



An Coimisiún
um Rialáil Fóntais
**Commission for
Regulation of Utilities**

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CRU Information Paper

Security of Electricity Supply – Programme of Actions

Information Paper

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Executive Summary

The purpose of this note is to provide an update on security of electricity supply and the programme of actions the CRU is undertaking to ensure security of supply in the coming years, in cooperation with EirGrid, the Department of Environment, Communications and Climate (DECC), the energy industry and other stakeholders. This paper is published in tandem with the publication by EirGrid and SONI of the All-Island Generation Capacity Statement 2021, which outlines the current challenges facing the electricity market.

This Information Note provides an update on the short-term security of supply risks for the forthcoming winter 2021/22, noting the planned return to operation of the Huntstown 2 and Whitegate generators in October and November respectively and the latest advice from EirGrid that the system will remain tight this winter.

The Information Note also summarises EirGrid's assessment of a supply deficit in the following winters 2022/23 to 2025/26 which is set out in the Generation Capacity Statement 2021, and some of the changes that have given rise to this deficit since the 2020 Generation Capacity Statement was published last year. It further outlines the key elements in the programme of actions that the CRU, in line with its statutory duties, is undertaking in cooperation with EirGrid, DECC, the energy industry and other stakeholders.

These include:

- The procurement of new, enduring, capacity through a number of forthcoming capacity auctions, which is complementary to renewable electricity and central to our low carbon transition, and steps to ensure successful delivery of this capacity.
- The procurement of additional temporary emergency generation capacity.
- The extended availability and operation of older generation capacity, on a temporary basis, that was otherwise expected to retire in this timeframe.
- Measures to improve the performance and availability of existing generators and Demand Side Units, and develop additional demand side responsiveness.
- Temporary transmission outage planning system services to be procured by EirGrid.
- Appropriate oversight and reporting arrangements to ensure the successful delivery of this programme.

Some of the measures outlined are temporary in nature (such as the extended availability and operation of older plant and the temporary emergency generation capacity) and will be unwound as soon as possible, on successful energisation of enduring capacity procured through the Single

Electricity Market (SEM) Capacity Remuneration Mechanism (CRM) and the delivery of enduring demand side measures. The CRU will work with EirGrid and other stakeholders as appropriate, to avoid and/or minimise potential negative impacts on the energy and capacity markets arising from these temporary measures.

The core element of this programme is the procurement of over 2000MW of flexible gas-fired plant, providing an enduring and efficient market capacity, additional flexibility to support our 2030 renewable targets and ensuring security of supply in the medium to long term. Gas-fired generation will remain a critical enabler of the decarbonisation of the electricity system in 2030 and beyond, particularly as we accelerate the decarbonisation of the natural gas network. This is in addition to the delivery of additional storage, demand-side units, system services and interconnection. As our 2030 generation fleet is increasingly comprised of renewables back up by flexible gas-fired generation, the security of gas supply will be increasingly important.

It is important to emphasise that ensuring a secure energy transition will not be costless. The delivery of new system services, along with significant new generation and network infrastructure, without which we cannot deliver our low carbon future, will be funded by energy customers. Our focus will be to ensure the least cost delivery of these new services and capacity, and to enable customers and communities to contribute to and where possible benefit from the transition.

The CRU, with due regard to the advice provided by EirGrid, considers that the implementation of this Programme over the coming months and years, with appropriate contingency measures, will address the capacity shortfall identified in the Generation Capacity Statement.

The CRU will seek to maintain clear and transparent communication with existing and prospective market participants; our colleagues in the Utility Regulator in Northern Ireland; the European Commission; key national competent authorities; other stakeholders and the public at large relating to the delivery of this programme over the coming years.

CRU Mission Statement

The CRU's mission is to protect the public interest in Water, Energy and Energy Safety.

The CRU is guided by four strategic priorities that sit alongside the core activities we undertake to deliver on the public interest. These are:

- Deliver sustainable low-carbon solutions with well-regulated markets and networks
- Ensure compliance and accountability through best regulatory practice
- Develop effective communications to support customers and the regulatory process
- Foster and maintain a high-performance culture and organisation to achieve our vision

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1. Introduction

1.1 Security of Electricity Supply

Under Section 9 of the Electricity Regulation Act, the CRU has a statutory duty to have regard to ensuring security of supply and ensuring that all reasonable demands for electricity are met. Regulation 28 of SI 60 of 2005 puts additional obligations on the CRU and the Transmission System Operator, EirGrid, to ensure security of supply. EirGrid's role includes monitoring and reporting on security of supply, including through the Generation Capacity Statement, and making recommendations to the CRU on measures necessary to cover peak demand and address any shortfalls in capacity. The CRU is required to take such measures as it considers necessary to protect security of supply. The All-Island Electricity Market is governed by the Single Electricity Market Committee, of which CRU is a member, along with the Utility Regulator in Northern Ireland and an independent member. Energy markets are governed by EU and national policy and legislation.

