

Transmission Development Plan 2020-2029 Consultation Report



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1 Abbreviations

| | |
|-------|---|
| ATR | Associated Transmission Reinforcement |
| CRU | Commission for Regulation of Utilities |
| DSO | Distribution System Operator |
| ESB | Electricity Supply Board |
| FAQ | Firm Access Quantity |
| SONI | System Operator Northern Ireland |
| TDP | Transmission Development Plan |
| TSO | Transmission System Operator |
| TSSPS | Transmission System Security and Planning Standards |

2 Glossary

Associated Transmission Reinforcement (ATR)

ATRs are the transmission reinforcements that must be completed in order for a generator to be allocated Firm Access Quantity (FAQ). ATRs include reinforcements such as circuit and busbar upratings, new stations and new circuits.

Firm Access Quantity (FAQ)

The level of firm financial access available in the transmission network for a generator is that generator's FAQ. Firm financial access means that if the power produced by a generator is constrained down, it is eligible for compensation in the manner set out in the Trading and Settlement code.

3 Introduction

As the Transmission System Operator (TSO) for Ireland, EirGrid is responsible for the development of the electricity transmission network. We are obliged to develop a safe, secure, reliable, economical, and efficient transmission network to meet all reasonable demands for electricity, in accordance with our license conditions.

We plan the development of the electricity transmission network taking account of the long-term electricity system needs and the relative performance of various development options.

We have both statutory¹ and licence² obligations to produce a Transmission Development Plan (TDP) annually. Before the TDP can be approved, the Commission for Regulation of Utilities (CRU) is obliged to hold a public consultation on the draft TDP³. Based on the responses to the consultation we update the draft TDP where necessary, and submit a consultation report alongside the final TDP for approval to the CRU.

This document is the consultation report on the TDP 2020-2029 (TDP 2020) consultation. It describes the consultation process and provides an overview of the submissions received, our responses to the issues raised and the changes that we will make to the draft TDP 2020 in response to the feedback received.

4 Description of consultation process

The CRU held the public consultation on the draft TDP 2020. The draft TDP was published for consultation on the CRU website on 23 April 2021 and the consultation closed on 21 May 2021.

A notification of CRU's consultation was sent, via email, to the CRU's stakeholders subscribed to CRU's info@cru.ie mailing list.

5 Purpose of the Transmission Development Plan

National and European strategic energy policy objectives set the context for investment in the Irish electricity transmission network to ensure security of electricity supply, competitiveness of the national economy, and long-term sustainability of electricity supply in the country. To achieve these strategic objectives, it is necessary to invest in the development and maintenance of the electricity transmission network.

The primary objective of the TDP is to describe the transmission network reinforcements planned for the next ten years. The TDP explains:

- Our approach to network development;
- The drivers for investment, both policy drivers and technical drivers;
- The needs of the transmission network; and
- The planned network developments with expected project completion dates.

¹ Statutory Instrument No. 445 of 2000 (Paragraph 8) and EU Directive 2009/72 (Article 22)

² TSO Licence (Condition 8)

³ European Directive 2009/72 (Article 22)

In so doing, the TDP raises awareness of planned network reinforcements. It is important to note that the TDP is neither a strategy-forming nor a policy-forming document.

6 Responses to the consultation

The CRU received six submissions in response to the consultation. These were from:

- Bord Gáis Energy;
- Coillte;
- EDF Renewables Ireland;
- Energia;
- Tullynamoyle Wind Farm 3 Limited; and
- Wind Energy Ireland.

EirGrid takes a consultative approach to grid development and we place stakeholders at the heart of all decisions taken in relation to how we develop the grid. We would like to thank all parties for their responses. All responses were reviewed and considered and where possible, we have incorporated feedback into the final TDP 2020-2029. In addition, relevant feedback that was not incorporated in the current TDP has been noted and will be considered for future TDPs.

In the following sections we summarise and respond to the submissions.

6.1 Welcome for the opportunity to respond to the TDP consultation.

All respondents welcomed the opportunity provided by the CRU's consultation process to comment on the plan. EirGrid is pleased that there is support for the consultative approach taken to the development of the TDP and we will continue to work with our stakeholders on development of the TDP.

6.2 Grid development and 2030 renewable electricity target

6.2.1 Comments received

A number of respondents are concerned that the existing grid and the upgrades proposed do not adequately support delivery of the Government's 70% renewable electricity (RES-E) target by 2030 due to the lack of, and timing of, network development which is needed to facilitate the connection of renewable generation.

There are also concerns:

- That EirGrid is waiting for connection agreements to be in place before progressing reinforcements. Respondents believe that transmission projects need to be progressed in parallel with the renewables pipeline in order to accommodate the large volumes of renewable generation that will be required, rather than waiting for generators to sign connection offers and become contracted.
- That the TDP should include additional transmission reinforcement projects that cater for the needs identified in the latest Tomorrow's Energy Scenarios (TES) System Needs Assessment (SNA).

- Additionally, respondents also believe that the grid will require significant investment and new transmission circuits in addition to those currently listed, to meet specific needs, in particular those needs in locations such as North-West and South-East regions.

6.2.2 Our response

At the end of 2019, EirGrid and SONI launched their five-year strategy to transform the electricity systems in both jurisdictions. These strategies focus on the transformation of the power system and electricity market, so that 70% RES-E is achieved in Ireland and Northern Ireland by 2030. Achieving 70% RES-E by 2030 has become a legal obligation as part of Ireland's National Energy and Climate Plan 2021-2030, which is Ireland's current contribution to the European Union's effort-sharing approach of the Clean Energy Package. This transformational change needs to take place whilst ensuring the security of supply of electricity is maintained at all times.

EirGrid works to facilitate increased amounts of renewable energy on the grid, which is demonstrated by the use of renewable electricity jumped from 36% in 2019 to 43% last year. We are working to continue increasing the renewable generation aiming to meet our target 2030.

The scale of the impact of the low carbon transition outlined in the Tomorrow's Energy Scenarios (TES) is assessed as part of the System Needs Assessment (SNA) conducted in Ireland. The System Needs Assessment identifies the elements of the transmission system that do not meet the required performance levels in tests selected from the Transmission System Security and Planning Standards. This includes system needs that are driven by the renewables pipeline and connections that do not have connection agreements in place.

In addition to TES and the System Needs Assessment, we will also perform studies to identify candidate solutions required to address needs that are driven by changes to demand, generation and interconnection. These studies, performed as part of step 1 in the grid development process, also consider renewable connections that do not yet have connection agreements. In Spring 2021, we launched a consultation on Shaping Our Electricity Future which detailed different sets of candidate solutions required to achieve the renewable targets of 70% RES-E by 2030. We received approximately 430 responses to the consultation from a wide range of stakeholders.

This feedback is currently being used to prepare the final Shaping Our Electricity Future 2021 roadmap which will be published in autumn 2021. It is anticipated that the final roadmap will identify a number of candidate reinforcement solutions required by 2030 whilst also setting out actions required to appropriately evolve system operations and electricity markets so that renewable targets can be achieved.

Needs identified in the System Needs Assessment and candidate solutions that will be reported in Shaping Our Electricity Future (SOEF) 2021 must be examined in more detail through the six-step framework. As projects progress through the six-step process they will be included in future TDPs.

As stated in the draft TDP 2020, the TDP contains a list of the committed investments as at 01 January 2020. It is anticipated that additional committed investments will be required over the coming years to address reinforcement needs as follows:

- Reinforcements required to support changes in, or connection of new demand and generation;
- Reinforcements related to interconnection;
- Reinforcements to facilitate inter-regional power flows; and
- Reinforcements to address the condition of existing assets.

These additional projects are likely to be influenced by our assessment of the impact of the Government's Climate Action Plan, needs identified in Tomorrow's Energy scenarios and the candidates solutions reported in SOEF 2021. Additional projects will also be required that are driven by new connections of demand and generation, and projects that are driven by the condition of existing assets.

The candidate reinforcements identified in SOEF 2021 will be studied in more detail as part of the framework for grid development. It is important to note that the candidate solutions in SOEF are identified based on performance tests using a subset of the Transmission System Security and Planning Standards (TSSPS). The subset of the standards focus on testing performance of the intact power system and the power system when there is an outage of a single item of transmission equipment, such as a circuit, which is referred to as the single contingency performance test (i.e. N-1). These tests are appropriate as the primary tests of the adequacy of transmission system security at this strategic stage of the analysis. If the project progresses to step 2 in the framework for grid development, the full set of TSSPS tests will be used to assess the performance of the grid (i.e. N-G-1). As projects develop, they will be subject to extensive stakeholder engagement and consultation, if they progress to the appropriate step in the framework for grid development.

System needs and resulting reinforcements identified in SOEF 2021 will vary depending on the location of new generation and demand. We will continuously monitor how system needs are affected by changes to generation, demand and interconnection and adjust to ensure that optimal solutions to these needs are identified. We are working to develop robust solutions that facilitate Ireland meeting its 2030 RES-E target and deliver the best long-term value to electricity consumers.

6.3 Onshore and Offshore wind farms

6.3.1 Comments received

A few respondents were concerned about the lack of transmission capacity, which they believe will be the biggest barrier to delivering the renewable capacities of up to 8.2 GW of onshore wind and 5 GW of offshore wind outlined in the Climate Action Plan 2019⁴ and the

⁴ <https://assets.gov.ie/25419/c97cdecddf8c49ab976e773d4e11e515.pdf>

Programme for Government⁵, respectively. They felt that the market design needs to develop accordingly, to ensure that wind can bid into the market.

On the suggestion of the urgent need to focus on the capacity targets in the Climate Action Plan and Government’s Programme for Government, one respondent argued that it is not enough to deliver the bare minimum by 2030 and believe that EirGrid needs to focus on a target of net-zero emissions by 2050.

It has been suggested to include projects reported as “common reinforcements” in Shaping Our Electricity Future in the TDP 2020-2029.

6.3.2 Our response

EirGrid is preparing for a future electricity system with at least 70% of our electricity coming from renewable sources by 2030. Windfarms are an important part of this and participate actively in the energy market. At the time of writing this consultation report, the power system had experienced an all-time peak load of 6.5 GW which occurred in December 2020, and a maximum all-time wind output of 4.3 GW⁶ which occurred in February 2020, highlighting significant progress in wind power capacity.

