ESB NETWORKS

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The current. The future.

Investment Planning and Delivery Report 2019

Annual EirGrid and ESB Networks' Electricity Transmission Performance Report

Document No. DOC-310119-ELW Revision 3

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The Strategy for Planning and Delivering the Grid

EirGrid in its role as Transmission System Operator (TSO) is responsible for operating and ensuring the maintenance and development of a safe, secure and reliable electricity transmission system - now and in the future. To achieve this, EirGrid continues to develop, manage and operate the electricity transmission grid. ESB is the Transmission Asset Owner (TAO) and its business unit ESB Networks carries out the licensed TAO functions. ESB Networks is therefore responsible for building works and carrying out the physical maintenance as identified by EirGrid. We work closely together to ensure that all steps in the development and construction of grid infrastructure are carried out as efficiently and cost effectively as possible.

In 2019 EirGrid launched a new Group Strategy the aim of which is to Transform the Power System for Future Generations. This strategy is shaped by two factors: climate action and the impending transformation of the electricity sector. These factors set the context within which the TSO and TAO will operate for Price Control 5 and Price Control 6. It also identifies the scale of shared ambition required to meet our 2030 Climate Action Plan targets, in addition to developing a robust and secure grid which meets the requirements of our economy and society into the future.

In 2019 EirGrid and ESB Networks commenced engagement with CRU on the development of requirements for the PR5 Transmission Capex Programme for the 2021-2025 Price Review 5 (PR5) period, and beyond, to meet the ambitious targets set out in the Climate Action Plan.

Our PR5 proposals submitted to the CRU in November 2019, aim to enhance our capability to deliver an improved quality of service to our customers and stakeholders. Our proposals include a range of new initiatives that we aim to deliver during the PR5 period. These initiatives will enable the delivery of a better quality of service for all customers, providing the resources required to operate the electricity system with unprecedented levels of intermittent renewable generation and facilitating a step change in the level of engagement EirGrid and ESB Networks deliver to both direct customers and members of communities with whom TSO and TAO interact.

The PR5 submissions were influenced and shaped by the objectives and vision set out by CRU in relation to the process on grid delivery, decarbonisation and local security of supply. In each instance these are underpinned by cost efficiency and a regulatory framework which supports the delivery of value to customers. Further information on EirGrid's PR5 submission can be found here.

Reporting Requirements

In addition to this public document, we also jointly provide a detailed **"Annual CAPEX Monitoring Report"** to the Commission for Regulation of Utilities (CRU). That report provides an annual update of EirGrid and ESB Networks' performance in delivering the grid against the total capital investment approved for network development under Price Review 4 (PR4).

The PR4 period runs from 2016 to 2020. The incentive arrangements that applied during Price Review 3 (PR3) continued to apply to the first two years of PR4, namely 2016 and 2017, while a new set of incentives was put in place for 2018 to 2020 covering the remainder of the PR4 period.

This Investment Planning and Delivery Report may be amended going forward to reflect changes in the transmission performance indicators as may be laid out by CRU.

The **"Annual CAPEX Monitoring Report"** for 2019 was submitted to CRU in May 2020 and feeds into the content of this report.

EirGrid also publishes the Transmission Development Plan (TDP) each year following public consultation and approval from the CRU. The primary objective of the TDP is to describe and raise awareness of the planned transmission network reinforcements for the next ten years. The TDP also identifies future needs that may drive future potential projects.

Central to the EirGrid strategy is our six-step approach for grid development. It sets out how the general public and stakeholders can influence the decisions that EirGrid makes on grid development projects. The focus of the TSO has been to increase our value proposition to consumers and stakeholders while improving efficiencies in grid development.

The purpose of the six-step process is to facilitate greater involvement from the public in the decisions that are made in planning and developing the grid and to improve transparency in the decision-making process. More details can be found in EirGrid's "Have Your Say" document.

This report has been compiled to:

- provide stakeholders with an overview of the transmission development programme as at the end of calendar year 2019; and
- highlight how each of the six steps works, by reference to 2019 projects.

