



The Grid West Project
Frequently asked questions

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TABLE OF CONTENTS

1. The Grid West Project
2. Current position
3. Timeline and design
4. EirGrid and Grid25
5. Public consultation
6. Constraints and corridors
7. Renewable energy
8. Jobs and investment
9. Overhead vs. underground
10. Substation, lines and tower types
11. Technical information
12. EMF
13. Local impact
14. Transmission line noise
15. Landowner access and compensation
16. Property devaluation
17. Grid West project planning process
18. Broadband
19. Grid25 Initiatives – January 2014
20. Aarhus Convention

THE GRID WEST PROJECT – QUESTIONS AND ANSWERS

1. The Grid West project

What is the Grid West Project?

The Grid West project will deliver 21st century energy infrastructure to the west of Ireland. Grid25 is EirGrid's plan to develop and upgrade the electricity transmission network. The Grid West project is the largest Grid25 project in the west of Ireland. By connecting the electricity generated by the region's huge renewable energy resources, the Grid West project will facilitate significant job creation and investment. It will contribute to national recovery and growth while at the same time allowing the region to attract inward investment that requires a strong, reliable, source of power.

EirGrid launched the Grid West project in May 2012. Since then we have completed five rounds of public consultation, hosted 27 open days and engaged with community groups and local stakeholders. In October 2013, EirGrid announced details of an emerging preferred overhead route corridor for the Grid West project running from north Mayo to Flagford, Co. Roscommon. In June 2014, EirGrid announced details of an emerging preferred underground corridor option also running from north Mayo to Flagford, Co. Roscommon.

Why is the project needed?

Ireland has a legally binding target set by the European Union to source 16 per cent of our energy from renewable sources by 2020.

The existing transmission infrastructure in the region needs substantial investment to capture the west's increasing levels of renewable energy generation. This critical infrastructure will also allow the western region to attract the type of industry that requires a secure high-voltage power supply.

2. Current position

What stage is this project at?

An emerging preferred route corridor for an overhead line route was identified in October 2013. The preferred corridor connects the proposed new 400kV substation site in Co. Mayo, north-west of Moygownagh, to Flagford substation in Co. Roscommon.

EirGrid has been consulting with landowners, the public and all stakeholders since the publication of the emerging preferred route corridor in October 2013. We have been listening to all of the feedback we have received to date and will continue to do so. In January of this year, in response to this feedback, EirGrid announced a number of initiatives to address some of the key concerns raised by the public. These included a commitment to undertake a comprehensive analysis of an underground option for the Grid West project and a series of community gain initiatives.

To provide the public with assurance that the undergrounding analysis is carried out in a fair and objective manner, then Minister for Communications, Energy and Natural Resources, Mr. Pat Rabbitte T.D., appointed an independent panel of experts, chaired by former Supreme Court Justice Catherine McGuinness, to conduct an independent review of the overhead and underground options.

This independent panel has recently published its terms of reference and EirGrid has committed to carrying out our analysis of an underground option according to the requirements and standards set by the panel.¹

¹ The panel's terms of reference can be found here:

<http://www.dcenr.gov.ie/Press+Releases/2014/Statement+by+the+Independent+Expert+Panel+considering+the+EirGrid+Grid+West+and+Grid+Link+projects.htm>

In June 2014, EirGrid announced details of an emerging preferred underground corridor option also running from north Mayo to Flagford, Co. Roscommon. This will be developed alongside the overhead options and once both are at a stage where they can be compared in a fair and objective manner, they will be reviewed by the panel

The project will not proceed to the next stage until the review is complete.

We hope to present our analysis to the panel later this year, and they have indicated that they hope to be in a position to provide an opinion on this analysis in January 2015. Following this a further round of public consultation will take place early next year.

Work on the overhead line option will continue to progress and we are currently talking to landowners within the emerging preferred route corridor about the development of an overhead indicative line which will also show substations and tower locations. Work on the underground option will be advanced in line with the terms of reference set by the independent panel of experts. Further information on the current status of the Grid West project is available on the project activity section of the Grid West project site.

