Rialtas na hÉireann
Government of Ireland

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

2022

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

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1 Section 1: Annual Monitoring Report Objectives

Monitoring Reports and Market Reform Plan for Ireland

1.1 Introduction

1.1.1 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 (CRU in Ireland and the Utility Regulator 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.

As the SEM includes a capacity mechanism, the plan reflects the recognition 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, EirGrid, SONI and SEMC papers as well as in Government policy documents.

1.1.2 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 first Monitoring Report has been prepared in fulfilment of this requirement for Commission opinion under Article 20 (7).

This report contains updates on the progress to date achieved towards measures detailed in the Implementation Plan relating to Market Reform, Resource Adequacy, I SEM Project[1] reform measures, 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 submission of a Market Reform 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").

[1] The Integrated Single Electricity Market (I-SEM) project was a radical overhaul of Ireland's all-island SEM, which demonstrated Ireland's strong commitment to the integration of European electricity markets. The difficulty of implementing this in practical terms was illustrated in the complexity and duration of the I-SEM market redesign project, which took 6 years and only launched in October 2018.

This report sets out the progress of measures identified in the Market Reform Plan submitted to the Commission on 16 December 2019 and updated to reflect DG ENER's Opinion on 27 July 2020. This report is structured as follows:

a) A chronological list of all previously submitted Monitoring Reports and the Market Reform Plan for Ireland is included in Section 1.

b) An overview of progress since submission of the Market Reform Plan in 2020, highlighting the most recent updates is included in Section 2.

c) Section 3 provides 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's[2] 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 where they relate to the same wholesale electricity market.

[2] https://ec.europa.eu/energy/sites/ener/files/market_reform_plan_northern_ireland.pdf

2 Section 2: 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 2019[3] 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 Project Ireland 2040 process and included all the climate and energy measures set out in the National Development Plan 2018-2027[4].

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 2020[5]. 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

[3] gov.ie - Climate Action Plan 2019 (www.gov.ie)

[4] gov.ie - National Development Plan 2018 - 2027 (www.gov.ie)

[5] National energy and climate plans (NECPs) | Energy (europa.eu)

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 Future[6], 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) Act[7], 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.

The Climate Action Plan 2021: The Climate Action Plan 2021[8] (CAP 2021), which was published on 4 November 2021, sets out the actions that must be taken in every Government Department and State Body in order to ensure we achieve our 2030 targets, set us on a pathway to climate neutrality by 2050 at the latest, and make Ireland a leader in responding to climate change. Subsequent plans will meet all statutory requirements of the Climate Act, as it is expected that carbon budgets and sectoral emissions ceilings will be in place in accordance with the Act.

As with the Climate Action Plan 2019, 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 up to 80% where achievable and cost effective, without compromising security of electricity supply

[6] gov.ie - Programme for Government: Our Shared Future (www.gov.ie)

[7] Climate Action and Low Carbon Development (Amendment) Act 2021 (irishstatutebook.ie)

[8] gov.ie - Climate Action Plan 2021 (www.gov.ie)

- At least 500 MW of these renewables will be delivered through local community-based projects, subject to competition as appropriate
- 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 (to Northern Ireland, Great Britain, and the EU)
- Explore further interconnection, including hybrid interconnectors, to other countries
- Expand and reinforce the grid – through the addition of lines, substations, and new technologies
- Complete the phase-out of coal and peat-fired electricity generation
- Ensure that 20-30% of system demand is flexible by 2030

2.1 Market Overview

This section provides an overview of total demand in Ireland and the generation mix in 2020 overall and so far in 2021. An overview of cross-border trade and pricing in the ex-ante markets is provided along with an update on adequacy issues for Ireland.

In 2020, the Covid-19 pandemic led to unforeseen world-wide disruption across many sectors. The energy market has been impacted with a number of generators postponing maintenance outages from the summer months due to unavailability of specialist resources and materials from overseas. This has impacted on existing infrastructure along with the development of infrastructure in support of new renewable technologies.

For 2020, the total electricity demand in Ireland was 30.8 TWh. The 2021-2030 EirGrid Generation Capacity Statement[9] 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.

