



Rialtas na hÉireann
Government of Ireland

Second Monitoring Report Implementation Plan for Ireland

Under Article 20 of the Regulation (EU) 2019/943 of the European Parliament and of the Council of 5 June 2019 on the Internal Market for Electricity

2023

Prepared by the Department of
the Environment, Climate and Communications
www.decc.gov.ie

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Section 1: Introduction

1.1 Implementation Plan and Monitoring Reports for Ireland

The Implementation Plan for Ireland

The Implementation Plan for Ireland was prepared in fulfilment of the requirement set out in Article 20 of Chapter IV of the REGULATION (EU) 2019/943 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 5 June 2019 on the internal market for electricity (recast), part of the Clean Energy Package (CEP). The Single Electricity Market (SEM) is the wholesale electricity market on the island, jointly administered and regulated with the Irish and Northern Irish authorities via their regulators (Commission for Regulation of Utilities (CRU) in Ireland and the Utility Regulator (UR) in Northern Ireland) and the transmission system operators (TSOs) – EirGrid in Ireland and SONI in Northern Ireland. The Single Electricity Market Committee (SEMC), established in 2007 following the introduction of the SEM, is the decision-making authority for all SEM matters.

Ireland and Northern Ireland will each submit separate implementation plan monitoring reports. The requirement in Article 20 is for Member States with capacity mechanisms to prepare and submit an Implementation Plan containing information about its measures under certain pre-defined headings relating to principles and objectives (listed in Articles 3 and 20) for market operation. The submission of the Implementation Plan is followed by a review by the Commission, both being legal conditions for the approval of any national capacity mechanism under Article 21(5) of the Electricity Regulation. This was detailed in the Guidance for Member States on implementation plans pursuant to Art. 20 (3)-(5) of Regulation (EU) 2019/943 (“Market Reform Plans”).

Ireland’s Implementation Plan recognises that markets, if well designed, free of regulatory distortions and sufficiently connected to the EU electricity grid, can provide the right amount and type of capacity to meet demand. Capacity mechanisms should only be introduced to address residual concerns, i.e., problems or circumstances which cannot be solely resolved by market reforms. Once the residual concerns have been eliminated and market reforms have started to work, adequacy problems are expected to decrease and ultimately disappear. To enable this, regulatory measures to eliminate distortions and to reform markets need to be effective and credible for investors and all other market participants.

In December 2019, Ireland’s draft Implementation Plan was submitted to the Commission, which published it as part of their consultation process in early 2020. The Commission sent its opinion to the Department of the Environment, Climate and Communications (the

Department) in April 2020. It then published the opinion on 28th May 2020. The Implementation Plan was updated to reflect the Commission's suggestions on priority action in the wholesale market. The Commission emphasised in its opinion the requirement for thorough implementation of Clean Energy Package rules in the Irish wholesale market. The updated Implementation Plan was published on the Department's website on 9 October 2020.

The Implementation Plan for Ireland details the various reforms and measures relevant to these principles and objectives. It provides information about measures that are both ongoing and scheduled for future implementation, along with envisaged timelines for implementation. It should be noted that much of this information is already available in the public domain in various CRU, UR, EirGrid, SONI and SEMC papers as well as in Government policy documents.

Monitoring Report

Article 20 (6)-(8) of Regulation (EU) 2019/943 (Electricity Regulation) requires all Member States with identified adequacy concerns to monitor the application of their implementation plans and to publish the results of the monitoring in an annual report ("Monitoring Report") that shall be submitted to the Commission. This report contains updates on the progress to date achieved towards measures detailed in the Implementation Plan relating to market reform, resource adequacy, and ongoing or future market reform measures. This report also details and explains any previous delays or possible future delays, whilst also setting out upcoming issues and planned mitigation measures.

The first Monitoring Report was prepared in fulfilment of this requirement for Commission opinion under Article 20 (7) and submitted in February 2022. That report set out the progress of measures identified in the Implementation Plan submitted to the Commission on 16 December 2019 and updated to reflect DG ENER's Opinion on 27 July 2020.

This second report sets out the additional progress on those measures made since the first monitoring report was submitted. The report is structured as follows:

- Section 1 provides an introduction to the Implementation Plan and the requirements of Regulation 2019/943
- Section 2 provides policy context and a current market overview
- Section 3 provides a list of the measures and any changes to those since the submission of the Implementation Plan
- Section 4 provides an overview of progress since submission of the first Monitoring Report, highlighting the most recent updates along with a year-by-year

overview with a forward-looking component to identify possible delays, upcoming issues and subsequent mitigation measures.

1.2 Relationship between Ireland's and Northern Ireland's¹ Implementation Plans & Monitoring Reports

As noted in the Implementation Plan, given the cross-jurisdictional nature of the SEM, a number of reforms and measures contained in the plans and updated in this Monitoring Report are common across Ireland and Northern Ireland where they relate to the same wholesale electricity market.

Section 2: Policy and Market Context

2.1 Policy Context

At the time the Implementation Plan was submitted, an overview of the policy context including the publication of the Government Climate Action Plan (CAP) in June 2019² was provided.

Climate Action Plan 2019: The 2019 CAP contained the target that 70% of Ireland's electricity demand would be sourced from renewables by 2030. The policies and related measures identified to bring about this transformation include the continued promotion of energy efficiency measures, further deployment of renewable electricity generation, the promotion of new technologies in generation, heating and transport, the facilitation of demand management for commercial and domestic customers and the promotion of electricity storage. The measures in the 2019 CAP related to the wholesale electricity market form part of the suite of measures to be implemented over future years.

Draft National Energy & Climate Plan 2019: In accordance with the Regulation (EU) 2018/1999 of the European Parliament and of the Council of 11 December 2018 on the Governance of the Energy Union and Climate Action, amending Regulations (EC) No 663/2009 and (EC) No 715/2009 of the European Parliament and of the Council, Ireland's draft National Energy & Climate Plan (NECP) 2021-2030 was submitted to the European Commission in December 2018. The draft NECP considered energy and climate policies developed up to that point, the levels of demographic and economic growth identified in the

¹ https://ec.europa.eu/energy/sites/ener/files/market_reform_plan_northern_ireland.pdf

² [gov.ie - Climate Action Plan 2019 \(www.gov.ie\)](https://www.gov.ie/en/publications-and-statements/publication-climate-action-plan-2019/)

Project Ireland 2040 process and included all the climate and energy measures set out in the National Development Plan 2018-2027³.

The 2019 draft NECP was prepared to incorporate all planned policies and measures that were identified up to the end of 2019 and which collectively deliver a 30% reduction by 2030 in non-ETS greenhouse gas emissions (from 2005 levels).

The Final NECP 2020: The final NECP was finalised and published in 2020⁴. This NECP was drafted in line with the then EU effort-sharing approach, before the Government committed to this higher level of ambition, and therefore does not reflect this higher commitment.

Accordingly, Ireland submitted the NECP in order to facilitate the ongoing analysis at EU level. It will be revised to include policies and measures currently being developed to achieve the 7% trajectory. Ireland is currently developing those policies and measures and intends to integrate the revision of the NECP into the process which will be required for increasing the overall EU contribution under the Paris Agreement.

Programme for Government 2020: Following an election in early February 2020, a new Government was formed in Ireland at the end of June. This new Government agreed an ambitious Programme for Government, Our Shared Future⁵, which commits to an average 7% per annum reduction in overall greenhouse gas emissions from 2021 to 2030, which represents a 51% reduction over the decade.

The Climate Action and Low Carbon Development (Amendment) Act 2021: The Government is committed to a reduction in overall greenhouse gas emissions by 2030, equivalent to a 51% reduction from 2018 levels, and to achieving a climate neutral economy by no later than 2050. This ambition has been given statutory basis through the Climate Action and Low Carbon Development (Amendment) Act⁶, which was enacted in July 2021. The Act places into law a requirement for annual updates to the Climate Action Plan, which will provide an opportunity to set out actions, as necessary, to ensure compliance with sectoral targets.

Climate Action Plan 2023: Climate Action Plan 2023⁷ (CAP23) was approved by Government and launched on 21 December 2022. CAP23 sets out a roadmap for taking

³ [gov.ie - National Development Plan 2018 - 2027 \(www.gov.ie\)](https://www.gov.ie/en/publications-and-statements/publication-national-development-plan-2018-2027/)

⁴ [National energy and climate plans \(NECPs\) | Energy \(europa.eu\)](https://energy.ec.europa.eu/en/national-energy-and-climate-plans/NECPs/)

⁵ [gov.ie - Programme for Government: Our Shared Future \(www.gov.ie\)](https://www.gov.ie/en/publications-and-statements/publication-programme-for-government-our-shared-future/)

⁶ [Climate Action and Low Carbon Development \(Amendment\) Act 2021 \(irishstatutebook.ie\)](https://www.irishstatutebook.ie/eli/2021/act/12/enacted/en/html/)

⁷ [gov.ie - Climate Action Plan 2023](https://www.gov.ie/en/publications-and-statements/publication-climate-action-plan-2023/)

decisive action to halve our emissions by 2030 and reach net zero no later than 2050, as committed to in the Programme for Government. CAP23 details how Ireland can accelerate the actions that are required to respond to the climate crisis, putting climate solutions at the centre of Ireland's social and economic development. In line with the requirements of the Climate Action and Low Carbon Development (Amendment) Act 2021, CAP23 is consistent with the carbon budgets and sectoral emissions ceilings, including for the electricity sector. Compliance with the first carbon budgetary period, 2021 to 2025, requires a significant increase in early implementation. The scale of the challenge to meet the carbon budget programme requires policies to be moved from an 'end of decade' target trajectory to a 'remaining carbon budget' target.

As with Climate Action Plan 2021, the new Plan has a strong focus on implementation, including actions with specific timelines and steps needed to achieve each action, assigning clear lines of responsibility for delivery.

Some of the key targets for the electricity generation sector include:

- Increasing the share of electricity demand generated from renewable sources to reach 80% where achievable and cost effective, without compromising security of electricity supply
- Delivering 6 GW of onshore wind and up to 5GW of solar by 2025. This will be increased to 9 GW onshore wind, 8 GW solar, and at least 5 GW of offshore wind by 2030. At least 500 MW of these renewables will be delivered through local community-based projects
- New, dynamic Green Electricity Tariff will be developed by 2025 to incentivise people to use lower cost renewable electricity at times of high wind and solar generation
- Deliver circa 2 GW of new flexible gas in support of a high variable renewable electricity system
- Delivery of three new transmission grid connections or interconnectors
- Expand and reinforce the grid – through the addition of lines, substations, and new technologies
- Phase out and end the use of coal and peat in electricity generation
- Ensure that 15-20% of electricity system demand is flexible by 2025, increasing to 20-30% by 2030, to reduce peak demand and move to times of high renewable output

2.2 Market Overview

This section provides an overview of total demand in Ireland and the generation mix in 2021 overall available data for 2022. An overview of cross-border trade and pricing in the ex-ante markets is provided along with an update on adequacy issues for Ireland.