Onshore and Offshore wind are a key enabler to Ireland meeting 2030 targets of 70% RES-E. At present, there is 4.3 GW⁷ of wind capacity installed on the power system. This capacity is primarily onshore and is expected to continue to increase in the coming years to address our renewable target 2030. There is approximately 1 GW of new RES generation capacity with planning consent, and 4 GW of new RES generation capacity in the planning process or ongoing into planning before 2023⁸.

We are also working to increase offshore wind capacity; there is currently 25 MW of offshore wind capacity connected to the distribution system. Additionally, EirGrid has been supporting offshore wind integration by:

- Commissioning consultants Guide house (formerly Navigant⁹) to prepare a study on the options for offshore grid delivery model for Ireland, this was completed in March 2020. This was used for a consultation by Government, which held in June 2020.
- Publishing the East Coast Generation Opportunity Assessment¹⁰ report that presents analysis that EirGrid has undertaken to identify the opportunities for connecting new power generation sources in the East coast region of Ireland from a grid capacity perspective. The analysis provided useful information for developers seeking to connect generation in the region.

5 <https://www.gov.ie/en/publication/7e05d-programme-for-government-our-shared-future/>

6 EirGrid Group, System and Renewable Summary Report, 2021.

7 EirGrid Group, Wind Installed Capacities – 1990 to date, 2021.

8

<https://consult.eirgrid.ie/sites/default/files/Full%20Technical%20Report%20on%20Shaping%20Our%20Electricity%20Future.pdf>

9 <http://assets.gov.ie/75918/9659386d-7526-4ebe-8420-8854033250b6.pdf>

10 <http://www.eirgridgroup.com/site-file/library/EirGrid/East-Coast-Generation-Opportunity-Assessment.pdf>

- EirGrid was directed by CRU in January 2020 to accept applications from the *Relevant Projects*, to engage with those projects and to carry out extensive analysis on the east and west coasts along. These analyses have highlighted outcomes such as a number of ongoing infrastructure projects that are already in EirGrid's Framework for Grid Development and will play a role in the integration of offshore wind energy on the east coast. More details of these grid developments, including the project to support the EirGrid's East Generation Opportunity, will be included in future TDPs.

As stated in the draft TDP 2020, the TDP contains a list of the committed investments as at 01 January 2020. Additional projects will be included in subsequent TDPs as a result of our assessment of the impact of the Government's Climate Action Plan and the outputs reported in SOEF 2021.

The SOEF 2021 will be published in the Autumn 2021 and will provide a list candidate solutions that are required to support delivery of Ireland's climate and energy targets, including reinforcements required to support connections of onshore and offshore wind generation. These candidate solutions, and the studies performed to identify them, will be influenced by the feedback received in the SOEF consultation. Proposed candidate solutions will be studied in more detail to confirm if they should progress in the framework for grid development. These projects will be subject to extensive stakeholder engagement and consultation if they progress to the appropriate step in the framework for grid development. Those solutions that progress through the framework for grid development may appear in future versions of the TDP. SOEF 2021 will also outline actions required in system operations and electricity markets to support delivery of the 70% RES-E target by 2030.

Future committed projects that will support grid development in the East Coast will appear in future TDPs, such as the Oriel windfarm to be described in TDP 2021-2030. Regarding the projects identified as "common reinforcements" in *Shaping Our Electricity Future*, these projects will not be reported in TDP 2020 as they have not yet progressed through of the framework for grid development. We have received a lot of feedback in relation the *Shaping Our Electricity Future* consultation and this feedback is currently being used to update our grid models and to identify a revised set of candidate solutions. The revised list will be reported in the final *Shaping Our Electricity Future Roadmap* which will be published in Autumn 2021. If these candidate solutions progress through the framework for grid development, they will appear in later versions of the TDP.

6.4 Interconnection

6.4.1 Comments received

One respondent requested more information about what developments are being pursued to address the connection of the Celtic Interconnector circa 2026 to the Knockraha station in Cork.

The respondent also has asked for confirmation as to whether load flow studies have been completed on the network in relation to the Celtic Interconnectors connection.

The respondent argued that the load flow studies would help inform the scale of reinforcement required to mitigate further congestion issues in the Cork area.

6.4.2 Our response

As reinforcements get capital approval, at the end of step 3 of our six-step process for developing the grid, we report them in the Transmission Development Plan. We will apply the same process for reinforcements associated with the Celtic and Greenlink interconnectors.

It is important to note that these reinforcements will be designed to facilitate both import and export access to the transmission system and ensure the transmission system complies with the Transmission System Security and Planning Standards (TSSPS).

Considering the connection of the Celtic Interconnector and the previous network analysis, the TDP 2020 has outlined the development of the network in the Cork City area to ensure security of supply, and to maintain the necessary levels of reliability and flexibility in the transmission network. Various station upgrades and line renewals are underway, as reported in the draft version the version of the TDP 2020-2029.

Further to projects listed in the draft TDP, EirGrid has performed power system studies for a number of future scenarios as part of Tomorrow's Energy Scenarios 2019 System Needs Assessment. These studies help to identify system needs for possible changes to the transmission system including the connection of new demand, generation and interconnection, including the connection of the Celtic Interconnector. These scenarios datasets have also been used in studies supporting the Shaping Our Electricity Future consultation that was held in Spring 2021. These studies assist to identify candidate reinforcements required to address the scenario based system needs. Our findings suggest that reinforcements are required in the South-West to address potential power transfer capacity needs. These needs are greatest for the following conditions:

- high onshore wind generation in the area and HVDC interconnection export, or
- high conventional and onshore wind generation within the area, or
- high conventional generation within the area and HVDC interconnection import.

The SOEF 2021 will be published in the Autumn 2021 and will provide a list candidate solutions that are required to support delivery of Ireland's climate and energy targets.

These candidate solutions, and the studies performed to identify them, will be influenced by the feedback received in the Shaping OEF consultation. It is important to note that the candidate solutions in SOEF are identified based on performance tests using a subset of the Transmission System Security and Planning Standards (TSSPS). The subset of the standards focus on testing performance of the intact power system and the power system when there is an outage of a single item of transmission equipment, such as a circuit, which is referred to as the single contingency performance test (i.e. N-1). These tests are appropriate as the primary tests of the adequacy of transmission system security at this strategic stage of the analysis.

Proposed candidate solutions identified in SOEF 2021 will be studied in more detail to confirm that they address system needs under a broader set of contingency conditions, and if they should progress in the framework for grid development. Those solutions that

progress through the framework for grid development may appear in future versions of the TDP.

6.5 Network development in specific regions

6.5.1 Comments received

A number of respondents expressed concern regarding the lack of, timing of, nature of, or reporting of, network development in specific regions. The specific areas of concern with regards to grid development highlighted by respondents were:

- The south-east, and the corridor east of Knockraha to Great Island, to facilitate power flows from the Cork region and south-west to the east via the south-east.
- A general lack of progress in ATR projects in the north-west has been mentioned.
- The north-west, specifically the Project CP0800, to facilitate the connection of renewables in the north-west.
- The lack of progress in upgrading the Flagford – Sligo 110 kV, CP0982, circuit has also been mentioned.

6.5.2 Our response

With regards to grid development in the south-east, we are currently progressing the Regional Solution which comprises:

- Series compensation on the existing 400 kV overhead lines that cross the country from Moneypoint in County Clare to Dunstown in County Kildare and Woodland in County Meath. The series compensation devices are planned for:
 - Moneypoint 400 kV Station Series Compensation (CP0967)
 - Oldstreet 400 kV Station Series Compensation (CP0969)
 - Dunstown 400 kV Station Series Compensation (CP0968)
- Cross-Shannon 400 kV Cable (CP0970)
- Great Island - Kilkenny 110 kV Line Uprate (CP0945)
- Wexford 110 kV Station - Busbar Uprate (CP0972)

While all elements of the Regional Solution are not in the south-east, the solution as a whole will strengthen the network between Munster and Leinster, including in the south-east, by facilitating larger power flows on the existing 400 kV circuits from Moneypoint transmission station in County Clare to Dunstown and Woodland transmission stations in Counties Kildare and Meath respectively.

With regard to the importance of some elements of the Regional Solution, all elements of the Regional Solution are required in order to meet the need and are thus important. The specific need to uprate the 110 kV assets is due to a lack of thermal capacity. For more information on the Regional Solution and the need for it, please see the report prepared for the Government appointed Independent Expert Panel¹¹.

Additionally, the following projects are complementing the development of the Regional Solution:

¹¹ <http://www.eirgridgroup.com/site-files/library/EirGrid/Grid-Link-Report-to-IEP.pdf>

- Great Island – Kellis 220 kV Line Refurbishment (CP0866)
- Great Island - Wexford 110 kV Line Uprate (CP0844)
- Rosspile 110 kV New Station and loop-in to Great Island – Wexford 110 kV circuit – Solar Farm Connection (CP1040)

Regarding the current grid development that facilitates renewable connections in the west and north-west, we are currently progressing the following Capital Projects to enhance the network:

- Flagford – Sligo 110 kV circuit thermal capacity (CP0982)
- Letterkenny 110 kV busbar thermal capacity (CP1023);
- Arva – Carrick-on-Shannon 110 kV circuit thermal capacity (CP0841)
- Binbane – Cathaleen’s Fall 110 kV circuit thermal capacity (CP1079)
- Cashla – Dalton 110 kV circuit thermal capacity (CP0898)
- Castlebar – Cloon 110 kV circuit thermal capacity (CP0848)
- Castlebar – Dalton 110 kV circuit thermal capacity (CP0899)
- Flagford – Sliabh Bawn 110 kV circuit thermal capacity (CP0817)
- Lanesboro – Sliabh Bawn 110 kV circuit thermal capacity (CP1078)
- Lanesboro – Mullingar 110 kV circuit thermal capacity (CP1000)
- Dalton 110 kV busbar thermal capacity (CP0907)

With regard to the North West Project CP0800 - this project is currently in step 1. The Flagford-Sligo 110 kV circuit uprate project is currently at step 2. Quarterly and annual updates will be provided for all these projects in the ATR update and TDP respectively. Five of ATRs have recently progressed in the framework for grid development¹².