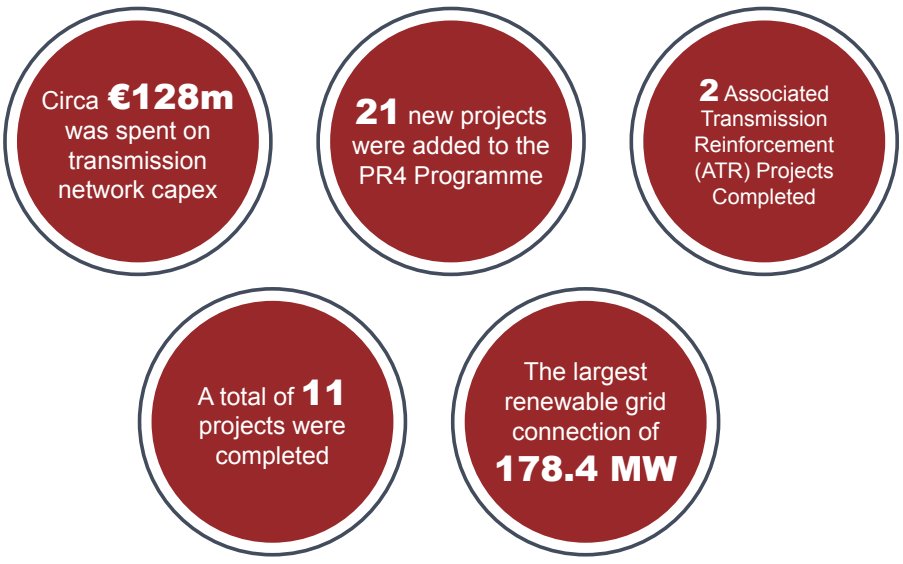
We recommend that this report is read in conjunction with our Electricity Transmission Performance Report 2019.

Transmission Development Highlights 2019

EirGrid manages a complex programme of transmission capital projects at various stages of development. ESB Networks undertakes the process of procuring, managing and delivering projects safely, in line with the needs identified by EirGrid and the jointly agreed work programmes. The successful rollout of an upgraded electricity network is a key requirement in achieving the ambitious Climate Action Plan targets and maintaining a safe and secure transmission system.

2019 was a positive year for the transmission capital programme with a total regulatory spend of €128m[1]. The actual amount of customer contributions received in 2019 was higher than forecast thus reducing the total regulatory spend during the year. A significant number of new generation and new demand customers were connected to the transmission grid in 2019. While year on year project completion figures are not comparable, as different projects can vary greatly in scale and complexity, for information, eleven projects were energised and completed in 2019. This compares to 40 projects energised and completed in 2018. A selection of 2019 highlights is shown below.

In 2019 five projects were completed which facilitated the future connections of 547 MW MEC of TSO/DSO renewable connections. This comprised 203 MW of TSO connections and 344 MW of DSO connections and represents an unprecedented volume of renewables connected to the system. It exceeds the 2020 RES-E target as outlined in the Renewables Energy Directive 2009/28/EC[2]. These positive outputs coupled with the ongoing collaboration with renewable generation stakeholders represent a significant contribution to the government's Climate Action Plan, facilitating a low carbon future and demonstrating the enduring commitment of both TAO and TSO to the future of renewable generation in Ireland.



1. Further detail on this is in Section 8 of the 2019 APR which is located on EirGrids website.
2. The Irish Government's 2020 RES-E target for the electricity sector, developed as part of the response to the EU Renewable Energy Directive 2009/28/EC, required that 40% of energy consumed in 2020 come from renewable sources. Based on predicted electricity demand for 2020, approximately 4,100 MW of renewable generation required to be connected. This target was exceeded during 2019.

Further highlights include:

- A 220 kV station extension at Clonee enabling a demand customer with a data centre to increase their demand connection by 37 MVA.
- The energisation of Coomataggart 110 kV Station was completed in October 2019. This is the largest renewable grid connection in Ireland to date, facilitating the connection of 178.4 MW of wind.
- A project to replace two transformers at Cloghran 110 kV station to increase capacity for another data centre.
- Two Associated Transmission Reinforcements [ATR] line uprate projects, one in the South East and one in the West. The completion of these ATRs alleviates constraints and strengthens the transmission network in those areas.
- Twenty-one new projects were added to the PR4 Programme.
- €128m was spent on Transmission Network Capex.

Metric	Section of report	2019			Outturn		
		Target	Outturn	Financial Incentive	2018	2017	2016
Projects completed[3]	*"Transmission Developments 2019"* Page 5	27	11[4]	N/A	40[5]	31[6]	12

3. Includes both transmission works and customer connected projects. It is important to note that year on year project completion figures are not comparable as different projects can vary greatly in scale and complexity. EirGrid work with customers and engage on appropriate safe completion times in a given year that may require adjusting to the following year or years thereafter.
4. The factors influencing the revised completion dates of the 16 projects not completed are summarised in Section 10.
5. Investment Planning and Delivery Report 2018.
6. Investment Planning and Delivery Report 2017.

