to enable personalised decision making to work out what tariff will be the best fit. This is in line with the CRU's aim to consider '*possible measures to create a more enabling environment where consumers have more information to help them decide whether a time of use tariff is appropriate for them, and to be able to better compare tariffs*.'[4]

We would urge the CRU to ensure that, in addition to having 'more' information, there is emphasis and attention on ensuring the quality of the information, and that it is designed and tested with all consumer groups in mind. This would build on research carried out by ESRI in 2020, which provides important insights into a range of issues that impact customer uptake of tariffs, and in particular the importance of testing and developing information tools: as the ESRI state '[i]ntuitive predictions can be wrong, with the potential for well-intentioned interventions to misfire.'[5] It will be important to extend this research to further explore the nuances for different consumer groups, as well as their experience *after* taking up tariffs.

UK research on ToU tariff impacts

In 2020 Ofgem commissioned research with both ToU and non-ToU tariff customers to understand perception and experience of static and dynamic ToU options. The research found that simpler tariffs were the easiest to navigate and most appealing. It also found that those customers with EVs found it much easier to change their behaviour to respond to pricing, whereas those without EVs 'struggled to adjust behaviours' as changes needed were more complex.[6]

In a previous Ofgem-commissioned report in 2017, the distributional impact of ToU tariffs was assessed for the UK market.[7] The report explored how responsive different groups were to price changes, and the level of cost savings that may accrue to different groups. Key relevant findings include:

- On average customers with a range of different characteristics classed as 'vulnerable' show cost savings. However, within each group there is a wide range of

[4] CRU (2023) ' Energy Demand Strategy: Call for Evidence' Available here, p2.
[5] Belton, C. and Lunn, P. (2020) 'consumers struggle to choose new types of electricity tariffs, but comparison tools can help' Available here.
[6] Ofgem (2020) ' Energy consumers' experiences and perceptions of smart 'Time of Use' tariffs' Available here.
[7] CEPA (2017) 'distributional impact of time of use tariffs (Ofgem)' Available here.

cost changes, and 'within each vulnerable group, there is potentially an ill-defined subset that would experience a bill increase if they were to take up a ToU tariff'.

- Responsiveness to ToU pricing varies for income and vulnerability categories due to 'factors that in practice inhibit them from responding to price', including having already reduced energy use to the lowest possible level, and that purchasing appliances that can maximise ToU tariffs may not be possible (this is a factor also noted by Citizens Advice UK[8]).

Summary of recommendations (further details are within the table below):

*Communications*

1. Communications used by suppliers and PCWs must be piloted and tested with different consumer groups to ensure that they are accessible and successfully communicate the necessary information to consumers.
2. To ensure digitally excluded consumers receive equivalent information, the regulator should consider requiring freephone numbers to reach dedicated supplier staff with capacity to support people transitioning to TOU Tariffs. [9]

*Tariff design*

3. There should be cooling off periods after a customer transitions to a ToU tariff if they subsequently don't believe it's the correct choice.
4. There should be an opportunity to switch tariffs without penalty due to change of personal circumstance.

*Research and monitoring*

5. The Regulator should commission research to understand the uptake, experience and impact of ToU tariffs amongst different consumer groups, paying particular attention to groups who may experience adverse impacts from either missing out on potential cost-savings, or from inappropriate tariff selection.

Response to select consultation questions:

| **CRU Question** | **SVP Response** |
|---|---|
| **Price Comparison Websites (PCW)** | |
| Question 2: The CRU is proposing not to put any restrictions on the minimum period of time that needs to be contained in smart meter consumption data that consumers can upload to the PCW. However, we propose that a warning message be | This is a risk to the consumer that needs to be effectively mitigated.<br><br>This approach relies on customers knowing enough about their usage without smart meter data to choose the right tariff – there |

[8] Citizens Advice (2017) ' The Value of Time of Use Tariffs in Great Britain' Available here.
[9] Kruja, K. (2019) 'What do changing energy tariff designs mean for consumer protection?' Citizens Advice blog available here.

| | |
|---|---|
| included where consumers have included less than a year of data. Do you agree with this approach? If not, why not? | should be **piloting to ensure this works for customers,** otherwise the CRU should consider a minimum period of data to be required.<br><br>We would emphasise that the warning message should be **tested with a range of consumers** to ensure that it is clear and effectively delivers the necessary information. The timing, design and content of the warning should be tested. |
| Question 3: Is there anything else CRU should consider with regards to this matter? | We believe there should be a '**cooling off period' in ToU tariffs where customers can realise their usage patterns do not suit the tariff** and switch to a more appropriate tariff without financial penalty.<br><br>If there were mechanisms to detect this and inform the customer directly that would be beneficial (if, for eg, the customer's bills went up and it wasn't due to actual higher KWH usage).<br><br>We also believe there should be consideration of protections for customers who, due to unexpected change in circumstance, are no longer on the right ToU tariff for their usage: **an opportunity to switch tariffs due to change of circumstance.** This could include onset of illness or disability requiring medical equipment. There are points of vulnerability in people's lifecycle and there should be no financial penalty due to a particular ToU |

| | |
|---|---|
| | tariff no longer being the right choice – these customers should be able to move tariff with no charge. |
| Question 6: The CRU would be interested in hearing whether respondents believe there is added value or not in allowing PCWs to ask consumers additional questions to identify their consumption behaviour, and tailor price comparisons. For example, whether a consumer has an Electric Vehicle. If you believe there is added value in this approach, what guidelines, if any, do you believe the CRU should implement to ensure a minimum standard across PCWs? | We believe this is necessary and there would be added value. There is important household information, not limited to EV use, that would impact a household's appropriate ToU tariff.<br><br>Requiring the household to think through this stage independently, rather than requiring them to be prompted by the PCW, puts the responsibility on the individual to accurately understand and assess their energy use, potentially prior to smart meter data (even with smart meter data, it would be subject to the individual's interpretation and understanding).<br><br>**The responsibility should be on the PCW to develop the necessary questions, steps, and safeguards, to inform the best possible tariff choice.**<br><br>We would suggest the CRU specify a minimum list PCW must use, and engage stakeholders to test this.<br><br>For example, the households heating source such as a heat pump, use of electronic medical equipment that may need to be permanently on, or may need to be in use at Tariff 'peak' times, could both lead to bills vastly different to the EAB. As |

| | |
|---|---|
| | well as household size, circumstance and usage patterns, including some of the factors listed on page 1 of this submission.<br><br>A wider group of stakeholders would need to be consulted to make sure this list is appropriate and comprehensive. |
| **Estimated Annual Bill (EAB)** | |
| Question 11: The CRU proposes to extend the requirement for an EAB to all tariffs available on the market, including time of use tariffs. Do you agree with this approach? If not, why not? | We agree with this approach however the Warning and caveats discussed above (question 2 and 3) should be applied. |
| **Limitation of number of ToU Tariffs** | |
| Question 15: The CRU proposes to increase the limit on the maximum number of Time of Use (ToU) tariffs from four to eight from 1 October 2023. Do you agree with this approach? If not, why not? | Increasing the number of ToU tariffs available from suppliers should be contingent on the communications and warnings about tariffs being **fully tested with a range of consumer groups**, and protections built into tariffs design, including the introduction of 'cooling off' periods with no financial penalty for switching tariff.<br><br>Navigating an increasing number of tariffs will be much harder for people with low digital literacy – this needs to be actively planned for so this group of consumers do not experience higher bills – and an increasing gap with customers who are able to navigate PCW – by default.<br><br>One response is to require specific **call centre capacity and a freephone** |

| | |
|---|---|
| | **number[10] from suppliers to enable customers to discuss and navigate TOU tariffs over the phone**. This would be an important part of mitigating TOU tariffs contributing to digital exclusion.[11] We recommend the CRU requires this from suppliers. |
| **Other Measures** | |
| Question 19: CRU would welcome any additional suggestions to incentivise the uptake of time of use tariffs. | We believe the CRU needs to focus the drive to incentivise ToU tariffs on customers being able to choose the *right* time of use tariff. This acknowledges the importance of personal circumstance in dictating the best tariff for each household. ToU tariff selection needs to be an informed decision based on personal circumstance, and the ability and appropriateness of altering usage behaviour in response to a financial incentive. |

The SVP Social Justice team would like to acknowledge and thank Tom Geraghty for his voluntary assistance in developing our response.

[10] Kruja, K. (2019) 'What do changing energy tariff designs mean for consumer protection?' Citizens Advice blog available here.

[11] Citizens Advice in the UK have written about the importance of maintaining telephone and offline contact routes for customers in the energy sector as it is an 'essential to life' service: Why energy suppliers need to keep their customer phone services | by Alexander Belsham-Harris | We are Citizens Advice

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30 August 2023

By email: energydemandstrategy@cru.ie electricityconnectionpolicy@cru.ie and smartmetering@cru.ie

**Re: Energy Demand Strategy Call for Evidence Papers**

Dear Sir/Madam

Uisce Éireann (UÉ) as the largest consumer of electricity in the public sector welcomes the opportunity to make a submission to the Commission for Regulation of Utilities (CRU) Energy Demand Strategy Call for Evidence Papers.

Energy efficiency improvement is a key sustainability measure to help ensure water and wastewater services are resilient to climate change and for developing a low greenhouse gas emitting water and wastewater service. As UÉ accounts for circa 21% of public sector electricity consumption, we are focused on improving energy efficiency in asset design, upgrades, lighting and heating, transport and process, as well as on renewables such as PV and wind, and focusing on reducing demand (Use Less). We have made significant progress on our journey to become an energy efficient, low carbon, sustainable water utility. We have achieved over a 30% improvement in our energy efficiency. We are developing plans to move towards net zero carbon, including further development of renewable energy sources on our assets, delinking energy use from greenhouse gas emissions.

Below we detail our responses to the individual consultation papers.

**Consultation Paper – Incentivising the Update of Time of Use Tariffs**

Uisce Eireann welcome the rollout of smart meter and the enhanced usage profiles available across the Network. The provision of access to the site-specific data for multisite customers should be provided to enable the transition to more dynamic time of usage tariff without the transfer of cost risk to the end user. It is important from the outset that multisite customers should have access to their site data centrally to assist in the transition and to enable users to get a greater understanding of the benefits of Time of Day usage.

As the largest consumer of electricity in the public sector, bulk demand data download and analysis is a challenge for our sector. The CRU Energy Demand Strategy and in particular “Coordinated approach between Government Departments/Agencies” should consider the solutions to overcome data aggregation and analysis challenges to enable a step change in large energy portfolios.

**Question 1: The CRU is proposing to amend the PCW accreditation framework to allow consumers to upload their smart meter data (obtained as a HDF via the ESBN Customer Portal) to receive a**

**Stiúrthóirí / Directors:** Tony Keohane (Cathaoirleach / Chairman), Niall Gleeson (POF / CEO), Christopher Banks, Fred Barry, Gerard Britchfield, Liz Joyce, Patricia King, Eileen Maher, Cathy Mannion, Michael Walsh.
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Is cuideachta ghníomhaíochta ainmnithe atá faoi theorainn scaireanna é Uisce Éireann / Uisce Éireann is a design activity company, limited by shares.
Cláraithe in Éirinn Uimh.: 530363 / Registered in Ireland No.: 530363.

**price comparison based on their actual historical electricity consumption. Do you agree with this approach? If not, why not?**

We welcome the proposed amendment of the Price Comparison Website accreditation framework and suggest that simplicity of using the PCW is a key measure for customers to encourage engagement resulting in smart tariff decisions

**Question 13: With regards to the methodology for calculating an EAB for all time of use tariffs, the CRU proposes to use the demand-weighted approach, which is the same that is currently used for the Standard Smart Tariff and Day/Night tariff. Do you agree with this approach? If not, why not?**

We welcome the EAB as it will enable consumers to see a maximum and minimum saving and inform them about the impact of their behaviour on costs. We would suggest presenting a range of savings across the EAB models rather than just the demand weighted approach

**ESBN "Scenarios for 15-20% Flexible System Demand – National Networks, Local Connections Programme" Paper**

As the largest consumer of electricity in the public sector we have already taken significant steps across our infrastructure sites to ensure energy usage during the expected morning peak of 7am to 9am and evening peak of 5pm to 7pm is reduced. Where practical, energy intensive operations are scheduled to run when electricity is available at optimum costs and non-core operations are managed outside the peak hours of 17:00 and 19:00 (Monday-Friday). Night-time water pumping to elevated storage reservoirs is maximised to facilitate gravity supply for much of the day. A dedicated process optimisation team continuously drives energy efficiency at treatment plants and pumping stations using cost savings/avoidance tools. In addition, individual asset operators have a high level of awareness in relation to time-of-day energy costs and driving energy efficiencies.

Additionally, UÉ continues to actively participate in the EirGrid Demand Side Management (DSM) scheme to assist in the management of electricity at a number of sites. In 2023, UÉ is exploring the opportunities to include additional sites in this scheme, of which a number are already under assessment to be included.

UÉ will continue to review our infrastructure and operations to run outside of peak electricity hours whilst ensuring there is no impact on water and wastewater quality.

**Call for Evidence Paper – Review of Large Energy Users Connection Policy**

UÉ notes that the purpose of the paper *'is to seek views on potential assessment criteria which the SOs could use to assess LEU applications in the context of binding climate targets.'*

In the coming years, we will continue to invest in our network to deliver improvements in drinking water quality, leakage reduction, water availability, wastewater compliance, efficiencies and service for consumers.

These strategic national projects will meet Ireland's future water and wastewater needs for housing, commercial and industrial growth and are included in the Governments' National Development Plan 2021-2030. As such, we propose that one of the potential assessment criteria is for strategic national projects' LEU applications to be prioritised over LEU commercial entities applications.

Yours sincerely

Brendan Murphy
Strategy Resilience & Regulation Director

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# Commission for Regulation of Utilities
# Call for Evidence – Review of Large Energy Users Connection Policy

## Response by Vantage Data Centers, August 30th 2023

Responses are invited from interested parties on this call for evidence until close of business on Wednesday, 30 August 2023.
Responses to this call for evidence paper should be sent, preferably by email, to **electricityconnectionpolicy@cru.ie**.

## Introduction:

We welcome the opportunity to respond to the Call for Evidence on the Review of Large Energy Users Connection Policy.

Ireland's economy is unique in winning technology investment at the scale it has achieved in recent years. The digital economies of other European countries are not comparable with Ireland's ambitions and leadership in this area. The policy decisions of the past decade – designed to stimulate Foreign Direct Investment and particularly investment in digital infrastructure and businesses - have led to one third of Ireland's exports now coming from ICT services (approximately €170 Bn in 2021[1][2]).

More recently, the government has identified the digital economy as a key pillar in decarbonising society and the economy as part of Ireland's drive towards Net Zero. Signals from government are that digitalisation and decarbonisation are key and complimentary pillars of the future. However, the policy framework required to underpin this ambition has stagnated. This has created a disabling environment for these two pillars to co-nurture each other as envisioned.

A consequence of this stagnation is that Large Energy Users (LEUs) and Extra-Large Energy Users (XLEUs) are faced with high levels of regulatory and business uncertainty in Ireland. Policy signals have been uncoordinated to date, and this has created confusion in the market. There also appears to be little if any collaborative coordination between the multiple state bodies – the CRU, EirGrid, ESB Networks, Gas Networks Ireland, Local Authorities, An Bord Pleanála, and the Environmental Protection Agency.

In this context, it is recognised that growth, both in terms of energy demand from and total quantity of, LEUs and XLEUs has presented challenges for policymakers and Irish utilities in terms of delivering capacity, maintaining security of energy supply, and transitioning towards a sustainable future.

[1] https://www.trademap.org

[2] https://bitpower.ie/index.php/dashboard

Any policy changes designed to reconcile these challenges should aim to facilitate the potential synergies that can be harnessed by LEUs and XLEUs in achieving both decarbonisation and digitalisation. Policy should not be structured in a way that places these two pillars at odds with one another.

As examples of the potential to harness synergies, EirGrid's *Shaping Our Electricity Future* roadmap[3] identifies the need for LEUs to support its plans including through providing the future demand necessary to deliver on this roadmap's targets. Furthermore, the electricity grid needs predictable and stable base load demands to better manage the transition to a sustainable future. LEUs, and data centres in particular, represent stable and predictable base load demand.

The 2023 Climate Action Plan's goals of 9GW of new wind and 8 GW of solar cannot be achieved without a large base load. Conversely, the CRU requirement for dispatchable generation of sufficient capacity to match Maximum Import Capacity (MIC) has led LEUs – particularly data centre developers - to plan overly complex fossil-fuel-based energy systems. Consequently, they need to participate in the electricity market and to become energy utilities while not working in optimal alignment with decarbonisation objectives.

The siloed and misaligned nature of existing policy and the proposed policy direction outlined in this CRU consultation risks further amplifying an environment that is not conducive to continued investment by the impacted industries. This in turn would severely hinder EirGrid's ability to generate the demand needed to meet its roadmap targets as the sources of demand would be driven away from Ireland to invest instead in more favourable regulatory climates in the EU.

We thereby welcome the opportunity that this review of Large Energy Users Connection Policy provides, to redirect current policy thinking away from disconnected, implausible and barrier-inducing regulation and instead to create a regulatory framework that can enable complementarity between decarbonisation and digitalisation in Ireland. This is rather than amplify the contradictions currently present between these two streams which, if continued, would result in stagnation in the Irish green and digital economy's growth.

We look forward to CRU's analysis of responses to this Call for Evidence to create a regulatory environment that can facilitate LEUs to continue supporting Ireland in its growth as a decarbonised and digitalised economy.

In the following two sections we provide (1): key observations and an overview of the impact of proposed regulation on data centres as a sub-sector of LEUs and (2): specific comments to questions within the consultation.

[3] Shaping our Electricity Future Roadmap 1.1… https://www.eirgridgroup.com/the-grid/shaping-our-electricity-f/

# Section 1

## Overview of the impact of proposed regulation on data centres as a sub-sector of LEUs

This section provides an overview of key observations and essential context particular to data centres as a segment of LEUs and XLEUs, as well as a summary of the consequences for LEUs and particularly for data centres under the current draft of this Policy.

### 1. Disabling data centres through policy will harm the backbone of the Irish digital economy

As the home to several hyperscalers, including key cloud computing and digital sector businesses, Ireland's economy is heavily dependent on the physical and mission-critical digital infrastructure provided by data centres.

Not only do ICT exports – enabled through the availability of data centres - account for 33% of all Irish exports[4], but data centres also attract over €1.5 bn of direct investment in their construction including associated power infrastructure in Ireland annually.

Data centres enable the totality of industry and commerce on a multi-sectoral basis in Ireland. They are integral to life and living and the functioning of the modern economy. Data centres provide secure and reliable infrastructure to host and process data and they make possible the use and integration of digital applications ranging from online-learning to working from home to artificial intelligence, also accessible to end users through international fibre optic networks.

As the CRU policy draft currently stands, continued growth of the data centre industry will stagnate as signals to the market will indicate that Ireland is closed for Foreign Direct Investment from this sector.

This will have further consequences with the data storage and processing demands of the public sector, private sector and individuals not being able to be met within Ireland.
Furthermore, this is likely to trigger a disincentivisation of continued growth of the digital economy in Ireland as we know it, as the infrastructure required for continued growth is unavailable.

### 2. Achieving a sustainable energy system in Ireland is a transition (not a cliff-edge) and policy must be sensitive to complex market dynamics involved in that transition

A shift to a more sustainable energy system will require a transition period. The current CRU policy draft lacks a recognition of the significant timeline and complex interactions between LEUs and XLEUs as energy-demand drivers, the current lack of scale and maturity of renewable and clean energy supply, and the supply-demand certainties required to make forward-sign purchase arrangements viable.

[4] CSO Data: https://www.cso.ie/en/releasesandpublications/ep/p-its/internationaltradeinservices2021/

For example, the suggestion that data centres seeking connections to the electrical and or gas systems would be 'carbon neutral at the time of connection' is unworkable. Neither the renewable resources nor the mechanisms to pre-purchase them are mature or timely enough to allow such a condition to be met.

Furthermore, the biomethane market is not sufficiently mature to deliver the quantities of gas envisaged if data centres were required to build on-site dispatchable generation. Even the government target of 5.7 TWh by 2030 is well below the levels required.

Biomethane/RNG at any meaningful scale is at best a future aspiration in Ireland. This coupled with the on-going business uncertainty related to private wires, electricity and natural gas connections means that in practice there will likely be little appetite for data centre developers to speculatively purchase biomethane/RNG/renewable project PPAs and this prospect could be five or more years into the future.

Such examples indicate that the current CRU draft is not considerate of the complex market within which data centres participate. Policy should recognise that the data industry can play an active part of the transition by understanding the characteristics of the industry, thereby creating a facilitating regulatory environment for all interconnected requirements to occur in a viable, scalable, and complimentary manner over a timeframe that is reasonable and technically and economically viable.

### 3. Data Centres can and should be enabled to play a positive role in the transition to a sustainable energy system

The transition to sustainable energy requires the development of large-scale renewable energy projects. Without demand certainty, ambitious renewable energy projects will struggle to secure long-term investment. LEUs, including the data centre industry, are keen to be active participants in developing and providing needed demand for Ireland's infrastructure in order to enable the renewable transition.

Tech companies are the leading buyers of renewable energy in Europe and the world[5], providing opportunities to Ireland that energy policy should facilitate. As an example, according to Recharge News in November 2022: "Microsoft announced the largest chunk of deals covering 900MW of wind and solar in Ireland to help power its data centre operations there. The multi-year agreements with Statkraft, Energia Group and Power Capital Renewable Energy will between them meet 30% of the Irish government's target for corporate PPAs by 2030, said the software group."

[5] https://www.rechargenews.com/energy-transition/microsoft-google-and-renault-in-gigascale-corporate-green-power-deal-bonanza-on-land-and-sea/2-1-1360719

**4. The role and impact of data centres on Ireland's energy system is not appropriately quantified, understood or made transparent**

There is a current lack of understanding and quantification of the impact data centres have on Ireland, both in absolute and relative terms. There appears to be a lack of sufficient analysis of the role data centres play or their intersections with other key actors in the energy market (such as EirGrid and the CPPA market) to inform policy. This appears to be partially due to the lack of sufficient base line data.

For example, the scale of contribution that data centres currently make to Ireland's energy system operating costs is not transparent (with, for instance, a cost-of-service analysis by rate class), along with the number of data centres and electricity demand.

Data centres are lumped in with the "ICT sector" as in the recently released Annual Taxation Report, August 2023, where the words "data centre" are never mentioned. For an often-mentioned economic driver for Ireland, there is a lack of data and information on the data centre sector from the Central Statistics Office and/or other state agencies.