Over the past number of years there has been increasing tightness between supply and demand in the electricity market in Ireland. The confluence of several factors has led to declining capacity margins. These factors include increasing demand as the economy grows, an aging generation fleet that is experiencing increased levels of forced outages, the expected closure of plant with emission limits that exceed minimum standards, delayed delivery of some new capacity and the termination of some capacity awarded by the market. While the return of some generators in late 2021, which had been on forced outage, has improved the margins on the electricity system in the short term, there remains a need to proactively address declining capacity margins in the coming years.

In 2022, the value of wholesale electricity trades increased significantly in Ireland, as they did across Europe, in particular due to the war in Ukraine. While gas prices had started to increase over winter 2021-22, further significant inflation and increased volatility has marked the period since the invasion of Ukraine by Russia. The unprecedented rise in gas price has even more strongly linked gas and electricity prices in the Single Electricity Market, as gas fired generation now consistently sets the marginal price. Wholesale electricity Day Ahead Market (DAM) prices averaged 235.71 €/MWh for the last 12 months compared to 92.4 €/MWh in the preceding 12 months. This is a 155% increase year on year and is highly correlated with gas price movement.

For 2021, the total electricity demand in Ireland was 31.7 TWh. The 2022-2031 EirGrid Generation Capacity Statement⁸ provides forecasts for three scenarios of expected growth in demand, driven by the expected expansion of large energy users, and of data centres in particular.

⁸https://www.eirgridgroup.com/site-files/library/EirGrid/EirGrid_SONI_Ireland_Capacity_Outlook_2022-2031.pdf

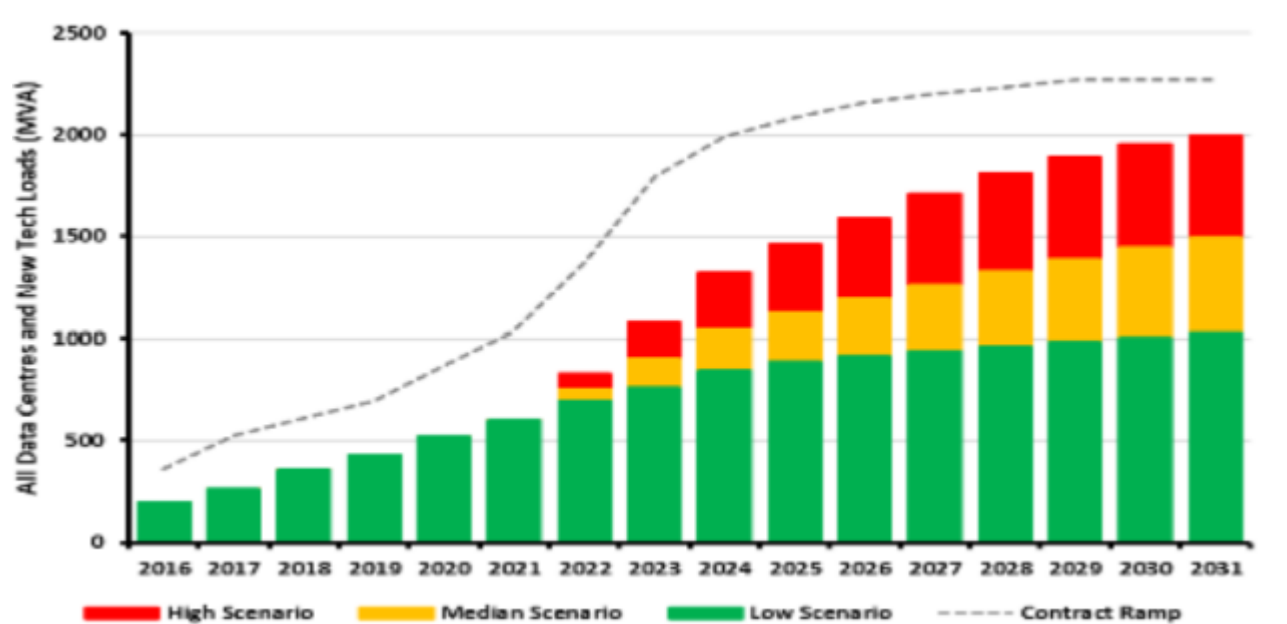


Figure 1, Low, Median and High demand growth scenarios for data centres and new tech loads, EirGrid and SONI 2022-2031 GCS

The overall fuel mix for Ireland in 2021 is shown in Figure 2.

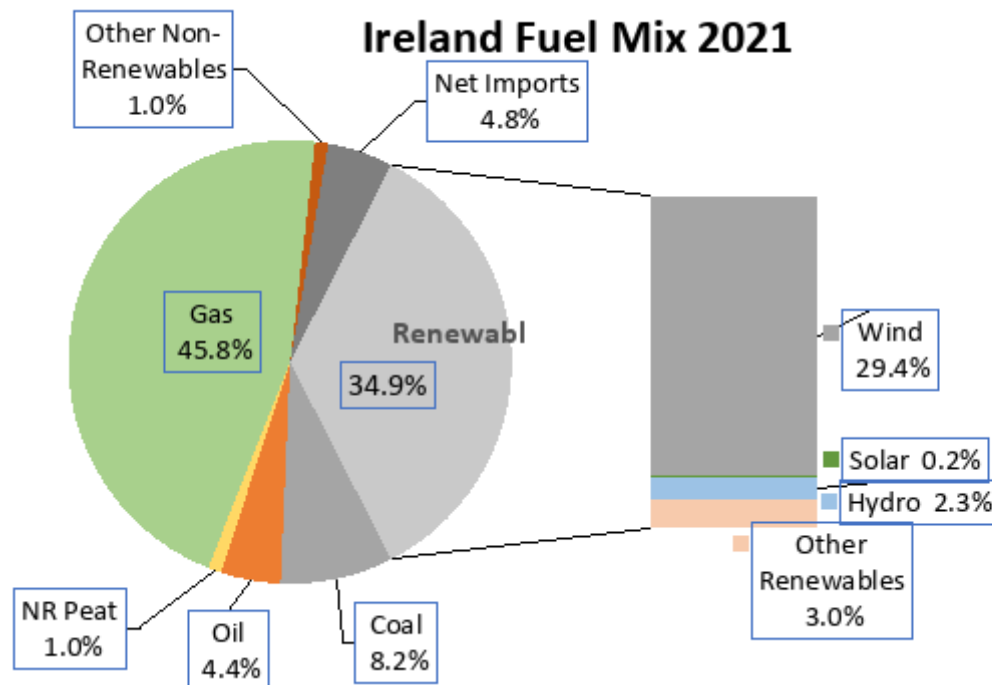


Figure 2, Ireland Fuel Mix 2021, EirGrid system and renewable data⁹

While the level of renewable electricity as a percentage of demand has increased year on year (see Figure 3), in 2021 the level of electricity generation by wind has decreased compared to 2020, as shown in Figure 4 below. This reflects a lower volume of wind on the system in 2021 so far compared to 2020. In 2021 there has been an increase in coal generation, which had dropped to very low levels in 2019 and 2020, see Figure 5. This increase is partially attributable to a surge in gas prices, which has made coal generation more competitive, and also to outages at two key gas-fired power stations over the majority of 2021.

⁹ <https://www.eirgridgroup.com/how-the-grid-works/renewables/>

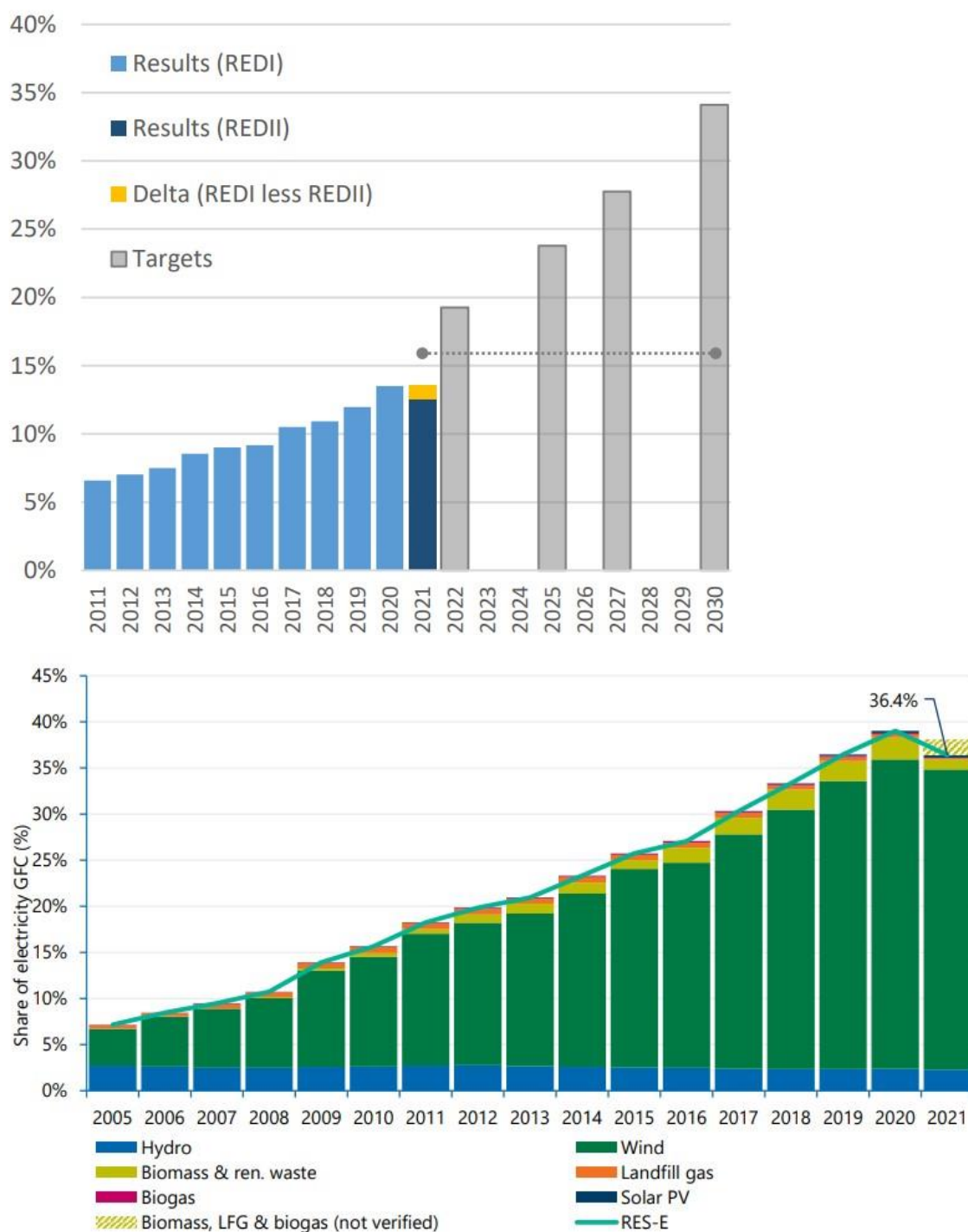


Figure 3. top: Overall renewable energy share (RESOverall) under the EU's first and updated Renewable Energy Directives (REDI and REDII) with current EU targets out to 2030 (note that accounting methods have changed between REDI & REDII), bottom: Renewable energy share of gross final consumption in electricity (RES-E normalised) SEAI, Energy in Ireland, 2022

