



NETWORKS



Delivering a cleaner energy future



Investment Planning and Delivery Report 2020

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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 Networks, in executing the responsibilities of Transmission Asset Owner (TAO), has a core role in delivering the capital projects and maintenance requirements of the transmission system. ESB Networks also plays a key role in the integration of transmission system infrastructure developments with the distribution system, to provide a world-class network for all electricity customers.

EirGrid and ESB Networks have clearly defined roles and responsibilities in relation to the transmission network, as set out in an Infrastructure Agreement. Both the TSO and the TAO 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.

This report has been compiled to:

- Provide stakeholders with an overview of the transmission development programme as at the end of calendar year 2020, the final year of the Price Control 4 (2016-2020) period; and
- Highlight how each of the six steps works, by reference to 2020 projects.

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 the Price Control 5 period (2021 -2025) and Price Control 6 period (2026-2030). 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 December 2020 CRU published their decision on TSO and TAO revenue for the PR5 period. EirGrid and ESB Networks will now prepare the PR5 Baseline Transmission Capital programme which will deliver the projects and benefits 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](#), whilst the CRU's PR5 final determination 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 ran 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 2020 was submitted to CRU in May 2021 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.



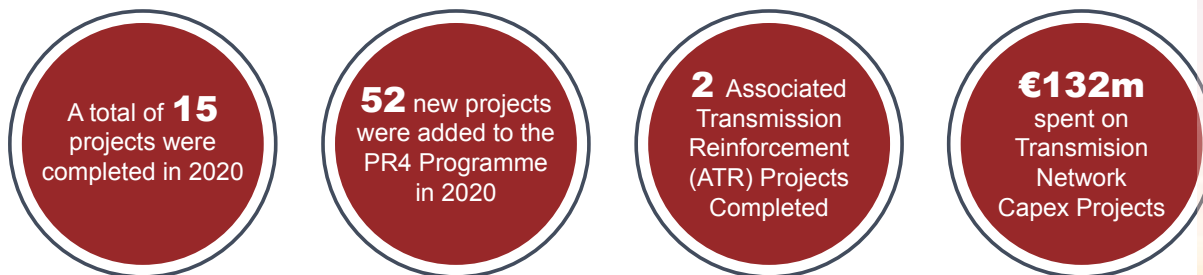
Central to the EirGrid strategy is our six-step approach for grid development. It sets out how the general public and stakeholders can influence the decisions that EirGrid makes on grid development projects. The focus of the TSO has been to increase our value proposition to consumers and stakeholders 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. Step 6 (construction, energisation and benefit sharing) largely concerns building the project on the ground, and these works are typically carried out by ESB Networks in close collaboration with the TSO. More details can be found in EirGrid's ["Have Your Say"](#) document.

We recommend that this report is read in conjunction with our Electricity Transmission Performance Report 2020.

Transmission Development Highlights 2020

EirGrid manages a complex programme of transmission capital projects at various stages of development. ESB Networks has responsibility for efficiently and safely managing the delivery of these projects, including aspects such as procurement and construction. Projects are planned and delivered 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.



It was a challenging year for the transmission capital programme given the impacts of COVID-19 on the development and delivery programmes. The COVID-19 related restrictions, introduced on public health grounds in 2020 and continuing into 2021, created a number of specific challenges with respect to developing the transmission system and completing transmission projects during 2020. Most notably the first lockdown closed many TAO and customer sites for two months causing disruption to projects in progress at that time. Opportunities to recover the work programme and system outages were limited for the remainder of 2020. COVID-19 restrictions continued to impact work practices throughout the year, for example, the limitations imposed on close proximity working in stations and on cable jointing activities. For projects in the early development stages EirGrid trialed a number of new methods of stakeholder engagement using online technologies and virtual consultations. Overall, this resulted in the deferral of a significant amount of transmission capital work and expenditure to 2021.

Notwithstanding the challenges faced by the TSO and TAO during the COVID-19 pandemic, the following projects were energised and/or completed in 2020, accounting for a total regulatory spend of €132m:

- Two new 110 kV circuits totalling 57km were connected to the transmission system.
- Four projects which will facilitate the connection of renewable/battery storage connections.
- Four projects which will facilitate demand connections (Including Belcamp and Castlebagot below).
 - The new 220kV transmission station at Belcamp, North County Dublin was energised. While construction of this station was complete in 2019, the station was fully energised in December 2020.
 - The new 220kV transmission station at Castlebagot was energised in March 2020. The new station will support large manufacturing industries and data centres in the area. Castlebagot is one of the largest substations on the transmission network – with eight 220 kV bays, twelve 110 kV bays, four 250 MVA 220/110 kV transformers, four new 220 kV cable circuits and five new 110 kV cable circuits. It is noted that although energised in 2020 works at the site are ongoing and thus this station has not been included in the count of the 15 completed projects.