**5. Grid flexibility is supported, but the demands placed on data centres need to be feasible and based on an understanding of how data centres work**

While data centres can operate somewhat flexibly, the vast majority can only achieve this on the utility side of their operations. The electricity demand within a data centre may not be directly controlled by the data centre owner/operator. This is due to the fact that customers within the data centre will have service level agreements (SLAs) that allow the customers to set the electricity loads being used. The data centre owner/operator provides the power capacity to cover the SLA, where the customers determine the electricity actually used. Flexibility also gets significantly more expensive and less optimum as it increases. Any new infrastructure required to deliver flexibility must be optimised.

6. **Draft policy around the use of sustainable energy is unclear in intention and currently has unforeseen adverse consequences**

For C/VPPAs the data centre industry has been a global leader in adopting and advocating for their utilisation to meet global decarbonisation goals. Adding Renewable Energy (RE) supply capability has been an intrinsic, business as usual, part of data centres' approach for some time. The term "de-rating" should not be used in relation to renewable energy generation as it is not clear. De-rating is "renewable subsidisation" by LEUs to the Irish grid and the mechanics of this within the Irish regulatory structure need elaboration (Please refer to the response to Question 3).

It is also unclear whether this would be a power line loss calculation based on the geographic location of the renewable site and the data centre site and whether it would vary with time.

Real-time carbon neutral operations (as envisaged) will be difficult to achieve in the short term. This is due to the interdependency on insufficiently mature or scalable markets such as the renewable energy or biomethane markets as explained in point 2 above.

There is also a risk that this policy would encourage sub-optimal choices at the operational level that would be counterproductive to broader environmental objectives. For example, this objective would incentivise the use of adiabatic cooling systems whereby water is continuously used to chill servers. This is compared to currently preferred technology which only uses air-cooling in the chilling mechanisms.

Adiabatic cooling would result in lower Power Usage Effectiveness (PUE) rates (below 1.2, thereby offering lower carbon emissions), but would result in exponentially higher Water Usage Effectiveness (WUE) rates. This is compared to air-cooling systems that offer a WUE of approximately 1.1, and a PUE of under 1.3, on average.

Consequently, a choice to meet the short-term net zero objective would result in exponentially higher usage of another precious natural resource over the short and long term: water. This contradicts a holistic understanding of environmental sustainability and threatens Ireland's leadership in this space.

It is also unclear what problem interruptible gas supplies are intended to solve. Gas Networks Ireland (GNI) designs every new demand connection so as not to overburden the network infrastructure even in a 1 in 50-year worst-case scenario. The concept of 'interruptible gas supplies' overlaps with the natural gas emergency plan6 already under the remit of GNI.

The suggestion to include a requirement for on-site renewable energy for data centre projects would not enable the optimum use of land or energy resources. Power densities and demand profiles are not necessarily complimentary. It would be preferable to fine-tune the cPPA market mechanisms and/or to allow the development of private wire networks.

## 7. System-wide solutions and comments on classes

Some of the options presented in this call for evidence paper would be more appropriate as system-wide solutions rather than be isolated to discrete sites or class of user. Policy decisions must recognise that every decision will require new equipment which carries its own lifecycle emissions cost (manufacturing, energy, steel, rare-earth metals, transport, etc). There is a need to ensure that a holistic interpretation of a sustainable future is formed, and that other aspects of environmental sustainability throughout the supply chain are not derailed due to a focus on only a sub-sector of objectives at a specific stage within the supply chain. It is important that policy does not inevitably result in valuable resources being wasted and adverse environmental effects being caused.

Creating new demand classes of users in the electricity and gas systems would not be appropriate. It is not clear how such classes could be fairly defined to match the evolving lifecycle of projects. It would also send out a strong signal that the rules for data centres are different than for other classes of energy system participants. Data centres operate under differing business models and classification by energy demand would be open to manipulation.

[6] NGEP: -gas-emergency-plan.pdf

# Section 2

## Comments on Specific Questions

### DECARBONISATION OF ENERGY DEMAND

**Q 1. Comments are invited from stakeholders on the proposed approach of decarbonising energy demand with a view to achieving net zero emissions from LEUs at time of connection. Please provide reasons and rationale for any views provided.**

The concept that LEUs, seeking connections to the electrical and or gas systems, would be carbon neutral at the time of connection is unachievable. The renewable resources and the mechanisms to pre-purchase them are not mature enough to allow such a condition to be met. A shift to a more sustainable energy system will require a feasible transition period. Reasons for this expectation not being feasible are:

1. The infrastructure and mechanisms to pre-purchase renewable energy are still in their infancy.
2. There are no processes or timeframes in place to allow LEU's visibility of lead-in times to secure or sign PPAs.
3. LEUs require a transitionary period to phase in renewables as the infrastructure is developed.
4. This transition period is complex requiring considerable interaction from all stakeholders to achieve maximum output between supply and demand.

6. Both the issue of connection and that of achieving net zero go hand in hand. The industry and economy require investment from LEUs to accelerate renewable resources while transitioning. Private wire would assist in intensifying the achievement of climate goals with innovative solutions.
7. Determining and demonstrating net-zero will require the gathering and analysis of multiple datasets from different systems (grid, gas, renewables, on-site flexibility etc). The processes and mechanisms for achieving this data gathering and analysis are not in place. Certain technologies for measuring e.g., real-time energy usage optimised for renewables are also not currently economically viable and are limited to only the most sophisticated of international technology players.

The lack of accessibility to such net zero measurement technologies will create an inherent discrimination to any LEUs that are not highly sophisticated international leaders.

8. Developers cannot forward-sign power purchase contracts with renewable energy developers without clearly defined lead-times for utility connections.

**Q 2. Comments are invited from respondents on the need for onsite generation and storage capability for LEU connections. Please provide reasons and rationale for any views provided.**

LEUs such as data centres are actively exploring the use of onsite generation technologies such as clean natural gas-fuelled generators and onsite wind, where permitted, to self-sufficiently provide both short- and long-term power capacity needs that directly and efficiently meet their demand, and able to provide the electric grid with supporting energy at times.

However, the potential use of onsite generation is complicated by policy and technical issues. Current CRU/EirGrid policy requires matching import capacity; in other words, “double the size” is required. Additionally, current policy creates complexities for LEUs that wish to use onsite generation when participating in the electricity market, such as the T-4 auction timelines. If on-site generation is required to provide a system baseload, then there is a situation where large energy users are effectively delivering the traditional base load, which conflicts with both the business of the end users and others that provide base load energy. While end users can efficiently self-supply their direct energy needs using clean natural gas and by doing so reducing load on the grid, base load energy is best provided by power providers for EirGrid. However, the current policy is not well designed to enable efficient and clean onsite generation.

Furthermore, on-site renewable generation does not represent the optimum use of land or energy resources or business locational needs. Power densities and demand profiles are not necessarily complimentary, especially in a land-constrained and high-demand market for infrastructure such as Ireland. Rather than focus time and resources on trying to solve for this problem, it would be preferable and more impactful to fine-tune the cPPA market mechanisms to allow system-wide deployment of renewables in Ireland that LEUs can utilise.

Another measure - that could assist in deploying significant renewable resources in Ireland to better serve current and future power needs - is to pursue legislation authorising private wire networks, thereby allowing large projects to develop renewable energy projects of appropriate scale in reasonable proximity to demand. These networks, or microgrids, once matured could in future merge with and support the broader electrical grid in Ireland. We are aware of the government consultation on private wire networks, and we support this process.

**Q 3. Comments are invited on the use of CPPAs for additionality of renewable generation outside of support schemes for decarbonising electricity consumption. What type of de-rating may be appropriate to reflect real-world performance of renewable generation during peak times. Please provide reasons and rationale for any views provided.**

For C/VPPAs the data centre industry has been a global leader in adopting and advocating for their utilisation to meet global decarbonisation goals. Adding Renewable Energy (RE) supply capability has been an intrinsic, business as usual, part of data centres' approach for some time.

According to BloombergNEF's 1H 2023 Corporate Energy Market Outlook, global companies secured a record 36.7 gigawatts of clean energy to power operations in 2022, an increase of 18% over 2021. Tech companies are the leading buyers of renewable energy in Europe and the world.

By way of example, according to Recharge News in November 2022: "Microsoft announced the largest chunk of deals covering 900MW of wind and solar in Ireland to help power its data centre operations there. The multi-year agreements with Statkraft, Energia Group and Power Capital Renewable Energy will between them meet 30% of the Irish government's target for corporate PPAs by 2030, said the software group."

Respectfully, the CRU as a regulator needs to provide a definition of what the term "de-rating" means for LEU rate payers/customers as applied to C/VPPAs.

We would suggest that the term "de-rating" should not be used in relation to renewable energy generation. This terminology already has precedent for existing standard electricity generators. The CRU intent seems to be **"renewable subsidisation"** by LEUs to the Irish electricity grid.

As part of the definition, it would be helpful to understand the mechanics of how "renewable subsidisation" would work in practice within the Irish regulatory structure and in practice in relation to the Irish electricity grid. For instance:

- Would there be transparent, real-time calculation on a sliding scale reflecting distance of electricity transmission (where there are fluctuating levels of line loss), the number of MWh being generated, by the type of RE generation technology, time of use valuation, and location of connection/off-take from the Irish electric grid?
- Does the CRU plan to provide detailed electric system models or modelling scenarios that demonstrate the impact and benefits of additionality on a locational basis?
- Where and how could renewable energy subsidisation by LEUs best provide additionality to the Irish grid?
- How would the CRU avoid that renewable subsidisation creates discriminatory or unfair burden on certain industries or energy consumers compared to others?

- How would the CRU ensure such a subsidisation demand on LEUs is considerate of other current or upcoming requirements on certain sub-sectors of LEUs such as data centres potentially providing waste heat to district heating systems? Would there be mechanisms for offsetting demands with regard to renewable subsidisation to account for other such sustainability-focused initiatives?
- With LEUs providing additional levels of renewable subsidisation how will the CRU account for, incentive, or provide credit to LEUs for this added level of benefits to the Irish grid and other rate payers?

An alternative approach to consider might include a voluntary LEU renewable energy subsidisation market, where LEUs over-procure renewable capacity against their demand to ensure real-world effects are countered. This could be transitioned in over a period to allow the market to mature (e.g., 50% initially, rising to 110% over a period).

A transition would allow for practical contractual timelines against passed data centre development, especially for new grid connections. Commonly electricity grid cost allocations based on costs of service analysis, LEUs or "industrial" customers, have subsidised other electricity rate payer classes, such as residential, streetlights, low-income communities, etc.

**Q 4. Based on preference that renewable electricity and /or gas contributes to Ireland's emissions targets and security of supply, do respondents have a view in relation to how electricity feeding into Irish system and renewable gas credits feeding into the Irish system could be tracked?**

The electricity and natural gas grids can be complimentary, but they need to be treated differently in terms of carbon impact, reliability and the mechanics of tracking, accounting, and reporting.

It is incumbent on the CRU to provide the appropriate regulatory framework on the mechanics of how the proposed 'feeding into' the electricity and natural gas grids would work for the benefit of the Irish grids. The basic structure that would be expected is to provide transparent trading and/or a trading system with appropriate regulation, accounting, reporting, and incentives.

The CRU should make a draft of such a regulatory structure available to LEUs for review and consultation, where typically 'feed-in' tariffs have incentivisation to encourage rate payer support and participation.

It would also be helpful if the CRU can elaborate on the volumes required for either renewable energy or renewable natural gas, feeding into the electricity and natural gas grids, to have impact on reaching Ireland's emissions/decarbonisation goals.

**Q 5. Comments are invited from stakeholders on the use of renewable gas credits (feeding into the Irish natural gas system) in order to facilitate the connection of gas demand to the system. Please provide reasons and rationale for any views provided.**

The question as posed by CRU is not clear regarding the direct connection between renewable gas credits, how renewable gas may be sourced, and the linkage to an Irish natural gas grid connection.

If renewable gas procurement is geographically limited to Ireland (and like question number 4) what would be the regulatory structure to provide a transparent trading and/or trading system with appropriate regulation, accounting, reporting and incentives. It would be helpful if the CRU should elaborate on the volume of renewable gas credits envisaged to have meaningful impact on reaching Ireland's emissions/decarbonisation goals.

## DEMAND FLEXIBILITY

**Q 6. Comments are invited from respondents on enabling demand flexibility requirements as described above. Please provide reasons and rationale for any views provided.**

As an LEU segment, data centres provide critical infrastructure nationally and globally and are built to the “Five 9's” standard of 99.999% reliability and resiliency, where this is not conducive to a situation of electricity demand being "flexible".

Data centres spend millions of euros providing on-site back up generation to ensure Five 9's status (all but 5.25 mins/year of uptime at full capacity). Any 'demand flexibility' could potentially be leveraged if working with other LEUs having quite different load profiles, but this is not applicable to data centres with 24/7 high load factor electricity demand profiles.

The concept of applying flexibility to LEUs in general is too broad as a CRU regulatory approach.

To apply any sort of effective 'demand flexibility', the CRU would need to segment the rate payer customer base by load profile to quantify and structure effective measures to address the demand, particularly at times of coincident peaks between the electricity grid system and the load profile segmented rate base. This would be the most effective in guiding 'demand flexibility' to avoid electricity system outage/'security of supply' risks.

'Demand flexibility' does not work where data centres are in the business of hosting other firms’ data, unless there is economic, viable, dispatchable, on-site or near on-site generation via private wire to reduce load, or at-scale storage that can be leveraged (the latter is typically expensive & space consuming as an on-site solution).

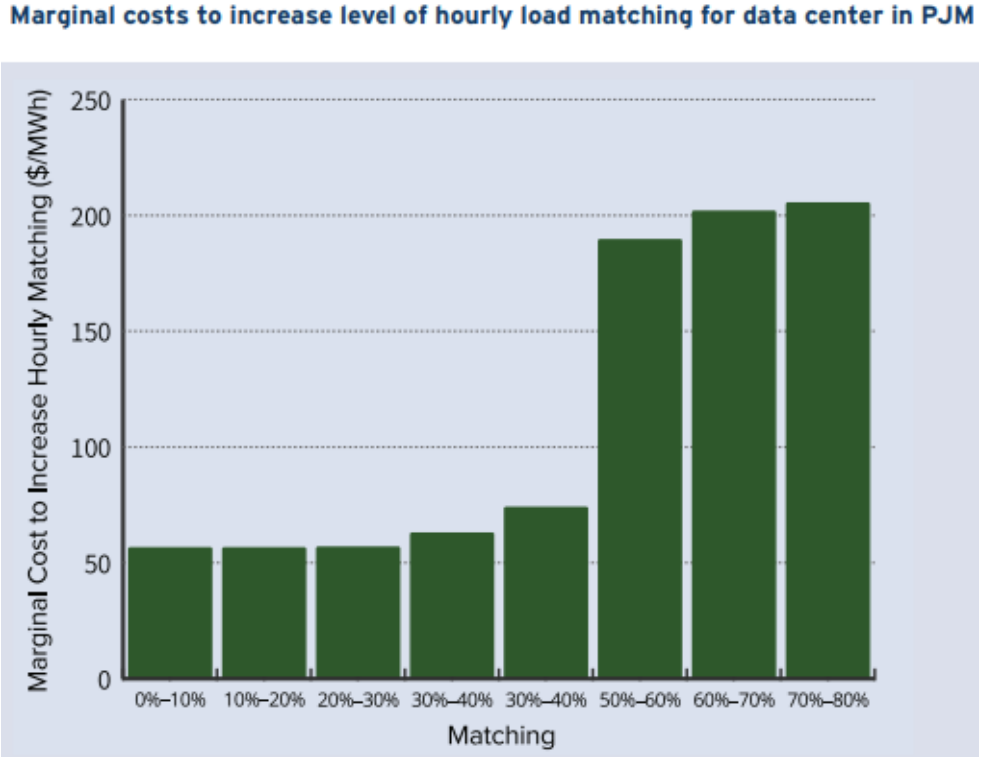
It would be helpful if the CRU could quantitatively address the duration and amount of electricity that the Irish electricity grid would require for avoidance of outages/security of supply, with transparent numbers, projections for this for the grid on a regional basis.

To realistically serve rate base customers the CRU would need to understand the impact that any "demand flexibility" could have for overall system reliability, along with an appraisal of the customers that would need to be segmented by load profile and business model.

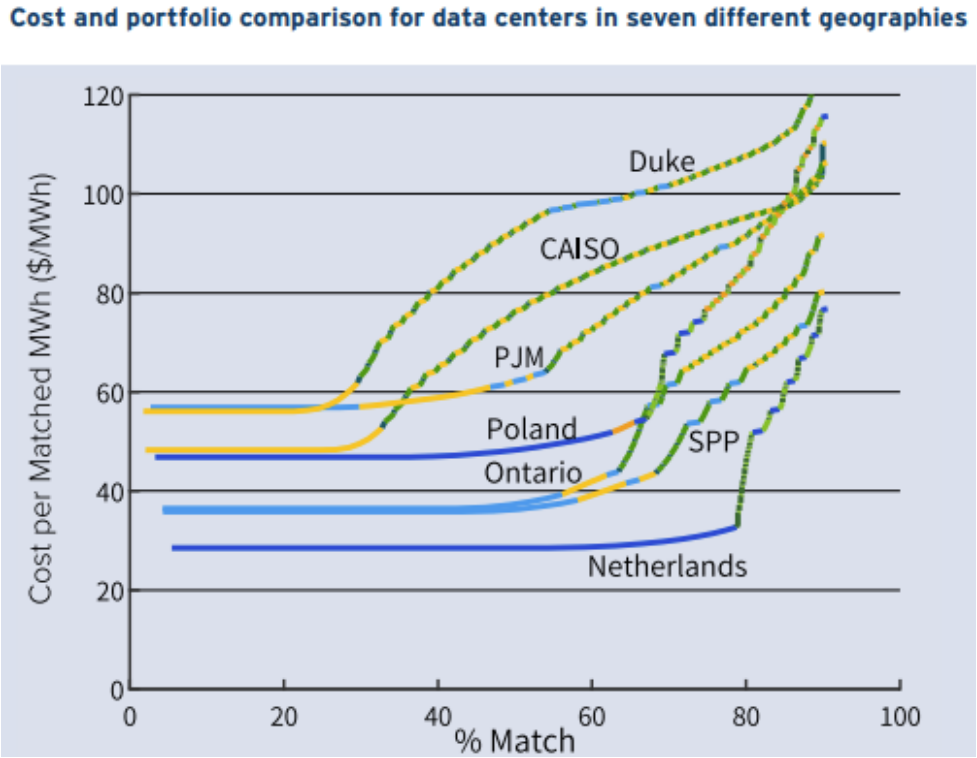
Only then could the CRU understand and apply value to the approach and regulatorily provide structure, incentivise appropriate tariffs for LEUs and avoid unforeseen consequences.

To avoid unforeseen consequence across the customer rate base, 'demand flexibility' should be interactively modelled, tested, and transitioned gradually as opposed to an abrupt implementation.

Currently when considering 24/7 carbon free energy (CFE), and ‘flexibility’ in obtaining renewable energy (RE), initial studies demonstrate that this can be prohibitively expensive for 24/7 high load factor electricity demand. Where this is at 55%+ the economics begin to break down as shown below:




Source: Mark Dyson, Sakhi Shah, & Chaz Teplin, Clean Power by the Hour: Assessing the Costs and Emissions Impacts of Hourly Carbon-Free Energy Procurement Strategies, RMI, July 2021




Source: Mark Dyson, Sakhi Shah, & Chaz Teplin, Clean Power by the Hour: Assessing the Costs and Emissions Impacts of Hourly Carbon-Free Energy Procurement Strategies, RMI, July 2021

**Q 7. Are there other sources of flexibility that can be provided?**

Demand flexibility could be further incentivised by creating a carbon accounting mechanism to give carbon credit back to LEUs who deliver some level of demand side flexibility. Demand flexibility provides value in that it may enable the electricity system to achieve lower emissions when reliant on fossil fuel-based generation, where renewable energy from storage (e.g., batteries, UPS systems, etc.) could off-set or reduce carbon intensity.

**INTERRUPTIBLE CONTRACTS FOR GAS CONNECTIONS**

**Q 8. Comments are invited from respondents on the introduction of interruptible type supply contracts for gas connections. Please provide reasons and rationale for any views provided.**

It is unclear what problem 'interruptible gas supplies' are intended to solve. Gas Networks Ireland (GNI) designs every new demand connection so as not to overburden the network infrastructure even in a 1 in 50-year worst-case scenario. The concept of interruptible gas supplies overlaps with the natural gas emergency plan already under the remit of GNI.

**REAL TIME ZERO CARBON EMISSIONS**

**Q 9. Comments are invited on real time zero carbon emissions, shifting of demand in real-time to times of high renewable energy availability. Please provide reasons and rationale for any views provided.**

While an admirable goal, real-time zero carbon operations will be difficult to achieve in the short and medium term and requires scrutiny in terms of value add compared to the effort and investment required to achieve this. This is particularly so with complex energy supplies, market structures, and the varying maturity and availability of technical solutions. Such capabilities and corresponding technologies would only be accessible to - and viable for - the most healthily resourced and technologically capable world-leading organisations.

An undesirable consequence of demanding this would therefore be Ireland limiting access to, and creating a discriminatory environment for, smaller or less mature industries or organisations seeking to enter or who are currently active in the Irish market. This, as they could not afford to invest in the technologies required to meet this objective. Such an exclusionary approach contradicts the nature of economic and investment policy in Ireland.

Further, there is a risk that sub-optimal choices will be made at the operational level that will not always contribute positively to national emissions objectives. For example, this objective – as well as the objective of net-zero at the time of connection - would incentivise the use of adiabatic cooling systems in data centres whereby water is continuously used to chill servers. This is compared to the currently preferred technology which only uses air-cooling in the chilling mechanisms.

Adiabatic cooling would result in lower Power Usage Effectiveness (PUE) rates (below 1.2, thereby offering lower carbon emissions), but would result in exponentially higher Water Usage Effectiveness (WUE) rates. This is compared to air-cooling systems that offer a WUE of approximately 1.1, and a PUE of under 1.3, on average.

Consequently, a choice to meet the short-term net zero objective would result in exponentially higher usage of another precious natural resource over the short and long term: water. This contradicts a holistic understanding of environmental sustainability and threatens Ireland's leadership in this space.

Additionally, there is an inherent challenge for net-zero carbon operations for the data centre industry due to the various levels of control over energy use and load in the retail and wholesale models. Customers also face challenges and costs when it comes to shifting their load from one market to another.

Moreover, there is a question about what counts for real-time net zero emissions. If accounting for Scope I, II, and III emissions are contemplated, it is difficult to envision how it is possible to provide and collect real-time and useful system data. The fundamental problem is that currently available technologies are not mature enough to be reliable. A cost-benefit analysis should also be conducted in terms of the value of measuring real-time net zero carbon emissions compared to e.g., averages over fixed periods of time.