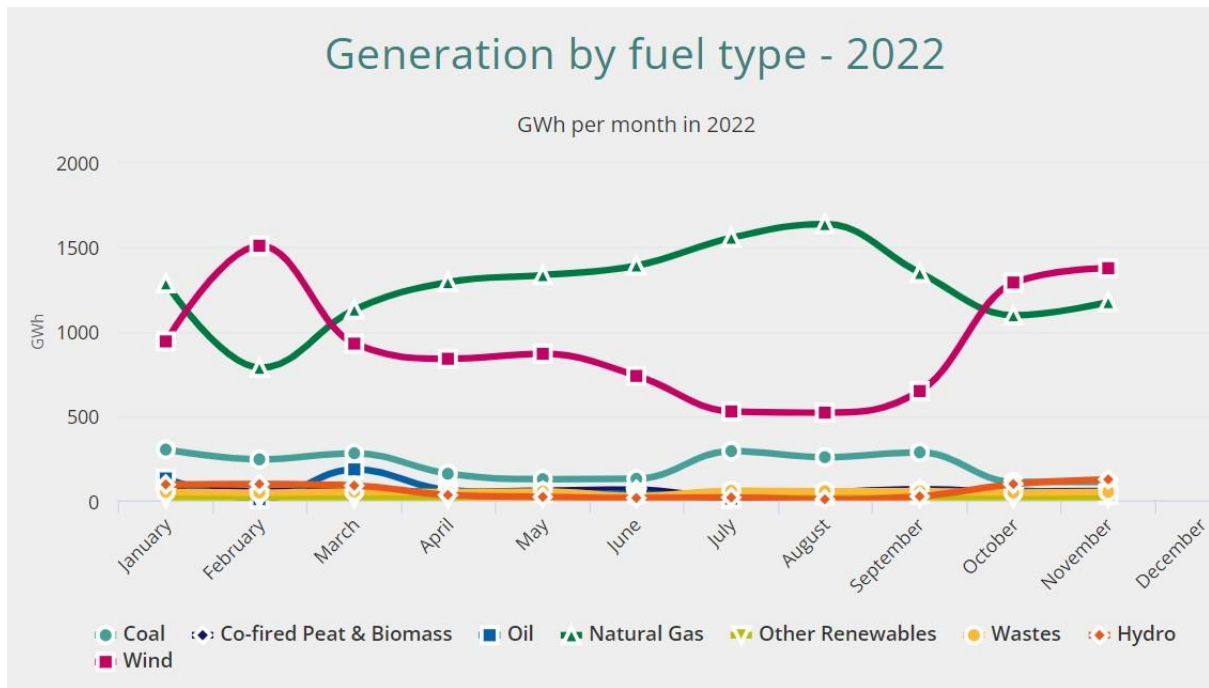


Figure 4 Generation by fuel type 2022, <https://www.seai.ie/data-and-insights/seai-statistics/monthly-energy-data/electricity/>

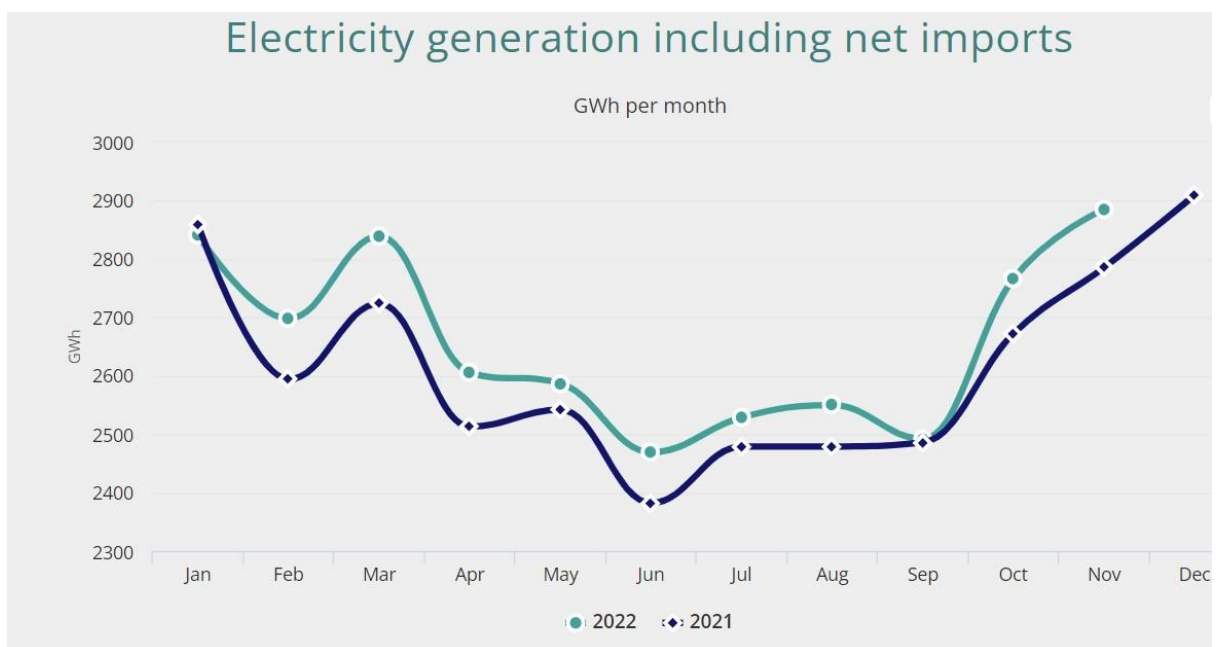


Figure 5 Electricity Generated including net imports 2021 & 2022, <https://www.seai.ie/data-and-insights/seai-statistics/monthly-energy-data/electricity/>

Ireland is interconnected to Northern Ireland through three transmission connections. Only one of these has significant capacity, the Louth – Tandragee 275 kV line is the primary means for power to flow between Ireland and Northern Ireland today. The two other

connections are 110 kV lines from Corraclassy to Enniskillen and from Letterkenny to Strabane. They only provide local support to the network and because of this, they don't have sufficient capacity to carry surplus power¹⁰. There are plans in progress for the development of a second North-South interconnector.

There are currently two interconnectors connecting the SEM to other markets, the 500MW East West Interconnector which connects Ireland and GB and the 500MW Moyle Interconnector between Northern Ireland and Scotland. The available Net Transfer Capacity from GB to Northern Ireland on Moyle for winter 2022/23 is expected to be 450 MW¹¹. The Celtic Interconnector, which is expected to be commissioned in 2026, will link the electricity transmission systems of Ireland and France, with a capacity of 700MW. Having gained the necessary statutory consents, the Celtic Interconnector reached a significant milestone with financial close in November 2022. The Greenlink Interconnector is planned for commissioning in 2024 and will link the transmission grids in Ireland and Wales with 500MW capacity. Construction on this has commenced.

As of 1 January 2021, the Day Ahead Market (DAM) in the SEM is no longer coupled, with cross border trading taking place only in the intraday timeframe (IDA) with GB. Scheduling of flows on each of the interconnectors is determined by the price spread between the SEM and GB in the IDA 1 and IDA 2 auctions. As noted earlier, prices in the DAM and IDA have increased further in 2022 primarily due to the war in the Ukraine and the associated increase in the cost of gas used for electricity generation.

¹⁰ [North-South-Interconnector-Answering-Your-Questions-\(Download\).pdf \(eirgridgroup.com\)](#)

¹¹ While the total installed capacity of the link is 500 MW, the transfer capability is constrained by network limitations on both sides which results in a reduced transfer capability.

Figure 6 shows average DAM and IDM prices in the SEM for 2019, 2020, 2021, 2022.

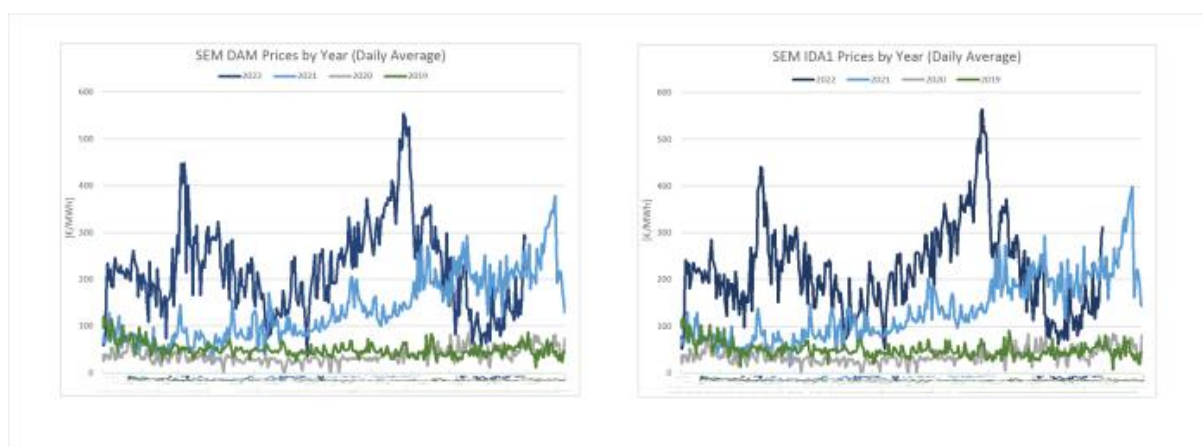


Figure 6, DAM and IDA prices in the SEM

In 2021, there was a net import of 1,585 GWh in cross border trade between Ireland and the UK, reflecting the tight generation margins in Ireland. Between January and October 2022, there was a net import of 268 GWh. There was a net export of 151 GWh in 2020, showing the change from net exports in 2020 to net imports in 2021 and 2022. We draw caution to attributing a single specific cause for the notable increase in imports in 2021 as the generation portfolios in Ireland and the UK are considerably different and are influenced by a range of factors such as outages, weather, fuel supply etc. However, we do note that security of supply issues in Ireland contributed to higher wholesale market prices in 2021, which in turn will likely have contributed to the increase in imports over the period.