Some respondents felt that there has been a general lack of progress of ATRs in the North West. While the eastern part of the country has seen significant increases in new large industry demand, the network in the North-West has seen a large amount of renewable generation connections with many requests for further connection. These factors drive the need for increased west to east power transfer capacities.

There are a number of challenges in the North-West which can impact on the progress the grid development in the area. Due to the network topology and the relatively low levels of grid capacity there are limited opportunities for outages, and multiple simultaneous circuit outages for maintenance, uprating, new connections or substation works, are often not possible. One planned outage in this area can have a big impact on the local network and the wider network, often constraining generation in the area.

Although a significant amount of works have been completed in the area in over the last 8-10 years, outage planning constraints have led to delays of other planned works. We are committed to delivery of ATRs in the area and completion of other works reported in the TDP. We will continue to assess reinforcement needs in the North-West through our System Needs Assessment report and to identify candidate solutions as part of Shaping Our

¹² [https://www.eirgridgroup.com/site-files/library/EirGrid/2021-Q2-ATR-Status-Update-FINAL-\(2\).pdf](https://www.eirgridgroup.com/site-files/library/EirGrid/2021-Q2-ATR-Status-Update-FINAL-(2).pdf)

Electricity Future aiming to find new projects required in the area beyond those already progressing through the grid development process.

6.6 Project risk

6.6.1 Comments received

A number of respondents suggested that the risks associated with projects, including planning delays, detailed information around the project risks, mitigations plan, ways to minimise dispatch down, should be identified and it should be noted that the generator bears the risk of delays to transmission infrastructure.

6.6.2 Our response

Section 4.3 of TDP 2020-2029 highlights that the development of the transmission network is subject to delivery risk. We use risk management plans and processes to identify, analyse, monitor and manage project and programme risks. We provide estimated completion dates based on the best information available at the time of the data freeze. Certainty with regard to completion dates risk increases as a project progresses.

The following points need to be taken into account when considering project progression and risk:

- Current level of project maturity;
- Outage availability;
- Land access, planning and consent risks; and
- Project complexity.

We have added the bullet points outlined above to Section 4.3 of TDP 2020. In relation to dispatch down, more regular quarterly updates and commentary are provided for Associated Transmission Reinforcement (ATR) projects as outlined above in Section 6.8.2.

Additionally, EirGrid's Shaping Our Electricity Future includes a workstream dedicated to enhancing our system operations capability out to 2030, and to manage challenges associated with dispatch down of renewable generation. This workstream describes Operational Pathways to 2030 and builds upon the programme "Delivering a Secure Sustainable Electricity System (DS3)". Contained within the operations workstream of Shaping Our Electricity Future is a roadmap detailing actions required to ensure that System Operations support delivery of the 2030 renewable targets.

The key pillars considered by the Shaping Our Electricity Future operations workstream are the following:

- Standard and Services: to ensure that we have the right operational standards.
- Operational Policies: to continue to evolve our operational practices.
- Technology Enablement: focuses on breaking down barriers to entry and enabling the integration of new technologies at scale.
- Tools: enhance current and develop new operational systems and tools.

Close collaboration between the TSOs and DSOs will be central to achieving the aims of each of the four pillars.

The key objectives of the operational workstream of Shaping Our Electricity Future are, firstly, to increase the instantaneous amount of non-synchronous RES that can be accommodated on the Irish and Northern Irish power system in a safe and secure manner to 95% SNSP on an enduring basis, identifying the technical challenges to achieve this and encouraging the industry to invest in the development of these technologies. Secondly, removing barriers to entry and enable the integration of new technologies at scale by developing and implementing operational policies and tools in the control centres to ensure the new technologies are utilised effectively. It is our expectation that these operational enhancements and frameworks will support continued integration of renewable generation capacity whilst managing levels of dispatch down.

EirGrid has taking on board feedback from an extensive programme of stakeholder engagement ran for 14-week period. This feedback will be reflected in the final operational roadmap that will be published as part of Shaping Our Electricity Future 2021 in the autumn 2021.

6.7 Dispatch down and constraints in 2019

6.7.1 Comments received

A number of respondents raised concerns regarding the level, and resulting impact on system costs and emissions, of constraining renewable generation in 2020. They also raised concerns regarding expected levels of constraints in the future, and stated that grid development is essential to ensure the most efficient use of the system and that negative impacts are minimised. There is a concern about the level of constraints which increase the cost of running the system and costs to the consumers.

6.7.2 Our response

The integration of large amounts of non-synchronous variable renewable energy sources poses challenges for the transmission system. Our approach to facilitating renewables and reducing constraints includes:

- The operational roadmap of Shaping Our Electricity Future;
- Investing in the transmission system and interconnection; and
- Researching, developing and adopting innovative solutions and technologies.

Network reinforcements described in TDP 2020 and future reinforcements that will be added to future TDPs are a vital element to facilitating renewables and reducing constraints.

We publish annual and quarterly reports that outline the level of, and contributory factors for, dispatch down of renewable generation. These reports are available on the EirGrid website¹³.

Information on potential future constraints, across a range of scenarios, for generators that received offers under the Enduring Connection Policy Stage 1 (ECP-1) process is available on

¹³ <http://www.eirgridgroup.com/how-the-grid-works/renewables/>

the EirGrid website¹⁴. These reports were created to fulfil the requirement of CRU's ECP-1 decision, CRU/18/058¹⁵, that system operators carry out system studies to inform generators about possible constraint levels. As set out in CRU2006¹⁶ this is also required for ECP-2.1 and the regional constraint reports are expected to be completed and published by the TSO by end of Q4 2021.

As noted in the 2019 TDP Consultation Report a vital enabler of our approach to facilitating renewables and reducing constraints is delivery of projects and initiatives detailed in Price Review 5 (PR5). The CRU published its PR5 Decision in December 2020¹⁷. In addition to providing the forecast revenues for EirGrid and ESB Networks for the physical development of the transmission system, the CRU has under its PR5 Regulatory Framework, Incentives and Reporting paper placed a key focus on constraints over the coming years¹⁸.

This framework includes the introduction of new incentives and reports on the TSO related to 'Renewable Dispatch Down' and an Ireland only incentive on 'Imperfections & Constraints' and a 'Joint TSO/DSO Co-ordination' incentive which includes a focus on Dispatch Down and Curtailment in recognition of the potential greater role for the DSO in managing dispatch down as the power system evolves. The outputs of these incentives alongside other activities will form part of the Annual Performance Report as published by EirGrid.

6.8 Relevance of data

6.8.1 Comments received

It has been suggested to consider the same data freeze date for the different reports developed by EirGrid.

A number of respondents questioned the relevance and benefit of the data due to the gap between the data freeze date and publication. With the intention of solving this problem, respondents suggested to show a "Post-freeze update" with information on projects which were not considered in the data freeze. One stakeholder offered to continue to provide EirGrid with information on its projects pipeline.

Respondents also suggested development of a live register or online portal for grid development projects which could be kept up to date and published. This would be similar to what is done for the ATRs, though with more information, e.g. on project timelines including more interim steps and reasons why projects haven't progressed as anticipated.

14 <http://www.eirgridgroup.com/customer-and-industry/general-customer-information/constraint-reports-solar/>

15 <https://www.cru.ie/cru18058-ecp-1-decision-final-27-03-2018/>

16 <https://www.cru.ie/wp-content/uploads/2020/06/CRU20060-ECP-2-Decision.pdf>

17 http://www.cru.ie/document_group/price-review-5-electricity-networks/

18 <http://www.cru.ie/wp-content/uploads/2020/07/CRU20078-PR5-Regulatory-Framework-Incentive-and-Reporting.pdf>

6.8.2 Our response

Transmission network development is continuously evolving. To help with the comparison of network development projects year-on-year, and in the interest of routine reporting, data is represented at a fixed point in time – the data freeze date.

The TDP summarises transmission projects at a point in time and the changes that have happened since the last TDP, with data applicable as at the data freeze date. The freeze date aligns with the freeze date for other documents and processes.

It is our objective to produce TDPs within the year in question and we are targeting issuing TDP 2021-2030 for public consultation in Autumn 2021.

Every quarter, we publish a status update on projects known as Associated Transmission Reinforcements (ATRs). The ATR update provides customers with up to date information regarding the progress of the delivery of these transmission projects. ATRs comprise a subset of the projects described in the TDP. The ATR status update includes information on:

- Scheduled ATR completion dates;
- Changes to the ATR since the previous quarterly update; and
- Comments on the ATR, for example information on project risks.

This information is updated quarterly and is available on our [website](#)¹⁹.

We acknowledge the need to improve the way data is communicated and published. Regarding the request for more up to date data via an online portal, EirGrid has listened to feedback from stakeholders in relation to updates for projects, and we are planning to provide enhanced reporting in 2022. The enhanced reporting in 2022 will include details of all capitally approved projects being progressed through the framework for grid development. These enhanced reports will provide additional information including:

- Estimated project energisation years;
- Changes to the project since the previous quarterly update; and
- Comments on relevant projects, for example information on project risks.

We anticipate that this information will be updated on quarterly basis.

Additionally, we are looking into ways which can make the website more user-friendly while still providing the most up to date information possible. As part of our planned upgrades to the website, the search functionality is a key priority.

¹⁹ <http://www.eirgridgroup.com/customer-and-industry/general-customer-information/operational-constraints/>

6.9 Provide more project information

6.9.1 Comments received

A number of respondents suggested that there are opportunities within the TDP to provide additional information on projects, including:

- Rationale for projects;
- How projects identified throughout the TES initiative and EirGrid's Grid Development Framework interact,
- Forecasted project timelines including intermediate milestones, reasons if a project has not progressed as anticipated; and
- Budget information published for individual CP which would allow for outturn comparisons to be conducted upon project completion.

6.9.2 Our response

The TDP seeks to standardise the reporting of projects into defined categories. These are described in further detail in Section 4 (Planned Network). Information is provided for each project including project drivers and needs.