[9] https://www.eirgridgroup.com/site-files/library/EirGrid/208281-All-Island-Generation-Capacity-Statement-LR13A.pdf

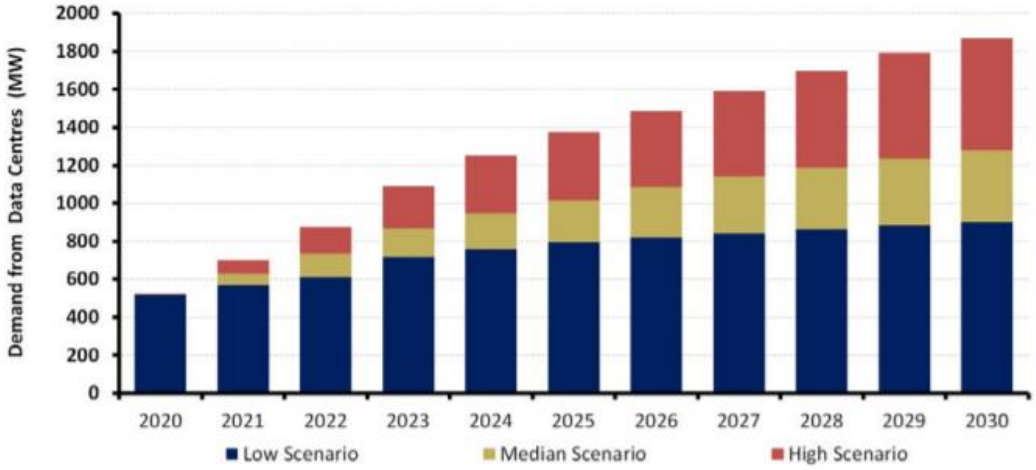

Figure 1: Low, Median and High demand growth scenarios for data centres, EirGrid and SONI 2021-2030 GCS

The overall fuel mix for Ireland in 2020 is shown in Figure 2 below.

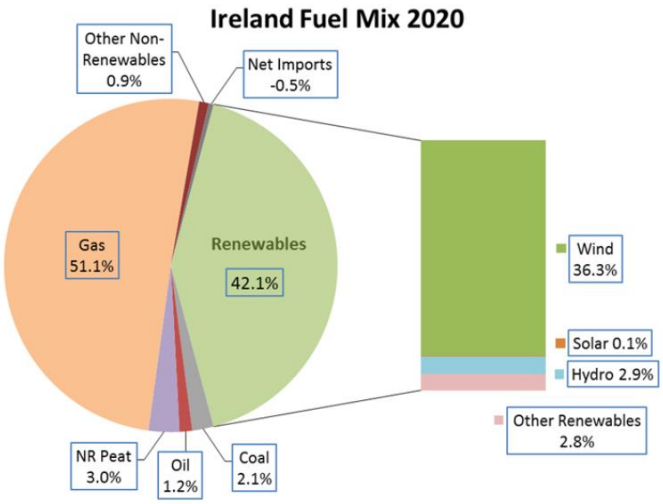

Figure 2: Ireland Fuel Mix 2020, EirGrid system and renewable data[10]

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 outages at two key gas-fired power stations over the majority of 2021.