Section 3: Overview of measures provided in the final implementation plan

3.1 Changes to Measures

Section 4 of the Implementation Plan set out the ongoing and future market reforms and measures being taken to eliminate identified regulatory distortions or market failures in the SEM. An overview of the measures identified is provided in Table 1, including any changes to these measures since the final Implementation Plan.

Table 2 in Section 4 of this document provides an update on implementation of these measures as of January 2023.

Table 1: Overview of Measures in Implementation Plan

	Overview	Changes
Removing Price Caps	<p>Section 3.3 of the Implementation Plan noted that the SEM currently operates with the limits put in place by ACER Decisions in 2017 outlining harmonised maximum and minimum clearing prices in the Day-Ahead Market.</p> <p>In the Intraday Markets, which are not yet part of Single Intraday Coupling, there is a technical price cap and floor of 1,500 EUR/MWh and -150 EUR/MWh respectively.</p> <p>The Balancing Market operates with a price cap based on the Value of Lost Load (VoLL). VoLL for the SEM is currently being recalculated based on customer surveys in accordance with ACER's methodology pursuant to Regulation (EU) 2019/943.</p>	<p>This was not identified as a measure in the Implementation Plan but as there are some expected changes in this area they are noted here. The methodology for increases to the technical price limits in the interim Intraday Markets is currently under review through the SEM-GB IDA Operations Committee.</p>
Compliance of Capacity mechanism with the Electricity Regulation, including Article 22(5)	<ul style="list-style-type: none"> • Section 4 of the Implementation Plan set out the compliance of the SEM Capacity mechanism with Article 22(5) of the Electricity Regulation including three areas of work: • Requirements introduced in Article 22(4) regarding CO2 emission limits. At the time of submission of the Implementation Plan, changes had been implemented to the SEM Capacity Market Code (CMC_05_20) and a technical guidance note was published for participants to determine CO2 emissions. • Engagement with the ACER working group on resource adequacy. In 2020 the Regulatory Authorities had engaged with the ACER working group to feed into the development of methodologies for calculating the value of lost load, the cost of new entry for generation or demand response and the reliability standard required under Article 25. • Implementation of cross border participation in capacity mechanisms in line with Article 26 of the Regulation. 	<p>No change, updates to implementation of these measures are provided in Table 2.</p>

DS3/Competitive System Services Procurement	<p>Section 4.1 of the Implementation Plan outlined a number of outstanding areas of work associated with the TSO System Services programme in 2020, as reproduced below:</p> <ul style="list-style-type: none"> • Rate of Change of Frequency (RoCoF), to allow for an increase from 0.5Hz/s to 1 Hz/s. • The development of new Control Centre Tools to use the higher RoCoF capability and operate the system in new configurations of increasing high RES-E. • Commencement of work in designing the next phase of DS3. <p>1. Rate of Change of Frequency (RoCoF)</p> <p>The ROCOF 1 Hz/s trial commenced in June 2020 and is currently ongoing and expected to be completed in March 2022.</p> <p>In parallel with the above-mentioned ROCOF trial an operational trial at 70% SNSP (System Non-Synchronous Penetration) has been completed and this is now enduring policy. Furthermore, a trial of up to 75% SNSP is currently ongoing and expected to complete in Spring 2022. Studies are ongoing to assess the requirements for reducing the number of conventional sets on the all-island system from 8 down to 7 and to lower the inertia floor to 20,000 MWs. Subject to the outcome of these studies, operational trials will commence in mid-2022.</p> <p>2. Control Centre Tools</p> <p>The look ahead stability assessment tool (LSAT) went live in the control rooms in December 2020. The product continues to be fine-tuned based on operational experience.</p>	<p>The DS3 programme has continued to evolve. As part of the Shaping Our Electricity Future Roadmap¹³ published in November 2021, the TSO outlined future operational and market changes identified.</p> <p>The SEM Committee published a high level design decision paper in April 2022 which outlined how the competitive system services procurement should work. The TSO is continuing to engage with the SEM Committee in relation to the detailed design of same.</p> <p>Further updates to implementation of these measures are provided in Table 2.</p>
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¹³ https://www.eirgridgroup.com/site-files/library/EirGrid/Shaping_Our_Electricity_Future_Roadmap.pdf

	<p>The enduring Ramping Margin Tool (eRMT) went live in October 2021. An interim ramping margin tool (iRMT) has been operational in the control room since September 2020 and will remain in parallel operation for the short-term as the tool is fine tuned.</p> <p>The Voltage Trajectory Tool (VTT) project is ongoing and is in the Build/Test phase. Hardware has been commissioned in all sites, however delivery dates for the full VTT software solution is currently under review and a re-baselined plan is expected in early November.</p> <p>The delays to delivery of the tools came about for a number of reasons, including those during the procurement and design processes and challenges with the complexity and innovative nature of the solutions themselves.</p> <p>These delays were further exacerbated by the Covid 19 pandemic which limited access between project team members.</p> <p><i>Implementation of the Electricity Balancing Guidelines (EBGL) and other Network Codes to open up markets to cross-border service provision</i></p> <p>Following Brexit, the SEM market is not currently linked to any other EU Member state and so cross-border market participation is not possible in a wider EU context at present. The implementation of EU Legislation and Network Codes is ongoing; in 2021 an all-island consultation assessing the compliance of the local SEM market arrangements with the Guideline on Electricity Balancing (https://www.semcommittee.com/publications/sem-21-017-eirgrid-and-soni-analysis-sem-compliance-guideline-electricity-balancing) was conducted by the SEM Committee. The development of new cross-border trading arrangements with GB is underway as part of the work outlined in the Trade and Cooperation Agreement between the UK and EU. Preparations for future EU cross-border trading in line with EU market regulations with the advent of the Celtic interconnector have started and engagement is underway with EU TSO colleagues on this.</p> <p>Enhancing the existing suite of services and attracting new service providers to deal with any new technical challenges identified</p>	
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	<p>A project is ongoing to establish procurement arrangements for low carbon inertia solutions (subject to the approval of the Regulatory Authorities). A consultation on technical requirements is expected to be complete by end Q2 2022, and a consultation on the contractual arrangements is currently planned for end of 2022. An OJEU procurement process will be launched in 2023.</p> <p>To design and implement novel approaches to mitigate the technical scarcities identified in operating the whole power system of Ireland and Northern Ireland at times up to 100% RES-E in real time.</p> <p>The SysFlex Task 2.6 report has been published online.¹²</p> <p>A report discussing the technical challenges in operation the Irish 2030 network and their possible mitigations is nearing completion and will be published before the year end.</p> <p>3. DS3 Programme Development</p> <p>A programme of work for the development of Future Arrangements for System Services is progressing. A scoping phase was completed in March 2021. The SEM Committee High Level Design Decision paper was published in April 2022. The TSOs are engaging with the RAs on the implementation of the High Level Design decision. The design of the arrangements should be such as to attract the required investment in system services to meet 2030 targets, while complying with the requirements of the CEP and Electricity Balancing Guidelines.</p>	
Connection Process	Designing and implementing an appropriate connection process to facilitate the connection of target levels wind generation was identified in the Implementation Plan as a key challenge that needed to be addressed.	Updates in Table 2

¹² https://eu-sysflex.com/wp-content/uploads/2021/06/Task_2.6-Deliverable-Report-V1.0_for_Submission.pdf

	<p>The Commission for Regulation of Utilities (CRU) determined a connection policy 'Enduring Connection Policy, scheduled to run over a minimum of three years in a batch processing format.</p> <p>ECP-1 was the first stage of the CRU's development of enduring connection policy in Ireland. On the 27 March 2018 the CRU published their decision on ECP-1. The ECP-1 applications window opened on 27 April 2018 and closed on 28 May 2018 with the results of that process available on the CRU's website here.</p> <p>ECP-2 is the second stage of the CRU's development of enduring connection policy in Ireland. On the 10 June 2020 the CRU published their decision on ECP-2, which set policy for at least three annual batches of connection offers (ECP 2.1, ECP-2.2, and ECP-2.3). The ECP-2 applications window is open for the month of September each year. To accompany this, the SOs have published a joint ruleset detailing the rules around applications and the connection offer process.</p> <p>Through ECP-2.1, the SOs have issued offers for the connection of 1.8 GW of RES-E projects, with just under 1GW of this made up of wind projects</p> <p>In relation to offshore wind, on 31 January 2020, the Commission for Regulation of Utilities (CRU) directed EirGrid (D/20/2760) to "commence processing any such applications from projects which may be deemed to meet the definition of Relevant Projects". The term "Relevant Projects" was subsequently replaced with the term "Phase 1 projects". EirGrid has carried out extensive analysis on the east and west coasts along with detailed engagement with the Phase 1 projects and key stakeholders to inform a report to CRU on the Grid Connections Assessment for Phase 1 projects in March 2021. On 11 October 2021 CRU published a Proposed Decision paper (CRU/21/112) on proposals for the next stage of processing for Phase 1 offshore grid connection applications. This paper marks the first consultation by the CRU related to a new regulatory framework for the offshore electricity transmission system. In the CRU's Proposed Decision paper, it is proposed that EirGrid will issue a Grid Connection Assessment (GCA) to each eligible</p>	
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	Phase 1 applicant. Following consultation on this paper the CRU will decide on the criteria for the Phase 1 GCA in early Q1 2022.	
Demand Side Participation	<p>As part of the European Commission's State Aid ruling of November 2017, modifications were required to the method of participation of DSUs in the SEM CRM by October 2020 in order to end the exemption from payback obligations for DSUs where Reliability Option (RO) payments are required.</p> <p>This was to be implemented via interim arrangements where energy payments for DSUs, arising from dispatch in the balancing market above ex-ante position, would only be made at times when DSUs are required to pay difference charges. It was also recognised that an enduring solution for energy payments to DSUs would need to be developed.</p>	The interim arrangement was implemented, but now a wider change has been introduced which extends energy payments to DSUs at all times, rather than only when they are liable to pay difference charges
Enhanced Interconnection	<p>Timelines were provided in Section 4.3 of the Implementation Plan for the implementation of new interconnector projects, with a view to meeting interconnection targets as set out in Article 4(d)(1) of Regulation (EU) 2018/1999, including:</p> <ul style="list-style-type: none"> • North-South Interconnector – Earliest possible date for construction to commence is 2022. • Celtic Interconnector – 26 • Greenlink interconnector – 2024 	Updates to implementation of these measures are provided below and in Table 2. There is a further commitment in Ireland's 2021 Climate Action Plan to update Ireland's interconnector policy to account for Brexit and the amended EU TEN-E Regulation. The updated policy statement is expected to be published in Q1 2023.
Enhanced Interconnection (Grid Connection Direction for PCI projects)	<p>There is one proposed interconnector project on the 5th Projects of Common Interest (PCI) list</p> <p>Celtic Interconnector (PC no. 1.6)</p> <p>PCI no 1.6 is a project promoted by EirGrid and Réseau de Transport d'Electricité (RTE) on France- Ireland Interconnection <i>The Celtic Interconnector</i> is a proposed 700 MW sub-sea electricity cable linking the</p>	NSIC is no longer a PCI due to the UK's withdrawal from the European Union. The project is being put forward for designation as a PMI (Project of Mutual Interest)