Information on the CRU's role and relevant legislation can be found on the CRU's website at www.cru.ie

1.2 Policy Context

The Irish energy system is currently undergoing transformational change, as we increase the penetration of renewable generation (primarily wind and solar) and reduce our dependence on more carbon intensive fossil fuels. This requires us to develop flexibility and resilience through increased interconnection, storage, new system services, the use of demand side response and the delivery of a flexible and lower carbon gas generation fleet which will support our high renewables system.

Ireland is world leading with regard to the integration of wind onto our power grid, but as we have seen this year, wind can be highly variable, and we can have extended periods of low wind. As we increase our ambitions with regard to renewables, we must continue to assess and mitigate the risks that come with this valuable, renewable, natural resource.

1.3 International Context

It should be noted that in many electricity systems world-wide, reviews of the way that system security is delivered in the short and medium terms are underway. In general, these reviews are intended to ensure that system security is guaranteed, while supporting ever higher levels of intermittent renewable electricity. At EU level, there are changes underway to harmonise a range of features of capacity markets in Member States, to ensure that such markets are designed to support as far as possible the transition to a low-carbon system.

Low wind conditions over this summer, alongside high prices, have created a greater understanding across Europe of the scale of risk associated with our once in a generation transition to a net-zero economy. In addition to the above, many countries are now examining shorter term mitigation measures, that can address some of the risks associated with this transition. For example, in the UK,

the Electricity System Operator recently requested that some of its coal fleet come back online to meet power demand, and Greece is now in active dialogue in order to facilitate the retention of some of their coal fleet, to be used when needed, in order to maintain security of supply.

1.4 Related Documents

The Generation Capacity Statement 2021 and previous Generation Capacity Statements can be found on EirGrid's website at www.eirgridgroup.com

The CRU proposed Direction to the System Operators related to Data Centre grid connection (CRU/21/060) can be found [here](#)

Relevant SEM Committee consultations and decisions can be found at www.semcommittee.com

2. Short Term Security of Supply Risks for Winter 2021/22

Earlier this year, EirGrid identified a serious risk to security of supply arising from the long-term outage of two large gas generators (Whitegate and Huntstown) which were initially at risk of not returning to operation until after the peak Winter 21/22 period. This coincided with growing electricity demand and declining availability of existing generators and led to a recommendation from EirGrid that temporary, emergency, back-up generation would be required to ensure resilience for this winter.

However, EirGrid has advised that the delivery of temporary emergency back-up generation is not feasible in the required timeframe, even on a fast-tracked basis. In the interim, while the Huntstown 2 and Whitegate power plants remain offline at this time, they are now anticipated to come back onto the system in October and November, returning approximately 800MW of gas-fired capacity to the system, which mitigates the security of supply risk for this winter.

EirGrid has continued worked closely with other generators to manage their maintenance schedules over the summer period. This summer has also seen the lowest wind levels in several decades, and therefore we have had lower contribution from wind generation than would normally be the case.

In addition, we have seen generation scarcity issues in the GB market, with which we have in excess of 900MW of interconnection, which has been further exacerbated by a recent fire which has closed down part of the France / UK interconnector. This has resulted in higher prices and, for example, GB's electricity system operator requesting that some of their older coal fleet is brought back online and retained to provide additional security of supply.

During this period we have therefore seen a number of System Alerts (formerly known as amber alerts) on the electricity system. System Alerts are triggered when the generating margin has tightened to a level where EirGrid begin taking additional actions to protect security of supply. These actions can include maximising the dispatch of all conventional and energy limited plant and undertaking trades on the electricity interconnectors to reduce exports or reverse flows so that we are importing, contributing to security of supply.

As the Huntstown 2 and Whitegate plants return to service, margins on the electricity system will improve for the peak winter period. Given the ongoing high forced outage rate and continued careful management of scheduled outages, EirGrid anticipate that there may be further system alerts this winter, and in particular in times of low wind and low import over the interconnectors. The CRU will continue to explore and implement further measures to enhance supply security for this winter, including increasing demand side response and reliability.

3. Medium Term Security of Supply Risks for Winter 2022/23, 2023/24 and 2024/25.

3.1 Additional challenges identified in GCS 2021 and Security of Supply Studies

Successive all-island Generation Capacity Statements prior to 2021 have highlighted a number of challenges for the Irish electricity system, including:

- significant growth in electricity demand, driven primarily by Data Centre demand growth and to a lesser extent, the electrification of heating and transport, and
- the closure of older, fossil fuel plant in line with decarbonisation goals and emissions requirements.