[10] https://www.eirgridgroup.com/how-the-grid-works/renewables/

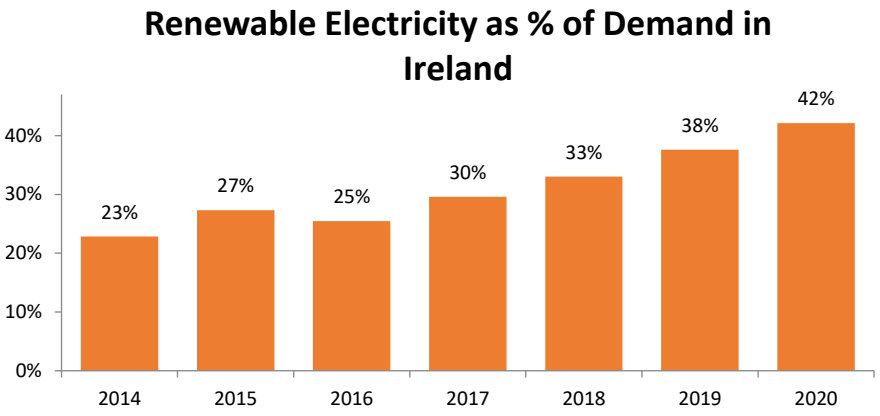

Figure 3: Renewable Electricity as % of demand in Ireland

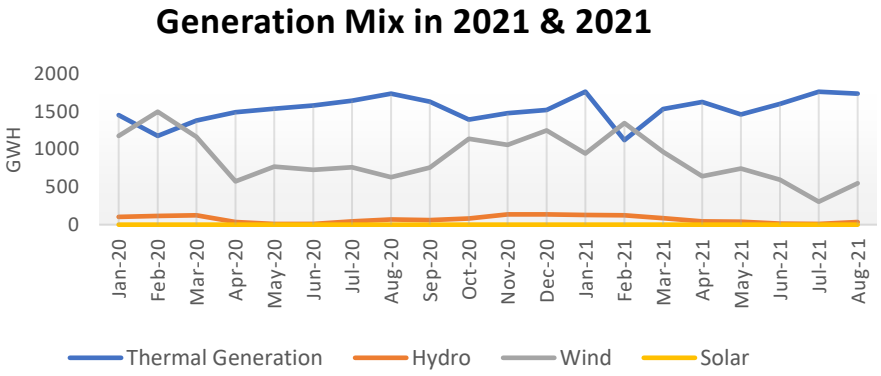

Figure 4: Generation Mix 2020-21

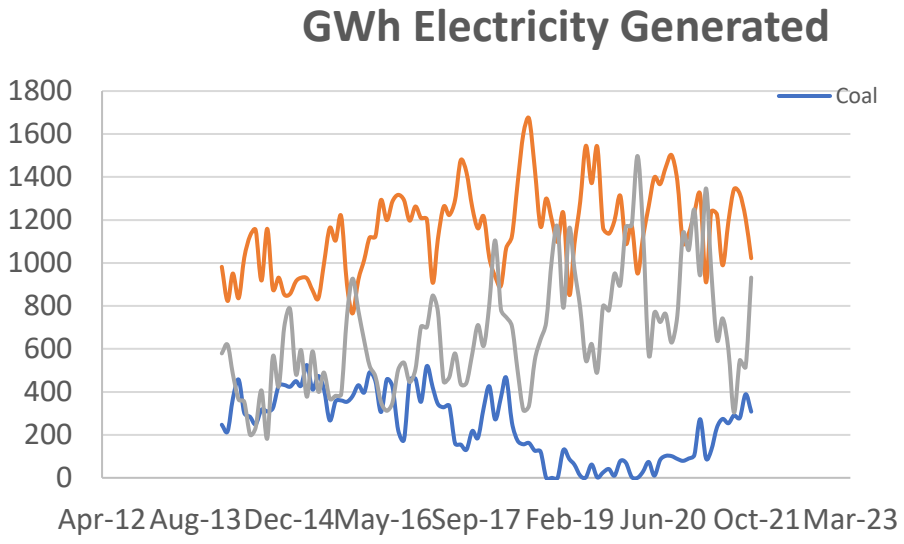

Figure 5: Electricity Generated figures since 2012

Ireland is interconnected to GB through the 500MW East West Interconnector. It is also 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 the surplus power[11]. 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 2020/21 is expected to be 450 MW[12]. 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. The Greenlink Interconnector is planned for commissioning in 2024 and is proposed to link the transmission grids in Ireland and Wales with 500MW capacity.

As of 1 January 2021, cross border capacity is no longer coupled through the Day Ahead Market (DAM) in the SEM, with cross border trading taking place only in the intraday timeframe (IDA). 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. Prices in the DAM and IDM have increased in 2021 as a result of increased wholesale fuel prices, carbon costs, generator outages and lower wind on the system. Figure 6 shows average DAM and IDM prices for 2019, 2020 and 2021.

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

[12] 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.