	<p>electricity grids of Ireland and France. The project is being jointly progressed by the Irish TSO, EirGrid, and its French counterpart, Réseau de Transport d'Electricité (RTE). The planned Celtic Interconnector promoted as an EU Project of Common Interest (PCI); the Celtic Interconnector was awarded a €530m grant under the Connecting Europe Facility (CEF) in 2019. The Celtic Interconnector will facilitate enhanced security of supply, and enhanced integration of renewable energy. Celtic will provide a direct electricity link with mainland Europe, and therefore a connection with the EU's Internal Energy Market post Brexit. Political support from the Irish and French Governments for development of the Celtic Interconnector was reaffirmed in a Joint Plan of Action signed by respective Foreign Ministers in August 2021. Planning for the proposed interconnector has continued and applications for the required foreshore licence and onshore planning permissions in Ireland were submitted by EirGrid in July 2021. Celtic received its comprehensive decision from An Bord Pleanála in October 2022 and reached Final Investment Decision in November 2022.</p> <p><i>The Greenlink interconnector to Wales is a proposed 500MW subsea and underground electricity interconnector linking the power markets in Ireland and Great Britain. . The project began construction in Q1 2022 under a limited notice to proceed and received its comprehensive planning decision from An Bord Pleanála in April 2022.</i></p> <p>Timelines:</p> <ul style="list-style-type: none"> • Celtic Interconnector Expected to be completed in 2026. • The Greenlink interconnector –Construction of the interconnector began in Q1 2022 and the project will be prospectively energised in late 2024. 	<p>Greenlink is no longer a PCI due to the UK's withdrawal from the EU. The draft list was published in Q4 2021 at that point the project was at an advanced stage of the consenting process and the project began construction in Q1 2022 and is expected to be energised in late 2024.</p> <p>See Table 2 for updates on progress on the Celtic Interconnector project and the Greenlink project</p> <p>In November 2022, EirGrid and their French counterpart Réseau de Transport d'Electricité (RTE) signed agreements for €800m of financing to be provided by the European Investment Bank, Danske Bank, Barclays and BNP.</p>
Grid Development	Section 4.4 of the Plan set out measures for Grid Development, in particular related to ongoing investments taking place or scheduled to take place in	West Dublin station has energised. Further updates to implementation of

	<p>coming years within the all-island market grid infrastructure to ensure security of supply, mitigate locational capacity constraints to facilitate higher integration of renewables generation. Two major projects were highlighted:</p> <ul style="list-style-type: none"> • The North South Interconnector Project, comprising the addition of a new 138km 400 kV overhead line connecting the electricity grids of Ireland and Northern Ireland. • The West Dublin Project, in response to a significant local increase in demand for electricity. 	these measures are provided in Table 2.
Grid Development (Transmission Development Plan Update)	<p>EirGrid's Transmission Development Plan ¹⁴(TDP) 2021-2030 is the plan for the development of the Irish transmission network and interconnection over the ten years from 2021. This ten-year plan presents projects that are needed for the operation of the transmission network.</p> <p>The development of the Irish electricity sector is guided by a number of national and European Union (EU) rules and strategic objectives. These objectives guide investment in the Irish transmission network and are summarised as follows:</p> <ul style="list-style-type: none"> • Ensuring the security of electricity supply • Ensuring the competitiveness of the national economy; and • Ensuring the long-term sustainability of electricity supply in the country. <p>Drivers of investment include:</p> <ul style="list-style-type: none"> • Securing transmission network supplies • Promoting market integration; and • Promoting the integration of Renewable Energy Sources (RES) and complementary thermal generation. 	<p>EirGrid's Transmission Development Plan (TDP) 2021-2030 is the current plan for the development of the Irish transmission network and interconnection over the next ten years. In TDP 2020-2029 there were 111 active projects. Taking into account 15 projects that are now completed, two projects that are removed and 51 projects added, there are 145 active projects in the updated TDP 2021-2030.</p>

¹⁴ https://www.cru.ie/document_group/draft-eirgrid-transmission-development-plan-2020-2029-for-public-consultation/

	<p>The all-island transmission system currently includes capacity constraints limiting the ability to transfer power between the two jurisdictions which comprise the I-SEM. This poses a potential risk to security of supply and creates a sub optimum outcome regarding the integration of renewable generation on the island of Ireland, notwithstanding the work of the TSOs, EirGrid and SONI, in achieving a Synchronous Non-Synchronous Penetration rate of 70%, which will be raised in steps in the coming years. There is an additional constraint in the greater Dublin area which has been exacerbated by the increase in large energy users in this region along with general economic growth during recent years.</p> <p>The above capacity constraints in the SEM are currently mitigated by ensuring the availability of generation in proximity to the constraint to influence the flow of power. In this regard, the competitive CRM introduced under the SEM design project is performing a crucial ongoing role, with locational constraints incorporated in the Capacity Market to ensure minimum levels of generation capacity are maintained in the constrained areas to ensure appropriate levels of security of supply. Additional generation capacity is ensured via the running of annual T-4 capacity auctions, the most recent of which was held in January 2021 for the capacity year 2024-25,</p> <p>It is important to note that significant ongoing investments are currently taking place or are scheduled to take place in coming years within the all-island market grid infrastructure to ensure security of supply and mitigate the locational capacity constraints in the Dublin area and Northern Ireland in the most efficient manner possible, and to facilitate higher integration of renewables generation in the SEM. Reducing longer term constraints in the SEM, and within the wider Dublin region in particular, are considered vital by EirGrid to reduce the need to incorporate locational constraints with future CRM auctions, as well as a reduced level of curtailment to facilitate a swifter pace of decarbonisation on the island of Ireland.</p>	
Grid Development ("Shaping our Electricity Future")	In order to plan for the future of the transmission system EirGrid undertook a major public consultation in 2021 entitled "Shaping Our Electricity Future" which sets out a roadmap for a:	Shaping our Electricity Future was published at COP 26 in Glasgow in November 2021.

	<ul style="list-style-type: none"> • Robust, economic and deliverable plan for 2030 and ultimately towards a net zero carbon energy system by 2050 • Accommodates social and economic growth (national and regional) • Facilitates a secure transition from a non-renewable to renewable based system through the decade <p>Shaping Our Electricity Future, to be published later this year, will set out a number of major upgrades and extensions to the electricity transmission system to deliver these goals. In this regard, there are a number that are already planned by EirGrid, or in which progress has already commenced. These projects include:</p> <p>North South Interconnector Project</p> <p>The proposed North South Interconnector is a 400 kV overhead line linking the 400kV substation in Woodland, County Meath with a new substation in Turleenan, County Tyrone. It will be a 138km transmission connection with a power capacity of 1,500MW. It is anticipated that it will bring savings in the Single Electricity Market of €20 million per annum from its inception, rising further over time.</p> <p>The Department has commissioned a further short study on the North South Interconnector project to assess if the overall finding from the 2018 report – that an overhead line remains the most appropriate option for this critical electricity infrastructure - remains valid. This review has been finalised and is expected to be published in 2023. A legal challenge in Northern Ireland was dismissed this October.</p> <p>The North South Interconnector is critical to improving the efficient operation of the Single Electricity Market and increasing security of electricity supply across the island of Ireland. It will also help us to move to 80% renewable electricity, a commitment made in the National Development Plan published on 4 October 2021 as well as the recently published Climate Action Plan</p>	<p>The 2021 Climate Action Plan's Annex of Actions requires further Grid, Operational and Market Studies to facilitate renewable electricity up to 80%.</p> <p>In addition, in July 2022, the Government of Ireland has announced commitments to deliver further emissions cuts by 2030 and associated carbon budgets by sector, including for electricity.</p> <p>EirGrid analysis is ongoing to assess these new targets and to update the Shaping Our Electricity Future Roadmap accordingly.</p> <p>Shaping our Electricity Future version 1.1 will be published in Q1 2023 to outline our roadmap to meeting these ambitious updated targets.</p> <p>North Connaught Grid Upgrade and Kildare-Meath Grid Upgrades are currently underway. Following a judgement by Northern Ireland Court of Appeal, the Northern Ireland consents were upheld in October 2022 which means that the project now has planning consent in both jurisdictions.</p> <p>The Kildare-Meath Grid Upgrade is expected to lodge planning in 2023.</p>
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	<p>2021. A resilient and well-connected energy infrastructure is vital for Ireland's economic well-being and the ability to respond to the future needs of energy consumers.</p> <p>Kildare-Meath Upgrade</p> <p>The Kildare-Meath Grid Upgrade is a high-capacity connection between Dunstown substation in Kildare and Woodland substation in Meath. In April 2021, following public consultation, it was decided that an underground cable was the best performing option. The project will help to more effectively transfer power to the east of the country and distribute it throughout the electricity network in Meath, Kildare and surrounding counties. It will also strengthen the network and help meet the growing demand for electricity in the East. Four design options for the underground cable route are currently out to public consultation.</p> <p>North Connacht Grid Upgrade</p> <p>In September 2021 EirGrid, following technical assessments and extensive local engagement, identified the best-performing route option for the North Connacht 110kV Project – an underground line. This upgrade runs from Ballina in Co. Mayo to Ballaghaderreen in Co. Roscommon. It is approximately 60 km in length, will bypass major towns and villages, including Ballina, Foxford and Ballaghaderreen. Approximately 53 km of the underground cable route will be constructed on a range of road types from Moy to Tonroe, including the N5, N26, L1321 and N59.</p> <p>A planning application is now being prepared by EirGrid, anticipated for submission in early 2022. If successful, the project would move into the construction phase in 2023.</p>	<p>Construction is planned to commence in 2024 with energisation of the project in 2028</p> <p>A planning application was lodged for North Connacht in 2022. Commencement of construction is expected in 2023 and energisation in 2026</p> <p>In March 2022, EirGrid formally launched a new Dublin Programme which involves a major upgrade of the Dublin electricity grid, helping to facilitate Government renewable energy targets, replace aging infrastructure and meet growing demand in the city and county.</p> <p>The project includes the replacement of circa 55km of cabling throughout the city as well as the expansion of existing substations and provision of new substations at key points to provide capacity.</p>
RESS High Level Design/Competitive Auction	<p>Section 4.5 set out the auctions for renewable electricity due to occur between 2020 and 2027 in order to deliver on 2030 targets, with the first RESS auction held in July 2020.</p>	<p>Updates are provided in Table 2.</p>