- Completion of the final works and energisation across the multi-year phases of the Moneypoint 400/220/110 kV project.
- Completion of two Associated Transmission Reinforcements (ATR)¹ projects, both located in the West of Ireland. The completion of these ATRs alleviates constraints and strengthens the transmission network in this area.
- Diversion of two overhead circuit sections to facilitate third party customer construction requests.
- Diversion of one underground cable to facilitate a third party customer construction request.

Metric	Section of report	2020			Outturn			
		Target	Outturn	Financial Incentive	2019	2018	2017	2016
Projects completed ²	<i>“Transmission Developments 2020”</i> Page 5	40	15 ³	TBC	11 ⁴	40 ⁵	31 ⁶	12

1 ATR – Associated Transmission Reinforcement – work necessary to provide firm access to generators

2 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.

3 The Castlebagot 220 kV Station was energised in March 2020. However, the project is ongoing so is not included in this figure.

4 [2019 IPD](#)

5 [2018 IPD](#)

6 [2017 IPD](#)

Transmission Developments 2020

2020 saw a number of new generation and demand customers connected to the transmission grid. Reinforcement projects were also a key feature of the 2020 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, and liaises closely with ESB Networks on the safe construction and/or connection of these projects to the Transmission system.

During 2020, the following projects which will facilitate renewable/battery storage connections were energised and/or completed:

- The Beenanaspuck and Tobertoreen Wind Farm was energised in January 2020. The project is the first hybrid facility and battery energy storage connection of this scale to connect to the transmission network. The site facilitates the connection of a 23 MW windfarm and an 11 MW battery.
- The energisation of Carrigdangan 110 kV station in Co Cork took place in December 2020 and facilitates the future connection of a 55 MW wind farm.
- The Kelwin Phase 2 project customer energised their new 26.6 MW battery storage facility at Coolnagoonagh 110 kV Station in December 2020.
- The energisation of Derrycarney 110 kV station, located in Co Offaly, concluded in December 2020 and facilitates the connection of a 100 MW battery storage system, the largest battery storage system in Ireland.

2. Demand and Data Centre Connections

There has been increasing interest by large energy users such as 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 multinational organisations have chosen Ireland as the location of their data centre operations or European headquarters. As well as data centre's, EirGrid connects other types of large energy users who seek to connect to the Transmission system.

During 2020, the following projects which will facilitate demand connections were energised and/or completed:

- Castlebagot 220 kV station was successfully energised on 26th March 2020. The new station will support large manufacturing industries and data centres in the area. Castlebagot is one of the largest substations on the transmission network – with eight 220 kV bays, twelve 110 kV bays, four 250 MVA 220/110 kV transformers, four new 220 kV cable circuits and five new 110 kV cable circuits. (Note: works on this project are ongoing and it is not yet fully complete).
- The 220 kV and 110 kV station in North County Dublin at Belcamp which was constructed in 2019 was fully energised in December 2020. This station relieves load congestion at the existing Finglas 220 kV station and supports future expansion in the area which includes Dublin Airport, Beaumont Hospital and a number of high profile IDA supported business parks and data centres.
- The new Darndale 110 kV station was connected in December 2020
- New transformers were also connected at the Ryebrook 110 kV station

3. System Reinforcement & Refurbishment Projects

Reinforcement projects were also a key feature of the 2020 capital programme. 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.

The final multi-year phases of the Moneypoint 400/220/110 kV project were completed in 2020.

The completion of ATRs alleviates constraints and strengthens the transmission network in these areas.

- Two ATR projects, Corderry - Srananagh 110 kV line uprate and the Cashla - Salthill 110 kV bay conductor uprate were completed in the West of Ireland.
- In addition the Moy 110 kV station busbar uprate ATR works were completed in 2020. The remaining protection works required to complete this ATR are due to be completed in 2021 and the overall project will be then be completed and closed out.