This is a much more achievable goal over the long-term if there is a policy focus with a reasonable transition period spread over the next several years.

Real time net zero carbon operation is possible if there is time to allow the systems for complex interactions between the supply and demand for electricity to continue to mature. Also, it will also require customers to have the capability and desire to shift load.

It is also important to consider any reporting requirements within broader reporting frameworks designed to promote the move towards net zero. For example, energy efficiency reporting to the European Union because of the Energy Efficiency Directive. Reporting requirements should be cognisant of the burden placed on industry across all reporting schemes and assess the true value-add of gathering such data, and at which interval.

**DEFINITION OF AN LEU**

**Q 10. Comments are invited from respondents on what they consider to be an appropriate definition of an LEU for electricity and gas for the purposes of this review. Please provide reasons and rationale for any views provided.**

As regulator, the CRU is tasked with creating a level, non-discriminatory playing field for all rate payers/customers to join in the market of energy users connecting to the electricity and natural gas grids. Each rate payer should pay reasonable costs, commensurate with the costs/benefits that they provide to the energy system. To effectively and transparently understand the costs per rate class/load profile, a cost-of-service analysis needs to be provided by the CRU.

As a fundamental principle, it is challenging to manage and improve that which is not quantitatively measured. As a rate class, LEUs are going to be distinct in either the electricity or natural systems. Then within each energy system there will inherently be different LEU demand load profiles.

To effectively manage for energy system benefits, the CRU needs to create and implement tariffs and regulations based on the rate class load profiles in each energy system. As a further subset of LEUs, there are data centres - which have a high load factor 24/7 load profile.

***Why would the Regulator discriminate between LEUs?***

There are many different sizes of data centres that service different customers and different types of IT loads. Do LEU data centres contribute disproportionately to system costs or to the benefits?

***What are the allocated costs and cost recovery criteria for infrastructure per MWh of delivered energy?***

The CRU needs to be judicious and fair in how it creates classes of rate payers in the electricity and gas system. It is not clear how such rate classes could be fairly defined to match the evolving lifecycle of projects.

There is a risk of sending out a signal that the rules for data centres are different than for other classes of energy system participants. Data centres operate under differing business models and classification by energy demand would be open to manipulation.

Classification of energy users should be based on cost of system parameters. In this regard, it would be useful if the cost burden of developing and operating the electricity grid and gas system could be allocated to end users based on their load demand characteristics, and based on how such characteristics benefit the grid. For example, flat profile, stable, and predictable baseload has a benefit in achieving higher renewable penetration.

**Q 11. Comments are invited from respondents on whether this review should only apply to Extra Large Energy Users (XLEUs) in relation to electricity. Please provide reasons and rationale for any views provided.**

The current policy for LEU electricity grid connections (data centres specifically) represents a de-facto ban on data centre developments. This is contrary to stated government policy.

Application of new policies for LEUs should be based on optimising the overall electricity grid in favour of increased decarbonisation.

Increased electricity demand is not necessarily counter to this objective, especially where such demand can support decarbonisation goals both technically and financially.

Not all data centres (if looking at a subset of the LEU/XLEU rate classes) are the same in terms of business models, control over energy usage and ultimate scale of actual energy usage. Hyperscale data centre owner/operators will have direct control over the amount of electricity usage since they are managing the IT loads for their products directly. This would also be the case with dedicated, directly owned and operated corporate/Bank/Government data centres.

Many other data centres (colocation for example) provide the service to a vast range of customers that have a variety of electricity use profiles, with different terms of usage and service level agreements (SLAs). This means that the amount of electricity being used at any one time is not directly controlled by these data centres. So, the categorisation of XLEU is too broad and undefined. Rate classes need to be defined by load profiles and backed by a quantitative cost of service analysis, to have any usefulness to a regulator.

**Q 12 Comments are invited for gas LEU definition of those with a peak hourly demand greater than 50MW thermal input and a connection pressure of 16 bar or above. Please provide rationale for any views provided.**

The CRU as the regulator is tasked with creating a level, non-discriminatory playing field for all rate payers/customers to join in the market of energy users connecting to the electricity and natural gas grids.

Each rate payer should pay reasonable costs, commensurate with the costs/benefits that they provide to the energy system. Gas Networks Ireland (GNI) defines large energy users in terms of capacity and delivery pressure. Categories are Daily Metered (DM), Large Daily Metered (LDM), Non-Daily Metered (NDM). These definitions are immaterial to data centre developments due to the cost/benefit ratio but have an impact on how gas is procured (transmission versus distribution connected customers).

Generation facilities above certain thresholds also must meet environmental license conditions imposed by the EPA. The license conditions are the appropriate mechanisms to be used in achieving the objectives of sustainability.

**ISLANDED CONNECTIONS ON THE GAS NETWORK**

**Q 13. Comments are invited from respondents on the treatment of 'islanded' LEUs. Please provide reasons and rationale for any views provided.**

Large energy users are committed to corporate sustainability. For example, Vantage Data Centers monitors adherence to customers' ESG policies monthly, identifying issues arising short and long-term and resolving these with innovative solutions. Most data centre-related emissions are counted as their customers' Scope 3 emissions. It is in the interest of large energy users to minimise their emissions.

CRU Direction to System Operators, December 2021 stated this consideration for grid connections: *"The ability of the data centre applicant to bring onsite dispatchable generation (and/or storage) equivalent to or greater than their demand, which meets appropriate availability and other technical requirements as may be specified by the relevant SO, in order to support security of supply."*

Several data centre developments with live applications with EirGrid began to develop dispatchable generation plans. To be dispatchable, gas is required. Many of these projects were subsequently refused grid connections based on the direction of CRU. The complexity introduced (e.g., capacity market) made it very difficult for data centre operators to align their plans with these new conditions in a timely manner.

If grid capacity becomes available, then "islanded" LEUs can use their generation assets to support the electricity grid. This might also reduce the need to develop other large dispatchable generation assets and enhance security of electricity supply at little or no cost to the Irish taxpayer.

**Q 14. Should the connection of LEUs to the natural gas network focus on security and decarbonisation as per the Government Policy Statement on Security of Electricity Supply. Please provide reasons and rationale for any views provided.**

On-site generation of electricity using natural gas represents an opportunity (1) to support the electricity grid (as noted above) and (2) to use waste heat from generation. CHP (combined heat and power) systems have large amounts of high-grade heat that, if collected, could

provide a solution to decarbonisation of heating. CHP can be as efficient as the grid if demand for heat is sufficient. District heating networks of scale would allow this. This will enable the decarbonisation of heat, which is a bigger challenge than the decarbonisation of electricity.

## GENERAL QUESTIONS

**Q 15. Please suggest any alternative approaches not captured above that could help in meeting the challenges outlined.**

We would like to highlight our previous comments about private wire legislation. Successful examples of private wire deployment exist across the EU including the UK[7]. In Ireland, authorisation for private wires would help to deploy significant renewable resources to better serve current and future power needs.

These private wire networks would allow large projects to develop renewable energy projects of appropriate scale in reasonable proximity to demand. These networks, or microgrids, once matured could in future merge with and support the broader electrical grid in Ireland. We are aware of the government consultation on private wire networks.

The continuing efficient operation and resourcing of the regulatory and planning system is critically important to the realisation of Ireland's future energy needs and decarbonisation. Having certainty over the timing of the delivery of decisions in relation to proposed developments would be particularly helpful for all operators across the energy and data centre industries. Several jurisdictions around the world, especially in North America, have proposed overhauling connection permitting processes and implementing firm timelines for issuing final decisions from regulators on planning permits for electricity infrastructure projects[8]. These "shot clocks" have significantly improved the timely decision-making process and provide certainty for users in their planning for availability of capacity.

[7] https://resource-platform.eu/wp-content/uploads/files/statements/RE-Source-introduction-to-corporate-sourcing.pdf

[8] https://www.ft.com/content/a3be0c1a-15df-4970-810a-8b958608ca0f

**Q 16. Should provisions apply to all LEUs connections, or are there are any exceptions that should apply? Please provide reasons and rationale for any views provided.**

The CRU has not clearly defined what the LEU rate class is, and this broad categorisation needs to be defined by load profiles for effective understanding of the energy system impacts that the rate payers within LEU are having.

Any connection agreement policy implemented by a utility and/or generator including EirGrid and/or GNI, etc., based on the policy and regulations created by the CRU, should be based on the utility's discounted cash flow analysis for revenue and a fair and transparent cost of service analysis to understand cost recovery and cost allocations across the rate payer classes, not just isolated to LEUs.

By way of analogy, say there is a cul-de-sac in a neighbourhood where the last person in that estate connects to the local transformer. Should that residential rate payer be assigned all the costs, a fair share of costs, or should they get incentives for joining the energy system? As regulator the CRU should avoid a situation where a single rate class sets the bar for a rate structure that may disproportionately impact the entire range of other rate payer classes.

Quantitative measurement is required to manage or improve the energy system.

**Q 17. Please suggest any incentives which could be applied to new LEU connections in facilitating some of the measures described above. Please provide reasons and rationale for any views provided**.

**Incentivise flexibility by creating a carbon accounting credit:** This will help to enhance renewable integration across the user base, incentivise flexible demand response and promote new low-carbon solutions and technologies.

**Establish a framework for stakeholder collaboration:** This will help to ensure that the perspectives and concerns of stakeholders—including utilities, renewable energy providers, businesses and industry, consumers, and environmental groups are taken into account in decision-making processes. The intention would be for this collaborative approach to expedite the implementation of new policies and strategies ensuring a high degree of stakeholder buy-in, ultimately supporting a more sustainable and resilient energy system for Ireland for the future.

**Engage constructively with large energy users through workshops.** This will help to facilitate direct understanding of the primary concerns, needs, and operational challenges faced by LEUs including those with unique energy consumption patterns, demand-side management capabilities, and potential for flexibility in the grid. This would also support the development of more tailored and effective policies, ensuring that the regulatory framework is adaptive and supportive of Ireland's larger economic activities. It would also facilitate a better understanding of regulatory initiatives among key stakeholders.

**Promote collaboration between EirGrid and Gas Networks Ireland:** A harmonised approach between the two agencies will support optimum utilisation of energy infrastructure and resources, also serving the aims of energy security and overall system efficiency. This would also be intended to support quicker decision-making processes regarding data centre connections, in line with sustainability criteria and decarbonisation, including relevant demand-side management programmes.

**The attached roadmap outlines how a transition might be achieved.**
A transitional approach allows for a) technology to catch up with demand, b) Data centres to be able to understand and respond to realistic aims, and c) for the CRU to phase in well balanced regulations/rates/tariffs to avoid unforeseen consequences impacting the rate payers and across the rate classes. It will also allow time to have clear regulation and policy electricity and natural gas connections and private wire to provide business certainly for LEUs as they evaluate any future energy related business in Ireland. The table below is a potential transitional road map for consideration:

**Transitional Road Map to 2030**

| | CRU Question | Range of Solutions | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 |
|---|---|---|---|---|---|---|---|---|---|
| Net Zero/C-Accting | 1, 9 | CRU Proposal | RT @ Time of connection | | | | | | |
| | | Existing DC's | Annual | | | Monthly | | Hourly | |
| | | New DC's | | Annual | | Monthly | | Hourly | |
| C/VPPAs | 3 ,4, 5 | CRU Proposal - New DCs, C/VPPAs | 100% Day 1 (RE subsidization, or "de-rating") | | | | | | |
| | | New DC's (% of actual E demand) | 14 | 29 | 43 | 57 | 71 | 86 | 100 |
| | | CAP23 Target (TWh) | | 1.0 | | | | | 5.7 |
| | | CAP23 Target (%) | | 1.7 | | | | | 9.5 |
| | | RNG/Bio-CH4 | RNG | | | | | RNG+H2 | |
| | | %-age of actual demand | 0 | 0.25 | 0.50 | 0.75 | 1.00 | 1.25 | 1.50 |
| Grid Flexibility | 6, 7 | CAP23 Target (%) | | 15-20 | | | | | 20-30 |
| | | DC "Demand Flexibiliy" (% of MIC) | 3 | 6 | 9 | 11 | 14 | 17 | 20 |
| | | DC Storage (Hours, % of MIC) | 0.25 | 0.50 | 0.75 | 1.00 | 1.25 | 1.50 | 1.75 |
| On-site RE gen | 2 | CAP23 Target (%) | 42 | 50 | | | | | 80 |
| | | DC PV (% of MIC) | 1 | 2 | Private wire required to add futher RE coming to DC site due to space constraints | | | | |
| | | DC Wind (% of MIC) | Private wire required to add futher RE coming to DC site due to space constraints | | | | | | |

This is the final page of the submission.

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**VMWare's Sustainability Approach**

At VMWare, our commitment to sustainability is embedded deeply in the foundation of our corporate philosophy. We firmly believe that technology and environmental responsibility can coexist harmoniously, and this principle drives our product development and operational strategies. As a global leader in cloud infrastructure and digital workspace technology, we recognize the profound responsibility we hold in shaping a more sustainable future for our planet.

The urgency of addressing environmental concerns has led VMWare to embark on a comprehensive sustainability journey. This journey encompasses a multi-faceted approach that extends beyond business as usual. One of our foremost objectives is the reduction of our carbon footprint. We acknowledge that the IT sector, while being a catalyst for innovation, also accounts for a significant share of global energy consumption. With this awareness, we are resolute in our efforts to minimize the environmental impact of our operations.

One of our pioneering initiatives that exemplifies this commitment is the "Carbon Avoidance Meter." Through this innovative tool, we transparently quantify and communicate the tangible environmental benefits of choosing VMWare solutions over traditional alternatives. This meter provides real-time insights into carbon emissions avoided, energy saved, and resources preserved through the adoption of our technologies. It serves as a testament to our dedication to not only producing cutting-edge products but also fostering a culture of accountability and transparency.

VMWare's commitment to sustainability extends beyond our immediate operations. We view the entire lifecycle of our products as a continuum of responsibility. From design and development to end-of-life considerations, we meticulously integrate sustainability principles. Our focus on energy efficiency drives us to develop technologies that optimize power consumption without compromising performance. We rigorously assess and minimize the use of critical resources, promoting a circular economy mindset that values resource longevity.

VMWare is collaborating closely with Equinix to pioneer research aimed at providing customers with enhanced visibility into their carbon emissions. Our joint efforts seek to offer customers the choice to align their operations with more renewable energy sources. This innovative approach includes options such as delaying the execution of workloads until renewable energy becomes accessible, or even considering the relocation of workloads to Data Centres that are powered by renewable sources. This strategic partnership exemplifies our commitment to not only offering cutting-edge technology solutions but also empowering our customers with the means to make environmentally conscious decisions that contribute to a greener future.

In conclusion, VMWare's sustainability approach is not just a surface-level commitment, but an intrinsic value that permeates every facet of our operations. As we forge ahead in a world where technological advancement is inseparable from environmental stewardship, we remain steadfast in our resolve to pioneer solutions that propel both innovation and sustainability hand in hand. Our dedication to reducing our carbon footprint, optimizing energy efficiency, and championing responsible e-waste management underscores our belief in the potential for technology to be a force for positive change in the world.

**Importance of Data Centres in Dublin**

VMWare recognizes and values the immense significance of Retail Data Centres, such as Equinix, in the thriving technology ecosystem of the Dublin region. These Data Centres stand as pivotal infrastructure components that play a crucial role in supporting businesses aiming to amplify their digital operations. Situated strategically in close proximity to high-demand urban areas, these Data Centres offer the advantage of efficient data transmission and reduced latency, ultimately elevating user experiences to unprecedented levels.

What makes this endeavour even more impactful is VMWare's collaborative partnership with Retail Data Centres, such as Equinix. This partnership entails a seamless fusion of cutting-edge technology and state-of-the-art infrastructure. At the heart of this collaboration lies the delivery of dynamic and scalable cloud solutions to our customers. By harnessing the power of these co-location Data Centres, VMWare empowers businesses to transcend traditional limitations, optimizing their operations, and streamlining IT management processes. This dynamic engagement ensures that our customers are well-equipped to swiftly adapt to the ever-evolving demands of the market.

Aligned with Dublin's distinguished status as a global technology hub, VMWare's strategic partnership with Retail Data Centres, such as Equinix, amplifies the value we deliver to our esteemed clientele. Leveraging the robust connectivity and infrastructure offered by these Data Centres, we create a conduit through which businesses can expedite their digital transformation journeys. Enhancing service

delivery, achieving operational efficiency, and cultivating agility become attainable goals in an increasingly competitive landscape.

In the context of Dublin's economic landscape, the continued development of Data Centres in the metro area assumes paramount importance. These Data Centres, including those facilitated by partners like Equinix, are not merely technological nodes; they are economic engines that drive growth and prosperity. The absence of sustainable Data Centres in the Dublin Region could potentially impede economic activite. This underscores the urgency for strategic collaborations between technology leaders like VMWare and entities invested in Digital infrastructure, like Equinix. Such collaborations facilitate the maintenance of a robust ecosystem that not only bolsters businesses but also catalyses economic vibrancy within the community.

In drawing this narrative to a close, the confluence of VMWare's presence in Ireland, our resolute commitment to sustainability, and the strategic collaboration with Retail Data Centres, such as Equinix, stands as a testament to our unwavering dedication. The innovation we drive, the economic growth we catalyse, and the environmental responsibility we uphold all encapsulate the essence of VMWare's mission. VMWare remains steadfast in its purpose — to empower businesses, strengthen local communities, and contribute substantively to the progression of Ireland's technological prowess and economic vitality.

**Nurturing Sustainability and Economic Prosperity Through Technology and Collaboratio**

VMWare's journey in Ireland has transcended more than just establishing a presence; it has been about fostering innovation, igniting collaboration, and driving economic growth. With a dedicated team right across Ireland, VMWare has not only become an integral part of Ireland's technology landscape but also a catalyst for progress within its tech ecosystem. Our commitment extends beyond mere operations; it encompasses a dedication to nurturing sustainability and leveraging the power of technology for positive economic transformation.

Sustainability isn't a mere buzzword at VMWare – it's a guiding principle that shapes our innovations and operations. In an era where technological advancement must coexist with environmental responsibility, VMWare stands at the forefront. From pioneering the "Carbon Avoidance Meter" to optimizing energy efficiency and promoting responsible e-waste management, our commitment to sustainability is an ongoing journey that ensures our technology benefits both businesses and the planet.

However, innovation is only impactful when it aligns with strategic partnerships that drive collective growth. Collaborating closely with Retail Data Centres, notably Equinix, embodies our dedication to

enhancing business operations while advancing environmental stewardship. These Data Centres stand as the bedrock of digital transformation, offering unmatched connectivity and infrastructure. Our collaboration empowers businesses to not just survive but thrive in today's competitive landscape, driving both economic growth and environmental consciousness.

The role of Data Centres, particularly in Dublin, cannot be underestimated in this equation. These centres not only power technological operations but also fuel economic activity in the region. Without their continued development, the potential for growth and innovation could be stifled. This underscores the urgency for strategic collaborations between technology leaders like VMWare and entities like Equinix. Together, we pave the way for economic prosperity, leveraging technology to safeguard the environment and drive sustainable growth.

In conclusion, VMWare's journey in Ireland, its steadfast commitment to sustainability, and strategic collaboration with partners like Equinix converge in a narrative that speaks of progress, responsibility, and potential. As we look ahead to an ever-evolving digital landscape, VMWare's mission remains resolute – to empower businesses, foster community growth, and contribute to Ireland's technological prowess, all while prioritizing sustainability and the greater good. Through technology and collaboration, we shape a future where growth isn't just economic but holistic, where innovation isn't just technological but also sustainable.

Emailed to: electricityconnectionpolicy@cru.ie

30th August 2023

**CRU: Review of Large Energy Users Connection Policy**

**Introduction**

Wind Energy Ireland (WEI) welcomes the opportunity to respond to the Review of Large Energy Users Connection Policy at this significant time for the sector. It is important that policy is developed in connections, and generally, to encourage greater electrification which can benefit System Operators with flexible demand and aiding in the growth in renewable electricity generation. Part of this new demand flexibility being sought will come from the expansion of the electrification of heat and transport as we seek to decarbonise these sectors.

WEI has established an Electrification Working Group that concentrates on policies to encourage greater electrification in Ireland. This transition to electric heat and transport represents a cleaner, more secure energy source. Both domestic and commercial/industrial heat, as well as transport electrification, forms the remit of the WEI Working Group, as we see the immense potential ahead for electrification and the broader benefits it will provide the electricity sector as a whole, including in its ability to provide a flexible demand source.

Electrification of heat and transport will play an increasing part in managing the electricity grid going forward. The potential in electrification of heat and transport growth must be factored into forecasts on future demand and in turn factored into flexible demand strategy. The CRU outline in the current consultation "*A key element in supporting the electricity system and supporting a higher proportion of renewable energy on the system is effective demand flexibility*." Some of this demand flexibility will come from increased electrification such as in the industrial and commercial sectors.

The National Industrial Strategy for Offshore Wind set to be published in Q1 2024 seeks routes to market for offshore wind energy[1]. This should be facilitated to provide power to industries that can electrify and in turn provide industrial demand flexibility to the electricity grid.

[1] https://enterprise.gov.ie/en/news-and-events/department-news/2023/may/202305092.html

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**Electrification and a 'Flexible Connection'**

The electrification of heat and transport sectors cannot be seen as simply adding to electricity demand. Policy on its development must utilise the overall advantages of electrification and in particular in regard to the flexible demand it provides for System Operators. We must look at the policy framework broadly to see how we can encourage greater electrification so that this technology can provide its many grid advantages.

Providing a flexible connection, or what can be called a partial non-firm connection to the electricity grid, gives system operators much in regards to managing the grid and in turn this should allow quicker grid access for industrial electrification as they attempt to move from fossil fuels which dominate the sector. In operation a flexible grid connection will allow for the power supplied to be turned down at certain periods.

There are overall broad benefits for the electrification of heat and transport for System Operators as this will allow shifting demand to cheaper periods.[2] Flexible supply will also help develop the coupling of power and heat/transport sectors, that can contribute to both renewable energy integration and decarbonising.[3] Further to this flexible heat pumps for example could significantly lower the costs for integrating renewables and reducing carbon emission.[4]

As of yet there is no policy in place with the CRU, DSO or TSO in terms of a connection policy for electric heat and transport connections that acknowledge their dynamic applications for the grid. Though the potential for electrification in Ireland is immense. The ERSI have stated that "*Heat pumps in conjunction with thermal energy storage provide system wide flexibility services such as load shifting, peak shaving, and demand side management, thereby ensuring increased utilisation of excess renewable energy during off-peak periods*."[5]

**Grid Connection Policy**

The current policy on grid connection is framed without regard to the possible dynamic application of electrification, and changes to policies such as flexible connections will aid in increasing the share of renewable heat and transport and this further aids the grid.