	<p>The Renewable Electricity Support Scheme (RESS) will help deliver Ireland's contribution to the EU-wide renewable energy target of 32% RES out to 2030. The RESS is an auction-based scheme which invites renewable electricity projects to bid for capacity and receive a guaranteed price for the electricity they generate. The first auction was held in 2020, and subject to a timely rollout of the successful projects it will deliver up to a 1,008GWh increase in renewable electricity generation by the end of 2022. A total of 82 out of 108 projects (securing 2237 GWh of electricity) were successful, including seven of the eight community projects. The final auction results were approved by the Minister for the Environment, Climate and Communications on 10 September 2020. It is envisaged that a minimum of four auctions will occur between 2020 and 2025 to deliver on 2030 targets. This will provide pathways for renewable developers including offshore wind projects as it sets out the indicative timelines and volumes for auctions over the coming decades and provides clarity for developers in relation to when they need to have their projects "auction ready". It will also allow Ireland to take advantage of new technologies as they emerge.</p> <p>The primary elements of the Scheme are listed below:</p> <ul style="list-style-type: none"> • Increasing Technology Diversity – the scheme will be open to a range of technologies that will broaden the renewable energy mix and enhance security of supply • Solar – the inclusion of a solar category in the first auction, of up to 10% of the overall auction • Community led category – the inclusion of a dedicated community category within the auction • Community participation – an obligatory Community Benefit Fund to provide opportunities for communities to benefit from Ireland's renewable energy transition. 	
Smart Metering	The delivery plan for the rollout of smart meters and go-live of smart services including time-of-use tariffs from 2021 was outlined in Section 4.6, setting out	Updated, revised timelines for this rollout are provided in Table 2. 2021 saw a reduction in the number of

	<p>the plan for initial delivery of 250,000 meters across 2019-2020 and approximately 500,000 meters in each of the four subsequent years.</p> <p>The smart meter upgrade is a meter replacement programme to modern, smart-ready technology. New generation electricity meters are being rolled out across Europe and internationally and when the programme completes in Ireland in 2024, all domestic and business premises will have a smart ready meter installed. The programme is being coordinated by the Commission for Regulation of Utilities (CRU) with ESB Networks responsible for rolling out the electricity meters nationwide.</p> <p>In October 2021 the number of installations exceeded 500,000 and the programme is running at roughly 40,000 installs per month.</p> <p>Smart services 'go live' commenced at the end of February 2021. As part of these new smart services, Suppliers are now offering a range of smart 'Time of Use' Tariffs to customers who have had a smart meter installed. These tariffs are a new way for customers to save money by moving their usage to off peak times, which will also facilitate greater levels of renewable energy to be integrated onto the national grid.</p> <p>The Department is currently engaging with the Office of the Parliamentary Counsel (OPC) with a view to developing a framework for the management and access to smart meter data, through the transposition of Articles 19-24 of the EU Internal Market for Electricity Directive (IMED), (2019/944). Work on this issue has been ongoing for some time and is at an advanced stage. The resulting Statutory Instrument, expected to be finalised shortly, will provide for CRU to develop a smart meter data access code for various third parties such as suppliers, SEAI, An Garda Síochána etc.</p> <p>The installation of smart meters is a key enabler for the energy transition to a decarbonised system as outlined in the Climate Action Plan. In addition, the move to upgraded digital meters will bring many benefits for energy customers by enhancing competition, making bills more accurate, providing customers with better information on their energy consumption and</p>	<p>smart meter exchanges due to supply chain issues as a result of the Covid-19 pandemic. However ESN still completed over 452,000 meter exchanges in 2022. Total Smart Meters installed is now over 1.1 million. ESN indicate that they expect to have exchanged 80% of all meters by the end of 2024.</p> <p>The CRU is currently engaging in consultation on the Data Access Code, with a view of publishing the Code in 2023.</p>
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	<p>empowering them with new tools to make more informed choices about their energy needs.</p> <p>Smart meters are configured to record consumption in day, night and peak time periods, as well as in shorter half-hour intervals. Smart meters are also configured to record any electricity feeding into the grid.</p>	
North Sea Design/ Offshore Renewable Energy	<p>Section 4.7 outlined plans for development of an offshore electricity grid, in tandem with new interconnection to allow Ireland to balance its significant renewables potential with security of electricity supply and develop long-term ambitions to export offshore renewable resources, with the intention to connect at least 3.5GW of offshore wind through competitive auctions by 2030.</p> <p>The 2020 Programme for Government includes the objective that 5 GW of offshore wind will be installed by 2030. As one of a number of ongoing workstreams required to meet the 5 GW target, a new framework for Ireland's future offshore electricity transmission system was approved by Government in April 2021, and provides for future offshore grid development, operation and ownership. This framework and associated policy will provide necessary clarity to all stakeholders ahead of the first of three scheduled offshore wind RESS auctions that will enable Ireland to meet the 5 GW offshore wind objective by the end of this decade.</p> <p>The new policy provides for a phased transition from the current decentralised offshore transmission system model to a centralised model over the course of this decade, to take place in line with three scheduled offshore wind specific auctions.</p> <p>Further ongoing workstreams required to meet the 5 GW target include developing terms and conditions for offshore wind-specific auctions under the State Aid approved Renewable Electricity Support Scheme (RESS) and future enactment of the Maritime Area Planning Bill, which will provide a new legal framework for consenting and development within Ireland's maritime area.</p> <p>In addition to the above, Ireland remains an active member of the North Seas Energy Cooperation (NSEC), of which it will assume the Presidency for 2022.</p>	<p>In December 2021, the Marine Area Planning Act, 2021 was enacted, with provisions for EirGrid to adopt the role of the offshore TSO in Ireland and to own offshore assets.</p> <p>Consultation on the Offshore RESS 1 Final Terms and Conditions was published in October 2022 and Government approval was secured in November. The ORESS-1 auction was launched in December 2022 with the qualification stage and auction process taking place in the first half of 2023. The final auction results will be published in June 2023.</p> <p>As part of Ireland's Presidency of the North Seas a Ministerial Event was held in Dublin in September 2022. One of the outcomes of that meeting was an agreement by the NSEC countries to an aggregate target of at least 260 GW of offshore wind energy by 2050 with intermediate targets of at least 76 GW by 2030 and 193 GW by 2040. These targets are a non-binding commitment set by the</p>

		<p>countries as part of the requirements under the TEN-E Regulation as part of NSEC's role as the facilitating body for the tasks of the North Seas Offshore Grids as set out in the Regulation. Ireland, for its part has set its targets a 7 GW for 2030 (including 2 GW for the production of green hydrogen, 15-20 GW by 2040 and 37 GW by 2050.</p> <p>In December 2022 under Ireland's co-Presidency with the Commission of the North Seas Energy Cooperation (NSEC), NSEC signed a Memorandum of Understanding with the UK.</p>
Market Parameters	<p>The plan noted that the Regulatory Authorities would be recalculating VoLL as part of the implementation of the Clean Energy Package (Article 11) following the ACER Opinion on the VoLL calculation methodology under Article 23(6).</p> <p>As set out in SEM-19-054, the SEM Committee intended to review its decisions in relation to balancing market pricing in Quarter 2 of 2020 following a review of outturn prices in the winter of 2019/20.</p> <p>Work was ongoing between the TSOs and SEM Regulatory Authorities to develop a conceptual approach for the conversion of SEM bids into standard products for balancing energy platforms and to ensure the approach to imbalance pricing and settlement in the SEM is compliant with all aspects of the Electricity Balancing Guideline.</p>	Updates provided in Table 2.
All-of Government Climate Action Plan 2019	At the time the Implementation plan was submitted, an overview of the policy context including the publication of the all of Government Climate Action Plan (CAP) in June 2019 was provided.	Updated, provide updates on new CAP in Table 2

Section 4: Status of measures in the final implementation plan

4.1 Status Updates

Table 2: Status of Measures from Implementation Plan and Actions Taken

Topic	Action Taken	Impact on adequacy concern
Removing Price Caps	The price cap in SEM-GB was increased to €3000 in December 2021 to match DAM's price cap. There are current discussions within European coupled markets (SDAC and SIDC) to amend the current methodology for the Harmonised Maximum and Minimum Price Caps (HMMCP) making them less sensitive to price spikes. This discussion is being followed closely by SEM-GB, although an alignment with EU SDAC/SIDC HMMCP methodology for SEM-GB IDAs is advisable, it should be noted that an increase in SEM-GB price cap should not be triggered by high prices in Continental European coupled markets until SEM is recoupled post commissioning of the Celtic interconnector.	Further change will potentially result in higher prices in the coupled IDM between the SEM and GB.
Compliance of Capacity mechanism with the Electricity Regulation, including Article 22(5)	<p>As set out in the Implementation Plan, in relation to CO2 emission limits under Article 22(4), the RAs implemented changes to the SEM Capacity Market Code and published a technical guidance note for participants to determine CO2 emissions in line with Opinion 22/2019 published by ACER in December 2019. The changes to the Capacity Market Code came into effect in April 2020 and in advance of the 2023/24 T-4 auction. The technical guidance came into effect in June 2020 in advance of qualification for the 2024/25 T-4 capacity auction. The T-4 24/25 auction was the first to cover the period to which the technical guidance refers, and as per the CMC mod, non-compliant plants were excluded from the auction.</p> <p>The CRU is currently engaging with the ACER working group on Adequacy, the ACER Expert Groups on VoLL/CoNE/RS and ERAA (European Resource Adequacy Assessment), and bilaterally with several NRAs on the implementation of the ACER methodologies for VoLL, CoNE and RS within</p>	<p>The implementation of the methodologies for VoLL, CoNE and RS will result in a new reliability standard for comparison with the results of the ERAA to identify adequacy concerns within the SEM.</p> <p>The development of cross border participation in the SEM Capacity Mechanism is expected to provide benefits for auction participation once the SEM is interconnected with another Member State.</p>