Two new 110 kV circuits were energised in 2020, the Mountlucas-Thornsberry 110 kV line and the Clashavoon-Dunmanway 110 kV line totalling 57 km of new 110 kV transmission circuits. These projects had experienced a number of significant delays over many years due to land access issues and their completion is a testament to the dedication of a large number of teams across both organisations and to the engagement by the local communities.

The diversion of two overhead circuit sections and one underground cable was completed in 2020 to facilitate third party construction requests.

There were a number of works completed in 2020 which are part of the scope of on-going projects. These projects will be completed in future years:

- Works continued on the Finglas 220 kV station with the Shellybanks, Corduff 2, T2106, T2104 and Huntstown bays transferring to new protection schemes.
- Aghada 220kV Station Busbar Reconfiguration -T2011/12 Protection Works and the F0-A/ F0-B Installation.
- Great Island 110/38 kV DSO transformer and bay works.
- Killonan 220kV Station Refurbishment - Killonan Station Works, Limerick 2 Diversion.
- Kilpaddoge 220/110 kV station, Killonan - Tarbert Loop-in to Kilpaddoge.
- Cashla Tynagh 220kV Line Fibre Wrap, partial completion due to land access issues.

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 2020, as projects were completed, added or removed. At the end of 2020, the actual outturn programme cost over the full PR4 period was €231m lower than the PR4 allowance of €985M. The total regulatory spend for the PR4 period was €754m, as per the table below:

Total Regulatory Spend PR4 2016-2020

	PR4 Programme 2016	PR4 Programme 2017	PR4 Programme 2018	PR4 Programme 2019	PR4 Programme 2020	PR4 Programme Final Actual Outturn	Increase/Decrease Outturn vs 2020	PR4 Outturn vs PR4 Allowance
Total Network Capex Regulatory Spend	€1,057M	€1,079M	€1,060M	€874M	€784M	€754M	-€30M⁷	-€231M

The table below provides a breakdown of the overall status of the projects in the PR4 Programme as at 31st December 2020 the end of the PR4 period. 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 01/01/2018	# of Projects at 01/01/2019	Delta
1	Ongoing Projects (Stage 1 or Stage 2)	112	145	33
2	Projects Closed or Complete	140 ⁸	155	15 ⁹
3	Projects Removed from Programme	10	12 ¹⁰	2
4	Projects on hold	10	12	2
	Total Number of Projects in PR4 Dataset	272	324	52

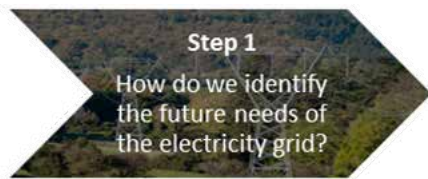
7 The lower than forecast spend in 2020 is mainly explained by Covid-19 impacts on construction activities and an inability to accommodate the resulting wide ranging outage changes into the remainder of the outage season.

8 Figure amended from 125 to 140. Error in 2019 joint TSO/TAO Capex report.

9 The energisation of the Castlebagot 220 kV station is included in the 2020 report; however it is noted that the project is ongoing in 2021 as there are circuit transfers to be completed. As such this programme status table shows 15 projects completed in 2020 as this project is excluded.

10 Two projects from 2019 that were on hold have now been progressed and two projects that were progressing in 2019 are now on hold. Two new projects placed on hold, overall delta of two.

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 2020?

The 2019 TES identified a number of needs across the network. These were analysed in further detail, in line with the six step process for developing the grid, to better understand and define the needs before preparing long lists of solution options in Step 2. These needs related to network capacity and were mostly in the north west, and south west of the country. The capacity needs will progress to Step 2 in 2021. In Step 2 options to meet the needs will be analysed and projects to reinforce the network will follow in later steps. These projects are in addition to others already progressing through later steps of the six step process for developing the grid.

In addition, a need for reinforcement of the transformer capacity at the Corduff 220 kV substation was identified in studies for the connection of a new Large Energy User near the Corduff substation.

The need for network reinforcement in Kinnegad 110 kV substation, and between Newbridge and Cushaling 110 kV substations to facilitate the connection of a new windfarm near Cushaling substation in the midlands was also identified.

17 network needs were identified and analysed in 2020

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 2020?