The TDP provides project information at a snapshot in time. It presents our plan to develop the network through specific projects to meet transmission system needs over the next ten years in line with EirGrid's statutory and licence obligations.

Needs identified in the TES System Needs Assessment and candidate solutions reported in Shaping Our Electricity Future must be examined in more detail through the six-step framework for grid development as described in the Appendix B of the TDP.

Estimated completion date (ECD) is specified for each project and is updated as they progress through the framework for grid development. We do not currently publish data relating to intermediate milestone dates. However, we will consider providing more information as part of our enhanced project reporting that will be launched in 2022.

We will endeavour to provide more information in relation to delays of capitally approved projects and investigate the inclusion of such information in our enhanced project reporting that will be launched in 2022.

Some examples of typical reasons for project delays are as follows:

- Relationship between projects; some projects rely on the completion of other projects. Occasionally, some projects must be completed before other projects can progress, resulting in an unexpected delays.
- Outage planning constraints; in some regions, one planned outage can have a big impact on the local network and the wider network, often constraining generation in the area. This type of planned outage can delay projects.
- Selection of the affected area; Due to different reason (i.e. technical, socio-economic), during step 3, the study of the potential benefits and impacts of the different options we could build, and where we could build them could take longer than expected.

Additionally, to provide more information about the network development, EirGrid produces quarterly reports on Associated Transmission Reinforcement (ATRs). ATRs are new or upgraded transmission infrastructure projects that are associated with generation connection projects, and which must be complete to release a generation project's FAQ allocation. More information on ATRs is available on EirGrid's website²⁰.

EirGrid as a regulated utility provides project budget information on all projects to the CRU in advance of allowances being provided for each price review. At the end of each price review the outturn for projects are also assessed by the CRU. The full assessment report by the CRU is available on the Commission's website²¹. EirGrid also reports annually with the TAO on regulatory spend on transmission capital projects in the annual Investment Planning and Delivery Report which is published on our website²².

We value any feedback that is provided in order to continue to improve the quality of the reporting and to continue to meet the evolving needs of our stakeholders. We are also discussing with CRU the possibility of providing additional project information in TDP 2021, and we are exploring opportunities to provide more regular updates of project information on our website.

6.10 Technology and innovation

6.10.1 Comments received

A number of respondents said it would be useful to get more information on EirGrid's innovation projects, some of which could be used to manage constraint levels, release grid capacity and future proof circuits.

One respondent suggested the development of a long-term signalling and investment framework for alternative network solutions (storage, composite poles, widespread use of dynamic line ratings, etc). Furthermore, the respondent has suggested that if EirGrid were to allow private lines, developers could create their own connections arguing that this could potentially help EirGrid to realise some of the consented projects.

A couple of respondents suggested to consider an over-rate design for circuits, i.e., thinking about a voltage uprate to 220 kV in the future, new 110 kV circuits could be constructed to a 220 kV standard and operated at 110 kV. They also suggested considering more bays in the GIS stations designs, arguing the need to accommodate future connections of new circuits, new generators, reactive power equipment or power quality equipment.

6.10.2 Our response

As the Transmission System Operator, EirGrid is committed to developing innovative ways to operate and plan the electricity transmission network.

²⁰ <https://www.eirgridgroup.com/customer-and-industry/general-customer-information/operational-constraints/>

²¹ https://www.cru.ie/document_group/price-review-5-electricity-networks/

²² <http://www.eirgridgroup.com/how-the-grid-works/tso-regulatory-publicatio/>

Information on EirGrid's innovation projects is published every year in the *Innovation Portfolio report*. The latest version of this report will be published later this year, highlighting our:

- Innovation Focus Areas in Evolving User Facilitation,
- Enhanced Grid Utilisation,
- Reduced Community & Environmental Impact, and
- Control Centre Evolution.

Future versions of the *Innovation Portfolio report* will consider relevant feedback that has not been incorporated in the current report.

EirGrid has a proven track record in researching, developing and adopting innovative solutions and technologies. These include:

- Voltage Uprate, to enable the potential conversion of existing 220kV lines to 400kV;
- Composite Poles, to increase the number of transmission options which have a reduce environmental and social impact while maintaining deliverability and cost;
- QTP 2018/2019, to improve the technical capability of the generation fleet and the system by facilitating capability, valuable to the system at high levels of renewable penetration;
- Control Centre Tools, to analyse the stability of the power system in the near future, assess the impact of varying sources of reactive power, accurately schedule and dispatch the Ramping Margin services and manage changing demand and generation profiles; and
- FlexTech, to provide a comprehensive platform through which engage with industry, Regulators and our System Operator partners.

In addition, the integration of large amounts of non-synchronous variable renewable energy sources and facilitating diverse power flows pose challenges for the transmission system. We are overcoming these challenges through the combined approach of our Operational Pathways to 2030 Programme as part of Shaping Our Electricity Future and investing in the transmission system and innovation.

In relation to private networks/direct lines, EirGrid awaits the outcome of action 22 in the Climate Action Plan 2019 which relates to further facilitation of private networks / direct lines.²³

6.11 Comments incorporated in the final TDP 2020-2029

6.11.1 Projects in early stages of development

Some of our stakeholders welcomed the addition of further data in Chapter 6 of the TDP 2020-2029, including details of projects in early stages of development. It has also been

²³ <https://assets.gov.ie/10207/c8f59b1734af460fa310ddbe20e01388.pdf>

suggested that this information is included in tabular format including additional data such as drivers, needs and steps.

Response

We have considered this suggestion in the context of alignment with other information in the report, and the current steps and the regions where the projects are being built are now shown.

Visibility of projects in early stages of development is also provided as part of Shaping Our Electricity Future including candidate solutions that are being assessed as part of step 1 of the framework for grid development. The TES System Needs Assessment also provides visibility of emerging needs driven by changes in electricity demand, generation and interconnection for a range of credible scenarios.

In relation to request for additional project information, we have added notes to Table 6.2 highlighting projects that have received capital approval since the data freeze. Please also note that additional project information will be provided as part of our enhanced project reporting that will be launched in 2022.

6.11.2 Additional Meta Data

Stakeholders have welcomed the addition of data to the tables shown in Chapter 5 of the draft TDP 2020-2029. There has also been a request to include the following additional data in the final TDP 2020-2029:

- Labelling of Associated Transmission Reinforcement (ATR) projects, particularly those projects in early stages of the framework for grid development, and
- Further classifications of new build projects, for example:
 - New Build Connection: New connection projects, and
 - New Build Capacity: Projects that deliver additional grid capacity.

Response

We have added labelled ATR projects in early stages in Table 6-2, 6-3 and 6-4. A column has been added showing this information has been added to each table.

Further classification of the new build category has been included in table 5-2, 5-3 and 5-4. Please also note that additional project information will be provided as part of our enhanced project reporting that will be launched in 2022.

Amber Raut
Commission for Regulation of Utilities
The Exchange
Belgard Square North
Tallaght
Dublin 24
araut@cru.ie

21st May 2021

RE: Draft EirGrid Transmission Development Plan 2020-2029 for public consultation

Dear Amber,

Bord Gais Energy (**BGE**) welcomes the opportunity to respond to the CRU's consultation on EirGrid's draft Transmission Development Plan (**TDP**) for 2020-2029.

We welcome the transparency and advanced foresight that the annual TDPs bring for market participants and the CRU. From this year's TDP however, it remains unclear to BGE what grid developments are being pursued to address the connection of the Celtic Interconnector circa 2026 to the Knockraha station in Cork. BGE has requested confirmation from EirGrid on whether the load flow studies on the grid in relation to Celtic's connection have been completed, and if yes can they please be published but we have not been provided with any of this information. The load flow studies' outcomes would help inform to what extent reinforcement and/ or new build of grid is required to mitigate further congestion in the Cork constrained area. Cork already struggles with getting MWs out of the area to meet Irish demand and this issue will be exacerbated once Celtic connects. Investors in the Cork area need to understand grid flow expectations and grid mitigations that will be taken in the Cork area to understand impacts on existing, and any future, business cases.

Our other comments on the draft TDP include:

1. Regarding the South-West / Mid-West section of the draft TDP and related maps:
 - a. While we would expect to see more projects focused on getting more MWs out of the Cork constrained area, we do welcome local refurbishments in the Knockraha area such as the Raffeen-Knockraha 220kV line. However, given that Knockraha is the central station for all power from Cork Harbour, we believe that the lack of any new project focusing on getting MWs away from Knockraha could have a negative longer term impact in the Cork area and for Ireland in general if maximum use of the MWs from Celtic, which cost is being underpinned by consumers, is not made.
 - b. Grid plans may help bring the wind generation in Kerry up towards Moneypoint and potentially divert power away from Knockraha. This is not certain though and given the volume of wind to be managed and the 700MW from Celtic coming in, improvements or even mitigation from impacts for the Cork area are not discernible. We would welcome clarity on these plans' impacts.
 - c. The full list of projects (p. 67-71) confirms our concern that the grid work plans we believe necessary to accommodate the MWs Celtic will bring into Cork, are not there. Refurbishment of the 220kV stations referenced will not enhance the MWs that can leave the Cork constrained area nor will the planned installation of statcoms given the volume of thermal generation in the area.

- d. Projects that enhance system stability and include for example detection of system faults are welcomed as they enhance local area network protection - e.g. project CP1082. More priority however as outlined above on projects that help to get more MWs out of the Cork constrained area, particularly with the relatively imminent connection of Celtic, is requested.
2. With regard to Dublin area plans:
 - a. We welcome the Transmission infrastructure plans in the Dublin area to meet the growing demand and future offshore connections. Several upgrades of the 220kV network around Dublin are planned which is positive as is the North-South tieline connection to the Woodland 400kV station given that the EWIC interconnector and line from Moneypoint feed into Woodland.
 - b. The planned 400kV line upgrades and the Great Island-Kellis 220kV line upgrade should help bring more MWs outside of Dublin into Dublin which is positive.
 - c. The series compensation projects in Moneypoint, Oldstreet, Dunstown 400kV stations should also help to pull power to the 400kV lines and free up capacity on the underlying 220kV and 110kV infrastructure through the midlands, which is also positive.
 - d. The proposed older Inchicore, Finglas and Carrickmines 220kV station planned upgrades are also positive given these are bulk supply points for demand.