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[2] Grid-edge technology - Exploring the flexibility potential of a heat pump and thermal energy storage system Christoph Schellenberg1,* , Laurentiu Dimache1 , and John Lohan1 1Galway-Mayo Institute of Technology, Department of Mechanical and Industrial Engineering, Galway, Ireland.
https://www.e3s-conferences.org/articles/e3sconf/pdf/2019/37/e3sconf_clima2019_06002.pdf

[3] Power-to-heat for renewable energy integration: A review of technologies, modeling approaches, and flexibility potentials Andreas Bloessa,b, Wolf-Peter Schillb, Alexander Zerrahnb Applied Energy, 2018.
https://d-nb.info/1221668390/34

[4] Benefits of flexibility from smart electrified transportation and heating in the future UK electricity system

[5] ERSI Working Paper No. 627 June 2019

EirGrid and SEMO are now to consider 'partial Firm Access' in regard to their methodology[6] used in determining connection for generators. Further to this EirGrid described how where a generator cannot be firm for the total MEC, so partial Firm Access in blocks will be considered and allocated where possible.[7] There are also specific policy conditions developed for data centre grid connections.[8]

This more flexible approach on connection policy can be applied by System Operators in regard to MIC connections to help accommodate greater electrification. ESBN have said heat pump technology is developing all the time and will play a significant role in the decarbonisation of industrial heat demand in Ireland[9]. This is well established technology for decades throughout the EU and can form a substantial part of future industrial heat. This can be facilitated with the correct changes to the policy framework such as providing a flexible or 'non-firm' grid access which will speed up connections.

Industrial electrification of heat can provide a means of establishing flexible demand for System Operators and changes in the policy will aid in its expansion. ESBN are seeking 20-30% of flexible demand by 2030[10]. Electrification of heat can help toward providing this but the right policy on access must be put in place with grid access for electrification of heat and transport being more dynamic in approach and this will help accelerate growth.

What should be put in place is an option for electrification to choose a mix of a Firm or Non-Firm electricity connection for their electrification if they wish. This option can suit the specific needs of the particular industry which is using electrification. This could allow the new electrification connections to have a reduced connection charge and this would provide the System Operator with a much needed flexible demand. So part of a connection's MIC may be firm and part of the MIC may be non-firm and this will ultimately require a policy to be developed on the parameters of reducing demand on this new non-firm supply.

[6] Firm Access Methodology in Ireland "EirGrid – proposed methodology" SEM-22-068 27/09/22 https://www.semcommittee.com/sites/semc/files/media-files/SEM-22-068%20SEMC%20Firm%20Access%20in%20Ireland%20consultation.pdf

[7] Ibid

[8] Eirgrid Data Centre Connection Offer Process and Policy July 2020.

[9] https://esb.ie/docs/default-source/leading-lights/industrial-heat-pumps-insights-paper.pdf?sfvrsn=270c3311_7

[10] https://www.cru.ie/wp-content/uploads/2022/08/CRU202281a-ESBN-Recommendation-Paper-NNLC-Demand-Reduction-Schemes.pdf

**Northern Ireland Electricity Networks (NIEN) and Flexible Connections**

Recently NIEN launched a Call for Evidence for Flexible Connections.[11] This is looking at possible changes to connections policy away from the current regime, which is a single figure for Maximum Import Capacity. The consultation states "*we know many of our customers do not need to import or export at the same level continuously. For example: a factory might have higher demand in daytime working hours; a transport hub might charge public transportation overnight; a renewable generator might only generate when the weather is suitable*." The aim therefore is to offer more flexible connections. This consultation outlines that certain kinds of customers, with predictable patterns of demand or generation, or the ability to control patterns of use, could benefit from flexible connections such as transport charging (overnight) or industrial users with the ability to manage patterns of demand. Consideration should be given for a consultation like this to be put froward by ESBN.

**Conclusion**

Electrification of heat and transport, and this potential large source of demand, can help not hinder management of the grid going forward. Electrification must form an integral part of demand strategy into the future. The policy framework in the area must also be addressed. 'Flexible' grid connections as stated above for example, could be provided at minimal/no cost and accelerate access to the grid for large energy users which need a grid connection and costs for connection can be reduced. This will aid the growth of electrification and provide System Operators benefits from technology such as heat pumps, e-boilers or EVs that can operate flexibly,[12] and so this growth can ultimately aid the grid of the future.

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Senior Policy Analyst
Wind Energy Ireland

[11] https://www.nienetworks.co.uk/documents/regulatory-documents/flexible-connections.aspx
[12] https://www.energynetworks.org/newsroom/a-flexible-future-for-heat-pumps

Emailed to: smartmetering@cru.ie

30th August 2023

# CRU: Incentivising the Uptake of Time of Use Tariffs

## Introduction

Wind Energy Ireland (WEI) welcomes the opportunity to respond to this consultation on Incentivising the Uptake of Time of Use Tariffs. Policy changes in the tariffs structures could be used to help develop further the electrification of heat and transport in Ireland. This helps decarbonise key sectors of the economy reliant on imported fossil fuels while also providing advantages to System Operators.

WEI has established an Electrification Working Group that concentrates on policies to encourage greater electrification in Ireland. This transition to electric heat and transport represents a cleaner, more secure energy source. Both domestic and commercial/industrial heat, as well as transport electrification, forms the remit of the WEI Working Group, as we see the immense potential ahead for electrification and the broader benefits it will provide the electricity sector as a whole.

## Greater Electrification of Heat and Transport

It is outlined in the current consultation that "*While we are seeking views on the questions posed below, the CRU would also welcome broader feedback on the uptake of time of use tariffs in the new environment created by the deployment of the National Smart Metering Programme*". We must see the tariffs as a whole in how they are presently structured, and the necessity of certain costs not being passed on to customers for instance to those that electrify and decarbonise their heat or transport, which in turn can provide demand flexibility to the grid. CRU state further that "*Encouraging consumers to move some of their consumption away from peak times to off-peak times also creates more flexibility on the electricity grid, which helps Ireland manage the balance between electricity supply and demand*." With this in mind the electrification of heat and transport can provide the grid with much more demand flexibility.

A large proportion of electricity costs are set or approved by State oversight in some form but there is no mechanism in the current structure that provide incentives for renewable heat or transport through electrification, or to acknowledge its broader benefits for renewable energy generation. Growing low carbon heat through electrification or expanding the electrification of transport can be aided directly by State action and instil long term price confidence against fossil fuels which are largely imported.

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Policies on electrification must recognise the value that this technology provides to the wider electricity market and to managing the grid. It is not simply an addition to demand but is in fact capable of adding value to the growing renewable electricity generation capacity.

The ESBN (DUoS) current tariff structures are approved annually by CRU and ultimately paid by consumers through the charges as set by ESBN following an annual submission. There are no incentives within the current DUoS tariffs to demand users encouraging renewable heat or transport. The allowed revenues are currently set for ESBN through the PR5 mechanism. [1]

PR5 Allowed Revenues:

| 2022 | 2023 | 2024 | 2025 |
|---|---|---|---|
| 908.3 | 910.8 | 910.3 | 905.1 |

These annual allowed revenues will determine the tariffs that ESBN apply as a standing charge. This revenue level can fluctuate depending on the ESBN submission. The current Price Review 5 (PR5) lasts until 2025. Further additional revenues to support certain initiatives can be accessed by ESBN such as through the *'Agile Investment Framework'* and an '*Uncertainty Mechanism'* to allow for further investment into the grid for reinforcement due to for instance expanding low carbon technology. There are also certain incentives on ESBN such as to invest in the visibility of the network through the '*Visibility Incentive'* on the MV network.

Another example of an incentive on ESBN and EirGrid is a joint incentive on the TSO/DSO to outline key milestones and targets against areas such as Dispatch Down and Curtailment where the CRU acknowledges that "*the electrification of heat and transport and the changing role of the DSO will mean it could play an increased role in managing dispatch down*"[2]. This management of dispatch down will be greatly aided by the growth in electrification. A recent study has found "*that direct electrification of industrial process heat demands should be favoured*" and this is also "*due to the lower costs of the energy system and a higher energy system efficiency with direct electrification."* [3].

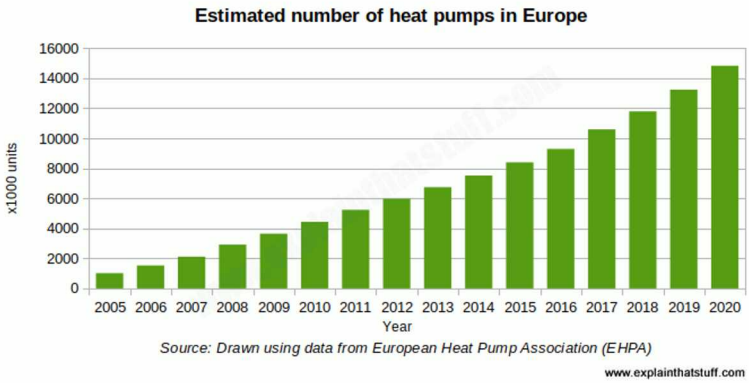
When PR5 concludes there will be a further 'PR6' mechanism used to determine revenues out to 2030. The approval of tariff changes is made by CRU under the Electricity Regulation Act 1999 s.35. Addressing the cost of electricity for technologies which use electricity to decarbonise heat and transport should be supported. The CRU should ensure that electrification is encouraged rather than hindered by ensuring any new tariffs do not prevent the transition to electrification technologies by, for example, making the cost of electricity uncompetitive with fossil fuel alternatives.

[1] Price Review Five (PR5) TSO and TAO Transmission Revenue for 2021 – 2025 CRU/20/152
[2] PR5 Regulatory Framework, Incentives and Reporting CRU/20/154
[3] Electrification of the industrial sector in 100% renewable energy scenarios, Aalborg University, May 2022.

**International Practice**

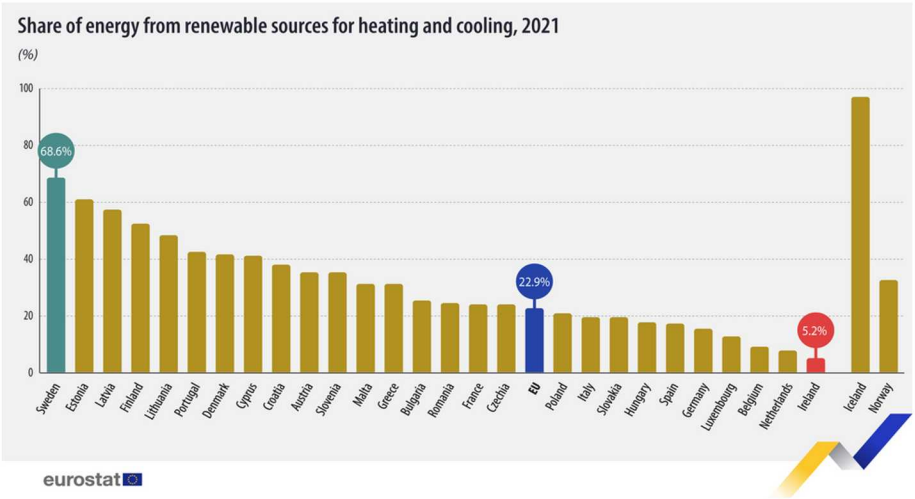
Other European countries are well advanced in terms of growing electrification of heat and transport. In terms of renewable heat however Ireland currently has the poorest performance in the EU. Certain measures in other States have been put in place to progress low carbon electric heating and address the price ratio between electricity and fossil fuels. Denmark have taken a policy of a reduction in taxes for electric heat[4]. Sweden with a well expanded electric heat sector has a heat pump tariff.[5] These and other actions have helped the growth of electrification expand greatly right across the EU and it is continuing to increase.

The expansion in renewable electricity generation in Ireland is not matched by growth in electrification, this is despite the benefits electrification can offer, to fully utilise the existing grid and fully utilise the electricity currently being generated from renewable sources.




[4] Levelling the playing field: Aligning heating energy taxes and levies in Europe with climate goals, Regulatory Assistance Project, July 2022.

[5] International Comparisons of Heating, Cooling and Heat Decarbonisation Policies, Report prepared for The Department for Business, Energy and Industrial Strategy (BEIS), Imperial College London, Final report November 2017




**Electrification Tariff**

Under the CRU electricity tariff review consultation, it is stated "*The electrification of heat will also play a key role in decarbonisation through an increase in the uptake of heat pumps*".[6] Providing incentives through the electricity tariff structure for example will help support the expansion of industrial electric heat and transport by using a specific lower tariff from ESBN for certain DG categories that have electrified heating and transport, and this could be guaranteed for a certain period. Longer term price stability is already provided to biomass and biomethane renewable heat through the SSRH tariff for a 15-year period. A specific lower tariff for those with electric heat gives longer term certainty for industry in the transition from imported fossil fuels and it allows for the current revenues to be more dynamic to encourage renewable energy generally across the economy.

The tariff review being undertaken by the CRU seeks "*To deliver network tariff structures that help facilitate a low carbon future that is secure, competitive and cost-effective*"[7]. The same CRU consultation further outlines that if the existing electricity network tariff structures are not fit-for-purpose *"they could hinder the changes that are necessary for the electricity system in the coming years in order to deliver a secure and cost-effective low-carbon future*."[8]

[6] CRU's Electricity Network Tariff Structure Review, 2021
https://www.cru.ie/wp-content/uploads/2021/10/CRU21123-Electricity-Network-Tariff-Structure-Review-Objectives-Principles-Call-for-Evidence.pdf
[7] CRU's Electricity Network Tariff Structure Review, 2021
[8] Ibid

**Conclusion**

Growth in the electrification of heat and transport, aids the broader electricity market, helping to address curtailment and constraints. Security of supply is a further advantage to electrification, with greater electrification is the greater displacement of the imported fossil fuel. The CRU in a recent paper set out the key areas "*where network, and by implication, demand flexibility are being sought"* and further "*large users who are inflexible and do not move their demand to times when the system is being powered by wind and solar generation will pay more than flexible large demand*". [9] Electrification growth must not be seen as simply adding to the demand but is a flexible demand technology adding broad market advantages. The policy framework, including tariff structures should acknowledge these advantages.

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[9] Electricity Network Tariffs 2022/23 – National Energy Security Framework Response Proposals, CRU202281

Emailed to: energydemandstrategy@cru.ie

30th August 2023

# CRU Call for Evidence - Energy Demand Strategy Project

## Introduction

Wind Energy Ireland (WEI) welcomes the opportunity to respond to this call for evidence on the CRU Energy Demand Strategy project. It is important that policy is developed to encourage greater flexible demand alongside the growth in renewable electricity generation. Part of this new demand flexibility will come from the expansion of the electrification of heat and transport as we seek to decarbonise these sectors.

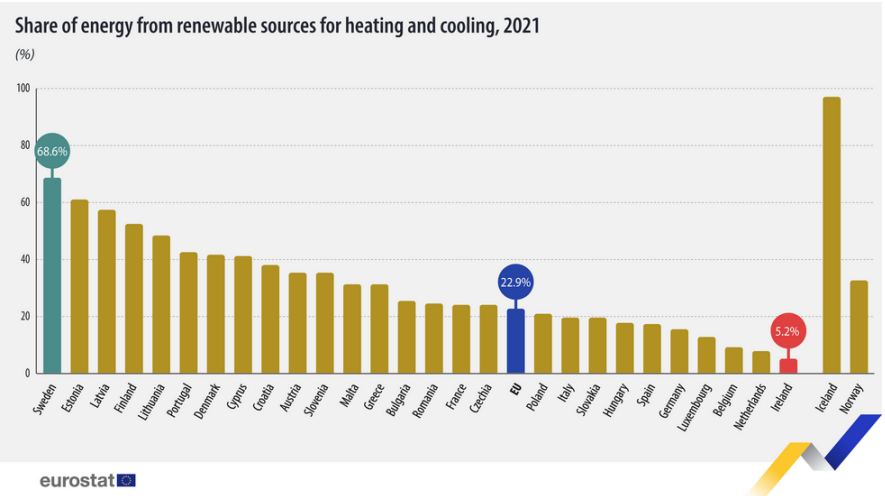
WEI has established an Electrification Working Group that concentrates on policies to encourage greater electrification in Ireland. This transition to electric heat and transport represents a cleaner, more secure energy source. Both domestic and commercial/industrial heat, as well as transport electrification, forms the remit of the WEI Working Group as we see the immense potential ahead for electrification and the broader benefits it will provide the electricity sector as a whole including in its ability to provide a flexible demand source.

The CRU state in the consultation paper that "*In order for Ireland to meet its carbon emissions targets, it is necessary for electricity demand to become more flexible, in order to optimise the use of renewable generation and to minimise demand during times of high carbon intensity on the electricity grid*". Electrification across heat and transport should form part of this strategy as a technology to provide a flexible demand for System Operators. This in turn lowers emissions in those sectors, increases security of energy supply, and aids in helping deal with curtailment and constraints on our electricity grid.

We have yet to see the full potential in electrification Ireland and presently Ireland has the poorest performance in the EU for renewable heat as outlined below in figures from Eurostat.

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**Electrification Potential**

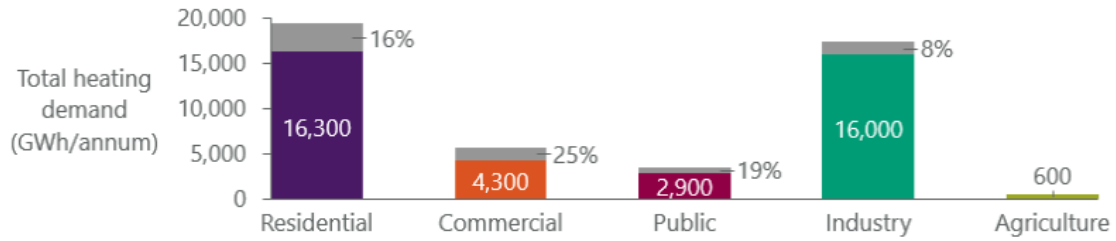
Our electricity generation will increase from sources such as solar PV, onshore and offshore wind, and electrification development can aid this growth. In this regard, the consultation states that "*This means that demand will need to be much more flexible in order to be able to increase and decrease in response to renewable generation output*". The electrification of heat and transport should form part of an intrinsic element of flexibility policy. In the industrial sector alone there is immense possibility to use readily available electric heat technology to decarbonise now. The CRU consultation paper outlines that "*The electrification of heat in industry alone is expected to lead to an increase of 3.5 TWh of electricity demand in 2030 (equates to approximately 10% of the total absolute electricity generated in 2021).*"

An extensive study on the heat sector and its potential for renewable heat is found in the SEAI Heat Study publication. This paper with graphs below outlines the demand figures for heat in Ireland across various sectors. We can see from the industrial sector there is a heat demand of 16,000 GWh/annum. This is a potential immense source of flexible demand for System Operators

that must be factored into future demand if it is electrified. A further graph also presents the annual heat demand from specific industries.

Graphs from SEAI Heat Study. [1]

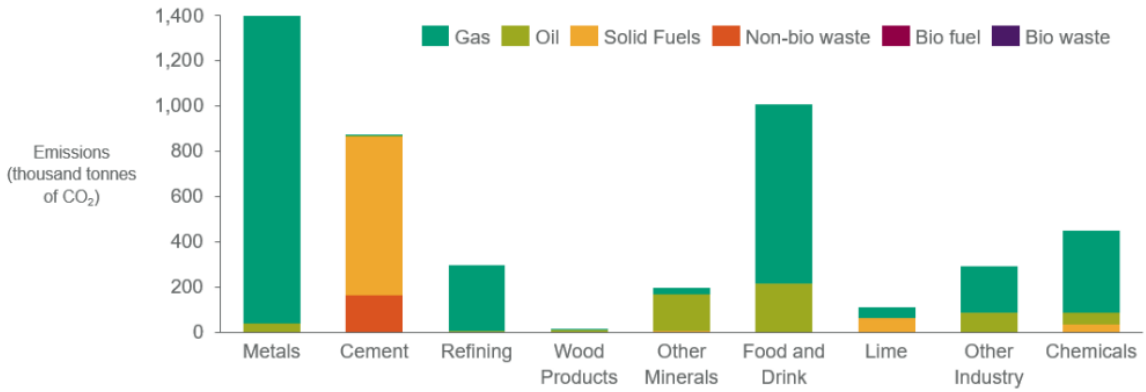
**Figure 21: The remaining heating demand in each sector after energy efficiency measures have been applied to all suitable stock**




***Note:***

- *The grey area of each chart represents the heating demand saved by the implemented energy efficiency measures.*

**Figure 60: Annual heating demand (GWh) in industry, split by subsector and heating grade**




Climate Action Plan targets for EVs and the key metrics are below. This seeks a substantial increase in electrification. Again a proportion of this transport electrification offers demand flexibility. EV numbers are predicted to increase over the coming years "*indications from car manufacturers and energy market analysts suggest that mass market adoption of EVs for cars and vans is probable*"[2]. At present the policy seems only to see electrification in terms of adding to demand and not in its broader benefits to System Operators through enabling flexibility.

[1] SEAI, National Heat Study, Heating and cooling in Ireland today
seai.ie/publications/Heating-and-Cooling-in-Ireland-Today.pdf
[2] Electric Vehicle Policy Pathway Working Group Report 2021

Graph from the Climate Action Plan.[3]

| | | |
|---|---|---|
| Fleet Electrification | • 175,000 passenger EVs<br>• 20,000 commercial vans<br>• 700 low-emission HGV<br>• 300 EV buses in PSO bus fleet<br>• Expansion of electrified rail services | **Private Car Fleet**<br>EV share of total passenger car fleet (30%)<br>EV share of new registrations (100%)<br>845,000 Private EVs[46]<br><br>**Commercial Fleet**<br>20% EV share of total LGV fleet.<br>95,000 commercial EVs<br>30% ZE share of new heavy duty vehicle registrations<br>3,500 HGVs<br><br>**PT Services**<br>1,500 EV buses in PSO bus fleet;<br>Expansion of electrified rail services. |

Through the SEAI Heat Study the heating and cooling demand of each sector has also been analysed spatially to produce a national map of heat demand. The data is linked to Ireland's 18,641 small geographical areas. This map[4] gives an indication of the high heat demand areas in the State and presents geographical detail on heat to determine where future electricity demand will grow if this heat is electrified. A more detailed break-down of heat demand for buildings and industry is also available as supporting documentation alongside the Heat Study from SEAI.[5] This provides a comprehensive analysis of different commercial demands at present.