Through the Capacity Auctions, the SEM Committee has sought to procure additional generation to address these challenges. However, based on recent experience, the latest security studies undertaken by EirGrid, superseding their 2020 Generation Capacity Statement, have now identified an acute risk to security of supply over the forthcoming years out to 2025/26. The additional risk factors are:

- 513MW of new capacity which was procured in the Capacity Auction for delivery in 2022/23 has failed to deliver and has dropped out.
- Actual electricity demand has continued to increase – Ireland experienced all-time record system demand peaks in the winter of 2020/21, on the 3rd (5112MW) and 7th December (5357MW). The previous record was in place since the extreme weather event of December, 2010. EirGrid, in the 2021 Generation Capacity Statement, has also increased its expectation for demand growth, primarily related to the data centre sector.
- The availability of the current generation fleet continues to decline, but at an increased rate, with more forced outages than would previously have been allowed for, resulting in an increased need for alternate generation capacity. This is in part due to older plant requiring additional maintenance. However, we are also experiencing the impacts on the conventional generation fleet of Ireland's world leading position in integrating variable renewables, whereby generators that were designed to run continuously are being forced to operate far more flexibly than their original design would have anticipated. In addition, although they have contributed at important periods to mitigate supply scarcity, the availability and responsiveness of contracted demand-side units in the Single Electricity Market has, at times, been lower than expected and could be enhanced.

- EirGrid has identified a need for additional reserve and transmission outage planning capacity, in part due to recent experience of tight margins, and also looking ahead to the scale of the programme of new connections to support demand growth and our 2030 decarbonisation goals.
- The most recent Capacity Auction to procure capacity for 2024/25 did not attract sufficient new capacity (with a T-3 top-up auction now underway).

3.2 Scale of the Challenge Identified

Taking account of these new factors, EirGrid and SONI have identified in their updated 2021 GCS a potential capacity shortfall of 260MW for the capacity year 2022/23, rising to 1050MW in 2023/24 and 1850MW in 2024/25. In the absence of any action, this clearly poses a significant risk to Ireland's security of electricity supply.

3.3 Programme of Actions to Ensure Security of Supply

In light of the scale of the new challenge outlined in the 2021 Generation Capacity Statement, the CRU, in line with its statutory duties, based on the recommendations of EirGrid and working with the Department of Environment, Climate and Communications, has put together a programme of actions that will be delivered by this group, using the support and capabilities of the wider energy sector and other key stakeholders.

The core of this programme of actions is the delivery of at least 2000MW of enduring capacity in the form of flexible gas-fired generators. As this will take time to deliver, a number of temporary interim measures and contingency options will also be progressed in parallel. A detailed Programme Management framework will oversee delivery of these actions which are outlined in summary below:

1. Delivery of T-3 (24/25) and T-4 (25/26) and subsequent capacity auctions (at least 2000MW)

In order to meet growing demand, replace retiring generators and support additional penetration of renewables, it is necessary to procure and deliver at least 2000MW of additional flexible gas-fired generation capacity by 2030 at the latest. This will be required in addition to procuring and delivering additional battery storage, low and zero-carbon system services, demand-side units and the delivery of additional interconnection capacity in the same period. Investment of this type, and at this scale, is critical to ensuring a secure transition and reaching our ambitious 2030 targets.

Given the disappointing outcome from recent capacity auctions, a significant tranche of the required capacity will need to be procured in the forthcoming T-3 auction the results of which we will know in February 2022, the T-4 auction which takes place in March 2022 and the subsequent T-4 auction in 2023. The objective of these auctions is to ensure new capacity delivery to allow the retirement of the

temporary measures outlined above (emergency generation and retention of older plant). Subsequent T-4 auctions will need to provide further necessary enduring capacity to support our 2030 decarbonisation goals.

The early stages of the T-3 and T-4 auction processes are already underway, with decisions published on parameters for the T-3 and the consultation on the T-4 parameters in progress. In addition, the CRU has engaged extensively with industry to understand and respond to some of the challenges faced in procuring and delivering new capacity in Ireland in the last two capacity auctions.

The challenges experienced in Ireland are in contrast to Northern Ireland, where the same auctions have successfully procured significant new capacity which is currently being delivered on schedule.

On foot of this engagement, the CRU has undertaken a number of actions in recent months, in cooperation with other stakeholders, to enhance delivery in the critical forthcoming capacity auctions.