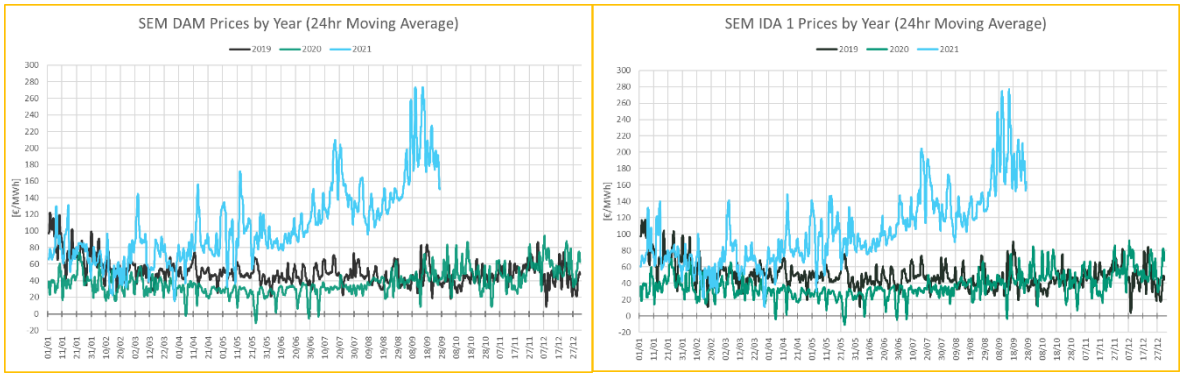

Figure 6: DAM and IDA prices in the SEM

In 2020, there was a net export of 153GWh in cross border trade between Ireland and the UK. Between January and October 2021, there was a net import of 1,672GWh reflecting the tight generation margins in Ireland. In the comparable ten-month period between Jan and Oct 2020 there was a net export of 90 GWh.

3 Section 3: Overview of Measures Provided in the Final Implementation Plan

Changes to Measures in Final Implementation Plan

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 provides an update on implementation of these measures as of December 2021.

Table 1: Overview of Measures in Implementation Plan

	Overview	Changes
Removing Price Caps	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. 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. 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.	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 technical price limits in the interim Intraday Markets are currently under review through the SEM-GB IDA Operations Committee.
Compliance of Capacity mechanism with Article 22(5)	• 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.	No change, updates to implementation of these measures are provided in Table 2.

	• 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.	
DS3/Competitive System Services Procurement	Section 4.1 of the Implementation Plan outlined a number of outstanding areas of work associated with the TSO System Services programme in 2020: • 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. **1. Rate of Change of Frequency (RoCoF)** The ROCOF 1 Hz/s trial commenced in June 2020 and is currently ongoing and expected to be completed in March 2022. 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.	No change. As part of the Shaping Our Electricity Future Technical report[14], the TSO outlined future operational and market changes identified. Further updates to implementation of these measures are provided in Table 2.

[14] https://www.eirgridgroup.com/site-files/library/EirGrid/Full-Technical-Report-on-Shaping-Our-Electricity-Future.pdf

	In March 2021, EirGrid launched its “Shaping Our Electricity Future” consultation which set out a range of credible approaches and options for Ireland to meet its renewable electricity ambitions. In that consultation, EirGrid set out its ambition to be able to operate the power system at SNSP levels up to 95% by 2030. EirGrid will shortly issue the “Shaping Our Electricity Future” roadmap which will take onboard the consultation feedback received and which will, amongst other items, set out the plan for power system operations needed to enable operation at 95% SNSP by 2030. **2. Control Centre Tools** 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. 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. 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. 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. These delays were further exacerbated by the Covid 19 pandemic which limited access between project team members. *Implementation of the Electricity Balancing Guidelines (EBGL) and other Network Codes to open up markets to cross-border service provision* 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. Enhancing the existing suite of services and attracting new service providers to deal with any new technical challenges identified 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. 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. The SysFlex Task 2.6 report has been published online.[13] 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. **3. DS3 Programme Development** A programme of work for the development of Future Arrangements for System Services is progressing. A scoping phase was completed in March 2021. A high-level design phase is	

