



**Submission to CRU on their consultation on four evidence
papers relating to energy demand and flexibility**

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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"

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 Ireland's 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 ESN 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.

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?

- 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 incentivise 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 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.