These actions include:

- **Policy signal:** the CRU is providing clarity that additional gas-fired generation is vital for the successful delivery of Ireland's 2030 renewable electricity and climate targets. In addition, policies to decarbonise the natural gas network through the injection of renewable natural gas, or in the future green hydrogen, will play a key role in delivering our net-zero legal obligations. In this regard, the CRU welcomes recent statements by Minister Eamonn Ryan reflecting the importance of new gas generation to facilitate the energy transition, the publication by his Department of the consultation on the Renewable Heat Obligation, which will incentivise Renewable Natural Gas and the forthcoming EU package of legislation on the decarbonisation of the gas grid, and green hydrogen. The CRU understands further clarity on these policy imperatives will emerge in the forthcoming National Development Plan, the Climate Action Plan, other national policy statements, and EU's Fit for 55 Package.
- **Volume signal:** The publication of the GCS 2021 provides clarity to the market on the scale of volumes required for the forthcoming period, and the necessity to deliver in the near term.
- The CRU has issued a **Direction to the electricity network operators** to prioritise the granting of connection offers for generators, reducing timeline-related risks to developer projects.
- The CRU has issued a **Direction to GNI facilitating advance investment in the gas network**, in order to avoid potential delays in delivering gas connections and associated reinforcements.
- The CRU and network operators, along with the DECC, have commenced a process which will **track the delivery of ancillary (non-developer) gas and electricity infrastructure** necessary for the timely delivery of successful projects, to provide further clarity on progress and the opportunity for early action as challenges arise.

- The CRU and EirGrid will work with industry to gain a greater understanding of the pipeline of projects for the forthcoming capacity auctions and will ensure **more frequent progress reporting, and tracking, on the successful projects** following the auctions to provide greater foresight into overall portfolio risk.
- **The CRU and SEM Committee will continue to keep under review the regulatory tools** within and alongside the current market design to ensure appropriate market signals to developers and a successful outcome to the auctions.

2. Temporary emergency generation capacity (up to 300MW)

EirGrid has recommended that additional temporary emergency generation capacity totaling up to 300MW be procured for delivery for Winter 2022/2023 and to remain available in place for the required number of years thereafter. In line with the provisions of Regulation 28(10) of SI 60 of 2005, the CRU has sought Ministerial approval for this and EirGrid will progress arrangements for the procurement of this capacity, which will alleviate the shortfall identified for 2022/23 and assist in subsequent years, until such time as new enduring capacity, procured through the Capacity Remuneration Market (CRM), removes the need for this support.

Such temporary emergency capacity will not operate in the SEM in the same way as enduring capacity (i.e. it will not bid into the day ahead or balancing markets) but rather will only be called upon when, after all other market capacity has been deployed, there remains a shortfall in reserve.

The final costs of this temporary emergency generation will be determined on foot of a competitive procurement process and will be paid for through customer network tariffs. The CRU has already made provision for the first tranche of these costs in the tariffs applicable from October 1st 2021.

3. Extended operation of Older Generators (up to 1200MW)

Given that a significant proportion of the replacement capacity contracted to be delivered for 2023/24 will not be delivered, the closure of a number of older generators in 2023/24 and 2024/25 would give rise to significant risks to system security. It is therefore important to explore extending the availability for operation of these generators for a further period until new capacity has been delivered to replace them through the CRM.

Discussions are already ongoing with these generators. In some cases, extended operation may require licence derogations, or other decisions relating to the Industrial Emissions Directive or planning permission.

The intention will be to extend the operation of the older, more carbon intensive units only until replacement capacity is procured, delivered and operational. In addition, given that these older plant tend to be higher emission fossil fuels based and more expensive to run, the intention will be that they will be available to support security of supply. Respecting the existing market structures, to the

greatest extent possible, the retention of this generation capacity will be delivered through the all-island energy, capacity and system services markets.

Alongside this, further work will be undertaken to ensure better availability of the existing generation fleet.

In the event that it is not possible to retain some of these older generators, the CRU and EirGrid will, in parallel, develop a range of contingency measures to support security of supply in order to compensate for this shortfall. This may include the delivery of significantly more impactful demand side measures and/or the procurement of additional large scale temporary generation capacity.

4. Temporary transmission outage planning system service procured by EirGrid (350MW)

EirGrid has identified the need to source 350MW of generation capacity to provide enhanced system services in order to support Transmission Outage Planning flexibility to the TSO and generators in order to facilitate the necessary maintenance, upgrade and delivery of transmission assets and the maintenance and connection of existing and future generators. The CRU will work with EirGrid to agree the approach to procuring this capacity and how it will be utilised by EirGrid during its period of operation, in order to minimise any market impacts, prior to further progressing this action.