In 2020 work related to Step 2 of the six step process was carried out on a number of projects. These projects aim to provide for a range of system needs:

- A project to increase the capacity of the Dalton 110 kV busbar to enhance network capacity.
- A project for reinforcement of the transformer capacity at the Corduff 220 kV substation for the connection of a new Large Energy User near the Corduff substation went from Step 1 to Step 2, and also through Step 3 in 2020.
- Projects to increase network capacity in Kinnegad 110 kV substation, and between Newbridge and Cushaling 110 kV substations to facilitate the connection of a new windfarm near Cushaling substation in the midlands went from Step 1 to Step 2, and also through Step 3 in 2020.
- Capital Project 1021 is a proposed development that will help transfer electricity within the east of the country between eastern Meath, and northern Dublin, helping to meet the growing demand for electricity in this area. This growth is due to increased economic activity and the planned connection of new large scale IT industry in the region, and to reduce dependence on fossil fueled generation in the Dublin area. Work on Step 2 of this project continued through 2020.
- Projects to increase the capacity of a number of 110 kV circuits in the north west of the country that were in Step 1 in 2019 and have now progressed to Step 2. These projects are circuit capacity increases of Arva – Carrick-on-Shannon, Castlebar – Cloon, Lanesboro – Mullingar, Binbane – Cathaleens Falls, Flagford – Sliabh Bawn, and Lanesboro – Sliabh Bawn. In this step of the project, information was gathered to help define the scope of work required for the uprates to inform decision making in Step 3.

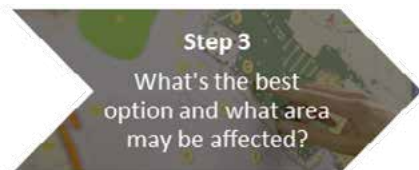
Step 1

4 projects progressed from Step 1 to Step 2 in 2020

Step 2

Investigative work continued on 8 projects in Step 2 during 2020

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 2020?

In 2020 fifty-two new projects with a total capital cost of €180m were added to the PR4 programme and were capitally approved in Step 3 of the six step process.

This includes the following projects:

- Customer Connections: 28
- System Reinforcement: 5
- Asset Refurbishment: 19

In comparison with 2019, 21 projects were capitally approved by EirGrid with a total capital cost of €122m.

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.

In 2019 EirGrid approved 21 new projects in Step 3. By the end of 2020, 71% of these projects had progressed into Step 6 (detailed design/construction/energisation) representing good progression of projects in the transmission capital programme. Projects classified as removed were either cancelled by the customer or superseded by new projects. Projects in steps 4/5 were in the scoping stage and will be progressed to Step 6 in the coming months.

Additional detail on these new 2019 projects includes:

- Projects Completed - 4
- New Projects GW3 to GW6 – 11
- New Projects GW3 to GW4/5 – 3
- Projects Removed - 3



71% of the newly approved projects (2019) progressed from step 3 to step 6 in 2020

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 updates 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. Due to the COVID-19 pandemic in 2020 and resulting Government restrictions it was not possible to arrange face-to-face meetings. EirGrid therefore trialed a number of new methods of stakeholder engagement using online technologies and virtual consultations.

The North Connacht 110 kV project a new electricity development that runs from Ballina in Mayo to Ballaghaderreen in Roscommon is currently in Step 4 of the framework. In 2020 EirGrid undertook a public consultation on the seven potential routes identified in the study area, four of which are for overhead lines and three for underground cables, using online channels for communities and stakeholders to provide feedback.

The Dunstown Series Compensation project progressed through Step 4 in 2020 and a planning application is expected to be lodged in 2021. The Oldstreet Woodland and Laois Moneypoint Projects were also in Step 4 in 2020. These projects will progress into Step 5 towards the end of 2021.

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 2020, two projects entered or passed through Step 5 of the framework.

These included the Thurles 110 kV Station Statcom project and an extension of Trien 110kV Station.

The Thurles 110 KV Station Statcom project also achieved consent in 2020.

Several projects which were noted last year as having entered Step 5, achieved consent in 2020 also, including the redevelopment of Lanesboro 110 kV Station and Maynooth-Woodland 220 kV Line Uprate.

The Six-Step Grid Development Process: Step 6



In Step 6, EirGrid and ESB Networks agree a construction programme. ESB Networks has responsibility for efficiently and safely managing the delivery of these projects, including aspects such as procurement and construction. Projects are 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 2020 29 projects reached PA. These project agreements represent a total Capex project cost of €328m and include the following project types:

- Station related projects: 20
- Circuit related projects: 9

The volume of Project Agreements reached in 2020 was higher than in 2019 both in terms of numbers (29 versus 25 in 2019) and in terms of total project capital cost, €328m versus €295m in 2019.