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

	under consultation by the Regulatory Authorities, with a SEMC decision due at the end of 2021. Thereafter the TSOs will lead the detailed design phase. Future Arrangements are likely to comprise a close to real time auction for at least a subset of system services with other arrangements for the remaining services together with fixed contracts where specific system needs are identified. 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.	
Connection Process	The Commission for Regulation of Utilities (CRU) has determined a connection policy 'Enduring Connection Policy'[15] which is scheduled to run over a minimum of three years in a batch processing format. 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. 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. The System Operators are currently in the midst of issuing offers for the ECP-2.1 batch and are also processing applications for the ECP-2.2 batch. Through ECP-2.1, the SOs will 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 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	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 Phase 1 applicant. Following consultation on this paper the CRU will decide on the criteria for the Phase 1 GCA in early Q1 2022.

[15] https://www.cru.ie/document_group/electricity-connection-policy-2/

	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[16]) 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 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	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. 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.	No change, updates to implementation of these measures are provided in Table 2.
Enhanced Interconnection	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: • Second North-South Interconnector – Earliest possible date for construction to commence is 2022.	No change, updates to implementation of these measures are provided in Table 2. There is a further commitment in Ireland's 2021 Climate Action Plan to update Ireland's interconnector policy

[16] https://www.cru.ie/document_group/offshore-grid-connection/cru21112-proposed-decision-offshore-grid-connection-assessment-phase-1-projects/

	• Celtic Interconnector – 2025/26 • Greenlink interconnector – 2024	to account for Brexit and the amended EU TEN-E Regulation, which is anticipated to be enacted during 2022 following Trilogues
Enhanced Interconnection **(Grid Connection Direction for PCI Projects)**	There are three proposed interconnector projects for the island of Ireland. All are on the 4th Projects of Common Interest (PCI) list and are steadily maturing towards construction. Two will connect with the UK (including NI) and the third with France. **Celtic Interconnector (PC no. 1.6)** PCI no 1.6 is a project promoted by EirGrid and Réseau de Transport d'Electricité (RTE) on France- Ireland Interconnection **Greenlink (PCI no. 1.9.1)** PCI no. 1.9.1 is a Third Party(UK)/ Ireland project for United Kingdom/Ireland interconnection **North-South Interconnector (PCI no. 2.13.1)** PCI no 2.13.1 is a joint EirGrid and SONI project for Ireland-United Kingdom interconnection. **Renewable Integration Development Project, RIDP (PCI no 2.13.2)** PCI no. 2.13.2 was a planned EirGrid and SONI Ireland United Kingdom interconnection project. **Second North-South Interconnector: See Section on Grid Development below** *The Celtic Interconnector* is a proposed 700 MW sub-sea electricity cable linking the 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	2.13.2 EirGrid & SONI Ireland – United Kingdom interconnection (known as Renewable Integration Development Project, RIDP)- Following recent studies, EirGrid has determined, that RIDP I (Renewable Integration Development Project I is no longer necessary in order for Ireland to meet the 2030 renewable energy targets. EirGrid will continue to monitor future development of this project in the context of Ireland's post 2030 energy and climate objectives.

	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. *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 is now at an advanced stage of pre-construction development The Commission for Regulation of Utilities published its regulatory treatment to be offered to the project in September 2021, with this cap and floor arrangement providing certainty over future revenues. **Timelines:** • Second North-South Interconnector – See Section 4.4 Grid Development below • Celtic Interconnector Expected to be completed in 2026. • The Greenlink interconnector – Greenlink is expected to reach financial close before the end of 2021 and will be prospectively completed in 2024.	
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 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: • 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.	No change, updates to implementation of these measures are provided in Table 2.

Grid Development (Transmission Development Plan Update)	EirGrid's Transmission Development Plan [17](TDP) 2020-2029 is the plan for the development of the Irish transmission network and interconnection over the ten years from 2018. This ten-year plan presents projects that are needed for the operation of the transmission network. 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: • 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. Drivers of investment include: • Securing transmission network supplies • Promoting market integration; and • Promoting the integration of Renewable Energy Sources (RES) and complementary thermal generation. 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. 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	EirGrid's Transmission Development Plan (TDP) 2020-2029 is the plan for the development of the Irish transmission network and interconnection over the ten years from 2018. For the Capacity Renumeration Mechanism, additional generation capacity is to be incentivised 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. To date the CRM has not delivered significant new generation capacity.