	<p>the SEM. For the implementation of the VoLL methodology this has involved the procurements of consultants to carry out a consumer survey for domestic and non-domestic sectors in ROI and NI. A decision is expected in early 2023.</p> <p>In relation to cross border Capacity Market participation, the RAs fed into the ACER consultations and discussions on the methodology under Article 26 of the Regulation in 2020. Due to the lack of interconnection with other Member States, however, post-Brexit, it is anticipated that the requirements on cross-border participation in capacity mechanisms will not become relevant until such time as interconnection is established with another Member State. This was set out in the RAs' updated roadmap to Clean Energy Package Implementation (SEM-20-089)¹⁵</p>	
DS3/Competitive System Services Procurement	<p>A rate-of-change-of-frequency (RoCoF) limit of 1 HZ/s has been operational under trial since 17 June 2020, increased from 0.5 HZ/s. This is updated in the Weekly Operational Constraints Update published by the TSOs¹⁶. The trial is expected to be completed in March 2023.</p> <p>A critical milestone was achieved in April 2022 in adopting 75% system non-synchronous penetration (SNSP) - mainly renewable generation - as our enduring policy, meaning 75% of our instantaneous electricity can come from low carbon renewable energy.</p> <p>In 2021, the TSO completed a Control Centre of the Future project to review existing control centre operations, assess international best practices and develop a vision of the control centres in 2030 as well as a detailed roadmap with an implementation programme out to 2030. This project is set out in further detail in the TSO publication 'Shaping our Electricity Future Technical Report'¹⁷. The TSO is currently building on the roadmap produced in 2021 by</p>	<p>RoCoF represents the rate at which system frequency changes following a system event which disconnects a generator or load from the system and is related to the amount of inertia that is stored in synchronous generators. A higher RoCoF limit will allow the system to accommodate greater changes in frequency and allow for a reduced number of synchronous generators.</p> <p>To achieve the 2030 renewable targets, we will need to be capable of operating the grid with almost</p>

¹⁵ <https://www.semcommittee.com/sites/semc/files/media/files/SEM-20-089%20Updated%20Roadmap%20on%20Clean%20Energy%20Package%20Implementation.pdf>

¹⁶ https://www.sem-o.com/documents/general-publications/Wk45_2022_Weekly_Operational_Constraints_Update.pdf

¹⁷ <https://www.eirgridgroup.com/site-files/library/EirGrid/Full-Technical-Report-on-Shaping-Our-Electricity-Future.pdf>

	<p>developing a detailed delivery plan with clearly defined priority tools/capabilities.</p> <p>In terms of ongoing control centre tools delivery, the Voltage Trajectory Tool (VTT) project is ongoing but nearing a conclusion with go-live of the tool in the control centres expected over the coming months following a period of operational tuning.</p> <p>In April 2022 the SEMC published a decision paper on the High Level Design (SEM-22-012) for the Future Arrangements for System Services. This outlines the new mechanism which will be utilised to procure system services to allow the power system to be operated with high levels of renewable sources. The TSOs has been engaging with the Regulatory Authorities to further understand the detailed design to allow the implementation phase to commence. The TSOs note that the implementation date for the new arrangements is currently estimated as late 2025.</p>	<p>100% of electricity sources that do not synchronise with the electricity system. EirGrid monitor the overall amount of System Non-Synchronous Penetration (SNSP), connected to the grid at any one time. This metric is important to ensure a safe, secure, resilient and reliable system even with high levels of renewables.</p> <p>The ability to design and operate control centres and processes for the future generation mix will allow the TSOs to operate the system with high levels of non-synchronous renewables, a range of network devices and service providers and with an increased level of generation and service provision connected to the distribution system.</p> <p>The development of future arrangements for system services will incentivise the provision of new system services to ensure security and resilience in a high renewables system.</p>
Connection Process	<p>The ECP-2.3 applications window opened in September 2022. The System Operators are currently in the midst of issuing offers for the ECP-2.2 batch and are also processing applications for the ECP-2.3 batch. Through the</p>	<p>Continued processing of applications helps enhance system adequacy.</p>

	<p>three batches of ECP-2, the SOs will have issued offers for the connection of 1.8 GW of onshore wind and 4.5 GW of solar generation.</p> <p>The CRU is currently identifying the next steps to follow on from ECP-2.3 taking new legislation into account, e.g. Article 16 of the Renewable Energy Directive (refresh) and RePowerEU This process will allow for a swifter permitting of renewable projects in Ireland.</p> <p>On 27th September 2022, the SEMC published a consultation on Firm Access Methodology in Ireland "EirGrid - Proposed Methodology". This proposed methodology will provide increased certainty to generators in the market. A final decision will be published in early 2023.</p> <p>It is expected that Ireland will have issued all GCAs to Phase 1 Offshore projects by the end of 2022.</p>	<p>This proposed methodology will provide increased certainty to generators in the market. A decision will be published in early 2023.</p>
Demand Side Participation	<p>As detailed in the Demand Side Unit (DSU) state aid compliance decision paper (SEM-19-029), an exemption of DSUs from Reliability Option (RO) payback obligations allowed for these units to have Difference Charges to apply only in the case of non-delivery where there is an RO event. This exemption was allowed as a temporary measure and State Aid approval was given on the basis that this exemption would cease for the delivery period commencing October 2020.</p> <p>Modification 17_19 was raised to the Trading and Settlement Code and was implemented in the SEM through a market system release¹⁸ in October 2020. This interim solution provides for energy payments to be made to DSUs where there is an RO event in order to provide the revenue with which to pay Difference Charges where such payments apply as well as changing the approach to Non-Performance Difference Charges to align with the approach for other units.</p>	<p>This work area intends to enhance the performance of existing demand side units and encourage the development of additional DSU capacity.</p>

¹⁸<https://www.sem-o.com/documents/general-publications/SEM-Rel-F-High-Level-Impact-AssessmentV1.0.pdf>

	<p>The Decision paper noted that an optimal solution would be to fully integrate DSUs into the market and calculate actual demand response in order to provide for energy payments for DSUs in the Balancing Market, but in the interim suggested a solution to be compliant with State Aid requirements by October 2020. The development of an enduring solution for DSU energy payment has commenced.</p> <p>As part of this work, the SEM Committee published and consulted on a discussion paper¹⁹, and information paper²⁰ following that consultation, to identify measures that could be implemented on an interim basis to encourage both the formation of appropriate price signals during times of scarcity and demand side response to those signals. The SEM Committee published a consultation paper²¹ in July 2022 on enduring energy settlement arrangements for DSUs, which included options for how and when DSUs could retain energy settlement in the medium and longer term. This outlined the potential for further improved interim arrangements while also outlining developments required in the longer term. A decision paper²² was published in Nov 2022, which sets out a two phase approach to implementing energy payments for DSUs, with DSUs to receive energy payments at all times from phase 1 onwards.</p> <p>The TSOs, as part of the Shaping Our Electricity Future Roadmap, are developing a Demand Side Strategy. This strategy intends to consider how demand side response can currently meet TSO needs, how it can meet these needs in the future, and areas of work required to enable demand side response to provide the most value it can.</p>	
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¹⁹ <https://www.semcommittee.com/sites/semc/files/media-files/SEM-21-042%20Discussion%20Paper%20on%20Scarcity%20Pricing%20and%20Demand%20Response.pdf>

²⁰ <https://www.semcommittee.com/sites/semc/files/media-files/SEM-21-083%20Information%20Paper%20on%20Scarcity%20Pricing%20and%20Demand%20Response.pdf>

²¹ https://www.semcommittee.com/sites/semc/files/media-files/SEM-22-036%20SEMC%20Consultation_Enduring%20Energy%20Payments.pdf

²² [SEMC Decision Paper \(SEM-22-090\) - DSU Energy Payments November 2022.pdf \(semcommittee.com\)](#)

<p>Enhanced Interconnection</p>	<p>During 2022 the CRU has worked with the Greenlink and Celtic IC to take them through to a final investment decision. CRU has provided the necessary decision, consents, and licences for the projects to move to the decision step.</p> <p>In March 2022 the Greenlink IC final investment decision was taken. Construction is underway and the interconnector is expected to be operational in late 2024. The cost recovery model for the Celtic Interconnector was determined by CRU and published on 11 February 2022²³</p> <p>The Celtic Interconnector Cross Border Cost Allocation methodology was published on 9 November 2022²⁴</p> <p>The Projects of Common Interest (PCI) Authority (An Bord Pleanála) issued its PCI Comprehensive Decision for Celtic in October 2022. In addition, agreements were signed for €800m of financing to be provided by the European Investment Bank, Danske Bank, Barclays and BNP. EirGrid and RTE awarded the contracts for both the cable-laying activities and construction of the converter stations.</p> <p>In November 2022 the Celtic IC final investment decision was taken. The project is moving to construction phase in 2023. The IC is due to be operational in 2027. The Greenlink Interconnector Project commenced construction works in 2022 and is expected to be energised in 2024.</p> <p>In October 2022, the NI Court of Appeal provided its judgement in relation to the appeal brought by the Department for Infrastructure in relation to the North South Interconnector. The judgement found that the Minister for Infrastructure acted lawfully by making the North South planning decision without recourse to the Stormont Executive Committee. This means the project now has planning consent in both jurisdictions.</p>	<p>New interconnection between the SEM and GB and with Member States in addition to improved interconnection between Ireland and Northern Ireland will strengthen the resilience of the all-island electricity system.</p>
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²³ [CRU202213-Celtic-Electricity-Interconnector-EirGrid-Regulatory-Framework-Request-decision.pdf](#)

²⁴ [Celtic Electricity Interconnector - Commission for Regulation of Utilities \(cru.ie\)](#)