In addition, two projects which were in Step 5 in 2019 have progressed to Step 6 in 2020. These include Maynooth - Woodland 220kV line uprate and Thurles 30MVAr Statcom project included in the Project Agreement section above.

It should be noted that a large number of projects can progress directly from Step 3 to Step 6, particularly where the customer is responsible for achieving the planning consent or where the TSO has confirmed a declaration that a project is an exempted development.

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

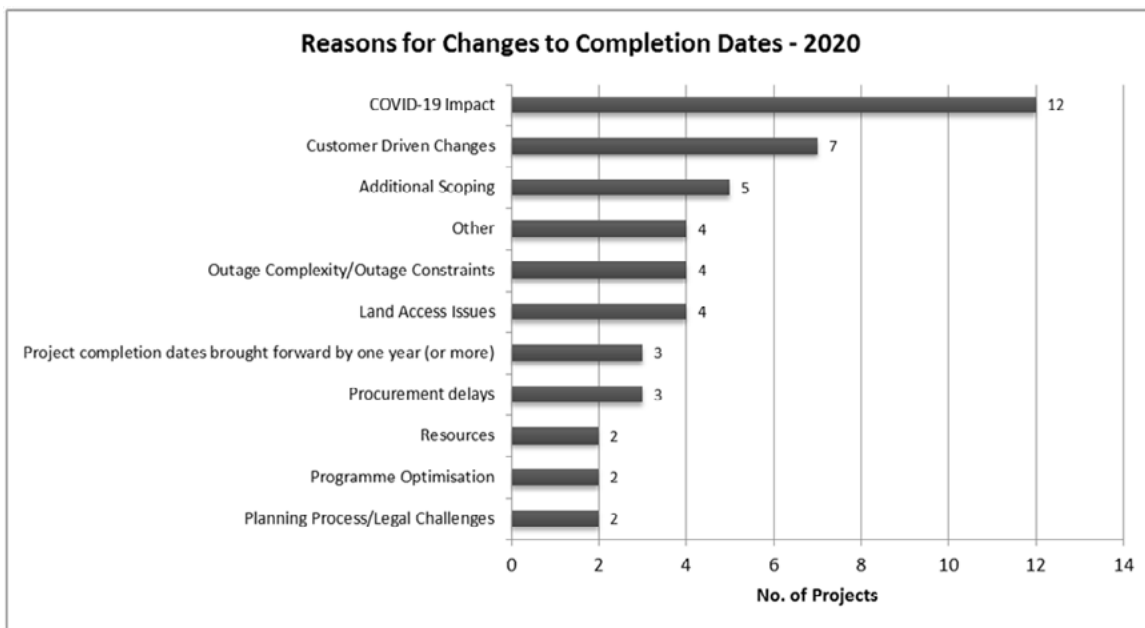
In 2020, sixteen projects were energised and/or completed:

- Two new 110 kV circuits totalling 57km of new circuits connected to the transmission system.
- Four projects which will facilitate the connection of TSO/DSO renewable/battery storage connections.
- Four projects which will facilitate demand connections
 - The new 220kV transmission station at Belcamp, North County Dublin was energised. While construction of this station was complete in 2019, the station was fully energised in December 2020.
 - The new 220kV transmission station at Castlebagot was energised 220 kV station occurred in March 2020. The new station will support large manufacturing industries and data centres in the area. Castlebagot is one of the largest substations on the transmission network – with eight 220 kV bays, twelve 110 kV bays, four 250 MVA 220/110 kV transformers, four new 220 kV cable circuits and five new 110 kV cable circuits. It is noted that although energised in 2020 works at the site are ongoing and thus this station has not been included in the count of the 15 completed projects.

- Completion of the final works and energisation across the multi-year phases of the Moneypoint 400/220/110 kV project;
- Completion of two ATR projects, both located in the West of Ireland. The completion of these ATRs alleviates constraints and strengthens the transmission network in this area.
- Diversion of two overhead circuit sections and one underground cable to facilitate third party customer construction requests.
- Diversion of one underground cable to facilitate a third party customer construction request.