Dublin's energy demand agency, Codema, has also carried out extensive work on energy demand mapping. Codema published a study in 2015, the 'Dublin City Spatial Energy Demand Analysis'. In this work, Codema produced a heat demand map for the city of Dublin, which includes residential and commercial heat demand per area.[6]

The use of these data sources that demonstrate the level of heat electrification that can be established should be factored into a demand strategy going froward. Alongside this, the types of industry that can electrify can be determined. Generally low or medium grade heat dominates heat demand, commonly supplied through steam from boilers/CHP. High grade heat dominates in some industrial subsectors, especially cement, and the heat for this is largely supplied by direct fired equipment like kilns or furnaces.

[3] CLIMATE ACTION PLAN 2023 CAP23.
[4] https://gis.seai.ie/heatdemand/
[5] https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fwww.seai.ie%2Fpublications%2FHeating-and-Cooling-in-Ireland-Today-Supporting-Data-.xlsx&wdOrigin=BROWSELINK
[6] https://www.codema.ie/images/uploads/docs/Dublin_City_Spatial_Energy_Demand_Analysis_-_June_2015.pdf

Further breakdown on the residential and commercial sector for electrification is provided on page 11 of the SEAI Heat study[7].

Several countries have adopted specific electrification measures to encourage growth. The IEA database outlines some measures across various countries.[8] Sweden for example has published a strategy focusing on how to enable further electrification, including the expansion of the capacity of the grid and further developing the EV charging network and wind energy sector.[9] This paper states that "*More flexibility in the electricity system is needed to cope with a sharply increasing and more variable need for power*" and that "*The possibility of flexibility must be promoted in new connections of electricity-demanding activities*".[10] As we develop electrification policies generally, these must be developed with demand flexibility potential in mind so that growth occurs to provide the wide benefits this technology is capable of contributing to the grid. Thermal storage also is a cost-effective form of energy storage and a proven technology. Using the storage possibilities from the electrification of heat will both further lower emissions in the industrial sector while adding additional storage potential using the existing grid. Coupled with this thermal storage offers further flexible demand to System Operators.

**Heat Flexibility**

Under CAP23, there is a requirement to deliver demand flexibility and demand response initiatives in line with set targets of 15-20% demand side flexibility by 2025 and 20-30% by 2030. If we look at these targets and view also the possible areas of growth for electrification such as with electric heat, 78% of residential buildings, 66% of commercial buildings and 47% of public buildings are suitable for heat pumps without any additional energy efficiency improvements.[11]

The potential for heat pump uptake in the commercial sector alone is outlined in the graph below from SEAI. This sees a substantial increase and continual rise over the coming decades, and this forms a level of flexibility that must be given strong consideration on polices going forward. Further to this, flexible heat pumps could significantly lower the costs for integrating renewables and reducing carbon emission. The ERSI have stated that "*Heat pumps in conjunction with thermal energy storage provide system wide flexibility services such as load shifting, peak shaving, and demand side management, thereby ensuring increased utilisation of excess*

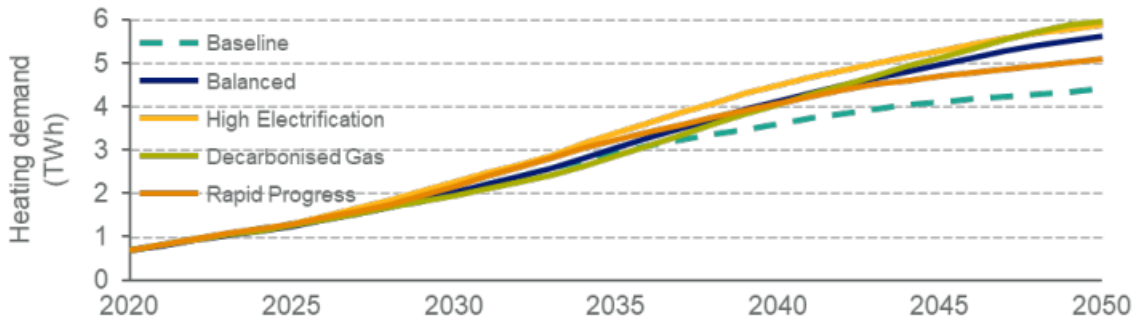
[7] SEAI, National Heat Study, Low Carbon Heating and Cooling Technologies. https://www.seai.ie/publications/Low-Carbon-Heating-and-Cooling-Technologies.pdf
[8] https://www.iea.org/policies?topic%5B0%5D=Electrification
[9] https://www.regeringen.se/contentassets/fe23dccdb7384109a5e39de2c8105432/popversion-elstrategi_eng/
[10] Ibid
[11] SEAI, National Heat Study, Low Carbon Heating and Cooling Technologies. https://www.seai.ie/publications/Low-Carbon-Heating-and-Cooling-Technologies.pdf

*renewable energy during off-peak periods*."[12]. Also in regard to electric heat ESBN have said that heat pump technology is developing all the time and will play a significant role in the decarbonisation of industrial heat demand in Ireland[13].

The Central Statistics Office analysis of Building Energy Rating data demonstrates this shift away from fossil fuels; the installation of oil boilers has dropped from 36% to 4% in new dwellings, and electrical systems (primarily heat pumps) make up 44% of heating systems in new dwellings with this percentage growing steadily each year.[14] Other electric heat technologies such as E-boilers further provide flexibility and the overall flexibility target should be analysed in the proportion that can be provided by further electrification of heat and transport.

Graph from SEAI Heat Study.[15]

**Figure 22: Commercial heat pump heating demand uptake (TWh)**

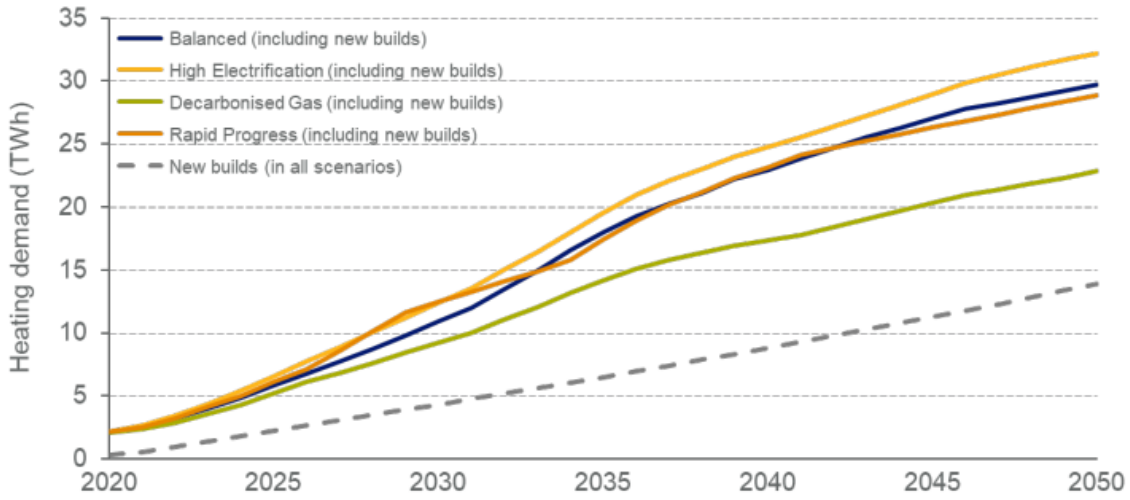



The growth in electrification means an available technology type to help decarbonise key sectors. Increased electrification in turn will be directed by CAP targets. There are obligations on the commercial sector under CAP 23 to achieve 35% emissions reduction by 2030. To decarbonise heat will be an important tool to help reduce emissions in this sector. Heat pumps play a significant role in decarbonising heat in all scenarios and dominating heat demand in new builds in the residential, commercial and public sectors, with significant numbers deployed in retrofits in all scenarios.[16]

[12] ERSI Working Paper No. 627 June 2019
[13] https://esb.ie/docs/default-source/leading-lights/industrial-heat-pumps-insights-paper.pdf?sfvrsn=270c3311_7
[14] Ireland's Long-Term Renovation Strategy 2020
[15] SEAI, Net-Zero by 2050
https://www.seai.ie/publications/Net-Zero-by-2050.pdf
[16] SEAI, Net-Zero by 2050
https://www.seai.ie/publications/Net-Zero-by-2050.pdf

Graph from SEAI Heat Study.[17]

**Figure 35: Total annual heating demand met by heat pumps by scenario, between 2020 and 2050**




**Flexible Demand and Electrification**

Load flexibility offers huge potential, and it is seen that it could serve 20% of estimated peak load in the US in 2030. This includes the application of electric heat and EV's.[18] In the definition of demand flexibility this must encompass load flexibility. The technology types that provide a flexible service to the grid should be acknowledged. Further the definition must be cognisant of specific industries, that through electrification are capable of providing flexibility. Measured in such manner this can aid in reporting, and compliance to CAP obligations. The frequency, duration, and timing of demand response events can vary significantly amongst geographic locations and utilities. Furthermore, for the same location and utility, the timing of the demand response events also evolves over time as renewables and electrification grow.[19] The definition should be conscious of the system need and growth in electrification going forward.

[17] SEAI, Net-Zero by 2050
https://www.seai.ie/publications/Net-Zero-by-2050.pdf

[18] The National Potential for Load Flexibility
https://www.brattle.com/wp-content/uploads/2021/05/16639_national_potential_for_load_flexibility_-_final.pdf

[19] Defining and applying an electricity demand flexibility benchmarking metrics framework for grid-interactive efficient commercial buildings
https://www.osti.gov/pages/servlets/purl/1890999

**Conclusion**

The CRU's strategic priority is to "*Deliver sustainable low-carbon solutions*". The electrification of heat and transport offers a ready to use technology now that can lower emissions in sectors seeking to transition from fossil fuels and help reach our net-zero future. This electrification then can further aid in the management of the electricity grid for System Operators.

Data is available on the potential for growth for electrification. The demand profile for electric heat is also presented in the SEAI Heat Study as placed in our response alongside data on the sectors that can electrify heat and in what geographical areas. This demonstrates the level of potential demand being placed on the electricity grid, and a proportion of future flexible demand, which should provide input into the development of the flexible demand strategy. The polices in electrification of heat and transport are interlinked to other climate actions and energy aims. They will lower emissions in key sectors, they increase security of energy supply, and aid the growth of renewable generation, supplying a source of flexible demand with technology readily available. The Energy Demand Strategy Project should develop with electrification policy being an important element so that electrification can grow to supply wide electricity system benefits.

Cathal Murphy
Senior Policy Analyst
Wind Energy Ireland

Emailed to: energydemandstrategy@cru.ie

30th August 2023

**ESBN - Scenarios for 15-20% Flexible System Demand**

## Introduction

Wind Energy Ireland (WEI) welcomes the opportunity to respond to the ESBN Scenarios for 15-20% Flexible System Demand. In developing policy on demand flexibility, it is important that the role of electrification, across heat, both domestic and commercial/industrial, as well as the electrification of transport, are encompassed in the strategy ahead.

WEI has established an Electrification Working Group that concentrates on policies to encourage greater electrification in Ireland. This transition to electric heat and transport represents a cleaner, more secure energy source as well as broad benefits to the electricity grid. There are several benefits to electrification such as offering flexible demand alongside thermal storage potential and helping further decarbonise our energy system. However the regulatory framework must be reformed to recognise the gains that are created with greater electrification for the energy market.

## Electrification and Flexibility

In seeking the 15-20% flexible demand by 2025 ESBN must factor the growth in electrification and the amount of flexibility this can provide. The paper acknowledges ESBN's commitment to "*Facilitating the people of Ireland's adoption of up to 936,000 electric vehicles and 600,000 heat pumps*". The growth in electrification must be seen as a potential demand flexibility source from both domestic and industrial heat as well as transport.

Considering that many of the industrial processes in Ireland such as the food and drink sectors can move to electrification there is immense potential in the near-term. The SEAI Heat Study[1] conducted extensive research on the potential in heat electrification going forward as outlined in the graph below. We can see for example from the industrial sector alone there is a heat demand of 16,000 GWh/annum. This is a potential large source of flexible demand for System Operators that must be factored into future demand if it is electrified. This graph also presents the annual heat demand from specific sectors, from residential to agriculture. Through the SEAI Heat Study the heating and cooling demand of each sector has also been analysed spatially to produce a national map of heat demand. The data is linked to Ireland's 18,641 small geographical

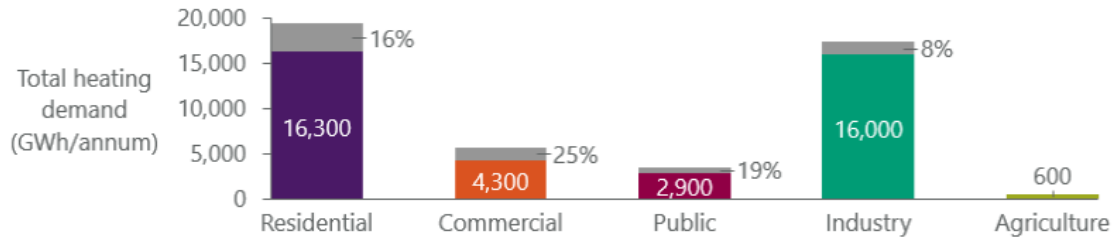
[1] SEAI, National Heat Study, Heating and cooling in Ireland today
seai.ie/publications/Heating-and-Cooling-in-Ireland-Today.pdf

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areas. This map[2] gives an indication of the high heat demand areas in the State and presents geographical detail on heat to determine where future electricity demand will grow if this heat is electrified.

**Figure 21: The remaining heating demand in each sector after energy efficiency measures have been applied to all suitable stock**




***Note:***

- *The grey area of each chart represents the heating demand saved by the implemented energy efficiency measures.*

The ESBN paper outlines that commercial demand side flexibility will include:

1. Shifting demand through the use of on-site electricity storage or generation;
2. Shifting demand by adapting production cycles or other energy management or efficiency operational activities.

The increased electrification potential alongside thermal storage in heat should be factored into any analyses on demand strategy and be a key element of demand flexibility policy. In transportation this also offers immense growth in electrification. As stated in the ESBN paper "*In facilitating the electrification of transport, ESB Networks will need to accommodate at least one million EVs on the distribution system by 2030".* Considering this level of expected growth in electrification of transport this offers grid benefits if the regulatory framework is designed correctly.

**Thermal Storage**

Thermal storage is a cost-effective form of energy storage and a proven technology. Using the storage possibilities from the electrification of heat will both lower emissions in the industrial sector while adding additional storage potential using the existing grid. Industrial heat electrification offers flexible demand to System Operators and coupled with thermal storage can offer some very unique advantages: it can be deployed in very large volumes, it is not limited to

[2] https://gis.seai.ie/heatdemand/

specific locations, so it is usually easy to put where required, and it connects renewable electricity to the heat sector, thus reducing curtailment.

Storage through thermal heat is not a developing or future technology. It is well established in other countries such as Denmark and shapes an important part of their storage strategy. Thermal energy storage such as Pit thermal Energy Storage (PTES) seen in installations in Aalborg[3] in Denmark or Aquifer Thermal Energy Storage (ATES) as that located in the University of Utrecht in the Netherlands[4] can provide long-duration energy storage.

> "*Excess heat from solar heating- and biomass plants and industrial processes as well as energy from wind turbines and PV-panels can be used for heating up the water inside the PTES to approx. 80-90 °C. When the heat demand increases, cooled return-water from the district heating network is lead into the bottom of the storage, while the heated water from the top is sent out to the consumers. Heat is thus stored, when the production price is low and supplied to the consumers, when it is expensive to produce. Hereby, an optimal utilization of the energy is achieved*."[5]

Aquifer thermal energy storage does not require large areas of land but does however require specific subsurface conditions i.e. an aquifer covered with a clay layer for the aquifer to be used in this way. There is a link here to the policy in district heating being developed in Ireland. In terms of policy development energy sector coupling across electricity heat and storage will be important going forward.

**Flexible Connections**

Certain policy changes could be pursued to ensure the expansion of electrification, and at a more rapid pace. One area to address regulatory change includes connections policy. Providing a flexible connection, or what can be called a partial non-firm connection to the electricity grid, gives system operators flexibility to manage the grid and in turn should allow quicker grid access for electrification as they move from fossil fuels. This type of grid connection will allow for the power supplied to be turned down at certain periods. Currently NIEN has a consultation out on a Call for Evidence for Flexible Connections.[6] This is looking at possible changes to connections

[3] https://www.aalborgcsp.com/business-areas/thermal-energy-storage-tes/pit-thermal-energy-storage-ptes
[4] https://www.iftechnology.com/wp-content/uploads/2018/05/Drijver-2011-High-temperature-aquifer-thermal-energy-storage-HT-ATES-water-treatment-in-practice.pdf
[5] https://www.aalborgcsp.com/business-areas/thermal-energy-storage-tes/pit-thermal-energy-storage-ptes
[6] https://www.nienetworks.co.uk/documents/regulatory-documents/flexible-connections.aspx

policy away from the current regime. This consultation outlines that certain kinds of customers with predictable patterns of demand or generation, or the ability to control patterns of use, could benefit from flexible connections such as transport charging (overnight) or industrial users with the ability to manage patterns of demand. Consideration should be given for a consultation like this to be put forward by ESBN.

**Electric Vehicles**

The effective management of transport electrification offers many broad benefits to the electricity grid. The Climate Action Plan outlines an electrification plan for the transport fleet, with 175,000 passenger EVs, 20,000 commercial vans, 700 low-emission HGV, 300 EV buses in PSO bus fleet and further the expansion of electrified rail services by 2025.

There is a largescale potential for growth in EVs on our grid. Studies have been conducted on managed EV charging along with developing technology. The ESBN paper cites the UK Power Networks "Project Shift". This project explored different market mechanisms to facilitate smart charging in a way that moved EV demand away from peak. Across all market mechanisms trialled, smart charging successfully shifted EV charging away from the evening peak period (with an 'unmanaged' profile peak at 20:00). The flexibility procurement trial delivered an 81% reduction in demand, while the ToU DUoS pricing trial resulted in a 55% reduction. Combining the data, the average diversified peak EV charging demand at 20:00 was reduced by 79%.

Also cited in the ESBN paper is the potential in vehicle to grid applications for EVs. Vehicle-to-grid technology is a form of electricity-to-electricity storage, as it allows energy to be pushed back on to the electricity system from the battery of an electric car. The features with this technology mean it can also ramp up the power delivered to the vehicle for fast charging and enable a fast reaction to unpredicted grid connection point constraints.

**Conclusion**

Electrification across domestic and commercial/industrial heat as well as transport offers many potential benefits to the System Operators in terms of a source of flexible demand and a way to decarbonise key sectors of the economy currently heavily reliant on imported fossil fuels. The policy framework on flexible demand being developed should be inclusive of the immense potential in electrification. The polices in electrification of heat and transport are interlinked to other climate actions and energy aims as electrification increases security of energy supply, and aids the growth of renewable generation, supplying a source of flexible demand with technology readily available. Electrification should be included in the policy framework going forward for demand flexibility while also considering the policy changes that can be put in place to increase electrification growth.

Cathal Murphy
Senior Policy Analyst
Wind Energy Ireland

Responses in relation to the consultation paper - Incentivising the Uptake of Time of Use Tariffs

Question 17
Yes, I think a review of the structure of the SST should be brought forward. Consumers see poor or limited value for money in switching to a smart tariff currently.

Question 18 (a)
It is easy to understand, but currently it provides poor value for money to the consumer. It also assumes that there is one standard tariff suitable for most people which is likely not the case.

Question 18 (b)
Day & Night is easy to understand but it doesn't reflect the reality of energy demand. Consumers expect to have greater control over their bills when switching to a TOU tariff, but many households would not be able to avail of the night-time rates due to the time-banding.

I would propose to rename Day/Night/Peak to be Normal/Off-Peak/Peak. This would better reflect the reality of the pricing bands and would avoid any confusion from having say off-peak periods during 'day-time' hours.

The assignment of hours to each time band should be done in such a way as to enable households to more practically switch their demand.

Question 18 (c)
Yes, I do see a need for a standard smart tariff. It is a good way for consumers to compare on a like for like basis, and promotes transparency and reduces obstacles. However, I would propose that in future additional standard tariffs are designed as it is currently assumed that there is one standard tariff suitable for most people which is likely not the case.

Question 18 (d)
The prohibition of a consumer from choosing a non-smart tariff once they switch to a smart tariff for the first time is an unnecessary obstacle to uptake, especially at this time when the current smart tariff offers show limited or negative savings compared to non-smart tariffs. This requirement should be removed and the focus placed on ensuring the smart tariffs offer a significant saving compared to non-smart tariffs.

Question 19
Additional standard smart tariffs should be created to give greater choice to consumers that are not suited to the current one size fits all approach. These additional tariffs should be standardised for reasons of price transparency and to reduce obstacles that enable greater take-up.
Proposed additional tariffs might be:

- Spot price: Price is calculated using hourly spot price from the wholesale market. (This is a common and popular tariff in Finland. Standard practice is to allow consumers a two-week notice period to quit.)
- FutureHome tarriff: designed to enable households with heat-pumps, EV's and solar panels to maximise their savings. Likely an ultra-low night-rate.

- WorkingfromHome: designed to enable households who are mainly based at home during the day to maximise the use of day-time off-peak rates.

In any review, the term 'meaningful difference' with regard to tariff price banding should be more expressly defined. Having a rate that is 6% or 3c/kwh different is not going to encourage uptake or demand switching.

Lastly, to risk stating the obvious. If we want more people using smart meters and smart tariffs to lower the demand profile, enabling greater use of renewables and thus reducing the carbon emissions of the sector; we need to lower the cost of electricity to consumers. So, no matter how many ways we play around with the tools at our disposal, if it's not noticeably cheaper for the consumer we will have a poor take up. It's important that the savings are practical to achieve.

Kind regards,

[redacted]

Hello,
here are my comments on this set of proposals.

In principle, yes I agree with the approach. Allowing a PCW to access all data from the HDF file will give them lots of detail to use in analysing the performance of the same usage against multiple separate supplier plans.

**Question 2**
Small time restrictions should not be applied. A minimum of a year is what we should target and if the upload is performed mid-year, the analysis PCW can run back 12 months to obtain enough usage pattern guidelines for each typical month of the 12.

**Question 3**
Yes, all ESBN meter profiles need to be amended to track 30-minute interval usage to make this comparison model work.

Right now, only meters in the MCC12 profile have this granular 30-min tracking in play. But all other profiles such as MCC01 (24h) and MCC16 (Smart SST) only track total usage per 24h and selected SST day, peak and night registers. Those meters are only rady by ESBN every 15 days or so.

So at an ESBN level, all that is known with these non-detailed profiles is how much 24h usage or day, night, peak usage took place during a given 15 day period. We have no further breakdown of this data.