Finally, our expectation is that the outcome of the ongoing EirGrid consultation on Shaping Our Electricity Future will alter this draft TDP development from next year (TDP 2021-2030) onwards, the extent depending on that consultation's outcome. However, given that the data freeze date for this draft TDP was 1 January 2020, the data freeze for next year's draft TDP could be 1 January 2021. Revision of the data freeze date and changes to the approach to grid planning should be borne in mind, in our view, when drafting the TDP 2021-2030.

We hope the above comments are clear for the CRU and EirGrid. Our main aim in responding to this Consultation is to better understand the CRU's and EirGrid's view on what grid developments will be pursued to ensure that the connection of the Celtic interconnector to the Knockraha station in Cork will not worsen the already constrained area of Cork. Without the necessary grid developments, we believe that it will result in MWs coming into the country via Celtic, and MWs being generated within Cork, not being able to leave the Cork area.

BGE requests that the CRU informs BGE of their position on our primary aim in responding to this draft TDP, outlined immediately above, when finalising their view on the draft TDP.

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

Yours sincerely,

Julie-Anne Hannon
Senior Manager
Regulatory Affairs – Commercial
Bord Gáis Energy

{By email}

Amber Raut,
Electricity Networks Division,
Commission for Regulation of Utilities,
The Grain House,
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Belgard Square North,
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D24PXWO

By e-mail to: araut@cru.ie

Date: 21st May 2021

Re: Coillte Submission to the Draft EirGrid Transmission Development Plan 2020-2029 Consultation

Dear Amber,

Prior to setting out our response to this consultation we wish to note to the Commission for Regulation of Utilities (CRU) that the Coillte Renewable Energy business unit is in the late stages of transitioning to a new stand-alone joint venture company, in conjunction with the ESB. The transaction completion is subject to final shareholder approval.

Coillte welcomes the opportunity to make a submission to the CRU consultation on the Draft EirGrid Transmission Development Plan 2020-2029.

Over the past decade Coillte has amassed a significant track-record in the renewable energy arena¹. Furthermore we believe that Coillte can make a very significant contribution to enabling Ireland attain its national low carbon transition objective. As Ireland continues to reshape its energy generation fleet and electrifies its economy (heating and transport sectors) in line with enunciated energy and environmental policy objectives, demand for c. 4 GW of new onshore wind facilities in Ireland is expected in the decade to 2030.

Coillte recognises the Government's ambition set out in the Climate Action Plan and seeks to contribute up to 1 GW of new onshore wind capacity in Ireland in the period up to 2030. By leveraging a unique land bank which presents an unmatched portfolio of large high wind sites, this target can be achieved.

¹ Specifically in onshore wind, through the development and construction of four wind farms totalling 230MW under the REFIT 2 regime representing a total investment of over €400m between 2010-2017. These projects were delivered on a 50% ownership basis in conjunction with third-party partners.

Coillte welcomes this consultation and believes that a key component of achieving policy targets is a strong electricity grid with sufficient capacity to cater for future demand requirements and the renewable energy project pipeline.

As such we would like to make the following comments on the draft EirGrid Transmission Development Plan 2020-2029:

1. Support Climate Action Plan RES-E and Installed Capacity Targets by 2030.

Future iterations of the EirGrid Transmission Development Plan (TDP) should take account of the Climate Action Plan (CAP) including the requirement that Ireland generates at least 70% of its electricity from renewable sources by 2030. The timely development of the transmission system is likely to be a key enabler in facilitating a 70% RES-E target. The CAP outlines capacities of 8.2 GW of onshore wind, 3.5 GW of offshore wind and 1.5 GW of solar. However, this is unlikely to be achieved without parallel development of the transmission system to accommodate these renewable volumes.

2. Identify and develop new lines

There are areas of Ireland's transmission system that require new transmission circuits above those currently listed in this draft TDP. Examples of these areas include regions in North Mayo, Donegal and parts of the Midlands as evident in EirGrid's Tomorrow's Energy Scenarios System Needs Assessment (TESNA) 2019 and this is backed up by the latest WEI wind energy pipeline, however the draft TDP only contains projects which cater for existing generation, and even a number of these grid projects have been delayed or have regressed. For example, Renewable Integration Development Project (RIDP) was in Step 2 in the previous TDP 2018-2027 but regressed to Step 1 in last year's 2019 – 2028 TDP and it is not clear how and when it will be progressed other than that it is part of a strategic review even though it is a Gate 3 ATR (we assume this means it will be reassessed as part of the SOEF consultation).

Even with a data freeze of January 2020, the draft TDP should include more projects to cater for the regional needs identified in the EirGrid TESNA 2019 and the solutions in regions that are common across a number of approaches in the more recent SOEF consultation. WEI continue to provide EirGrid with information on the wind energy pipeline which reaffirms the needs for grid development in these areas.

Coillte believes that transmission projects for these areas should be progressed into development in parallel with the WEI wind energy pipeline and into future TDPs rather than waiting for generators to sign connection offers and become 'contracted' if Ireland is to meet its renewable energy targets. Projects need to progress quicker through the framework steps. Preferred options and solutions for new circuits need to be identified earlier, particularly where cable is to be used, so that their consenting and delivery timelines can be confirmed and expedited.

Further to the January 2020 data freeze date, and as mentioned in the Draft TDP, EirGrid progressed their SOEF consultation studies and identified solutions including new circuits and upgrades to existing infrastructure to provide grid capacity in the four approaches they

outlined. EirGrid anticipate that ultimately a blend of the four approaches will be progressed. Coillte would be in favour of a blended approach to ensure that RES-E and Installed Capacity targets are met for 2030 (and beyond) at best overall cost to the consumer by enabling more competition with a continuing pipeline of shovel ready projects and ensuring that a strong and robust grid network is developed.

3. Dispatch down in 2020

The Irish electricity system has a substantial level of constraints which increase the cost of running the system and add costs to the consumer.

As outlined by EirGrid in their All Island Quarterly Wind Dispatch Down Report 2020 (Q4 2020), all-island dispatch down of renewable generation was 12.1% (vs. 8.3% in 2019). Of this 12.1% dispatch down, just over 50% was due to constraints on the network. This equated to 978,595 MWh of lost renewable energy due to network constraints. This renewable dispatch down means that additional fossil fuel generation has to be dispatched on and compensated which increases system costs and overall power sector emissions.

Given the increasing levels of generation connecting to the transmission system, it is widely expected that levels of constraint will increase significantly in the coming years. As a result, grid development is essential to ensure the most efficient use of the transmission system and the generation fleet, and to minimise these costs to the consumer.

4. Need for more detailed and up to date information

Coillte acknowledges that the production of the TDP is a statutory requirement and a condition of EirGrid's TSO licence but we would like to stress the need for more up to date information on grid development which would be of more benefit to industry and would alleviate some of the workload on the TSO. We have outlined a number of suggestions on this below:

- i. The data freeze date and subsequent gap in information in the TDP publication is an issue which results in information often being out of date and of little benefit. The freeze date of 1st January 2020 for this TDP means that more up to date information such as the reinforcement identified as common to all or a most of approaches in EirGrid's SOEF consultation are not fully taken into account. Coillte believes it would be more beneficial for EirGrid to establish a live register of grid development projects which could be published and kept up to date on the EirGrid website similar to what is done for quarterly ATR updates, albeit with more detailed information as outlined below.
- ii. More detailed information should be provided on project timelines, for example planned milestone dates for projects progressing through each stage of the six-step development framework rather than one overall estimated delivery date. It is unclear how projects are progressed through the framework, particularly in the early stages,

and more detailed information would allow for better tracking of project progress. It is also often unclear what weight or importance is placed on each of the criteria in multicriteria decision matrix that EirGrid uses for projects when identifying preferred options. Some new circuit projects such as the Kildare Meath 400kV project seem to have progressed relatively quickly while others, such as a number of Gate 3 ATR line upgrades and the RIDP project referenced above appear to be taking much longer or have stalled even though they are to be progressed for Gate 3 generation.

- iii. We recommend that more information is provided on project progress against the framework steps i.e. if a project hasn't progressed as anticipated then the reasons why should be outlined. There are often limited updates on projects if they are not ATRs as they don't appear on the Quarterly ATR updates from EirGrid.
- iv. An interim solution to provision of up to date information in the absence of an online register may be to ensure that the existing individual project web pages on the EirGrid website are kept up to date and include more information on what is happening on a project now, along with information on what is scheduled to happen next.

5. Leverage the existing transmission system and use of new technology

EirGrid has a proven capacity to be a leader in system integration of renewables through its work on the DS3 program, allowing levels of curtailment to be managed at world leading renewable penetration levels. We would encourage EirGrid to utilise their capacity for engineering innovation to manage constraint levels and create additional space for renewable generation through increased utilisation of smart network strategies. While this should reduce the need for significant new transmission system infrastructure in some parts of the network in the short term, the requirement for ongoing investment in new circuits remains to cater for the pipeline of projects referenced in EirGrid's TES Needs Assessment 2019, and from WEI analysis. EirGrid's SOEF consultation also outlined a number of solutions in the Technology Led approach that could be rapidly deployed (and should not be limited to one SOEF approach). Solutions such as dynamic line ratings should be used more widely and fast-tracked to provide capacity while line upgrades and new circuits are being delivered.

6. Future Proofing and Substation Extensibility

EirGrid should also consider future proofing new circuits so that maximum use of new circuit route corridors is made and so that new circuits can be voltage upgraded, if required, with minimal effort or impact to the environment and local communities. For example new 110kV cables could be constructed to a 220kV standard and operated at 110kV without major changes to their construction footprint. A voltage upgrade to 220kV could be accommodated in future if needed with minimal substation upgrades. This would also make it easier for the grid to 'flex' to accommodate any upward revision to 2030 targets in the next few years while also allowing for a better starting point for 2050 targets. It may also mean that EirGrid could defer having to go back to local communities to install additional circuits in future.