Transmission Developments 2019

2019 saw a number of new generation and demand customers connected to the transmission grid. Reinforcement projects were also a key feature of the 2019 programme.

1. Renewable Connections and Increasing Capacity

The TSO provides connection agreements to renewable generators to connect to the transmission grid at 110 kV or above. During 2019 203 MW of renewable generation has been connected to the transmission system and 344 MW of renewable generation to the DSO system. This compares to 183 MW connected to the transmission system and 171 MW connected to the distribution system in 2018. The total renewable generation provided to the grid at the end of 2019 was 14,364 GWh which makes up 36% of the total demand.

EirGrid and ESB Networks work together to connect renewable projects developed by customers such as Bord na Mona, Brookfield, Coillte and ESB Wind Development on the transmission system. This is beneficial as it reduces our dependence upon fossil fuels as the renewable energy can be used to replace carbon based fuels such as gas, coal or oil. It helps us meet our renewable energy targets as set out by the government.

- The energisation of new transformers at Glenree and Tawnaghmore 110 kV stations in February and April facilitated the connection of Killala windfarm in Co. Mayo and other renewable energy generators on the distribution network.
- The new Tievebrack 110 kV station was looped in to the existing Binbane Letterkenny 110 kV overhead line and was energised in May. The new Tievebrack station facilitates the connection of a new 18 MW windfarm at Ardnagappary 110 kV station to the distribution network.
- The new Srahnakilly 110 kV station was energised in June and facilitates the connection of a new 89 MW TSO windfarm, Oweninny Power 1.
- The Booltiagh 110 kV station transformer was energised in August which allows the connection of three new 74.4 MW DSO windfarms connecting to the Booltiagh 110 kV station in Co. Clare via the distribution network.
- The energisation of Coomataggart 110 kV Station was completed in October. This is the largest renewable grid connection in Ireland to date, facilitating the connection of 178.4 MW of wind energy.

2. Demand and Data Centre Connections

There has been increasing interest by large customers in establishing data centres in Ireland in recent years. The key focus area for such connections to the transmission system is in the Dublin area. This is principally driven by the need for Information, Communications and Technology (ICT) industries and high-tech manufacturing companies which are supported by the Industrial Development Authority (IDA) to locate in urban locations which can meet their requirements. One of the main requirements is to be able to connect to a high quality power supply. Many well-known companies such as Facebook, Amazon and Microsoft have chosen Ireland as the location of their data centre operations or European headquarters. At the end of 2019 there were twenty demand customer sites connected directly to the transmission system 3 of which were Data Centre's.

In North Kildare, a global microchip manufacturer applied for an increased power supply to support ongoing and future manufacturing activities at the facility. A new connection method was identified which connects the existing Maynooth Woodland 220 kV overhead line to a new 220 kV station using underground cable. Public open days were held in Leixlip, Co. Kildare in early and mid-2019. Planning consent was granted for the project by An Bord Pleanála in December 2019.

A new 220 kV and 110 kV station were completed in North County Dublin at Belcamp, which allows the power flow across the system to become more efficient. It also supports future expansion in the area, which includes Dublin Airport, Beaumont Hospital and a number of business parks and data centres.

Substation works were completed for another data centre connection at Clonee in November. The project doubled the size of the Clonee 220 kV station and facilitated the connection of an additional 37 MVA of data centre load.

A transformer replacement for an existing data centre customer at Cloghran was completed in December.

3. System Reinforcement & Refurbishment Projects

Reinforcement projects were also a key feature of the 2019 capital programme. As part of the first element of the regional solution suite of projects to address network needs in the South East, the Bandon 110 kV station protection works were completed in July and the uprating of the Great Island Wexford 110 kV circuit was completed in October. The Bellacorick-Moy 110 kV circuit was uprated and was subsequently completed in November. This is the latest of the major 110 kV line uprates in the West to be completed that will strengthen the transmission system and alleviate network constraints in the area. In this way, the power flow on the system will be more efficient and reach the areas where it's needed most with greater ease.

Network Development Expenditure

Every five years the CRU determines the revenue price control for the TSO and the TAO. The CRU sets a revenue envelope to cover the development of the national transmission grid. This is referred to as network capex under which EirGrid and ESB Networks carry out their capital works programme over a five-year period. This envelope can be adjusted, if necessary, during the five years to allow for changing needs.

The total network capex allowance for the PR4 period was determined by CRU in the PR4 Determination, CER/15/296, as **€985 million** (2014 Prices), based on the forecast network project programme as available in Q2 2014.