2020 Updates to Completion Dates

Changes to the completion dates for forty-eight projects are noted in 2020. These projects were forecast in the 2019 programme to be completed between 2020 and 2026. The revised completion dates are between 2021 and 2028. Reasons for these changes are displayed in the following graph:



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:

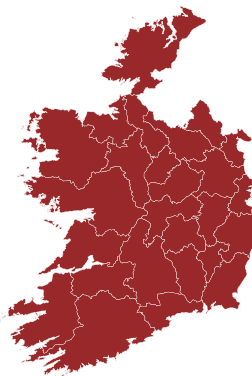
- Identification of outage requirements, including the sequence of work, expected timing, duration and the plant required for these outages;
- Assessment of readiness for outages in a given year; and the sequences of work, expected timing, duration and plant required for these outages; and
- Consultation 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 used which categorises projects, or project activities according to the importance of the project driver, with consideration for the safety of people and plant being of the highest priority.

Taking account of stakeholder requirements

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



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. 86% of the 2020 TOP was delivered¹¹, which compares to 72% and 83% in 2019 and 2018 respectively.

The TOP is supported by a 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.

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 2020, ESB Networks maintained regular interaction with Landowners, Landowner Representative Organisations and EirGrid regarding land access issues and arrangements.

In 2021, EirGrid published its Stakeholder Engagement Report for 2020. This provided information on all areas of its stakeholder engagement including adapted engagement in response to the COVID-19 pandemic 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 'Engaging with Stakeholders' section of the Electricity Transmission Performance Report 2020.

¹¹ This TOP20 delivery percentage includes an ex-post adjustment for COVID-19 issues outside of the control of the TSO and TAO.

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.

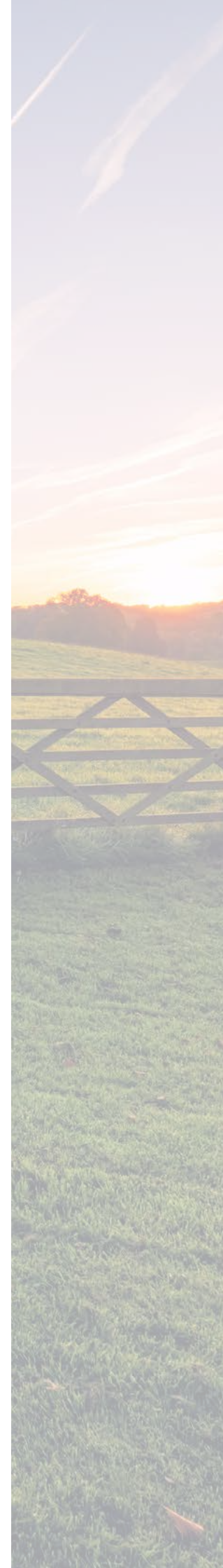
This is why, in January 2014, EirGrid developed a [Community Support Fund and a Proximity Payments Scheme](#). This was introduced after a consultation process where public feedback was taken onboard. We are building a more efficient, more effective and more economic electricity network. The Community 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.

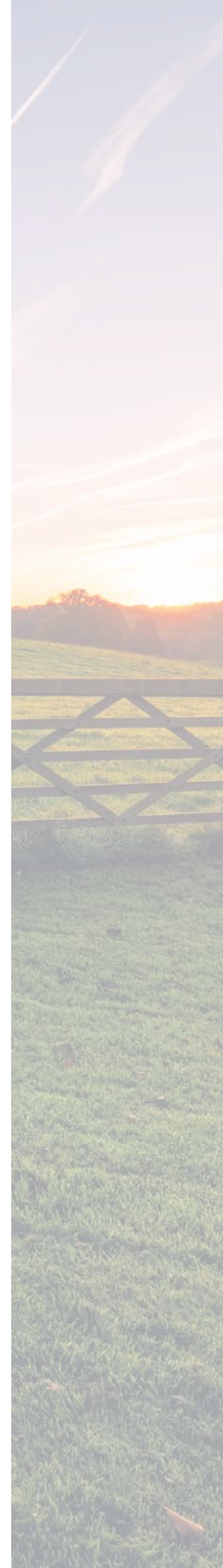
Proximity Payments

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](#).



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) Networks Stakeholder Engagement Evaluation
- (PR4) Price Review
- (PR5) Price Review
- (PR6) 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:



Delivering a cleaner energy future

Please contact our Customer Relations Team at:

info@eirgrid.com



NETWORKS

Please contact us at:
esbnetworks@esb.ie