As a result, if you feed this form of HDF data to a PCW, it cannot accurately price the historic usage against competing smart plans, especially against a landscape of multiple variable TOU tariffs.

The solution should move in a direction where all customers with smart meters are automatically switched to this fine-grained tracking and given access to granular 30-min interval usage regardless of the current supplier or usage plan they are on.

If a customer has their meter replaced with a smart meter and they remain grandfathered on an older 24h plan, while they continue to be charged in a 24h model, they should still be given access to this new fine-detailed usage. This helps them in multiple ways:

- They can self-examine their own detailed usage across the weeks or given days (via ESBN portal)
- As you are proposing, they can push that data to a PCW to make suggestions showing the accurate cost saving of moving from a 24h plan to a smart plan
- Their existing suppliers can also avail of that same granular usage and provide access to that data via their own customer portals
- This additionally allows an incumbent supplier to recommend alternate plans to their legacy 24h customers and show them actual savings they could make by switching to smart plans
- You mentioned that there is a mere 7% of smart meter owners using smart plans. This is one effective way to empower more to make the switch

**Question 4:**

**Question 5:**
Gaps in data should not be happening with smart meters. If there is a tendency for this to occur, it should be tracked and audited to make sure the ESBN is working diligently to correct the root causes.

**Question 6:**
Asking about an EV etc is fine. But the PCW should not have to ask about how much monthly bills are or how much usage the customer had... the HDF has provided this detail.

**Question 7:**
Yes agreed.

**Question 8:**
PCWs are known to be sponsored. So they have a vested interest in pushing some suppliers over others. This should be prevented to the best of the CRUs reach.

**Question 9:**
Yes, but note that the HDF file you download has both import and export usage present. So this kind of data share is not optional. They are both in the file at all times. So in soliciting one source of import data via HDF, you always get both.

**Question 10:**
No more to add

**Question 11, 12 & 13**:
Yes but as described in Answer 14 (below), EAB seems flawed

**Question 14:**
I think EAB is flawed. Ideally it should be abolished and replaced by the anonymous country-wide sourcing of all HDF data from the ESBN. This falls in line with my answer to Q3. This provides a much more accurate way to predict usage for different household types based on national statistics.

**Question 15:**
I agree having more TOU tariffs is a positive approach. We do have to watch that is not manipulated in a manner where suppliers will claw back reductions at different times.

**Question 16:**
Yes, I agree

**Question 17:**
Bringing forward the review is a good idea

**Question 18:**

One area of improvement I think should be standing charges. They probably should be nationalised to one standard and there should no longer be a separation between rural and urban rates. One of the sly observations we have made over the last year is that smart plans with cheaper night-time EV/boost rates also come with yearly standing charges that are about €100 more expensive. So there are tendencies to try and covertly claw back savings. Having that rate standardised would abolish that antic among suppliers. Their TOU rates would be the only differentiator.

**Question 19:**
Another widespread issue we are seeing is that suppliers are not correctly processing billing details. This is a mix of bad calculations and amateur mistakes such as failing to honour daylight savings correctly. I have seen evidence in bill excerpts and comparisons with HDF files that show some customers are being charged for EV charging on the wrong nighttime tariff. Similarly peak usage 5-7pm being offset an hour or so and the wrong costs being calculated.

There needs to be adequate scrutiny or auditing of these practices to ensure that customers are not being ripped off.

Lastly, the current taxation model on surplus export is draconian and blatantly unfair. A tax exemption limit of €200 is too low and should be raised to something like €2000. The statements typically made in government documentation and by TDs when reading from a script is that consumers with <= 6kw systems will almost never exceed €200/year. That is not correct and they need to be encouraged to revise those numbers.

--

Regards,
[redacted]

Good afternoon

Following reading the publication at https://www.cru.ie/publications/27534/

I'd like to add a few responses to the following point made in the publication:

"*As of April 2023, approximately 7% of consumers with a smart meter avail of a time of use tariff. Given the benefits of time of use tariffs to consumers, the environment and the electricity grid, the CRU is proposing a number of measures to incentivise further uptake.*"

The benefit of moving to smart meters is mainly to the grid, in an attempt to balance the strain put on it the during peak hours and to shift the use of energy to when surplus electricity is being generated using low carbon methods (for example when there is more electricity generated at night via wind).

I see the words "the benefit of smart meters to consumers" everywhere, but there is no outline of what these benefits actually are. Smart meter tariffs are as a whole are much more expensive than the day/night tariffs which they are replacing, I (like many others) see no benefit to switching and can only see it being more expensive.

If there is to be a dramatic (voluntary) uptake of smart tariffs them I propose the following will be more effective than making sure comparison websites are updated to handle smart tariffs:

1. Smart meters have to be able to replicate day/night meters. I've read this is coming, but until it does, consumers will not be able to make like for like comparisons so will be skeptical moving to a smart meter (and being forced onto more expensive smart tariffs).

2. Smarts tariffs are far too expensive. I understand the need for "peak hour" pricing to reduce demand (so keep that), but there should be much more "off peak" pricing to balance this out. Some tariffs do offer cheaper electricity for a few hours in the night, but these are at best the same as the night rate on a day/night meter (with the remainder of the night rate on smart tariffs being much higher than the night rate on a day/night meter). It feels very unbalanced at the moment.

3. FIT (Feed In Tariff) rates should also have "peak" rates. If someone is generating electricity at peak time, which can then be sold to some one else at a peak rate, the generator should be compensated accordingly.

4. The data available, from their smart meter, to the customer needs to be reliable and accurate. I heard of a lot of smart meters losing connection for hours and people being billed estimated amounts over peak hours. That doesn't inspire confidence that people won't be over charged.

I'm happy to discuss any of these points further, or complete any other surveys as I do feel strongly about improving how we generate and use energy in Ireland. We could be powered fully by our own renewables if it was done right.

Regards

[redacted]

**Response to consultation on**
**"Review of Large Energy Users Connection Policy"**
**by the Commission for Regulation of Utilities**

[redacted]

**August 2023**

https://www.cru.ie/publications/27532/

https://cruie-live-96ca64acab2247eca8a850a7e54b-5b34f62.divio-media.com/documents/CRU202357_Review_of_Large_Energ_Users_Connection_Policy_Call_for_Evidence_Paper.pdf

For submission to electricityconnectionpolicy@cru.ie.by 30 August 2023

# Summary

In order to meet climate targets and address the climate crisis, new and existing large energy users (LEUs) including data centres should be obliged, as a condition of operating, to be genuinely zero emissions. This means

- No on-site burning of fossil fuels for substantive periods longer than 15 minutes, and no new investment in on-site fossil fuel generators or infrastructure
- No new connections for LEUs to gas grids, and a phase out of existing gas connections for LEUs, given the significant barriers in substantially de-carbonising gas grids
- LEUs should be required to subscribe to or contribute to energy storage capacity infrastructure on the grid
- LEUs should be set up in such a way as to allow cutting off of non-essential services during times of energy scarcity, and should be transparent about the sectors/purposes they serve so decisions can be made by society about what to cut and what not to cut
- LEUs should face the full price of the grid energy they use, and should not benefit from any subsidies, price supports or other energy protections
- LEUs should face high prices during times of high carbon intensity (low renewable supply relative to demand), which will incentivise them to shift their demand to low carbon intensity times
- LEUs should be required to invest in or fund renewables and energy storage which aligns with the time they are using electricity and the place on the grid they are connected to, for example through time-and-place energy tagging

The CRU report states “Currently the average load drawn by these customers [data centres] is approximately 34% of their contracted capacity. The GCS [EirGrid’s All-Island Generation Capacity Statement 2022 - 2031] sets out that demand from data centres and new LEUs is expected to continue to rise as these customers build out towards their contracted load.” This shows the importance of applying conditions above not only to new connection agreements, but to existing data centres and large energy users, if we are to meet emissions targets.

Large energy users including data centres have substantial financial, human and technological resources at their disposal. These resources should be channelled into finding solutions that are genuinely zero-emissions - investment in renewables, genuine load-shed flexibility, and energy storage.

The following are false solutions which should not be pursued or continued:

- Gas networks:
    - Gas networks cannot transport substantial amounts of hydrogen without methane gas in the mix, or without substantial infrastructure re-builds
    - It is more efficient to transport energy in the form of electricity than in the form of gas
    - Biogas is only sustainable if is generated from genuine waste which cannot be avoided or cannot be put to better use as compost for soil fertility. Sustainable biogas is unlikely to provide the volumes of energy which would be needed by LEUs without fossil gas in the mix, and would be better used for small scale local energy or soil fertility. See biogas section in https://www.stopclimatechaos.ie/assets/files/pdf/energy_security_review_background_technical_document.pdf for details of the scalability and sustainability issues for biogas in Ireland
    - Gas networks are susceptible to leaks; leaked methane is a greenhouse gas, and leaked hydrogen is catalyst to the greenhouse effect
- Generators purported to be “hydrogen compatible in the future” when the main purpose is to burn fossil fuels now
- Use of hydrogenated vegetable oil which has come from deforested areas
- Carbon capture and storage (CCS) i.e. using energy to capture carbon, which is less efficient than producing energy in non-carbon emitting ways in the first place
- “Guarantees of Origin” and CPPAs which do not account for the time the electricity is produced and used or the place it is supplied from and to
- Demand response payment mechanisms which pay LEUs to burn fossil fuels on-site for hours at a time
- Current design of electricity capacity markets which fund investment in fossil fuel infrastructure instead of in energy storage infrastructure

# Decarbonisation of energy demand

## 1. Comments are invited from stakeholders on the proposed approach of decarbonising energy demand with a view to achieving net zero emissions from LEUs at time of connection.

A strict set of pre-conditions should be applied for all new large energy user and data centre connections, and phased in for existing large energy users and data centres, as follows:

- No new fossil-fuel burning infrastructure should be installed to power the LEU / data centre, either on or off site, either owned and operated by the LEU / data centre owner/operator or otherwise

- The LEU / data centre should be required to invest in additional renewable energy generation on the grid it is connected to (ie the Irish grid), and locate in places where it is feasible to generate sufficient energy from renewables and transmit that energy to the data centre location.

- The LEU / data centre should be required to consume grid electricity at times when there is plentiful wind or other renewable energy on the grid relative to demand, and reduce consumption of electricity when there is scarce renewable energy on the grid relative to demand. To facilitate this, they may turn off servers and delay low priority computing tasks, and install batteries or other energy storage infrastructure.

- The data centre should be required to disclose information on what levels of energy are used for different purposes or different economic sectors in the data centre, and set up their services in such a way that low-priority services can be switched off in times of energy shortage while retaining services linked to essential needs of society

- A significant portion of the useful waste heat of data centres must be utilized. To do this data centres should consider co- development with complimentary industries such as aquaculture, horticulture, industry or consider district heating solutions for nearby population centres.

- Data centres should not be allowed to run “mining” of bitcoin or other cryptocurrencies which consume huge energy resources and have been banned in some jurisdictions already.

Note that CRU/21/124 was highly flawed in that it allowed and actually encouraged installation of substantial fossil fuel generation on-site by large energy users, which increases emissions and locks us into fossil fuels. CRU/21/124 should be replaced with a directive with the above pre-conditions.

The CRU report states “Currently the average load drawn by these customers [data centres] is approximately 34% of their contracted capacity. The GCS [EirGrid’s All-Island Generation Capacity Statement 2022 - 2031] sets out that demand from data centres and new LEUs is expected to continue to rise as these customers build out towards their contracted load.”. This shows the importance of applying conditions above not only to new connection agreements, but to existing data centres, if we are to meet emissions targets.

It makes more sense to transport energy in the form of electricity than in the form of gas. Gas networks would need substantial upgrades to cater for non-trivial ratios of hydrogen. It makes more sense to invest in electricity grids and transport energy in the form of electricity, which has high de-carbonisation potential, rather than continuing to invest in gas networks which have a high degree of lock-in to fossil gas.

## 2. Comments are invited from respondents on the need for onsite generation and storage capability for LEU connections.

The requirement for flexibility should not entail large energy consumers burning fossil fuels on site.

Installation of fossil fuel generators on site on the basis that they will be later converted to hydrogen is not adequate. The generators need to use exclusively green hydrogen from the beginning in order to quality.

The use of hydrogenated vegetable oil is not a solution if that oil has been sourced from palm oil from deforested areas. The ultimate source of the vegetable oil should be documented, i.e. simply stating that it is waste cooking oil from restaurants is inadequate if the restaurants have ultimately sourced that cooking oil from deforested areas.

The onus needs to be put on large energy users to come up with energy storage solutions to use as backup. Policy does not need to specify how they do this, policy needs to simply specify that they come up with low impact energy storage solutions. Large energy users have large financial resources, human resources and access to technology know-how. They should be required to focus these resources and skills to come up with low impact on-site energy storage as a pre-condition for connection to grid energy..

While energy storage solutions could include green hydrogen, pumped hydro, thermal energy storage and chemical batteries for example, it is not the responsibility of policy makers such as the Commission for Regulation of Utilities to design solutions for LEUs. Rather it is the responsibility of policy makers to define what LEUs cannot do (i.e. activities which contribute to climate change or have other substantial negative impacts) and place the onus on the LEUs and their business partners to develop solutions within these limits.

## 3. Comments are invited on the use of CPPAs for additionality of renewable generation outside of support schemes for decarbonising electricity consumption. What type of de-rating may be appropriate to reflect real-world performance of renewable generation during peak times.

Rather than using de-rating, CPPAs should be structured in such a way that purchases of electricity from both renewables and from energy storage facilities are in real time (for example half hour intervals) from the grid the LEU is connected to. This will create incentives to invest in energy storage as well as renewables. It will preclude the use of CPPAs and Guarantees of Origin to greenwash electricity supply by claiming that the electricity being used by the LEU is renewable when in fact, in real time, it is not, and the grid is being forced to switch on or turn up fossil fuel generation to cater to the LEU demand.

## 4. Based on preference that renewable electricity and /or gas contributes to Ireland's emissions targets and security of supply, do respondents have a view in relation to how electricity feeding into Irish system and renewable gas credits feeding into the Irish system could be tracked?

As mentioned under question 1, the focus should be on electricity, not gas.

There are efforts underway at European level under the "EnergyTag" initiative https://energytag.org/ to track renewable energy, and energy from storage, in electricity grids, in real time, in a way which is linked to the place the energy is generated or stored.

The existing "Guarantees of Origin" system is highly flawed. It allows LEUs to claim that the electricity they use is renewable, when the GO they have bought is for electricity which was produced at a different time to the LEU was using electricity, and/or the electricity was produced far away from the LEU, even on a different grid than the Irish grid. The GO scheme as it stands is simply a greenwashing scheme.

The Energy Tag initiative aims to restrict this so that the LEU can only claim that their energy is renewable if they have bought it for the time interval they are actually using it, and if they have bought it from a source close to them, on the Irish grid.

## 5. Comments are invited from stakeholders on the use of renewable gas credits (feeding into the Irish natural gas system) in order to facilitate the connection of gas demand to the system.

As stated above under question 1, the focus should be on electricity grids, and gas grids should be phased out. It is not possible to transport large ratios of hydrogen on existing gas grids without substantial upgrades, and gas grids are also susceptible to leaks. Biogas is only sustainable if is generated from genuine waste which cannot be avoided or cannot be put to better use as compost for soil fertility. Sustainable biogas is unlikely to provide the volumes of energy which would be needed by LEUs without fossil gas in the mix, and would be better used for small scale local energy or soil fertility.
The gas network as it stands is effectively locked into fossil gas. Electricity grids can transport renewable energy more efficiently and instantly.

# Demand flexibility

## 6. Comments are invited from respondents on enabling demand flexibility requirements as described above.

## 7. Are there other sources of flexibility that can be provided?

It should be possible for policy to mandate the shutting down of non-essential data centre services, while retaining essential data services, in times of energy shortage, scarcity of renewables or peak times. In order to make this distinction, data centres should be required to disclose how much power is used for different types of data services in different sectors, and to put in place the capability to shut down non-essential services without shutting down essential services, if they provide any essential services.

Currently, large energy users including data centres are being paid through demand response incentive programs (by both Eirgrid and ESB networks) to burn fossil fuels on site for hours at a time. Large energy users including data centres should not be allowed to participate in and be paid for demand response programs by burning fossil fuels for extended periods (longer than 15 minutes). Incentives for demand response should be reserved for load-shedding and use of energy storage.
.
Large energy users and data centres have large financial resources, human resources and technological know how. They should be directed to use these resources to find ways of participating in demand response without using fossil fuels.

# Interruptible contracts for gas connections

## 8. Comments are invited from respondents on the introduction of interruptible type supply contracts for gas connections.

As stated above, new gas connections should not be granted to data centres or large energy users, as they lock them into fossil gas.

Existing connections to gas by data centres should be interruptible on the basis of distinguishing between essential data centre services and non-essential data centre services, as described above. Over time, gas connections to existing data centres should be phased out, as it is not possible to incorporate significant amounts of green hydrogen or into the gas network without substantial upgrades. and Biogas is only sustainable if is generated from genuine waste which cannot be avoided or cannot be put to better use as compost for soil fertility. Sustainable biogas is unlikely to provide the volumes of energy which would be needed by LEUs without fossil gas in the mix, and would be better used for small scale local energy or soil fertility.

# Real time zero carbon emissions

## 9. Comments are invited on real time zero carbon emissions, shifting of demand in real-time to times of high renewable energy availability.

Large energy users and data centres should face very high tariffs during times of high carbon intensity on the grid. Efforts to address energy poverty should continue to provide financial aid to households for energy costs, but the true high cost of energy, including the cost of fossil fuel emissions for electricity generation, should be fully passed on to large energy consumers such as data centres. The prices they face should vary in real time according to the carbon intensity of the electricity at that point in time, with higher prices when renewable supply is low relative to demand.

There are efforts underway at European level under the “EnergyTag” initiative https://energytag.org/ to track renewable energy, and energy from storage, in electricity grids, in a way which is linked to the place the energy is generated or stored as well as to the time is is fed into the grid. This can provide a way to force LEUs including data centres to pay for both renewables and energy storage to deliver green energy when they are actually using it. Mechanisms such as this should fully replace the flawed “Guarantees of Origin” scheme which is in effect a greenwashing scheme which allows large energy consumers to claim they are consuming renewables when the electricity they are using is in real time is actually from fossil fuels, and the demand from the LEU has forced the grid to burn more fossil fuels..

# Definition of an LEU

## 10. Comments are invited from respondents on what they consider to be an appropriate definition of an LEU for electricity and gas for the purposes of this review. 11. Comments are invited from respondents on whether this review should only apply to Extra Large Energy Users (XLEUs) in relation to electricity. 12. Q.11 Comments are invited for gas LEU definition of those with a peak hourly demand greater than 50MW thermal input and a connection pressure of 16 barg or above.

The definition of Large Energy User should be broad. Otherwise, large energy users can simply break up into a number of smaller units with separate connections in order to avoid the rules and conditions which should apply to them. To address the climate crisis, even medium energy users should also be facing stringent rules against burning fossil fuels on-site, towards providing demand response particularly for non-essential services, and investing in or paying for both renewables and energy storage linked to real time availability.

# Islanded Connections on the Gas Network

## 13. Comments are invited from respondents on the treatment of ‘islanded’ LEUs.

As outlined in response to above questions, islanded large energy users should only be allowed if they do not burn any fossil fuels on site, and are powered fully by renewables and energy storage. However, even in these circumstances, connection to the electricity grid should be encouraged rather than avoided, so that any on-site renewables and energy storage can be leveraged by the wider grid as well as by the LEU itself.

## 14. Should the connection of LEUs to the natural gas network focus on security and decarbonisation as per the Government Policy Statement on Security of Electricity Supply.

As outlined above, no new connections to gas networks should be allowed for large energy users, and existing connections should be phased out. The gas network is locked into fossil gas and it is not feasible to switch large ratios of the network to green hydrogen without substantial upgrades. Biogas is only sustainable if is generated from genuine waste which cannot be avoided or cannot be put to better use as compost for soil fertility. Sustainable biogas is unlikely to provide the volumes of energy which would be needed by LEUs without fossil gas in the mix, and would be better used for small scale local energy or soil fertility. Energy should be transported as electricity rather than as gas.

# General questions

## 15. Please suggest any alternative approaches not captured above that could help in meeting the challenges outlined.

Electricity capacity markets are currently flawed in the following ways:

- They largely fund investment in fossil fuel infrastructure and not in energy storage infrastructure
- All energy users contribute to capacity payments through fixed charges on bills, whereas large energy users should be forced to contribute more

Large energy users could be required to “subscribe” to capacity markets as part of connecting to the grid. In other words, if they are increasing demand on the grid, they should be required to contribute, through capacity payments, to the energy storage infrastructure which will be needed to keep the grid stable with renewables.

## 16. Should provisions apply to all LEUs connections, or are there are any exceptions that should apply?

It should be possible to distinguish between essential and non-essential services to society. Transparency should be enforced so that it is possible for society and public policy to distinguish between different services in different sectors being provided at the same connection point. This applies particularly to data centres. For example if a data centre such as the proposed Government data centre, was to focus exclusively on essential data services to the health sector, revenue commissioners etc, then it should not be cut off at times of renewable scarcity or peak times. Non-essential services such as entertainment, non-essential online shopping etc could be cut off and forced to invest in energy storage. To enable this, full transparency is needed on what sectors and purposes data centres, and other large energy users, are actually serving.

## 17. Please suggest any incentives which could be applied to new LEU connections in facilitating some of the measures described above.

The focus should not be on incentives, the focus should be on regulations and pre-conditions, if we are to address the climate crisis. Incentives and public supports should not be directed at LEUs, they should be addressed to communities and households participating in the energy transition, and households facing energy poverty.

The fact that wholesale energy prices are low at times of plentiful renewables relative to demand (low carbon intensity), and are high at times of scarce renewables relative to demand (high carbon intensity), should serve as an incentive to LEUs to invest both in renewables and in energy storage. Therefore large energy users should face these prices directly rather than being protected from these prices through subsidies, capacity market payments and public policy.

I welcome this consultation.

A smart meter has recently been installed in my home. However it will not be activated until I switch to a Smart Meter Plan with my supplier - [redacted]

I would like to be able to monitor my usage profile under the current plan and then decide what plan I want to move to or how I need to change my usage patterns.

I should not have to select a plan first.

A system that would provide me with usage data i.e. how many units in different time slots over a period of time would really help my decision. I do not want to have to decide on a Smart Meter Plan first, before I can gather the information.

If I don't decide to select a Smart Meter Plan, then I can't get the benefit of the Smart meter? Doesn't make sense to me, as the money has been spent to instal it anyway.