As required by the CRU, an updated PR4 programme as at 01 January 2016, the start of the PR4 period, was subsequently submitted. This updated programme is the PR4 baseline network investment programme against which we are required to report on progress over the PR4 period. The PR4 baseline programme totaled €1,057 million (2014 Prices).

Notwithstanding that the baseline total was €72 million higher than the PR4 allowance; an adjustment was not sought at that time. It was recognised that the PR4 programme would continue to evolve resulting in continuous adjustments.

The PR4 programme has continued to evolve in 2019, as projects are completed, added or removed. The table below provides an overview of the updated forecast PR4 programme costs. At the end of 2019, the forecast outturn programme cost was €90 million lower than the PR4 allowance.

Consistent with the PR4 Submission and the PR4 Baseline a factoring approach was applied to assess the likely spend over the PR4 period taking factors into account such as a project's current stage in its lifecycle, availability of transmission outages, access to land where required, resourcing across the programme, potential for planning permission delays, and changing customer timeline impacts. Using this approach, which is applied annual, and applying deductions for customer contributions and interest during construction, the factored total forecast spend has been revised to €784m as per the table below:

Forecast Total Regulatory Spend PR4 2016-2020

	PR4 Baseline 2016	PR4 Programme 2017	PR4 Programme 2018	PR4 Programme 2019	PR4 Programme 2020	Increase/ Decrease 2020 vs 2019
Total Network Capex Regulatory Spend	**€1,057M**	**€1,079M**	**€1,060M**	**€874M**	**€784M**	**-€90M**

The COVID-19 Pandemic and related work restrictions are on-going at the time of writing this report. The situation is being actively assessed by TAO and TSO in consultation with CRU. However, as the potential implications of the pandemic for the 2020 work programme are unknown at the time of writing this report, no new assumptions or adjustments have been applied to the 2020 Forecast figures and they remain correct as at 1st January 2020.

The table below provides a breakdown of the overall status of the projects in the PR4 Programme as at 1 January 2020. A comparison of the totals with those in the PR4 Baseline submission and the delta in the last year is shown.

Number of Projects in PR4 Programme

Item	Description	# of Projects at 01/01/2019	# of Projects at 01/01/2020	Delta
1	Ongoing Projects (Stage 1 or Stage 2)	101	112	11
2	Projects Closed or Complete	114	125	11
3	Projects Removed from Programme	6	10	4[7]
4	Projects on hold	13	10	-3[8]
	Total Number of Projects in PR4 Dataset	**234**	**257**	**23**

7. 3 projects terminated following customer requests, 1 project scope determined as DSO only.
8. 1 project came off hold and received a capital approval in 2019, 2 projects were cancelled and removed.

The Six-Step Grid Development Process: Step 1

In Step 1 EirGrid confirm the need for a project by considering potential changes in the demand for electricity. These changes are influenced by factors such as how and where electricity is and will be generated, and changes in electricity use.

Key to this process is considering a range of possible ways that energy usage may change in the future. We call this scenario planning. We test whether the grid of today can support a range of possible future energy scenarios or if the grid needs further investment. In 2019 we consulted on our scenario planning initiative which we call Tomorrow's Energy Scenarios (TES).

In 2019, we published Tomorrow's Energy Scenarios 2019 System Needs Assessment (SNA). The purpose of the SNA is to highlight the long-term needs of the grid in Ireland out to 2040. The SNA report was the output of a process that started with the publication of, and consultation on, TES in 2019. We must adhere to technical standards when planning the network. These technical standards are detailed in EirGrid's Transmission System Security and Planning Standards (TSSPS) as approved by the CRU. If it is established that the current grid cannot meet expected future needs under the TSSPS, the grid will need further investment.

When we have identified and confirmed a system need, a formal process of project development is initiated. At this point, the only decision that has been made is to confirm that there is a need for a grid development project.

What happened in Step 1 during 2019?

The integration of renewable generation on the electricity network and the ability of these resources to be utilised is dependent on the transmission infrastructure's ability to support the transfer of electricity from where it's generated to where it's needed by customers. It is vital that the electrical infrastructure can support increased power flows of renewable energy through the system.

In 2019 the need for investment was confirmed and several projects were identified. EirGrid identified limitations in the existing network and the need for system reinforcements in order to facilitate larger renewable power flows. These include uprating the existing circuits due to lack of capacity to dispatch Gate 3 wind in the North West area of the network at Flagford to Sliabh Bawn 110 kV, Arva to Carrick on Shannon, Castlebar to Cloon, Cashla to Dalton and Castlebar to Dalton.