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

	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, 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.	
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: • 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 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:	North Connaught Grid Upgrade and Kildare-Meath Grid Upgrades are currently underway. A Legal Challenge to the North South Interconnector Project in Northern Ireland was dismissed this October. The North South Interconnector Project is expected to proceed to commence construction.

North South Interconnector Project

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.

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 commenced in recent weeks and is expected to be completed later this year. A legal challenge in Northern Ireland was dismissed this October.

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 as well as the recently published Climate Action Plan 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.

Kildare-Meath Upgrade

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.

	North Connacht Grid Upgrade 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. 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.	
RESS High Level Design/Competitive Auction	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. 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	No change. The second RESS auction terms and conditions went to public consultation in July with the formal announcement of the auction dates to be given shortly. It is expected the auction will conclude by Q2 2022. Further updates to implementation of these measures are provided in Table 2.

	advantage of new technologies as they emerge. The primary elements of the Scheme are listed below: • 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 the plan for initial delivery of 250,000 meters across 2019-2020 and approximately 500,000 meters in each of the four subsequent years. 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. In October 2021 the number of installations exceeded 500,000 and the programme is running at roughly 40,000 instals per month. 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	Updated, revised timelines for this rollout are provided in Table 2.

	also facilitate greater levels of renewable energy to be integrated onto the national grid. 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. 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 empowering them with new tools to make more informed choices about their energy needs. 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.	
North Sea Design/ Offshore Renewable Energy	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. 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	Updated to 5GW of offshore wind in the Programme for Government[18], updates to implementation of these measures are provided in Table 2.

[18] https://www.rte.ie/documents/news/2020/06/draft-programme-for-govt.pdf

	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. 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. 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. 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.	
Market Parameters	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). 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. 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.	Updated, revised timelines for this are 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

4 Section 4: Status Updates

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

Topic	Action Taken	Impact on Adequacy Concern
Removing Price Caps	Discussions have begun between within the Intraday Market Operations Committee on revising the technical price cap of €1500/MWh to match the value of €3000/MWh in the DAM.	This change will potentially result in higher prices in the coupled IDM between the SEM and GB reflecting times of relative generation scarcity.
Compliance of Capacity mechanism with Article 22(5)	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[19]. 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. 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 the SEM. In relation to cross border Capacity Market participation, the RAs fed into the ACER consultations and	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. 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.

[19] https://www.semcommittee.com/sites/semc/files/media-files/SEM-20-036 CEP Technical Guidance Information Note.pdf

https://www.semcommittee.com/sites/semc/files/media-files/SEM-20-026 CMC Mods WG12 CMC_05_20 Decision Paper.pdf

	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)[20]	
DS3/Competitive System Services Procurement	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 TSOs[21]. The TSOs are currently undertaking 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 TSOs recent publication 'Shaping our Electricity Future'[22] 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. A Consultation (SEM-21-069) was published in September 2021, following an initial scoping paper published in July 2020.	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. 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.

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

[21] https://www.sem-o.com/documents/general-publications/Wk42_2021_Weekly_Operational_Constraints_Update_Rev1.pdf

[22] https://www.eirgridgroup.com/site-files/library/EirGrid/Full-Technical-Report-on-Shaping-Our-Electricity-Future.pdf

	In summary the SEM Committee is proposing to: 1. Build upon existing governance arrangements by formalising the processes and ensure adequate consultation between the TSOs, DSOs, and industry 2. Put in place a Post-DAM daily System Services auction consistent with EU requirements coupled with a layered procurement approach to allow for longer timeframes where appropriate; and 3. Set out a range of market design issues to be progressed in the detailed design phase.	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.
Demand Side Participation	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. Modification 17_19 was raised to the Trading and Settlement Code and was implemented in the SEM through a market system release[23] 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. The Decision paper noted that an optimal solution would be to fully integrate DSUs into the market and	This work area intends to enhance the responsiveness of existing demand side units and develop additional DSU capacity.