Regards

[redacted]

[redacted]

We have a smart meter since March 2022 and a t.o.u. tariff since Sept 2022
These are our observations

Standing charges for Smart meters/time of use tariffs should not more than 24 hour tariffs
All electricity companies should have the same, regulated, standing charges
The proviso that you cannot change back from a t.o.u. tariff should be relaxed
The standard penalty of €50 for early break of contract should be reduced to, say, €25 for t.o.u. tariffs

2.1.2. Microgeneration
Payment/credit frequency of CEG, e.g., monthly, billing period etc must be prominently displayed
Payment/credit frequency should be standardised to monthly/billing period
Current T&Cs for CEG (BGE,SSE) are inhibiting shopping around
Microgenerators should be free to sell their export electricity to an electricty supplier of their choice and not tied to their electricity provider

Missing data is a problem. We have two estimated days in April, which has been under query/complaint with BGE since April 14th and has not yet been addressed by them

May have further thoughts

regards
[redacted]

# Response to Consultation CRU202358:

# Incentivising the Uptake of Time of Use Tariffs

[redacted]

Private Consumer

This document is a response to consultation CRU202358.

I am happy for the contents to be published by CRU.

As a private citizen and electricity consumer, I would prefer that my identity is anonyimised for publication.

I should first set out my background and credentials. I have worked in Pricing, and specifically regulated prices, for many years. My area of work was mainly telecommunications (fixed and mobile, and later Broadband, wholesale and retail including bundles with TV) and latterly also in the postal sector. I am therefore quite familiar with price publication, and the concepts of price transparency.

I applaud the aim of the CRU in seeking to encourage take-up of Time of Use tariffs, but I find the stated motivation somewhat alarming. CRU want to have consumers on TOU tariffs to increase awareness, but it is not apparent why this is a good thing.

CRU is essentially interfering in a market for retail electricity, and is seeking to impose certain constraints on the retail consumer tariffs. These constraints include a basic, standard Time of Use offering, and limiting other time of use offerings to three options. Part of the consultation asks if the mandatory offering should be retained, and then it asks when the limit on the number of TOU offers should be doubled, and finally when it should be removed. It is not clear why retaining, doubling and removing are the only possibly options.

Let's leave aside the motivation for the CRU, or maybe accept that encouraging adoption of TOU is in itself a good thing. The question then becomes "what's in it for me?"

There are two parts to his question:

A: Why would a retail electricity supplier want to introduce TOU tariffs (absent a regulation compelling them to do so)?

B: Why would a consumer want to sign up to a TOU tariff? (the regulations do not yet compel the consumers to do so, but once a consumer adopts TOU, the regulations in effect forbid that consumer to ever seek any non-TOU tariff ever again).

The consultation seems strangely silent on both these issues.

I do not have insider knowledge of the retail supplier motivations, but I suspect even the state-owned companies tend to be profit-maximising. To the extent that some of them are not purely retail operations, but are associated with generating companies and/or with the distribution network owner, they may think in terms of overall corporate profit rather than simply retail profit. I do not see any evidence that the retail suppliers want to reduce consumer usage, or to even out demand over the typical day, or encourage greater use of off-peak or renewably generated power.

So, we should ask the question: what sort of tariffs will a profit maximising retail supplier offer? Are there regulations needed to protect consumers from some of these offers? The retailers seem to compete on price. After all, the product has the same voltage, the same current, the same meter, no matter who your retail supplier is. Price is the main differentiator, and perhaps customer service or reputation or reliability and accuracy of billing plays a part. So how does a retailer compete? It seems they mainly compete by trying to acquire customers from each other (the size of the consumer market being fixed, as most homes have already moved from oil lamps to electricity). Do they compete for particular user segments? It doesn't seem so, unless "gullible" is a significant segment.

One might expect to see specific electricity offers for identifiable user segments among consumers:

These segments might include for example:

- Low electricity users, cook with Gas, heat with turf fire, drive a diesel car or use buses
- Medium users, heat and cook with Gas, drive a PHEV and charge it at home
- High users, heat with Heat pump, cook with electricity, charge a BEV at home and regularly drive long distances
- Sophisticated users with large solar arrays (and significant feed-in potential), battery storage with time shifting, sophisticated home automation for heating, washing, drying, EV charging…

You might imagine these segments use different amounts of electricity, at different times, and have less or more flexibility in changing the scale or timing of their use.

So, presumably, the retail suppliers will offer tariffs aimed at attracting the most profitable segments – which are probably the ones who use the most. So why don't we see retail price plans aimed at these segments?

Is there something CRU is doing that prevents the suppliers offering TOU plans to attract the more profitable customers? Is there something that CRU could do to encourage them?

At the moment, the take-up of TOU tariffs is so low (7%?) that the suppliers either ***don't want to*** offer them, or ***are prevented*** from offering a solution that the consumers want to buy.

What would they offer absent regulation? I find it is instructive to look at other industries such as telecoms, post, airlines and especially at the same industry, consumer retail electricity, in other countries, to see what might be possible:

- Unlimited offers?
- High price for peak and free otherwise?
- Free or low-price weekends (In the 1990s, Telecom Eireann's off peak rates including very low weekend rates, succeeded in equalising the network load and greatly improving revenue for no extra investment).
- Higher standing charge with lower unit price?
- Inclusive bundles (e.g. €200 per month for 5,000 day units, 2500 night units and 500 peak units, with the balance at €1.00 per unit)

Maybe it is easier and more profitable just to have a simple 24 hour plan, and minor variations with huge standing charges that ensure no consumer ever chooses them.

But if retailers are not offering attractive TOU tariffs, CRU needs to ask why.

### *The Consumer Viewpoint*

What does the consumer want from a retail electricity supplier? As I said before, the voltage and current is the same. If there is an outage, ESB

Networks will fix it. The only thing the retailer can do is offer a different price, or make mistakes on the bill.

There may be a small cohort of users who want to do the right thing, and want to reduce their usage at peak times. I suspect these are the very same people who try to reduce overall energy consumption: they insulate their homes, they drive EVs, they install solar thermal and PV, and batteries. They wash and dry when its windy or sunny. They don't need a TOU tariff to do or be encouraged to do any of this.

So, I suspect the reason for choosing an electricity tariff, whether the consumer is trying to save the planet or just trying to survive on a low income, is price. Electricity users buy on price. So, why don't they choose TOU, and what could encourage them to do so?

I suspect there may be a couple of reasons.

There is a fear of getting it wrong. The fact that I can't go back to a 24 hour tariff if I choose a TOU offer is a red flag. Why can't I go back? Why would I want to go back? Why are they stopping me? So if I see a note like that on the SSE website "Once you've switched to Smart Services, you won't be able to revert to your previous meter type" I immediately think – "It's a trap. Run away, run away!"

If a smart meter TOU tariff was better for me, I would not want to go back.

So, the minimum requirement for me would be the option to switch back, or alternatively, a guarantee that my supplier or at least one national supplier, would always have a smart meter TOU plan with the same price for all units as a non-smart meter plan.

This is fundamental. Would anyone switch mobile network if they were told "once you switch, you can never come back. If our 5G is worse coverage, or turns out to be slower or more expensive, you can't go back. Not even when your contract is up"

What if you were told once you choose comprehensive insurance, you can never have third party only again. If you once tap a debit card, you can never ever withdraw cash again.

But electricity is different. There is no better insurance cover. There is no better mobile coverage, There is no faster internet. It is just 240v, and up to 60Amps. The only reason to "go back" would be because TOU is

more expensive. And if I can't that makes me think "I will want to go back, because this TOU is going to turn out more expensive"

So the ban on going back makes a Time of Use plan look like a trap. It puts me off, and it puts a lot of people off. I'm sure CRU know this, as do the retailers. There is nothing stopping them reading the facebook pages of IEVOA, or Solar PV groups.

The initiative of Electric Ireland offering Home electic+ 24 hour plan is a good one if a consumer can be sure it will be maintained. It essentially promises you can stay on to old non-TOU plan, and get some benefits of using your smart meter. It seems daft that the data from the smart meter can't be collected while on a 24h plan. There is no technical reason why this can't be done, so there must be a profit-maximising or a regulatory reason.

But really, if users are to be encouraged to adopt TOU, the ban on going back to a non-TOU plan has to be removed.

So, if I want to try a TOU plan, I want to see the saving. In fact, I want to see (a) the saving I would make if I do nothing (just continue my old usage pattern) and I want to see (b) the extra saving I'd make if I change my behaviour. Because really, the first saving (a) is guaranteed, and the second saving (b) might never happen.

But now, I have a couple of problems.

Firstly, the price plans are not obvious. They are hard to understand. I'm a professional pricing expert, and I find them hard to understand. That is not the case with other products – I can understand telecoms, post, insurance, pricing for cars and accessories, hifi - TUO plans are the worst.

Which is cheaper: Unlimited internet for €50 per month or unlimited internet for €95 per month? It's not hard to tell.

Which is cheaper: €302.92 plus €0.4327 per unit, or €396.89 plus €0.423 day and peak, €0.2086 night and €0.1225 boost? How can I tell? There is a saving of €0.01 per unit but almost €94 more on the standing charge. So, I'd need to use about 9,400 units a year for it to be cheaper. Is that a lot? Could I shift some usage to the boost period? That looks cheap but is it really only two hours a day? And is there some catch that

I can't use too much at that time? Could I charge my car? My solar back-up battery?

Ok, I do actually have a lot of detail from my solar/battery system and I know how to download and analyse the HDF from ESB Networks but really, how many people can do that?

So, there are two major problems here:

Firstly, the TOU tariffs are not obviously attractive, and ultimately may prove not to save compared to a standard 24 hour tariff.

Secondly, it is not easy to get the data I'd need to compare offers.

Why is that? ESB Networks has my data by 30 minute intervals for several years. Electric Ireland can access it.

But ESB networks only let me see a week at a time. Why can't it show me peak, day, night and boost for a month, for all of last year, for this year to date? It's a simple dashboard that every consumer could understand. What are they hiding?

Electric Ireland claim I "can now get free access to electricity insights, detailed usage graphs, monthly billing and lots more" – but first, I have to sign up to a TOU tariff. I can't go back. Am I locked in to this TOU tariff for 12 o 24 months, or could I change to a different Electric Ireland TOU plan? (they won't tell me). Can I switch to another supplier (they won' tell me")? They will tell me I can't have any data for 4 month after I change!

So, yes, I'd like my usage information, annualised based on at least 12 months data, preferably in a human readable form that doesn't require advanced database or excel skills to interpret. And yes, I'd probably share that with a trusted broker or independent advisor who can find the best available plan for me.

In the Electronic communications sector, the European Electronic Communications Code provides for tariff transparency, for example

through contract summaries. In the insurance market, renewals typically indicate the cover quoted for so the customer can compare alternatives. Ideally, electricity suppliers would annually supply (preferably in print, by post as well as an emailed pdf) the current contract, the expiry date, and enough 12 month usage data to allow meaningful comparisons of alternative offers by that supplier, or others.

Of course, none of this is helpful if the TOU tariffs are not actually attractive to consumers i.e. cheaper, and clearly, transparently cheaper, than the non-TOU tariffs.

I note the special case of the day/night meter users who seem to firmly believe that all Smart meter tariffs are more expensive than their day/night plans.

**Question 1: The CRU is proposing to amend the PCW accreditation framework to allow consumers to upload their smart meter data (obtained as a HDF via the ESBN Customer Portal) to receive a price comparison based on their actual historical electricity consumption. Do you agree with this approach? If not, why not?**

Note the leading question, a format favoured by Regulators. Do you agree? If you say yes, you don't need to explain why. If you say no, you do need to explain.

I agree consumers (and businesses) should be able to obtain their smart meter data, annualised based on at least 12 months usage. Customers should be able to upload the HDF or other format to price comparison sites and to individual electricity retailers.

**Question 2: The CRU is proposing not to put any restrictions on the minimum period of time that needs to be contained in smart meter consumption data that consumers can upload to the PCW. However, we propose that a warning message be included where consumers have included less than a year of data. Do you agree with this approach? If not, why not?**

I agree, therefore I do not have to explain my reasoning.

**Question 3: Is there anything else CRU should consider with regards to this matter?**

**CRU should require ESB Networks to make data available in a useful, customer friendly format. This should be defined following well specified market research.**

**Question 4: In case a consumer submits a HDF containing periods of missing data, the CRU is proposing that the PCW takes the following actions:**

- **If the missing data accounts for less than 1% of the total dataset: the PCW must use the most recent ESBN load profile and calculate an estimate for the consumption during the missing period.**
- **If the missing data accounts for 1% or more of the total dataset: the PCW must inform the consumer that there is missing data, include the percentage of missing data, and ask if they wish to continue with the price comparison using an estimate for the missing data, as outlined above.**

**Do you agree with this approach? If not, why not?**

**This seems odd. We are considering basic billing data – why would some of it be missing? What does 1% mean in this context? 1% of the total time periods? Or 1% of the electricity consumed (which we can't know if the data is missing. Suppose I have 14 months of data, lets say 20,000 half hourly readings. 1% is 200 readings, or about 4 days. What if my dataset is from May 2022 to end of June 2023. I am missing 3 days in early May 2022, and one day in May 2023. Must I only use the June 2023**

**data for an estimate? That seems absurd, as if someone had plucked a figure like 1% out of the air with no analysis.**

**So, I say use all available data, but explain clearly that some data is missing, and the significance of this. 1% missing at a low use time in a 14 month set may have minimal impact, whereas 40% missing at a heavy use time (e.g. December to March) in a 10 month dataset may be very significant.**

**Question 5: Is there anything else CRU should consider with regards to this matter?**

Presumably, although the words are exactly the same as Q3, this is a different question, pertaining to discarding useful data if 1% or more is missing. The CRU should consider the extent and significant of the missing data and the available data, and encourage retailers and comparison sites to make realistic use of the available data.

**Question 6: The CRU would be interested in hearing whether respondents believe there is added value or not in allowing PCWs to ask consumers additional questions to identify their consumption behaviour, and tailor price comparisons. For example, whether a consumer has an Electric Vehicle.**
**If you believe there is added value in this approach, what guidelines, if any, do you believe the CRU should implement to ensure a minimum standard across PCWs?**

**I do consider there is added value in this approach, and therefore I am required to specify guidelines to ensure a minimum standard.**

**I suggest that guidelines be developed based on appropriate market research and testing of consumer questionaires. The questions need to be specific and in some sense actionable.**

**"has an electric vehicle" is rather vague – is it a PHEC or a BEV? Does the consumer plug it in? When> for how long? Could they do it differently? Many consumers don't plug in at home because their company owns the PHEV and pays for petrol. Some have a BEV but don't have home charging.**

**Does the customer have a heat pump? Solar PV? Storage battery? Gas cooker?**

**In telecoms for example, a price comparison site can use average data or ask the consumer to put in their own If consumers answer honestly, retailers may see patterns based on heat pumps with constant use on winter and none in summer, BEV charging patterns, cooking types and so on.**

**Question 7: The CRU proposes to require PCWs to implement the functionality to allow consumers to upload their smart meter consumption data (via HDF) from 1 January 2024. Do you agree with this approach? If not, why not?**

**Question 8: Are there any other issues that you believe the CRU should take into consideration with regards to the timeline?**

Ido not agree with this approach, because the CRU has not provided evidence that it is possible or economically sensible to require a specific change to PCW systems by 1 January 2024. The date of the decision, or other details of the decision, is not yet known I recommend the implementation timescale be determined in consutation wit the relevant PCWs – if it take one month and the decision is published in August, it could be in by September. But if it takes 3 months and the decision will be published in November, it can't be until March.

No supporting evidence has been given for the 1 January 2024 date.

**Question 9: The CRU proposes to amend the PCW accreditation framework to allow consumers to access price comparisons for microgeneration export tariffs between suppliers. It proposes consumers should be able to do this in one of two ways, either by submitting their actual (historical) export volume, or by submitting their deemed calculation. Do you agree with this approach? If not, why not?**

**Question 10: Are there any other issues that you believe the CRU should take into consideration with regards to this functionality?**

I agree, so I do not have to explain why.

I wonder whether it is appropriate to tie microgeneration export to the retail tariff -should a supplier pay the same for export independently of the consumer unit price? Should the supplier have TOU export prices matching the supply price or some reasonable portion thereof? Should a consumer be able to export to a different supplier (or should perhaps generators or the distribution network compete for consumer export?). It seems to me the relevant markets have not been defined here.

If we consider telecoms, consumers could choose to have one supplier for voice and another for broadband. One mobile network for incoming voice and internet data, and a different voip or text messaging app. So why not unbundle expoert and supply?

**Question 11: The CRU proposes to extend the requirement for an EAB to all tariffs available on the market, including time of use tariffs. Do you agree with this approach? If not, why not?**

Yes, EAB should be based on real TOU data. Potential savings, based on customer supplied information, could also be provided.

**Question 12: The CRU proposes to implement an EAB for all time of use tariffs from 1 January 2024. Do you agree with this timeline? If not, why not?**

I do not agree, because, as with Q7, no supporting evidence has been given for the 1 January 2024 date. CRU should determine the earliest possible date.

**Question 13: With regards to the methodology for calculating an EAB for all time of use tariffs, the CRU proposes to use the demand-weighted approach, which is the same that is currently used for the Standard Smart Tariff and Day/Night tariff. Do you agree with this approach? If not, why not?**

I consider that where consumers provide accurate and substantial data regarding usage, that should be used rather than any notional average.

**Question 14: Are there any other issues that you believe the CRU should take into consideration with regards to implementing an EAB for all time of use tariffs?**

Consumers should be able to use personalised EAB based on their data.

**Question 15: The CRU proposes to increase the limit on the maximum number of time of use tariffs from four to eight from 1 October 2023. Do you agree with this approach? If not, why not?**
**Question 16: The CRU proposes to end the limit on the maximum number of time of use tariffs from 1 April 2025. Do you agree with this approach? If not, why not?**

I recommend these decisions be based on evidence. I do not see any evidence supporting the proposed dates or any evidence for doubling the number of tariffs permitted, or removing the restriction entirely.

There is some evidence that consumers prefer three or four options in certain circumstances, but that related to purchases such as a specific flavour of jam. Limiting my choice to four tariffs from each supplier probably results in all suppliers offering tariffs aimed at the same four segments (although the current offers seem to de designed to discourage any take up of TOU, but maybe that is just my perception because my segment is not targeted).

**Call for Evidence**
**Question 17: CRU would welcome any views on whether respondents consider it appropriate to schedule a review on the structure of the Standard Smart Tariff ahead of the completion of Phase 2 of the NSMP (currently scheduled for the second half of 2024).**
**Question 18: CRU would also welcome views from respondents on which issues should be considered in such a review. Respondents can specifically focus on the following questions, or provide their own views:**
**a) Is the Standard Smart Tariff achieving its purpose to be an easy to understand 'entry-point' to time of use tariffs for consumers?**
**b) Do you have any concerns or recommendations in relation to the Day/Night/Peak structure of the Standard Smart Tariff, including the hours assigned to each time band?**
**c) In light of the proposed measure to extend the maximum number of time of use tariffs for each supplier from four to eight, do you see a continued need for the Standard Smart Tariff?**
**d) Are there any other issues related to the Standard Smart Tariff you believe the CRU should take into consideration in a future review?**

Q17 and Q18 seem to pre-judge the outcome of this consultation. It would seem odd to review the structure of the standard smart tariff if one is not required.

It does seem however that some review is needed. In my opinion, the standard smart tariff is not meeting the purpose of being an easy to understand entry point.

I suggest that the hours assigned to day, night and peak should be evidence based. Do they broadly reflect demand? Do they broadly reflect cost? Are they sufficiently transparent? In a telecoms context, consumer are and were well able to understand peak, off-peak and weekend time periods, along with concepts such as distance. In the Postal market, consumers can understand speed of delivery, format (letter, packet, parcel), weight, destination and more. It seems to me CRU is underestimating the ability of consumers to understand electricity tariffs.

If CRU considers restrictions are needed, either to protect consumers from complexity or to ensure the needs of certain segments are met, the evidence should be provided.

**Question 19: CRU would welcome any additional suggestions to incentivise the uptake of time of use tariffs.**

The CRU could mandate a rising percentage of users with smart meters must be on TOU tariffs. This might be 50% by December 2024, 80% by December 2025. There should be no restriction on reverting to a non-TOU tariff, at least when changing operator. This might encourage real competition.

If it doesn't, perhaps CRU needs to determine if there is SMP or some other anti-competitve behaviour at play.

Dear Sir / Madam

Re: CRU Energy Demand Strategy

Whilst I am only an individual home owner, I have personally invested heavily* to mitigate my carbon footprint with regards to electricity supply. To this end, I have facilitated of SEAI grants and improved technologies, however, I feel there is a resistance from within the Irish electricity generation market, to support individual home owners in making this migration affordable.

From reviewing publicly available supply rates from leading domestic electricity suppliers**, discounted EV charging rates are set between 02:00 and 05:00 or 3 hours per day. Given the maximum charging capacity of domestic chargers (such as the MyEnergi zappi) is 7KWh, this provides a total of 21KWh of charging at the EV discount rate per day.

From a general review of Electric Vehicle manufacturers, the average*** battery size of EV cars selling within the domestic market, is 62KWh. Therefore, to achieve a full charge, at the EV rate available, would require 3 nights to complete (or 3.7 for our EV6) which is completely unrealistic.

Whilst electricity prices are linked to costs of non-renewable LPG market prices across the EU/UK, the Irish electricity market is woefully behind the UK with regards to the duration of overnight charge rates. A typical overnight rate in the UK lasts 6 hours at a rate of 7.2p/KWh. This gives a total of 42KWh of charge (6 hours @ 7KWh), allowing UK drivers to fully charge EVs in the equivalent of 1.3 low rate periods.