A project to investigate the capacity of the Dalton busbar and options to remove the risk of overloads on the busbar was identified. at Dalton 110 kV station. A thermal uprate of the existing 110 kV circuit was required due to a limitation in the existing network and the need for a system reinforcement to facilitate larger renewable power flows.

In the east of the network several projects were identified to re-enforce the system and enable increased power flows of renewable energy. Thermal uprates of the existing 110 kV circuit were required due to a limitation in the capacity of the network and the need to facilitate larger renewable power flows in the East of the network from Lanesboro to Mullingar, Maynooth to Woodland, Lanesboro to Sliabh Bawn and in the North West from Binbane to Cathaleen's Fall.

A need for an Asset Refurbishment was identified between Dunstown and Woodland to facilitate greater renewable power flows on the network. This project is known as Dunstown T4201 to Woodland T4201 Transformer Works.

The Six-Step Grid Development Process: Step 2

Step 2 involves the creation of a shortlist of options which meet the future needs as confirmed in Step 1. As part of this process, EirGrid will seek feedback from our stakeholders on the list of potential solutions.

We want to understand which options our stakeholders think are suitable and which are not. We will study stakeholders' feedback and produce a shortlist of options to consider in more detail in Step 3. This process typically takes approximately six months.

When compiling the shortlist of options to consider in more detail, we try to balance stakeholder preferences with technical, cost and environmental suitability. This means we may include options that meet the TSSPS and have a strong public preference but are technically less suitable than alternatives. We will consider the issue of overall suitability in more detail when progressing to Step 3. If a major new line or linear development is shortlisted, an underground cable option will also be considered.

We place new technologies into three broad categories. These are:

Technologies that are available now can be considered as potential solution options straight away. New technologies that are ready for trial use may be considered depending on their level of maturity.

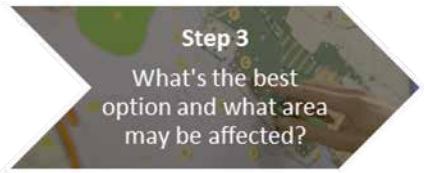
What happened in Step 2 during 2019?

In 2019 the following five projects went through Step 2. These projects aim to provide for a range of system needs:

- A system reinforcement project which was in Step 1 in 2018 has now progressed to Step 2. This will address renewable energy capacity issues when generation is exporting from the North West of Ireland.
- A project to increase the capacity of the existing 110 kV Letterkenny busbar to enhance the power flow was in Step 1 in 2018 and has now progressed to Step 2. The need is driven by the connection of renewable generation in Donegal.
- The Tarbert 220 kV cable project, which focuses on replacement of the cable.

- Capital Project 966 is a proposed development that will help transfer electricity to the east of the country and distribute it within the network in Meath, Kildare and Dublin, helping to meet the growing demand for electricity in the east. This growth is due to increased economic activity and the planned connection of new large scale IT industry in the region.
- A significant number of Ireland's electricity generators are located in the South and South West. This power needs to be transported to where it's needed cross country on the two 400 kV power lines. Transporting large amounts of electricity on these 400 kV lines could cause problems that would affect the security of electricity supply throughout Ireland, particularly if one of the lines is lost unexpectedly. To solve this emerging issue, we need to strengthen the electricity network between Dunstown and Woodland and we are currently exploring options to do this. These projects will assist in maintaining and enhancing the security of supply and also facilitate the integration of renewable energy onto the transmission system.

The Six-Step Grid Development Process: Step 3



Step 3 identifies:

1. **the best performing option; and**
2. **the study area where this option could be placed.**

During this step, EirGrid studies the benefits and impacts of the different options and where these can be built.

When considering where a project can be built, it is necessary to start by looking at a study area. This is a broad area within a region, rather than a specific, detailed route. Typically, this step is used to identify potential issues that may restrict options within the study area.

During Step 3, stakeholders' views are sought on a specific technology option and on the study area where the project is planned for. This consultation helps us to understand what is important to stakeholders and to learn more about the local area.

EirGrid has appointed Agricultural Liaison Officers (ALOs) and Community Liaison Officers (CLOs), who are available to discuss the siting of new lines and cables, land access and proximity payments. Contact details for our ALOs and CLOs can be found on the EirGrid website.

When making our decision a multi-criteria decision-making process is employed. This involves assessing the relative performance of options across agreed criteria. A decision is then based on a detailed analysis of stakeholder feedback and on economic, technical, social and environmental criteria.

What happened in Step 3 during 2019?