[23] https://www.sem-o.com/documents/general-publications/SEM-Rel-F-High-Level-Impact-AssessmentV1.0.pdf

	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 and is being prioritised as an area to develop additional demand side capacity. As part of this work, the SEM Committee issued a call for evidence exploring short and medium-term methods to improve the commercial signals to existing (and prospective) Demand Side Units in the SEM.	
Enhanced Interconnection	Work has advanced on the development of 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. On 2 June 2021 the CRU published a Consultation on a proposed Cost Recovery Model for EirGrid in developing the Celtic Electricity Interconnector[24]. On 30 September 2021 the CRU published its decision paper on the Cap and Floor regulatory framework for the Greenlink electricity interconnector[25]. This is in addition to the critical importance of completing the North-South interconnector, which received planning permission approval in Northern Ireland in September 2020.	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.

[24] https://www.cru.ie/document_group/celtic-electricity-interconnector/

[25] https://www.cru.ie/document_group/greenlink-electricity-interconnector/

Grid Development	Working with EirGrid and ESB Networks, the CRU is currently advancing work on the implementation of 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	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. A Consultation on the second onshore Renewable Electricity Support Scheme (RESS 2) design and implementation was published by the Department in June 2021 and closed for responses in early August. It is anticipated that the second RESS auction will take place in early 2022.	The RESS 2 auction will be a major step in meeting the ambition set out in the Programme for Government of at least 70% renewable electricity by 2030. This 70% was subsequently revised upwards to 80% in the NDP and the CAP 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. The RESS also increases energy security and sustainability.
Smart Metering	Approximately 250,000 smart meters were installed in Phase 1 (2019-2020) of the National Smart Metering Programme. Smart services including remote reads, Time-of-Use (ToU) tariffs, smart bills, access to historical consumption information went live on 26 February 2021. Smart meters can now facilitate smart services that can provide more frequent and accurate information on customer's electricity usage and reduce the need for estimated bills. 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. Under Phase 2, 500,000 meters were initially planned to be installed each year (2021- 2022) and Phase 3 (2023-2024). Covid-19, national policies and the transposition of the Clean Energy Package presented some challenges, and a re-scoping exercise was carried	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.

	out for Phase 2[26], resulting in the end date for Phase 2 and the commencement of Phase 3 extended by 9 months. Smart PAYG functionality will be available from the end of Phase 2 in 2023 and the CRU published a Decision on the Smart PAYG Policy in September 2021.	
North Sea Design/ Offshore Renewable Energy	The Department for Environment, Climate and Communications "Policy Statement on the Framework for Ireland's Offshore Electricity System"[27] designated EirGrid as the Transmission System Operator (TSO) and asset owner for Ireland's offshore transmission grid. This also outlined the policy for three phases of offshore generation projects to be developed in alignment with three offshore support auctions. In October 2021, the draft Terms and Conditions for the first Offshore Wind RESS Competition[28] were also published for consultation. The CRU also published a Proposed Decision on the generation connection policy[29] to apply to the first phase of offshore generation projects.	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	CRU have commenced the project to recalculate VoLL in accordance with the ACER methodology, which is expected to complete in Q2 2022. Following the calculation of VoLL, the Reliability Standard will also be calculated according to the ACER methodology. The SEM Committee conducted a review of market pricing based on outturn Balancing Market prices in 2019 and early 2020, which fed into a	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

[26] https://www.cru.ie/wp-content/uploads/2021/07/CRU21074-CRU-Information-Paper-on-Phase-2-Scope-of-the-NSMP.pdf

[27] https://www.gov.ie/en/publication/5ec24-policy-statement-on-the-framework-for-irelands-offshore-electricity-transmission-system/

[28] https://www.gov.ie/en/consultation/f55dc-public-consultation-on-the-draft-terms-and-conditions-of-the-first-offshore-competition-under-the-renewable-electricity-support-scheme-oress-1/

[29] https://www.cru.ie/wp-content/uploads/2021/10/CRU21112-Proposed-Decision-Offshore-Grid-Connection-Assessment-Phase-1-projects.pdf

	broader review of the Balancing Market and compliance with the Electricity Balancing Guideline. Since December 2019 the Regulatory Authorities (RAs), the TSOs, and SEMO have been carrying out a compliance assessment between EBGL requirements and local market arrangements. This work followed on from a detailed analysis carried out during 2019 of how the SEM might integrate with the EBGL platforms for the exchange of replacement reserves (RR), and manual Frequency Restoration Reserves (mFRR). 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 the relevant European methodologies.[30]	tighter Reliability Standard, leading to 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.