Gas insulated switchgear (GIS) stations are not readily extendable. Whatever is built is often seen by the System Operators as a final solution and it is not possible to add new bays. EirGrid should use the WEI wind energy pipeline when planning new 220kV or 400kV GIS stations so that they can be laid out to allow for a high RES-E system with sufficient bays on 110kV busbars to accommodate existing circuits, existing and future station inter-bus transformers, reactive power equipment, power quality equipment and new generator, battery or line/cable bays. In existing GIS stations even 8 bay GIS 110kV busbar arrangements can fill up relatively quickly and with no space in many GIS buildings, new stations have to be built to accommodate even one additional connection. This is in contrast to air insulated switchgear (AIS) stations in which new bays can be added more easily, often just by extending the existing busbar. Often GIS is used despite the additional cost to reduce station footprint size and gain social acceptance, but this would be negated if the GIS stations aren't planned correctly as multiple stations may be required due to a lack of extendibility.

We would be very happy to engage with you further on any matter set out in the above relating to this important consultation.

Yours sincerely,

[no signature as e-version only]

Ciarán McNamara
Grid Manager, Renewable Energy
Coillte CGA

Ms Amber Raut,
Commission for Regulation of Utilities,
P.O. Box 11934,
Dublin 24

Emailed to: araut@cru.ie

21st May 2021

RE: EDF Renewables Ireland Response to CRU Consultation on EirGrid's Draft EirGrid Transmission Development Plan 2020-2029

EDF Renewables is part of one of the world's largest electricity companies and our investment and innovation is bringing down costs for consumers and bringing significant benefits for communities. We operate in more than 20 countries around the world. We develop, construct and operate wind farms (onshore and offshore), solar and battery storage projects, and have more than 25 years' experience in delivering renewable energy generation.

We have recently opened an office in Dublin and are already in advanced discussions for an onshore wind development pipeline of around 800 MW, with aspirations for far greater growth in Ireland across all technologies, as can be seen by our recent acquisition of 50% of the Codling Offshore Wind Farm Development, off the East Coast of Ireland and the acquisition of a solar portfolio.

EDF Renewables welcomes the opportunity to engage with the CRU and respond to this consultation on the draft EirGrid Transmission Development Plan (TDP) 2020-2029.

EDF Renewables notes the following points: -

- A resilient electricity grid is essential to meeting our 2030 renewable electricity targets and our longer-term decarbonisation goals. The Climate Action Plan sets out a vision of how we can decarbonise Ireland's energy system. This is unlikely to be achievable without parallel development of the transmission system to accommodate the large volumes of renewable generation that will be required. Coupled with increased electricity demand, the existing transmission and distribution grids were not designed for the increased levels of power flows that are predicted. The grids will require significant investment if they are going to be fit for the needs of 2030 and beyond.
- It is imperative that EirGrid reinforces and upgrades the grid infrastructure now, in order to accommodate the predicted increased future demand and to strive towards a zero-carbon system that can operate with 100% System Non-Synchronous Penetration (SNSP).
- We believe that the existing grid and the upgrades proposed so far do not match the current and future pace of renewables development in Ireland and the transmission plan needs to acknowledge that.

Climate Action Plan

- We believe that, in the overarching context of the climate crisis, an accelerated pace of development is now required to decarbonise the system. In this regard, EirGrid urgently needs to focus on the capacity targets in the Climate Action Plan and Programme for Government (of 8.2 GW of onshore wind and 5 GW of offshore wind by 2030), rather than just achieving 70% RES-E by 2030. Transmission network development needs to allow these targets to be delivered. It is not sufficient to deliver the bare minimum for 2030 and we believe that EirGrid needs to instead focus on the net-zero 2050 target. Further renewables development beyond 2030 will be needed for further decarbonisation to deliver net zero and the grid should be planned to achieve these ultimate capacity targets. EDF Renewables believes that the electricity system must be able to operate with zero carbon system services by 2030 and a roadmap needs to be set out by EirGrid to deliver this.

Transmission Network Issues

- **Dispatch Down** - Constraint and curtailment continue to be an issue for renewable generators. An effective management plan to minimise dispatch down needs to be developed in order to remove this risk for renewable units.
- **Market Design** - To build a system capable of reaching and exceeding 70% RES-E by 2030 and accommodating 100% SNSP for multiple hours of the year, the market design needs to develop accordingly, to ensure that wind can bid into the market. Additionally, the introduction of frameworks to incentivise build-out of system support technologies, such as synchronous condensers and storage will be necessary.
- **Innovation** - We would also request more information on EirGrid's innovation projects, some of which may allow significant capacity upgrades. In addition, alternative network solutions such as storage, demand side response and smart wires could free up additional capacity or alleviate some of the need for network reinforcement. We welcome the development of long-term signalling and investment frameworks for such potential solutions. If private wire were to be allowed by EirGrid, developers would be enabled to create their own connections. This could potentially help Eirgrid to release some of the consented projects.

Transparent Process

- **Scenario Planning** - EDF Renewables welcomes further insight into EirGrid's scenario planning and into how projects come to be included in the Transmission Development Plan (TDP).
- **Decision-Making Process** - We would also seek clarity on EirGrid's decision making-process for grid projects, in terms of what metrics and factors they use. Additionally, we would welcome more transparency around risk to projects and mitigation plans around this. As the generator bears the risk of delays to transmission infrastructure and information regarding the risks should be made available.

- **Project Budget Figures** - Finally, it would also be useful to have budget figures published for individual capital projects which would allow for outturn comparisons on project completion. We note that SONI do include these budget figures in their Transmission Development Plan and would request that EirGrid do the same.

In conclusion, we would like to thank the Commission for Regulation for Utilities for the opportunity to engage on this matter and look forward to continuing our work with you in future.

Should you wish to discuss any of the issues raised in our response or have any queries, please contact Stella Burke on stella.burke@edf-re.ie, or me. I confirm that this letter may be published on the CRU website.

Yours sincerely

A handwritten signature in black ink, appearing to read "Michele Schiavone".

Michele Schiavone
Director for Offshore Wind and Ireland



**Response by Energia to Commission for
Regulation of Utilities**

***EirGrid's Draft Transmission Development Plan
2020 – 2029***

21 May 2021

1 Introduction

Energia welcomes the opportunity to respond to the Commission for Regulation of Utilities consultation on EirGrid's Draft Transmission Development Plan 2020 – 2029. The Transmission Development Plan (TDP) is a useful publication to understand EirGrid's ambitions for network development over the next ten years however we feel some additional information may enhance the value of this publication. We welcome the opportunity to provide this feedback and have outlined some areas and practical suggestions where we feel additional information will add significant assistance, to understanding the status of plans and progress to date of the TSO delivering network infrastructure.

2 Response

Grid development and reinforcement is a necessity to achieving the pathway to 2030 and a 70% renewable system, as targeted by the Government's Climate Action Plan. Ireland's ultimate ambition however is to reach net-zero emissions by 2050. Renewable electricity is expected to provide the primary means by which other sectors of the economy will decarbonise. The electrification of other sectors such as heat and transport will increase overall demand for electricity.

The delivery of the necessary grid infrastructure in time is a key challenge that must be overcome. The projected level of dispatch down (constraint & curtailment) that wind developments are likely to be subject to in the coming years, is a major concern. Prudent developers are now having to model sizeable quantities of lost output, which will likely lead to a significant increases auction prices awarded via future RESS auctions. The availability of more up to date information on network development plans and its delivery would help industry better inform their development plans and investment decisions.

2.1 Feedback & Suggestions

2.1.1 EirGrid's 6 Step Grid Development Framework

The Tomorrows' Energy Scenarios (TES) Needs Assessments, which were carried out in 2017 and 2019 involved large consultations to determine the ultimate system needs. Greater transparency is needed on projects which have been identified in the TES process as system needs, and those which are in earlier stages (i.e., projects in steps 1 and 2 of EirGrid's 6 Step Process). It would be useful to understand the process on how projects identified throughout the TES initiative and EirGrid's Grid Development Framework (GDF) interact. Given that these 'needs' will ultimately lead to projects and form part of future network development plans, it would be useful to get a full overview of all projects at each step of the GDF, not just those which have progressed beyond Step 3.

It is welcomed to see the data presented in Chapter 6 (Projects in early stages of development). To further improve the functionality of this report, it would be helpful to see this information presented in tabular format (similar to committed projects identified in Chapter 5) with additional meta-data (e.g., GDF step / ECD / ATR). For these projects, identifying the date that a need was identified will help flag projects, specifically ATRs, that appear to have stalled in the initial steps of the GDF.

2.1.2 Offshore

Offshore wind and the ambitious target of 5GW as set out in the programme for government will be a critical element to achieving 2030 renewable electricity targets. Section 6.4.1 of the TDP references EirGrid's East Coast Generation Opportunity Assessment, given the important role that offshore will play in the energy mix it would be beneficial to see the reinforcements and grid development to support these projects included in the TDP. Some of these have been identified as 'common reinforcements' in the TSO's 'Shaping our electricity future' consultation. The TSO has committed to progressing these common reinforcements via the GDF, so it would perhaps be appropriate to note these in the TDP.

The East Coast Generation Opportunity Assessment was published in February 2019. Things have moved on significantly in the interim, it would be useful if EirGrid could provide an update on this analysis, considering the cumulative impact of 5 GW of offshore renewable energy.

2.1.3 Data Freeze

The validity of the information presented in the TDP is limited given the data freeze date of 1 January 2020. This is almost 18 months old meaning the information presented is significantly out of date. For example, there are a significant number of projects shown as having Estimated Completion Dates (ECD) of 2020, it would be very useful if a more up-to-date status could be included in some way.

In some instances, the TSO has used footnotes to provide more up-to-date information since the data-freeze, however this does not apply to all projects. This should be applied to more of the projects which would help mitigate this problem. Alternatively, this additional information could be captured in:

- An update to the main document alongside the existing information for example, to add another column headed "post-freeze update", with updates provided where relevant.
- An appendix or additional chapter on noteworthy updates since the data freeze.

For projects reaching completion, it is acknowledged that a formal close out process between the TSO and TAO can lead to delays in communicating their completion to industry. Providing some clarity to industry on the close out status would be welcomed, this would entail noting where projects are returned to service or energised but awaiting formal close out. This will then focus attention on the formal close out and mitigate unnecessary delays.