5. Demand side mitigation measures

Demand side response will play a key role in ensuring a secure, low carbon electricity system. Demand response has played an important role in ensuring security of supply in recent months. More consideration may be needed as to how we can best leverage this capacity. We will therefore work to enhance the responsiveness of existing demand side units, as well as developing additional capacity.

As part of this work, the SEM Committee has this summer completed a short-timeframe consultation exploring short and medium-term methods to improve the commercial signals to existing (and prospective) Demand Side Units in the SEM. These Demand Side Units are incentivised to reduce their demand in response to market signals. The SEM Committee is also exploring scarcity pricing more generally as an element of this consultation, to provide clearer market signals to a broader cohort of demand customers.

We are also working with EirGrid in order to develop further options for larger demand sites with existing back-up generation, in order for them to play a greater role in demand side response, particular in times of scarcity.

In parallel with this programme of actions, the CRU is continuing to develop its Data Centre connection policy, following the recent public consultation. The CRU notes that the scale and speed of demand growth in the Data Centre sector is significantly beyond that arising from organic growth in the general economy or even that of Government policy to electrify the heating and transport sectors. Data Centre demand growth therefore requires a specific response which allows Data Centres to play

their part in addressing security of supply challenges as we seek to meet growing demand and continue on our decarbonisation pathway.

6. Other measures to support supply security

The CRU is also advancing work on the regulatory frameworks to support delivery of two new electricity interconnectors: the 700MW Celtic interconnector to France and the 500MW Greenlink interconnector to Great Britain, which are due for completion in the middle and latter part of the decade and will further support electricity security of supply. This is in addition to the critical importance of completing the North-South interconnector which will strengthen the resilience of the all-island electricity system and allow the new CRM generation in NI and throughout the island to provide support to the all-island customer.

The SEM Committee is currently consulting on the System Services Future Arrangements High Level Design which will ultimately incentivize the provision of new system services to ensure security and resilience in a high renewables system.

Working with EirGrid and ESB Networks, the CRU is advancing work on the implementation of the PR5 electricity network price control which provides additional revenues and incentives to invest in electricity networks to a secure, low-carbon future.

The PC5 price control process for the gas network has also commenced. As the 2030 all-island generation fuel mix will be comprised of renewables, backed up by flexible gas-fired generation, the security of gas supply becomes increasingly important. In this regard the CRU welcomes the forthcoming DECC report on Energy Security, which will address this vital issue.

The CRU also notes that other renewables can contribute to security of supply through their participation in the market. For example, the contribution of biomass generators and pumped storage facilities are not constrained by prevailing weather conditions, while solar photovoltaic generation tends to have a more predictable profile, complementing wind; and offshore wind has a higher capacity factor than its onshore equivalent. In short, the retention and addition of more diverse sources of renewable energy will also contribute to security of supply over time.

3.4 Oversight and Implementation of Programme

The CRU is putting in place a strong oversight framework to manage this Programme, which will include clear, transparent and consistent reporting to market participants, key stakeholders and the public. While each of the workstreams within the Programme may be delivered by a different body or group, the CRU will have ownership of delivery of the Programme as a whole.

Programme oversight will include representatives of CRU, DECC, EirGrid, GNI, ESNB and will ensure implementation and clear reporting on delivery.

Some of the measures outlined are temporary in nature (such as the temporary emergency generation capacity and the extended availability/operation of certain older plant) and will be unwound as soon as possible, as replacement capacity, procured through the CRM, is energised. The CRU will ensure to the greatest extent possible that the temporary measures do not negatively impact on the energy and capacity markets.

The core element of this programme is the procurement, through the CRM, of 2000MW of flexible gas-fired plant, providing enduring and efficient market capacity, additional flexibility to support our 2030 renewable targets and ensuring security of supply in the medium to long term. Gas-fired generation will remain a critical enabler of the decarbonisation of the electricity system in 2030 and beyond, particularly as we accelerate the decarbonisation of the natural gas network.

It is important to emphasise that ensuring a secure energy transition will not be costless. The delivery of new system services, along with significant new generation and network infrastructure will be funded by energy customers. Our focus will be to ensure the least cost delivery of new services and infrastructure and to enable customers and communities to contribute to and where possible benefit from the transition.

Cognisant of its statutory duties in regard to security of supply, the CRU is confident that the implementation of this programme, which it is undertaking in line with the recommendations of EirGrid, and in co-operation with the Department of Environment, Communications and Climate, the energy industry and other stakeholders, will address the capacity shortfall identified in the Generation Capacity Statement.