Given Eirgrid, has to file annual reports on “Dispatch down” (active turning off of renewable power supplies), in line with EU regulation, we can see that the Republic of Ireland is actively disabling 7.5% of all renewable power generated over the past 5 years (5.2% average 2011 – 2021). This power “dispatch down” peaks during overnight hours from 22:00 – 08:00, as can be seen in this table provided in the https://www.eirgridgroup.com/site-files/library/EirGrid/Annual-Renewable-Constraint-and-Curtailment-Report-2021-V1.0.pdf document, page 14:

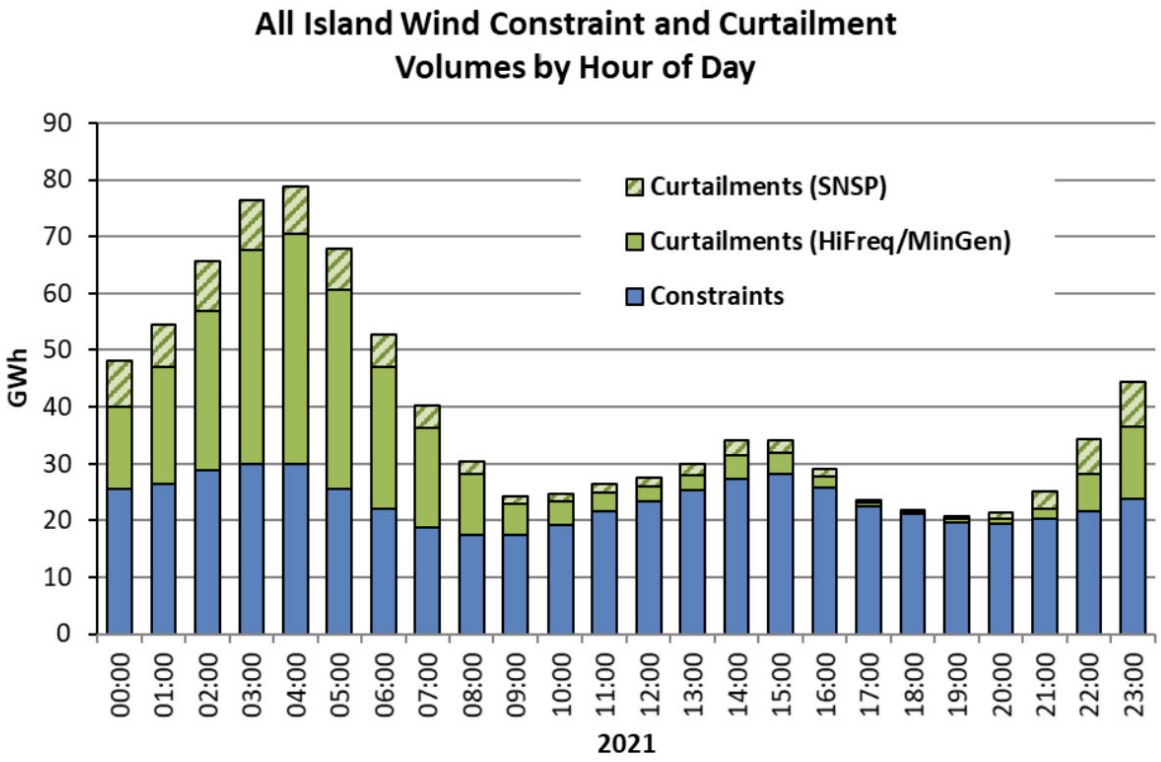



**Figure 5:** All-Island breakdown of wind constraints and curtailments in 2021 by hour of day

This leads to a situation where:

a. Renewable sources are being actively disabled
b. Overnight electricity rates, are much higher than they should be, given the over-supply in the generation capability

Whilst I am glad to see that this has been actively debated in the Dail, the high KWh charge and the limited duration is a huge factor in disenfranchising uptake in carbon reduction technologies within Ireland.

Kind regards

[redacted]

* Personal home improvements and carbon footprint mitigation investments:

- Installation of double glazing (2003) in our 1970's "brick-built" bungalow (which had 9' single pane windows throughout)
- Conversion of internal garage space to shower room (post build BER Rating C1, BER number [redacted] - 02/04/2010)
- Purchase of 'A'-rated domestic appliances (Samsung eco-bubble washing machine, Miele and then Whirlpool A-rated dish washers)
- Retrofit/rebuild of bungalow to a house in 2014 (BER Rating B2, BER number [redacted] - 25/03/2022), including the installation of a Nilan air-to-water heat recovery system

- Installation of a smart meter (ESB rollout in 2022) – no charge
- Installation of solar panels and car charger (November 2022 – BER Rating A2, BER number [redacted]- 05/12/2022) – SEAI grant supported
- Purchase of an EV Kia EV6 (March 2023) – Government EV subsidy

General lifestyle changes:

- Use of overnight rate for use of dishwasher
- Use of washing machine during daylight hours with high solar
- Installation of Smart switches to turn off devices such as TVs overnight when they are not used

** Electricity rates for Smart Meter Direct Debit rural customers (sample):

| Energy Supplier | Electricity only scheme name | Rate (cent per KWh) Peak | Day | Night | EV | Duration of EV rate | Source |
|---|---|---|---|---|---|---|---|
| Bord Gais | EV Smart Electricity | 56.92 | 40.82 | 30.79 | 10.4 | 02:00 - 05:00 | https://www.bordgaisenergy.ie/home/our-plans |
| | Green EV Smart Electricity | 58.26 | 41.78 | 31.51 | 10.65 | 02:00 - 05:00 | https://www.bordgaisenergy.ie/home/our-plans |
| Pinergy | Drive Lifestyle plan | | 46.62 | | 6.92 | 02:00 - 05:00 | https://pinergy.ie/terms-conditions/tariffs/ |
| SSE Airtricity | Smart Night boost | 76.38 | 56.82 | 32.18 | 12.42 | 02:00 - 05:00 | https://www.sseairtricity.com/ie/home/products/electricity-nightboost/ |

*** Average battery size statistics based on lowest specification model in each range:

| Manufacturer | Model | Battery size (KWh) | Source |
|---|---|---|---|
| Kia | EV6 | 77.4 | https://www.kia.com/ie/new-cars/ev6/discover/ |
| | Nero | 64.8 | https://www.kia.com/ie/new-cars/niro-sg2/specifications/ |
| Hyundai | Ioniq | 38.3 | https://ev-database.org/car/1165/Hyundai-IONIQ-Electric |
| | Ioniq 5 | 72.6 | https://www.hyundai.com/worldwide/en/eco/ioniq5/technology |
| | Kona | 64 | https://hyundai.ie/kona-electric/ |
| Volkswagon | ID.3 | 58 | https://www.joeduffy.ie/volkswagen/new/the-id3 |
| | ID.4 | 52 | https://www.volkswagen.ie/en/new-cars/ID4.html |
| Polestar | 2 | 69 | https://www.polestar.com/ie/polestar-2/performance/car-battery-pack/ |
| Average | | 62 | Based on lowest specification model within each range |

*** UK Electricity supplier rates

| Energy Supplier | Electricity only scheme name | Rate (pence per KWh) Peak | Day | Night | EV | Duration of EV rate | Source |
|---|---|---|---|---|---|---|---|
| British Gas | Electric Driver Sep24 | | 29.952 | | 9.4 | 00:00 - 05:00 | https://www.britishgas.co.uk/GetAQuote/order/electric-driver-sep24 |
| EDF | Sample Tarriff 1 | | 15 | | 5 | 5 hours | https://www.edfenergy.com/electric-cars/tariffs-guide |
| | Sample Tarriff 2 | | 17 | | 7 | 10 hours | https://www.edfenergy.com/electric-cars/tariffs-guide |
| Octopus | | | 30.25 | | 7.5 | 23:30 - 05:30 | https://octopusev.com/charging/tariff |

Question 1:

I agree with this approach. Any tool that empowers the consumer to find the best tariff for their own situation is a good thing.

But why stop at PCW accreditation? The CRU must have, as its primary reason for existence, the defense of the consumer against incompetent or unscrupulous energy providers. The billing systems of the energy providers must be audited annually and an accreditation applied if they are found to be compliant with their advertised tariffs. This is not true of SSE Airtricity at the moment. At least four of their customers have proven to them that they are not allotting units used to the correct tariff timeslots, resulting in overcharging of consumers. To date, SSE Airtricity has not accepted this proven fact.

Question 2:

I agree. Any amount of data may be useful to the consumer, and a clear warning regarding seasonality issues etc. with short time periods should be enough for them to take the results as provisional.

Question 3:

There should also be a warning to consumers that if the Electricity Provider of the Tariff they are testing on the PCW, with their data, has not had their billing system audited and accredited by the CRU, then it is possible, that if they sign up for that tariff, their unit usage may not be billed according to the tariff advertised, they may be overcharged. They should be advised that if they switch to an unaccredited provider, then they should check their bills by downloading their HDF from ESBN and compare the actual units used per timeslot, against the units listed in their bill.

For example, SSE Airtricity advertises a smart plan called “1 Year Nightboost Electricity”.

The advertised Registers & Timeslots for this tariff are:
Day (8-17 & 19-23)
Night (23-2 & 5-8)
Peak (17-19)
Night boost 3hr (2-5)

Up to the 26/3/2023, the units allocated by their billing system were taken from these timeslots….
Day (7-16 & 18-22)
Night (22-1 & 4-7)
Peak (16-18)
Night boost 3hr (1-4)
i.e. each register & timeslot is an HOUR EARLIER than advertised

Then, after the 26/3/2023, the units used in the bills were taken from used these timeslots….
Day (9-18 & 20-24)
Night (24-3 & 6-9)
Peak (18-20)
Night boost 3hr (3-6)
i.e. an HOUR LATER than advertised.

Question 4:

What is proposed seems reasonable, however, what qualifies as missing data? Is it, if the HDF contains 0 for a 30 minute interval? If so, then the approach is fundamentally flawed. Consumers with Solar PV installations will regularly have zero import during the day; and night, if they have a battery. Would that be counted as "missing data"?

Question 5:

There is anecdotal evidence to say that some consumers that have zero import periods because of Solar PV installations in their properties have found that their provider's billing system has infilled the zero import with estimated import. Again, this is another reason why the CRU should be auditing and accrediting electricity providers billing systems.

Question 6:

I believe there is added value in this approach. It could be kept as simple as possible by just catering for a few scenarios, i.e. charging an EV, charging a solar PV battery, using appliances at night or at weekends.

The consumers, if they are going to make such changes to usage patterns, will have to have the confidence that their electricity provider will actually bill them according to the timeslots they advertise. The best way that such confidence could be instilled in the consumers is if the billing systems of the providers are audited and accredited. This would also increase consumer confidence in the smart meters themselves and help speed up the NSMP.

When there are discussions on social media about the pros and cons of smart meters, the general consensus would seem to be that the meters themselves are not a problem, it is the excessive standing charges and incompetent billing systems of the providers that is the problem. And also their useless customer complaints services.

Question 7:

Yes I would agree.

Question 8:

I suppose it will be inevitable that the PCW's will say they do not have the resources nor can afford the expense to meet such a short timeline. The CRU needs to consider that.

Question 9:

I agree with this in principle. However, the Consultation Paper, on page 14, says: "If a consumer has a smart meter, they should be able to input their actual metered export volume (in kWh), which they are able to access via their supplier bills or via the ESBN Customer Portal."

To say that consumers are able to access their actual metered export volume (in kWh) via their supplier bills or via the ESBN Customer Portal is untrue.

This information is not available on supplier bills or on the ESBN website.

The suppliers' bills do not list the metered export volume at all. When payments are (infrequently) made, there is simply a line that says "CEG Payment €xxx.xx". There is no indication of the time period of the export paid for, or the amount of units. This leaves consumers at a loss to know if they are being properly remunerated or not.

On the ESBN website a consumer cannot simply view their export volume for a particular date range. The consumer must be adept at the use of spreadsheet software so that they can view a .csv file, manipulate it to delete all line entries, except those that are export data, for the time period they wish to view, then add all the values and then divide the total by two, to get the export in kWh. This division by two is necessary because the HDF shows the data in 30 minute intervals of kW.

In what way is that easy for the vast majority of consumers to do?

This is another strong argument for the auditing and accreditation of electricity providers' billing systems. There should be a minimum standard, for information displayed, that they have to comply with in order to protect consumers and empower consumers to challenge the providers when they incorrectly bill their customers, as is going on right now, especially with SSE Airtricity.

Question 10:

Electricity suppliers must be required to include export volume and date range on the bills where CEG payments are made.

Electricity suppliers should be required to make CEG payments monthly.

Electricity customers should be able to sell their CEG to other companies other than their electricity supplier.

Question 11:

Yes

Question 12:

Yes

Question 13:

Don't know, all too complicated for your average consumer.

Question 14:

To simplify the matter for the average consumer, the CRU should concentrate on a move away from EAB's completely. The consumer should be easily able to find, from their previous annual usage, what their actual annual bill would be. To this end, the CRU should concentrate on educating consumers on the availability of their previous usage from ESBN. ESBN should be required to make an interface available, which would be easy to use by the average consumer, where they can enter their MPRN and a date range, and be returned with the basic data needed to enter in the PCW tariff comparisons. This approach is necessary to remove any estimations around usage patterns and

remove the requirement for the average consumer to have advanced computer/software skills just to find this basic information. Uploading data from the HDF is the only meaningful way to use PCWs.

Question 15:

No, I do not agree with this. The vast majority of customers who move to TOU tariffs are unable to check that their bills are correct, even if they are only on the SST.
These customers need to be computer literate. They need to be able to download and view a .csv file, i.e. the HDF. They need to be able to use a spreadsheet tool to extensively manipulate the HDF to separate out their usage data into the different timeslots and also separate import from export. This is far from simple for most consumers; indeed it is most probably impossible.
This leaves consumers at the mercy of the electricity providers. It is a simple matter for the electricity providers to mis-apply the electricity usage to incorrect timeslots, either by incompetence or by design, thus overcharging the user without their knowledge and without the ability to check if everything is correct.
For example, an electricity provider could advertise a tariff that has an EV/Nightboost timeslot of 2am to 5am at a very cheap rate. But they could actually apply units used to different timeslots, winter and summer, thus resulting in the consumer only ever getting 2 of the advertised 3 hours at the cheap rate. An owner of an EV or Solar PV battery in this situation will be overcharged on average by as much as 20%.
This is a real life example. This is what SSE Airtricity's billing system is doing today. This has been discovered independently by at least four of their customers. The CRU is aware of this issue and quite frankly, it is a disgrace that the CRU is not currently in the offices of SSE Airtricity auditing their billing system and thus protecting the consumer, which, after all, is what the primary reason for the existence of the CRU should be.

Before there can be any additional TOU tariffs, there must be two measures put in place to protect the consumer.
Firstly, there must be a simple method in place for consumers to be able to check that the units listed in their bill, for either import or export, are correct. This tool could be provided by ESBN, where consumers could enter their MPRN, information about the timeslots in their tariff and a date range, and be returned with the units used for each timeslot and the number of units exported. Thus they could easily check that their bill is correct
Secondly, the billing systems of the electricity providers must be audited annually and accredited.

Question 16:

Absolutely not. Not until the customers of the electricity providers have a simple means to check that their complicated TOU bills are correct and not until the billing systems of the electricity providers have been audited and accredited.

Question 17:

It is far more important that the CRU concentrate its resources on checking that the electricity providers' billing system are correctly billing their customers, rather than rolling out more complications in tariffs.
The CRU should also direct resources to provide an easy method for consumers to check their bills. Before having electricity consumers bamboozled and possibly overcharged by complicated TOU tariffs, the CRU needs to work on giving consumers confidence that TOU tariffs can work in their

favour and that they are not being charged incorrectly by their electricity provider. This approach would greatly enhance the take-up of smart meters and TOU tariffs.

Question 18:

a. No, it doesn't seem like the SST was designed to be an easy to understand 'entry-point' to TOU tariffs, nor has it achieved such a purpose. To the consumer it seems like a way to charge them more for electricity during peak times. Also there is no 'easy to understand' way for most consumers to check that their bills are actually correct. This has led to a rejection of smart meters and TOU tariffs by consumers. The CRU needs to do more to win the confidence of the consumer by taking the consumer's side and requiring that tools and accreditation are available to protect them from electricity providers.

b. I would not have any concerns as long as I had the means to check that the electricity provider billed correctly in accordance with the advertised structure of the tariff. There would also need to be a reporting mechanism in place where consumers could notify the CRU directly when electricity suppliers are not compliant. The internal reporting/complaint mechanisms within the electricity suppliers are woefully insuffient.

c. As its original purpose seems to be to discourage consumption of electricity at peak times by charging higher rates, if this is still a requirement, then I guess it would need to be kept.

d. Yes, audit the electricity suppliers to ensure they are billing their customers according to the advertised timeslots.

Question 19:

If the CRU wishes to incentivize the uptake of TOU tariffs, or indeed, the take up of smart meters themselves, the CRU needs to win the confidence and trust of the consumer.
Consumers see the CRU as a toothless entity that is unable or unwilling to defend the consumer in matters relating to the electricity providers.
To win some confidence and trust from the consumers, the CRU needs to be seen to be on the side of the consumer and to be helping them.
This can be somewhat achieved if the CRU required ESBN to provide the consumer with access to a simple tool whereby the consumer can check that the units of import and export are correctly applied in their bills from their electricity provider.
Secondly, the CRU should be annually auditing the billing systems of the electricity providers, ensuring that they are correctly billing their customers and giving confidence to customers by accrediting the billing systems.

Yours sincerely,

[redacted]

Further to your call for input regarding the incentivising the uptake of Smart meters/Time of use tarrifs, the bottom line and something that the CRU has both mutedly ignored and failed to address over the past 18 months, especially is how energy companies have utilised both the war in Ukraine, but more significantly the introduction of Smart meters to run roughshod over consumers and availed of the opportunity, seemingly unchecked by CRU, to impose even higher tarrifs for peak time use without any corresponding effective or incentivising decrease in off peak tarrifs.

I am fortunate enough to have been able to install a domestic PV solar generation system in the past two years. In conjunction with the installation, I applied for and had a day night meter installed to benefit from cheaper rate night tarrif battery charging. I had applied for installation of a Smart meter on the understanding that it would both enhance and enable better management of my consumption experience and comprehension, as well as assisting the calculation of my FIT. From online research I discovered not to embrace the Smart meter installation rollout as it would deem me to no longer able to avail of the same tarrif structures as those available on the day night meter, only a more complex and stratified tarrif system comprising higher peak time tarrifs, an equally higher regular day time tarrif and a much reduced night time window tarrif (from about 11 hours down to 3). In all of CRU's spokespersons media appearances that I've heard on this matter, they've either feigned ignorance or attempted to sidestep this simple fact. i.e. that there is a gross price difference between day/night meter tarrif's v's those available through a Smart meter and indeed the acknowledged fact that the newly installed Smart meters can't actually apparently be currently configured or calibrated to accommodate the metering or tarrif system available to those with day/night meters. Something that seems totally ridicilious considering the fanfare and cost of the Smart meter roll out program.

The bottom line and simple economic practicality in all of this is, if you really want consumers to change their consumption behaviours and embrace time use tarrifs, the differential between peak use and off peak use tarrifs need to be much greater and that off peak tarrifs are graduated on a progressively diminished basis (perhaps in two hour windows) so as to offer the lowest rates or even free electricity at times when electricity demands are lowest. I would suggest the differential between the peak tarrif and the second lowest (presuming a free electricity two hour window) should be a factor of 10:1 and obviously that such tarrifs are structured so as to prove equally attractive to those currently on day/night tarrifs.

I am also aware of the current pilot system in place whereby some consumers can avail of texting services informing them of peak electricity usage and requesting them to take corresponding steps to reduce their own usage. It seems not beyond the bounds of technological possibility that the wifi capabilities of an effective smart metering system can be configured to manage and incentivise such scenarios, whereby the consumer is both alerted to and offered the prospect of financial rewards by reducing or rediverting/rescheduling their energy consumption to a financially more attractive time band window. i.e. A text reminding some one, "oh if you are considering putting on your dishwasher now it will cost you €2.50 for the wash but if you are prepared to postpone it for 4 hours it will only cost you €0.25c OR IF YOU WAIT ANOTHER 2 HOURS you can do it for free!". I would expand this further to a scenario where an effective smart meter is able to alert the consumer directly via their smart phone when their individual domestic consumption during peak demand is showing as elevated and they might wish to take steps to immediately slash such demand by switching off immersions or ovens or washing machines until a later more accommodating time.

I hope this consultation leads to a radical and effective shake up in electricity tariffing and the creation of broader and increased layered, stratified tarrif bands. However, judging by the money grabbing, opportunistic behaviours of the energy companies and the relative ineffectiveness of the CRU to date to do anything much in the way of checking this behaviour, I wouldn't hold out a great deal of hope. However I sincerely hope ye prove me wrong!

Yours Sincerely,

[redacted]

Hi,

I recently read your plan to increase the take-up of Time of Use Tariffs.
I see that you are reporting that the current take up is 7% of the Smart Meter installed base. I read that the Irish Independent were reporting that just below 4% had taken us Time of Use tariffs as at Sept 2022.
Whichever figure is correct, the uptake is shockingly low. Clearly it is a failure.

I see that you are proposing to add 4 'Incentives' to increase the uptake.
I fail to see how any of the 4 listed will have any impact on the uptake.

One is to allow the upload of usage data to comparison sites. That assumes that the usage is known. No consumer with a 24 hour standard meter or a smart meter on 24 hour rate will have any idea of their time of use data.

Another incentive is to amend the Estimated Annual Bill for all time of use tariffs. Again, consumers won't know enough to estimate their current time of use characteristics.

Showing them the figures in comparison sites will just prove that they are correct in calculating that Time of Use tariffs are not economically attractive.

The third incentive is to increase the number of time of use tariffs that can be offered from 4 to 8. That will just increase the complexity and therefore confusion with consumers. However, changing the time bands and coordinating them across all suppliers might be of minor assistance.

The fourth is to get "evidence on the structure and effectiveness of the Standard Smart Tariff". I think you already have that evidence -- it is, according to your figures, 93% of the potential consumers have said 'No' !!
The fourth clearly cannot be classified as an 'incentive'.

None of the 4 incentives will make any difference to the uptake of Time of Use Tariffs.

Are these just stalling tactics influenced by the larger suppliers who prefer the status-quo?

My household is one of the 7% with a Smart Meter who switched to a Time of Use Tariff last August -- almost one year ago now.
We switched as we were planning to purchase an electric vehicle and it was 'the right thing to do' from an environmental perspective.
I did a significant amount of research across all the suppliers. I knew our annual usage (without the EV) and tried to "guesstimate" our usage time profile.
I also compared the suppliers' standard 24 hour rate with their time of use rates. Without the EV impact there was no incentive to move to a time of use rate.

Since switching over last August we have tried to minimise our electricity usage between 5:00pm and 7:00pm, use the appliances at night, charge the car at low night rates, etc. This

has been largely successful with 40% of our electricity usage being at the low EV charge times.

As my 12 month contract is expiring, I am now planning to renew my contract or change to a different supplier.
Of course, I am now locked into using a Time of Use Tariff.

I now have a very detailed usage profile and putting various suppliers rates there is very little difference between the annual cost of Time of Use tariffs and their standard 24 hour tariff.
It certainly appears that to avail of the cheapest tariffs currently available, I should have just switched to a Day/Night meter instead of allowing a Smart meter to be installed with a Time of Use tariff.

The only way to get a real take up of Time of Use tariffs the only option is to make them cost effective compared to the other types of tariffs available.
They have to be clearly cheaper than the 24 hour or Day/Night tariffs available today.
That will start the ball rolling and get influencers on the various social media sites saying that Time of Use tariffs are worthwhile.

Regards,
[redacted]