We welcome that ECDs have evolved for each of the projects from TDP 2017 to TDP 2020, provision of this information is a new addition and is useful.

2.1.4 Additional Meta Data

The tables in produced in Chapter 5 are very useful. It would be welcomed if EirGrid could include the following additional meta data:

- Identification of projects that are an Associated Transmission Reinforcement (ATR). This would be particularly useful for projects in the early steps of the GDF (refer to recommendation in section 2.1.1).
- Segregation of new build projects, for example:

- New Build Shallow: New connection projects
- New Build Capacity: Projects that deliver additional grid capacity.

“New Build Capacity” projects (and uprates) are of greater significance to the sector given the increased grid capacity and impact on constraints they can deliver. Metadata to extract this information more easily would be useful.

2.1.5 Data Alignment

We acknowledge EirGrid have many different publications including the TDP that are driven by statutory and licence obligations. It could be beneficial if there was alignment on the data freeze dates and publication timing of these documents so that any information that is cross-referenced from other publications is up to date at the time of publication.

Tullynamoyle Wind Farm 3 Limited



Amber Raut
 Commission for Regulation of Utilities
 PO Box 11934
 Dublin 24
 (Issued via email to: araut@cru.ie)

Dear Mr Raut,

RE: EirGrid’s Draft Transmission Development Plan 2020-2029 (CRU/21/048)

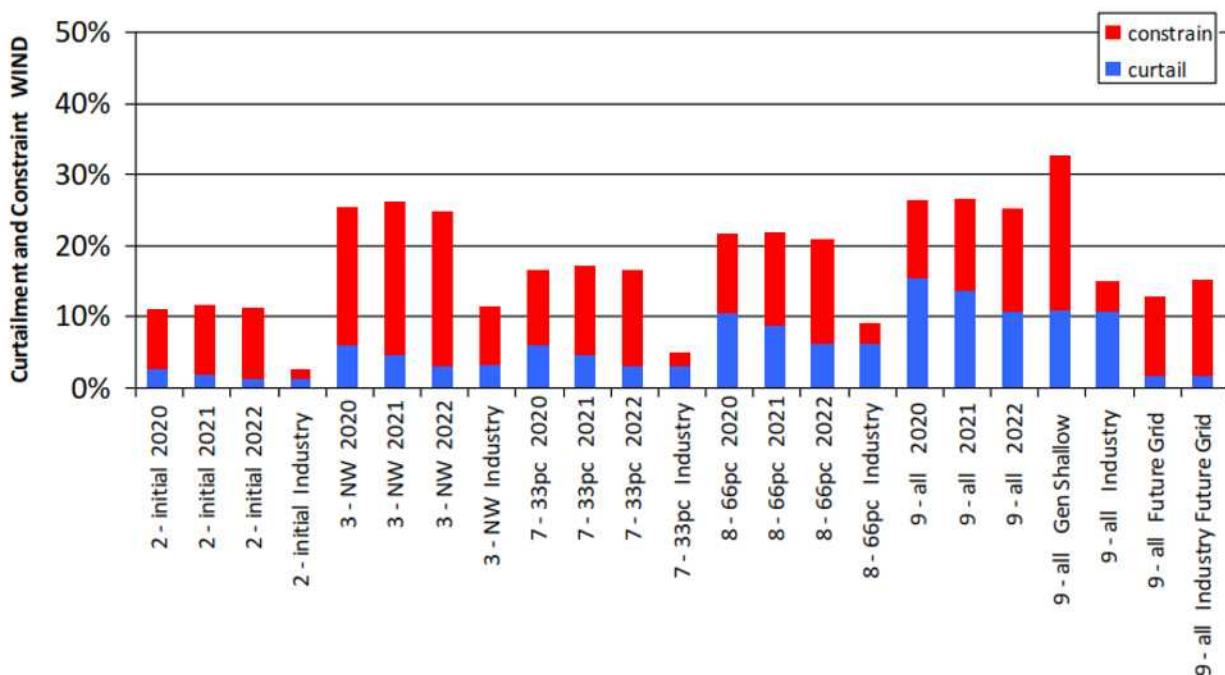
Thank you for the opportunity to respond to the above public consultation. Tullynamoyle Wind Farm 3 Ltd fully support EirGrid in the development of the transmission network in Ireland.

You may be aware that our wind farm, Tullynamoyle 3, is located in Co. Leitrim. Since it commenced operation in 2017, it has experienced constraints in the order of **4% to 9%** per annum. The reason for these very high constraint levels is mainly due to connection of a large amount of renewable generation in the general North West region (Donegal, Leitrim, Sligo and North Mayo) occurring at a much faster rate than the upgrade of the transmission network in the region.

High constraint levels such as these are not surprising, when other recent analysis undertaken by EirGrid is taken into consideration:

EirGrid ECP-1 Constraint Reports

The Area A report estimates very high constraints for wind farms located in Donegal and North Leitrim, as presented below. This analysis took account of ECP-1 generation and transmission network upgrades already planned by EirGrid that were identified for Gate 3 generation. It is concluded from this analysis that in the absence of additional transmission reinforcements, that are yet to be identified by EirGrid, constraints likely increase further as more generation connects beyond ECP-1.



EirGrid Tomorrow's Energy Scenarios 2019 System Needs Assessment Report

Summarised in **Figure 1** are circuit overloads in the North West region relating to the "Co-ordinated Action" scenario from EirGrid's Tomorrow's Energy Scenario. This analysis considered additional potential future generation expected to be required to meet our 70% RES-E target in 2030. The analysis again took account of transmission network upgrades already planned by EirGrid that were identified for Gate 3 generation. This study is indicating a very high level of circuit overloads in the region, which again suggests that further new transmission infrastructure will be required to cater for the existing and planned levels of generation in the region.

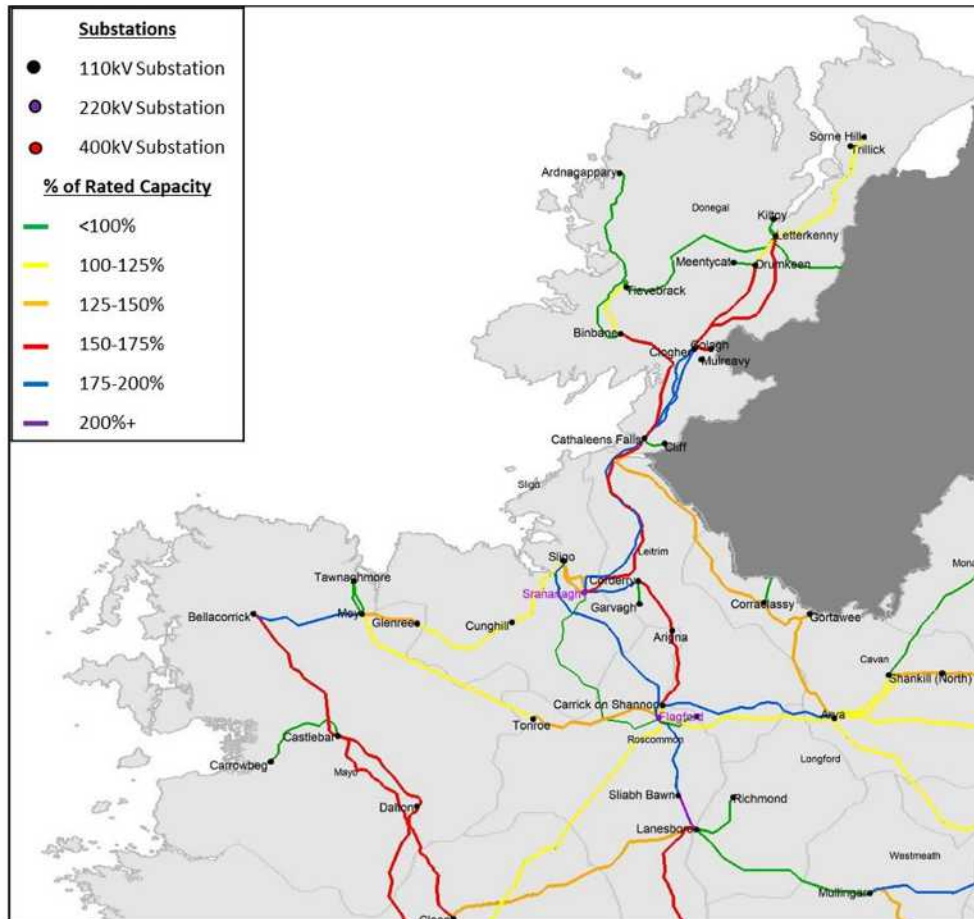


Figure 1 110kV Highest Line Overloads - Coordinated Action Scenario

Outlined in **Table 1** below are the transmission reinforcement projects relating to the North West region which are listed in EirGrid's Draft Transmission Development Plan (TDP) 2020-2029:

| Reinforcement Project | Current Step in EirGrid Process | TDP Edition First Identified (Year) | Current Scheduled Completion Year | Delay in appearing in TDP since first identified as an ATR in 2012 (years) |
|--|---------------------------------|-------------------------------------|-----------------------------------|--|
| North Connacht Project | 4 | 2007* | 2024 | - |
| North West / RIDP Project | 1 | 2010 | 2027 | - |
| Lanesboro 110kV Substation Redevelopment | 6 | 2017 | 2024 | 5 |
| Flagford – Sligo 110kV Circuit Uprate | 2 | 2008 | 2027 | - |
| Letterkenny 110kV Substation Busbar Uprate | 3 | 2012 | 2026 | - |
| Arva – Carrick on Shannon 110kV Circuit Uprate | 4 | 2019 | 2023 | 7 |
| Binbane – Cathaleen's Falls 110kV Circuit Uprate | 4 | 2019 | 2023 | 7 |
| Cashla – Dalton 110kV Circuit Uprate | 2 | 2019 | 2027 | 7 |
| Castlebar – Cloon 110kV Circuit Uprate | 4 | 2010 | 2024 | - |
| Castlebar – Dalton 110kV Circuit Uprate | 2 | 2019 | 2027 | 7 |
| Flagford – Sliabh Bawn 110kV Circuit Uprate | 4 | 2007* | 2024 | - |
| Lanesboro – Sliabh Bawn 110kV Circuit Uprate | 4 | 2007* | 2024 | - |
| Lanesboro – Mullingar 110kV Circuit Uprate | 4 | 2019 | 2024 | 7 |
| Dalton 110kV Substation Busbar Uprate | 4 | 2019 | 2026 | 7 |

* Transmission Development Plans published prior to the 2007-2011 edition were not available when this letter was issued

Table 1: North West Region Reinforcements Listed in 2020 TDP

Outlined as follows are our observations on these particular reinforcement projects:

1. It is extremely disappointing that the North West / RIDP project remains at Step 1 considering it was first identified in the 2010 TDP. It is critical that EirGrid advance this project as a matter of urgency.