In 2019 twenty-one new EirGrid approved projects were added to the PR4 programme and went through Step 3 of the process.

This includes the following projects:

- Station related projects: 6
- Customer driven projects: 14
- Land acquisition related projects: 1

A variety of system needs are catered for by these projects including:

- Providing connections for demand and generation customers;
- Refurbishment and replacement of existing assets due to their condition and age; and
- Addressing a lack of power transfer capacity due to the connection of new customers, in particular, new renewable energy generation.

These projects will help to maintain and enhance the security of supply and also facilitate the integration of renewable energy onto the transmission system.

The Six-Step Grid Development Process: Step 4

Following consultation and engagement in Steps 1, 2, and 3, EirGrid will have made some key decisions and know which technology is best for use on a project and roughly where the project will be built. We continue to examine and consider both an overhead line option and an underground cable option if a new circuit is needed.

In Step 4, we assess where exactly the most appropriate place to build the project is. This could be either a circuit or station, or both. Some projects will not go through Step 4, primarily uprates or similar works where the circuit and/or station is already built and therefore the location is already determined.

Key inputs will be local, social and environmental “on-the-ground” information, combined with higher-level datasets used in Step 3, to determine and verify local constraints and opportunities. These will identify potential station sites or circuit route corridors within the study area for the best-performing technology solution.

Once again stakeholders’ views are sought and depending on the size of the project, this could take many forms, such as public meetings or web pages with response forms. We promote consultations through the EirGrid website and in local or national media depending on the scale of the project.

In 2019 three projects entered or passed through Step 4 of the framework. These are the Moneypoint, Dunstown and Oldstreet Series Compensation Projects.

The Six-Step Grid Development Process: Step 5

The objective of Step 5 is to achieve the necessary statutory consent for a project; if no statutory consent is required, the decision underpinning this is documented appropriately. This includes the preparation of plans and particulars in respect of the project proposal that will be used in the statutory consents process (or in obtaining a confirmation or Declaration of Exempted Development where no statutory consent is required).

Where a project requires planning permission, EirGrid will submit a planning application to the planning authority – either An Bord Pleanála or the local planning body. In certain cases, a confirmation or Declaration of Exempted Development (Section 5 Declaration) will be given internally or by the relevant planning authority where no statutory consent is required. This also requires the preparation of plans and particulars for such projects.

When a project reaches Step 5 and requires planning permission, EirGrid is legally obliged to publish details of its proposed plan in the national newspapers. These notices give details on how you can make a submission to the relevant planning authority. We also publish and update this information on the EirGrid website at www.eirgridgroup.com.

The conclusion of this Step involves the receipt of a planning decision from the relevant authority or a confirmation or declaration of exempted development. When the planning application process ends, the planning authority will do one of the following:

- Grant permission, or
- Grant permission on the basis that EirGrid makes some changes to its application, or
- Refuse permission.

In 2019, five projects entered or passed through Step 5 of the framework.

These included the 220 kV Maynooth-Woodland line uprate, a redevelopment of Lanesboro 110 kV Station, the Cross Shannon 400 kV sub-sea cable project in the South West, Capital Project 1029 and the Thurles 110 kV Station Static Synchronous Compensator (Statcom) project.

The Thurles 110 kV Station Statcom project went through Step 4 of the process in 2018 and is now at Step 5. Once completed, it will help to maintain system security in the Tipperary region. It should be noted that while the Thurles 110 kV Station Statcom and the Cross Shannon 400 kV sub-sea cable projects are still in Step 5, planning applications are expected to be submitted to the relevant authorities at a future date.

The Six-Step Grid Development Process: Step 6

In Step 6, EirGrid and ESB Networks agree a construction programme. ESB Networks then undertake the construction work, which is jointly monitored and refined as the project progresses. During Step 6, a project is built and goes live after a period of testing. This can take from 6 to 36 months to complete.

Project Agreements Concluded

The first priority of Step 6 is for EirGrid and ESB Networks to sign a Project Agreement (PA). In 2019 25 projects reached PA. This includes the following projects:

- Station related projects: 18
- Circuit related projects: 7

These projects include the Killonan 220 kV Station refurbishment, Inchicore 220 kV GIS Station upgrade, Cloghran 110 kV Station transformer replacements, Flagford and Cashla 220 kV Station circuit breaker replacements, Baroda 110 kV Station and Intel 220 kV Station. Also included were the Knockraha- Raffeen 220 kV line refurbishment, Corderry-Srananagh 110 kV line uprate, Finglas-Shellybanks 220 kV cable diversion, a Ryebrook 110 kV Temporary Connection, a 220 kV cable sealing end replacement project, Kilbarry Line Conflicts project, the Knockanure Reactor and the Athea 110 kV shallow connection project.