[30] https://www.semcommittee.com/sites/semc/files/media-files/SEM-21-017%20EirGrid%20and%20SONI%20Analysis%20of%20SEM%20Compliance%20with%20Guideline%20on%20Electricity%20Balancing.pdf

https://www.semcommittee.com/publications/sem-21-016-regulatory-authorities-consultation-compliance-sem-eu-electricity-balancing

4.1 Updates Regarding Resource Adequacy and 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 2021-22[31].

EirGrid's Generation Capacity Statement[32], which was published in September 2021, sets out a significant generation capacity shortage of circa 2,000 MW (approximately one-third of peak demand) by the middle of the decade.

The CRU, which has statutory responsibility for ensuring security of electricity supply, published an information note[33] in September setting out the programme of actions that are being implemented in order to ensure security of electricity supply.

The capacity margin for each winter has reduced each year for the past five years due to increasing demand, dispatchable generation exiting the market and increasing generator forced outage rates, leading to a number of System Alerts in 2020 and 2021. There has been limited new dispatchable generation capacity entering the market in recent years.

Significant demand growth is forecast primarily through large energy users – including new Data Centre connections – and also the electrification of heating and transport. At the same time, a number of older, power stations are due to close in line with targets for decarbonisation and compliance with emission limits. Availability of the current generation fleet continues to decline with higher forced outage rates.

The capacity market has sought to incentivise additional generation to ensure these adequacy challenges are addressed but circa 500 MW procured for delivery in 2022/23 has failed to deliver. In addition, there has been limited other new dispatchable generation contracted under the capacity market.

[31] https://www.eirgridgroup.com/site-files/library/EirGrid/Winter-Outlook-2021-2022.pdf.

[32]https://www.eirgridgroup.com/site-files/library/EirGrid/208281-All-Island-Generation-Capacity-Statement-LR13A.pdf.

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

CRU Security of Supply Programme of Actions

A number of measures to address these issues have been set out in the CRU's recent Security of Supply Programme of Actions Information Note[34] and these are reflected in updates to the measures identified in the 2020 Implementation Plan.

In terms of (i) general wholesale market conditions, 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:

1. The development of circa 2000MW of additional flexible gas-fired generation capacity to be incentivised via the capacity market.
2. The provision of temporary emergency generation capacity where necessary in the short-term.
3. The consideration of extending the operation of circa 1,500MW of older generation due to close in the coming years until such time as replacement generation capacity is developed.
4. Assessment of pricing and market signals to stimulate demand side response.
5. Revised connection policies for large energy users such as data centres.

In terms of (iv) 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

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

Programme (2023 – 2025). A Consultation on this Interim Clean Export Guarantee was published in October 2021[35], followed by a Decision in December 2021[36] .

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 Package[37].

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 2s

	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	A new single VoLL by Q2 2022.										
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, system service future arrangements currently in development										
Demand Side Participation	Development of enduring DSU energy payments mechanism commenced										
Enhanced Interconnection	Greenlink 2024 Celtic 2026, N-S TBA										
Grid Development	Ongoing, PR5 decision covers investment in										

[35] https://www.cru.ie/wp-content/uploads/2021/10/CRU21117-CRU-Consultation-Paper-on-Interim-Clean-Export-Guarantee_.pdf

[36] CRU21131-Interim-Clean-Export-Guarantee-Decision-Paper.pdf

[37] https://www.cru.ie/document_group/energy-communities-and-active-consumers/

	Explanation of timelines	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
	2021-25 period										
RESS High Level Design/Competitive Auction	RESS 1 complete, RESS 2 in 2022										
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 following recoupling through the Celtic IC										