2. While we fully support EirGrid on the North Connacht Project, it is frustrating that this project has only reached Step 4 considering it was identified in the 2007 TDP.
3. Similarly, the Flagford – Sligo 110kV circuit uprate was first identified in the 2008 TDP, but again the lack of progress is stark considering the project has only reached Step 2.
4. All 14 of the reinforcement projects in **Table 1** are also associated transmission reinforcement (ATR) projects that need to be complete in order for existing generation to obtain firm access. These ATR projects would have been identified by EirGrid in 2012. However, it is very disappointing that 7 of these projects were only identified in TDP publications 7 years (on average) after 2012. The general lack of progress with these projects (and particularly the Cashla – Dalton – Castlebar 110kV circuit uprates) is also frustrating.
5. On a related note to item 4 above, considering that all of these projects would have been identified by EirGrid on or before 2012, and also bearing in mind these projects were considered necessary for renewable generation up to and including Gate 3, an obvious question would be, why have EirGrid not yet identified additional projects in this 2020 TDP to cater for all of the forthcoming ECP generation?

To conclude, we fully support EirGrid in the upgrade of the transmission network in the North West region in particular, but implore EirGrid to:

- Fast track the completion of the projects listed in the 2020 TDP; and
- Identify and develop additional transmission reinforcement projects that will be required to provide sufficient capacity for future generation expected to emerge in the region.

Yours sincerely,

Elad Michaeli - Director

Elad Michaeli



Commission or Regulation of Utilities
The Exchange
Belgard Square North
Tallaght
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21 May 2021

Emailed to: araut@cru.ie

RE: Draft EirGrid Transmission Development Plan 2020-2029

Introduction

Wind Energy Ireland (WEI) welcomes the opportunity to engage with the Commission or Regulation of Utilities (CRU) and provide feedback on the draft EirGrid Transmission Development Plan (TDP) 2020-2029.

WEI is the nation's largest renewable energy organisation with more than 150 members who have come together to plan, build, operate and support the development of the country's chief renewable energy resource.

We work to promote wind energy as an essential, economical and environmentally friendly part of the country's low-carbon energy future.

Need for Transmission Capacity

Lack of transmission capacity will be the biggest barrier to delivering the renewable capacities of 8.2 GW of onshore wind and 5 GW of offshore wind outlined in the Climate Action Plan 2019 and Programme for Government and decarbonising our electricity system.

Many areas of the grid where renewables are planning to connect are already experiencing high constraint levels and this issue will only worsen if the grid is not reinforced to accommodate these



renewable volumes. For instance, overall constraint levels in Ireland were at 6.7% in 2020, higher than curtailment, and these levels were particularly high for areas like the North West, West and South West. There is the potential for constraints to reach into the double figures for many regions of the grid over the coming years and this will significantly impact the viability of renewable projects and our ability to deliver on our climate action targets.

There are many operational projects in the regions we have noted above with existing ATRs that have yet to be delivered, particularly in the North West. There is also to be a new firm access policy for ECP-2 projects and this will require reinforcements for constrained areas of the grid. The midlands, the backbone of the electricity system and a fundamental area in terms of facilitating the connection and power transfer of generation connected in all areas, also requires immediate focus to address the associated reinforcement needs of the area. Without this the region will become a significant bottleneck for transmitting renewable energy to demand centres such as Dublin.

Going forward the grid will also need to be strengthened in areas such as the east and south coasts to accommodate offshore wind. EirGrid's East Coast Assessment Study identified the need for reinforcements around Dublin and further studies are ongoing on grid capacity and reinforcement requirements for other areas of the grid where offshore wind may connect in future. Clarity is needed on these reinforcement works and ongoing grid studies.

Delivering all the required infrastructure and network solutions will be a challenge but this cannot be thought of as 'business as usual' and must be addressed with the urgency and resources that our climate action targets demand.

We note that EirGrid are currently consulting on the Shaping our Electricity Future (SOEF) roadmap and a final plan or strategy on future grid development may come out of this, but it could be many years before any resulting projects materialise in future TDPs. EirGrid anticipate that ultimately a blend of the four approaches from SOEF will be progressed. We would be in favour of a blended approach to ensure that the renewable capacity targets of 8.2 GW of onshore wind and 5 GW of offshore wind are met for 2030 at best overall cost to the consumer. This can be done by ensuring that a strong and robust grid network is developed thus enabling more auction competition with a continuing pipeline of shovel ready projects.

We have put forward comments below on the need for more up to date and easily accessible grid development information, which includes early-stage development of projects, and it will be

important that this link with the SOEF roadmap outcomes is maintained so that there can be effective and consistent communication of projects in development.

Need for more up to date information

WEI acknowledges that the production of the TDP is a statutory requirement and a condition of EirGrid's TSO licence but we stress the need for more up to date information on grid development which would be of more benefit to industry and would alleviate some of the workload on the TSO. As has been noted in previous WEI TDP responses, the data freeze date and subsequent gap in TDP publication is an issue which means that information is often out of date and of little benefit. The freeze date of January 2020 for this TDP means that more up to date project information is not taken into account.

We note that the CRU's stated timeline from the last TDP consultation was to publish the 2020 TDP in Q3 2020. This has not been the case with the 2020 TDP published for comment in April 2021. This delay means information provided is even more out of date and further emphasises our position that it would be more beneficial for EirGrid to establish a live register of grid development projects which could be published and maintained on the EirGrid website. EirGrid already produce quarterly Associated Transmission Reinforcement (ATR) reports which are more current than the TDP that could be incorporated into a live register. More regular reporting for non-ATR projects is also required. It would also be beneficial if circuit ratings could be provided which identifies the equipment that limits the busbar to busbar rating of a circuit. The live register would provide information on all ongoing or planned grid development projects as well as ATRs. This would be much more valuable information for industry and would also, in our view, be a better use of EirGrid resources.

Projects need to progress quicker through the framework steps. Preferred options and solutions for new circuits need to be identified earlier, particularly where cable is to be used, so that their consenting and delivery timelines can be confirmed and expedited. Where a no regrets analysis is carried out by EirGrid, a status update on this analysis should be provided. We also suggest that more detailed information should be provided on project timelines, for example planned milestone dates for projects progressing through each stage of the six-step development process rather than one overall estimated delivery date. This would allow for better tracking of project progress and along with this we recommend that more information is provided on project

progress against these steps i.e. if a project hasn't progressed as anticipated then the reasons why should be given.

As noted in WEI's response to the 2019 TDP, we suggest that the risk associated with projects should be identified. It should be noted that the generator bears the risk of delays to transmission infrastructure and information regarding the risks should be made available.

As an example, there have been continued delays to such projects as the North West Project and the wider Renewable Integration Development Plan (RIDP) project - the latest date of completion for which is now 2027. This project has been listed as an ATR for generation projects since ATRs were published on EirGrid's website in 2013, and first appeared in an EirGrid TDP in 2010. In previous TDPs this project has been listed as being in Step 2 of the Grid Development process and there has been no visible change of the status of the project. The project is now listed as being in step 1 in the 2019 TDP without any clarification or detail provided.

Alternative Network Solutions

We would also request more information on EirGrid's innovation projects, some of which may allow significant capacity upgrades. For example, composite pole sets may make it more feasible to carry out voltage uprating along existing transmission line corridors. EirGrid could also use such technology in new or refurbishment 110kV projects to help future proof circuits. In addition, alternative network solutions such as storage, demand side response and smart wires could free up additional capacity or alleviate some of the need for network reinforcement. We would welcome the development of long-term signalling and investment frameworks for such potential solutions. EirGrid's SOEF consultation also outlined a number of solutions in the Technology Led approach that could be rapidly deployed. Solutions such as dynamic line ratings should be used more widely and fast-tracked to provide capacity while line uprates and new circuits are being delivered.

Future Proofing and Substation Extendibility

EirGrid should also consider future proofing new circuits so that maximum use of new circuit route corridors is made and so that new circuits can be voltage uprated, if required, with minimal effort or impact to the environment and local communities. For example, new 110kV cables could be constructed to a 220kV standard and operated at 110kV without major changes to their construction footprint. A voltage uprate to 220kV could be accommodated in future if needed

with minimal substation upgrades. This would also make it easier for the grid to be upgraded more quickly to accommodate any upward revision to 2030 targets in the next few years while also allowing for a better starting point for 2050 targets. It may also mean that EirGrid could defer having to go back to local communities to install additional circuits in future.

Gas insulated switchgear (GIS) stations are not readily extendable. Whatever is built is often seen by the System Operators as a final solution and it is not possible to add new bays. EirGrid should use the WEI wind energy pipeline when planning new 220kV or 400kV GIS stations so that they can be laid out to allow for a high RES-E system with sufficient bays on busbars to accommodate existing circuits, existing and future station inter-bus transformers, reactive power equipment, power quality equipment and new generator, battery or line/cable bays.

Cost Information

It would also be useful to have budget figures published for individual capital projects which would allow for outturn comparisons on project completion. We note that SONI do include these budget figures in their Transmission Development Plan and would request that EirGrid do the same.

Conclusion

In conclusion, we would like to thank the CRU for the opportunity to provide feedback on the draft EirGrid TDP 2020-2029 and we are available to discuss any of the points raised in this response if you require.

Yours sincerely



Bobby Smith
Senior Policy Advisor
Wind Energy Ireland