In addition, several projects which were in Step 5 in 2018 have progressed to Step 6 in 2019. These include the Ballynahulla and Ballyvouskill 100 MVAr Statcoms, the Great Island-Kilkenny 110 kV uprate project, the Cloon-Lanesboro 110 kV line refurbishment project and a 400 kV Voltage Uprate Trial project.

Once a Project Agreement has been finalised, the project progresses into the construction stage.

In 2019, eleven projects were energised and completed. Reasons for the changes in energisation and completion dates for sixteen additional projects which were forecast in the 2018 programme to be completed in 2019 include:

- Land access issues
- Material availability
- Customer issues
- Construction issues
- Outage issues

Scheduling and Prioritisation Approach

A key part of each project programme involves the transmission network outages required to complete construction within substations or on linked circuits. Outages required for maintenance work must also be included.

There are a number of key steps in the outage process, including:

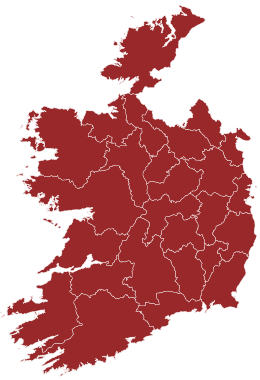
- Identification of outage requirements, including the sequence of work, expected timing, duration and the plant required for these outages;
- Assessment of readiness for outages in a given year; and the sequences of work, expected timing, duration and plant required for these outages; and
- Consultation with impacted stakeholders, the Distribution System Operator (DSO) where appropriate and prioritisation of works.

Programme Prioritisation

A key input into the programme scheduling process is the prioritisation of works. A prioritisation hierarchy is followed which categorises projects, or project activities, according to the importance of the project driver, with consideration of the safety of people and plant of the highest priority.

1. Safety
2. Security of Supply
3. Generator/Demand Connections
4. Associated Transmission Reinforcements (ATRs)
5. Backbone Transmission
6. Refurbishments
7. Control, Protection & Diversions

Taking account of stakeholder requirements

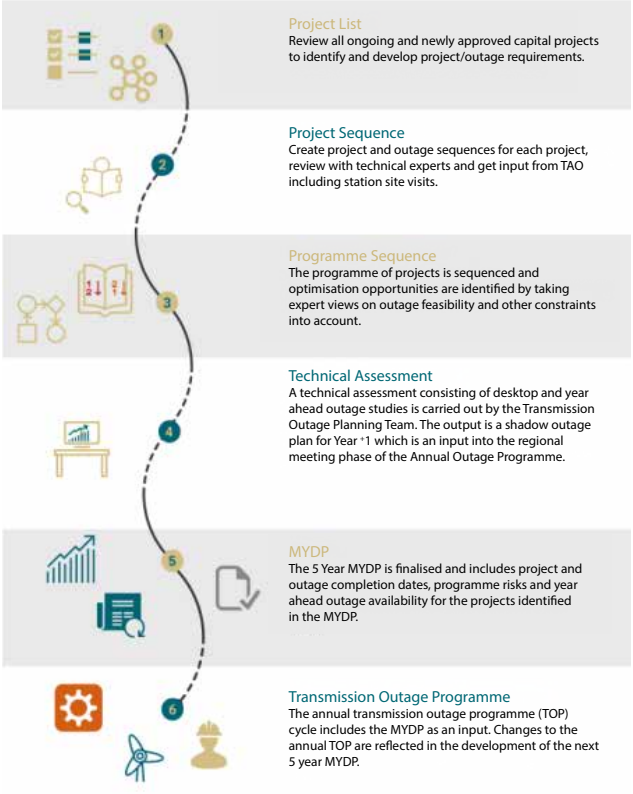


Where it is not possible to accommodate all proposed construction and maintenance works in the period requested, the required works and associated outages are prioritised in line with the hierarchy shown above, taking stakeholder considerations into account.

Based on this information, detailed system studies are carried out and a final plan is agreed. This annual plan is known as the Transmission Outage Programme (TOP). The plan is published in December for the coming calendar year. 72% of the 2019 TOP was delivered, which compares to 83% and 80% in 2018 and 2017 respectively.