	As a result of the extensive planning process and subsequent legal challenges, EirGrid and SONI are now anticipating that the North South Interconnector will be completed by 2026.	
Grid Development	Working with EirGrid and ESB Networks, the CRU has implemented the PR5 electricity network price control which provides additional revenues and incentives to invest in electricity networks.	Further grid development will reduce constraints on the system and redispatching requirements and allow more efficient use of generation resources.
RESS High Level Design/Competitive Auction	<p>The RESS 1 Auction concluded in 2020 with a total of 114 projects applying to participate. A total Deemed Energy Quantity of 2336.652 GWh was successful with a GWh-weighted average Strike Price of 74.08 €/MWh.</p> <p>RESS 2 auction concluded in May 2022. A total Deemed Energy Quantity of 2,748 GWh were successful equating to 414 MW of onshore wind and 1,534 MW of solar. The auction successfully delivered 2,700GWh and greater generation diversification with solar comprising 55% of total. The successful projects in RESS 2 represent a potential increase of nearly 20% in Ireland's current renewable electricity generation capacity. RESS 2 projects that have received a Letter of Offer have a commercial operation longstop date of the 30th September 2025. Projects can receive early RESS support with Commercial Operation from 1st April 2023.</p> <p>The third round of auctions, RESS 3, is scheduled to commence in Q2 2023. Preparatory work started in February 2022. Consultation document on potential changes to Terms and Conditions published October 2022.</p>	<p>The first Offshore RESS (ORESS) auction will be a major step in meeting the ambition for up to 80% renewable electricity by 2030 as set out in the National Development Plan and the Climate Action Plan 2021. It will also support the achievement of the increased ambition set out under the Climate Action and Low Carbon Development (Amendment) Act 2021 and the policies and measures in the Climate Action Plan 2021.</p> <p>The RESS also increases energy security and sustainability.</p>

	Work on the first offshore competition (ORESS) commenced. Auction timetable published November 2022. Auction scheduled for April 2023	
Smart Metering	2021 saw a reduction in the number of smart meter exchanges due to supply chain issues as a result of the Covid-19 pandemic, however ESNB is still expected to reach almost 500,000 meter exchanges by the end of 2022. ESNB has recently indicated that they expect to have exchanged 80% of all meters by the end of 2024.	As the Smart Metering Rollout progresses, more customers will have access to dynamic pricing and the ability to take a more active role in the energy market.
North Sea Design/ Offshore Renewable Energy	<p>In 2022 the CRU has decided on grid access and charging rules for Phase 1 offshore projects. All projects are being issued a grid connection assessment which is necessary for them to be eligible to participate in the ORESS in 2023.</p> <p>In late 2022 the CRU has published a consultation on Phase 1 asset treatment. A decision is expected early Q1 2023. ORESS1 is scheduled to commence and complete in Q2/Q3 of 2023 with successful Offshore phase 1 project bidders proceeding to develop and construct their projects with energisations expected from 2027</p>	The development of an offshore electricity grid, in tandem with new interconnection will allow Ireland to balance its significant renewables potential with security of electricity supply and develop long-term ambitions to export offshore renewable resources.
Market Parameters	<p>In 2022 CRU commenced a project to recalculate VoLL on the basis of consumer surveys, in accordance with the ACER methodology. In tandem, a project to calculate the Best New Entrant in the SEM, or Cost of New Entry was carried out. The approval of these values is anticipated in Q1 2023 Following the calculation of VoLL, allowing the Reliability Standard to be calculated according to the ACER methodology.</p> <p>In April 2021, the RAs and TSOs issued consultations on the compliance of the SEM with EBGL following the conclusion of this analysis of compliance of the SEM arrangements, with the individual requirements in EBGL including</p>	An increased VoLL would raise the technical price cap of the balancing market (set at 100% VoLL) and the administered scarcity price floor of the SEM (set at 25% VoLL), which could increase the delivery incentive for generation and demand response and enhance adequacy. An increased VoLL would also produce a tighter Reliability Standard, leading to

	the relevant European methodologies.[1] A decision on this is expected in Q1 2023.	additional capacity being contracted through the capacity market.
Climate Action Plan		Please See Section 2
NECP	The 2019 NECP was prepared to incorporate all planned policies and measures that were identified up to the end of 2019 and which collectively deliver a 30% reduction by 2030 in non-ETS greenhouse gas emissions (from 2005 levels). It was delivered in 2020	Ireland is currently developing policies and measures to be integrated into a revision of the NECP for increasing the overall EU contribution.

4.2 Updates regarding resource adequacy and timelines of planned actions

In Ireland, a number of electricity security of supply risks have been identified. The short-term risks are mainly related to low availability of existing generation capacity. They are set out in more detail in EirGrid's recently published Winter Outlook 2022-23²⁵.

A confluence of several factors has led to declining capacity margins. These factors include increasing demand as the economy grows, an aging generation fleet that is experiencing increased levels of forced outages, the expected closure of plant with emission limits that exceed minimum standards, delay to some new generation capacity and the termination of some generation capacity awarded by the market.

EirGrid's Generation Capacity Statement²⁶, which was published in October 2022, predicts a challenging outlook for Ireland, with capacity deficits identified during the 10 years to 2031. Since last year's GCS, 365 MW of previously awarded capacity has been withdrawn which is in addition to the previous 266 MW which terminated. This means that most new capacity that was expected to come online over the next few years has now withdrawn. In addition, the median forecast estimates that demand for electricity will increase 37% by 2031 primarily due to the growth of large energy users such as data centres, and also the electrification of heat and transport.

The CRU, which has statutory responsibility for ensuring security of electricity supply, published an information note²⁷ in September 2021 setting out the programme of actions that are being implemented in order to ensure security of electricity supply.

CRU Security of Supply Programme of Actions

A number of measures to address these issues were set out in the CRU's Security of Supply Programme of Actions Information Note²⁸ and these are reflected in updates to the measures identified in the 2020 Implementation Plan, as appropriate.

A number of planned measures have been identified to address the resource adequacy issues. These include the following actions which are set out in greater detail in CRU21115:

²⁵ [210963-EirGrid-Winter-Outlook-2022-2023.pdf \(eirgridgroup.com\)](#).

²⁶ [EirGrid SONI Ireland Capacity Outlook 2022-2031.pdf \(eirgridgroup.com\)](#).

²⁷ <https://www.cru.ie/wp-content/uploads/2021/09/CRU21115-Security-of-Electricity-Supply-%E2%80%93-Programme-of-Actions.pdf>.

²⁸ <https://www.cru.ie/wp-content/uploads/2021/09/CRU21115-Security-of-Electricity-Supply-%E2%80%93-Programme-of-Actions.pdf>

1. The development of circa 2000MW of additional flexible gas-fired generation capacity to be incentivised via the capacity market..Approximately 1360 GW of derated new gas-fired capacity has been procured in ROI since the publication of the Programme of Actions, via the T-3 24/25 and T-4 25/26 Capacity Auctions.
2. The provision of temporary emergency generation capacity where necessary to provide backup capacity in the short-term.
CRU issued a direction under section 28(10) of S.I. 60 of 2005 to EirGrid to secure circa 250 MW of Emergency Generation in October 2021 which is known as TEG1 (Temporary Emergency Generation 1). In June 2022 CRU issued a further direction to EirGrid to secure c. 450MW of Emergency Generation (TEG2). Works to progress TEG 1 and TEG 2 are now underway with deliver expected for Winter 2023/24.
3. The consideration of extending the operation of circa 1,200MW of older generation capacity due to close in the coming years until such time as replacement generation capacity is developed. A programme of work in this area is ongoing.
4. Assessment of pricing and market signals to stimulate demand side response.
Progress on this is summarized in Table 2, under Demand Side Participation .
5. A review of connection policies for large energy users such as data centres.²⁹

Retail markets

The CRU, with the Department and ESBN (the Distribution System Operator) is supporting the development of an enabling framework for electricity customers who install renewable generation on their own site or premises which may have surplus electricity exceeding their demand. The CRU has commenced development of a regulatory framework to ensure that these customers are paid for the surplus electricity which they export, at a rate which is reflective of the market value. This will align with the National Smart Metering Programme, with an interim solution under development in the short term prior to implementation of a more advanced, enduring solution which will be fully integrated into the retail central market systems in Phase 3 of the National Smart Metering Programme (2023 – 2025). A Consultation on this Interim Clean Export Guarantee was published in October 2021³⁰, followed by a Decision in December 2021³¹.

²⁹ <https://www.cru.ie/wp-content/uploads/2021/11/CRU21124-CRU-Direction-to-the-System-Operators-related-to-Data-Centre-grid-connection-processing.pdf>

³⁰ <https://www.cru.ie/wp-content/uploads/2021/10/CRU21117-CRU-Consultation-Paper-on-Interim-Clean-Export-Guarantee .pdf>

³¹ CRU21131-Interim-Clean-Export-Guarantee-Decision-Paper.pdf

In 2021, the CRU also published a Consultation on the implementation of an enabling regulatory framework for Energy Communities and Active Consumers as part of the Electricity and Renewables Directives of the Clean Energy Package³².

Table 3 below outlines the timelines for the measures outlined in Tables 1 and 2 and the rationale for any changes to timelines set out in the Implementation Plan. These measures are integrated with annual workplans within relevant organisations.

Table 3: Timelines for measures in Tables 1 and 2

	Explanation of timelines	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Value of lost load, the cost of new entry for generation or demand response and the reliability standard	Calculation of a new single VoLL, CoNE and Reliability Standard by Q1 2023.										
Implementation of cross border participation in capacity mechanisms	To be implemented once interconnected with a MS										
DS3/Competitive System Services Procurement	Progress on RoCoF trial, Decision published system service future arrangements implementation estimated in 2025										
Connection process	Decision on firm access methodology to be										

³² https://www.cru.ie/document_group/energy-communities-and-active-consumers/

	Explanation of timelines	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
	published early 2023										
Demand Side Participation	Development of enduring DSU energy payments mechanism commenced										
Enhanced Interconnection	Greenlink 2024 Celtic 2026, N-S 2025										
Grid Development	Ongoing, PR5 decision covers investment in 2021-25 period										
RESS High Level Design/Competitive Auction	RESS 1 & 2 complete, RESS 3 and RESS Offshore in 2023										
Smart Metering	Phase 1 complete, Phase 2 & 3 delayed by 9 months										
North Sea Design/Offshore Renewable Energy	ORESS 1 T&Cs published										
Review of BM pricing and EBGL compliance	Consultation process ongoing, with implementation expected										

	Explanation of timelines	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
	following recoupling through the Celtic IC										