The TOP is supported by a five-year delivery programme called the Multi-Year Delivery Programme (MYDP). The objective of the MYDP is to develop a realistic longer-term delivery programme which supports project prioritisation, customer requirements and outage scheduling. Complex projects must be planned a number of years in advance to ensure that the outages are efficiently managed and the maximum work is completed within an outage window.

Multi-Year Delivery Programme



Continued Engagement

When the grid is developed in a region, the aim is to bring benefits to the whole community in the area. That can only happen when we work closely with local farmers and landowners.

Throughout 2019, ESB Networks maintained regular interaction with Landowners, Landowner Representative Organisations and EirGrid regarding land access issues and arrangements.

In 2020, EirGrid published its Stakeholder Engagement Report for 2019. This provided information on all areas of its stakeholder engagement including continued engagement with local communities in proximity to network developments. The report can be found on EirGrid's website here.

The TSO's performance in terms of Stakeholder Engagement is assessed on an annual basis by the Network Stakeholder Engagement Evaluation (NSEE) Panel. Further details on EirGrid's performance in its stakeholder engagement as determined by the NSEE Panel can be found in the Electricity Transmission Performance Report 2019.

Benefits Sharing

When EirGrid plans development or expansion of the transmission grid, this work will affect communities near new transmission infrastructure. In some locations, and to some observers, electricity transmission lines have a visual impact on the landscape. Particularly in residential areas, they can seem intrusive when first built.

This is why, in January 2014, EirGrid developed a Community Support Fund and a Proximity Payments Scheme. This was introduced after a consultation process where public feedback was taken onboard. We are building a more efficient, more effective and more economic electricity network. The Community Support Fund and Proximity Payments Scheme recognises that this can only happen when we work closely with local communities.

Community Support Fund

Under this initiative, EirGrid creates a fund in proportion to the scale of the project and distributes grants from the fund when a project is complete and goes live. When a community fund is created, the aim is to support local projects that benefit the community near new transmission infrastructure.

Proximity Payments

Proximity payments are intended to share the benefits of a better network with the communities and home owners. These payments are made to those who are closest to new transmission infrastructure. After construction begins, proximity payments are then made to homeowners near a new transmission infrastructure. Further detail on proximity payments can be found here.

In summary - Transmission Development 2019 highlights

It was a positive year for the transmission capital programme. A significant number of new generation customers were connected to the grid in 2019.

Eleven projects were energised and completed in 2019. This total is comprised of:

- Five projects which facilitated the connection of future 547 MW MEC of TSO/DSO renewable connections.
- A 220 kV station extension at Clonee enabling a demand customer with a data centre to increase their demand connection by 37 MVA;
- A project to replace two transformers at Cloghran 110 kV station to increase capacity for another data centre.
- Two Associated Transmission Reinforcements [ATR] line uprate projects, one in the South East and one in the West. The completion of these ATRs alleviates constraints and strengthens the transmission network in those areas.
- The replacement of a 110/10 kV transformer at Midleton 110 kV station.
- A protection upgrade project at Bandon 110 kV station.

There were a number of significant works completed in 2019 which are part of the scope of ongoing projects. These projects will be completed in future years.

- The new Clashavoon - Macroom 110 kV cable (8 km) was energised in December 2019. This is the first new linear transmission reinforcement to be completed in a number of years.
- The Moneypoint - Prospect 220 kV cable was transferred to the new GIS station at Moneypoint 220 kV station.
- The Finglas 110 kV station project continues and in 2019 the existing transformers T141 and T142 were transferred to the new 110 kV GIS station. The Finglas-Huntstown cable sealing ends were replaced on the 220 kV cable.

Acronyms

- (AC) Alternating Current
- (ALOs) Agricultural Liaison Officers
- (ATR) Associated Transmission Reinforcement
- (CAPEX) Capital Expenditure
- (CER) Commission for Energy Regulation
- (CLOs) Community Liaison Officers
- (CRU) Commission for Regulation of Utilities
- (DC) Direct Current
- (DSO) Distribution System Operator
- (HTLS) High-temperature low-sag
- (MYDP) Multi-Year Delivery Programme
- (NSEE) Stakeholder Engagement Evaluation
- (PR4) Price Review
- (SNA) System Needs Assessment
- (TAO) Transmission Asset Owner
- (TDP) Transmission development Plan
- (TES) Tomorrow's Energy Scenarios
- (TOP) Transmission Outage Programme
- (TSO) Transmission System Operator
- (TSSPS Multi-Year) Transmission System Security and Planning Standards

How to Contact Us

We welcome all feedback in regard to the information set out in this booklet and any additional information you might wish to see included in future versions. Please contact the below:

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The current. The future.

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