<http://www.eirgridprojects.com/projects/gridwest/projectactivity/>

Next Steps - Landowner Engagement

In July 2014 we completed a series of five open days, from 7th-11th July, where we presented the work done to date on the underground option and on proposed localised changes to the overhead route corridor. This is the fifth round of open days we have held, bringing the total number to 27. The project team would like to thank everyone who has been in contact with us and provided feedback on the project.

As outlined at these open days, over the coming weeks and months we will be engaging with landowners on both the underground and overhead options with a view to progressing EirGrid's analysis of both, in line with the terms of reference set by the Government-appointed Independent Expert Panel.

We recently published two dedicated landowner information brochures; detailing the steps required in the development of an overhead line and/or construction of an underground cable. These brochures have been issued to relevant landowners as part of the next phase in the project, which will see work progress in parallel on both the underground and overhead options.

• [The Landowner Brochure - overhead option](#) outlines EirGrid's approach to landowner engagement and the methods employed in constructing an overhead line route through agricultural land, should this be the option chosen for the Grid West project.

• [The Landowner Brochure - underground option](#) explains the steps required in constructing an underground cable and the efforts that will be taken to minimise potential environmental impact and traffic disruption, should this be the option chosen for the Grid West project. An underground cable will only cross private lands where it is required to cross existing infrastructure, such as railways, or natural features, like rivers.

3. Timeline & design

When will a planning application be made?

A project of this nature requires a sufficient time frame for a high level of consultation, technical and environmental design work. It is currently expected that a planning application will be lodged in the third quarter of 2015 whether an overhead or underground option is selected.

What is the proposed timescale of the project from launch to completion?

It is currently expected that a planning application will be lodged in the third quarter of 2015 with the project due for completion by the end of 2019 (the timeline is expected to be the same regardless of whether an overhead or underground option is selected).

Who will a planning application be made to?

It is anticipated that the planning application will be submitted to An Bord Pleanála under the Planning and Development Acts 2000 – 2012. Local planning authorities are statutory consultees in the planning process and will be consulted extensively throughout the planning and development of this critical infrastructure project.

What will this infrastructure look like?

As noted in question 2, following feedback received on Grid25 projects, analysis into an underground solution for the project is being developed in parallel with the overhead line solution.

The overhead line and underground solutions will have different requirements and correspondingly impact differently on the environment.

For an overhead line solution, the Grid West project will use 400 kV technology as this voltage is best suited to cater for the large amount of renewable electricity which is expected to be generated in the region. At either end, new substation equipment will be put in place to transfer electricity to and from the existing electricity lines in the region (110 kV and 220 kV) and this new 400 kV line.

For an underground solution, cables will be located alongside existing roads where possible, except in locations where it is required to cross existing infrastructure or natural features, such as rivers or railways.

At the start and end points of the underground cable it will be necessary to construct converter stations to change the DC electricity used in the cable to AC electricity, which can be used on the transmission grid.

EirGrid has identified locations in north Mayo and Flagford, Co. Roscommon, in which these converter stations can be located. Detailed outlines of the steps required for both an overhead and underground option are set out in the two dedicated landowner information brochures.

4. EirGrid and Grid25

Who is proposing this development?

EirGrid, Ireland's independent Transmission System Operator of the high-voltage national electricity Grid, is proposing this project. EirGrid has the exclusive statutory function in Ireland to operate and develop a safe, secure, reliable, economic and efficient electricity transmission system with due regard for the environment.

What is the National Grid?

The National Grid is an interconnected network of high-voltage power lines and cables, comparable to the motorways, dual carriageways and main roads of the national road network. It is operated at three voltage levels; 400 kV, 220 kV and 110 kV and is approximately 6,400km in length. It is the backbone of Ireland's power system and is vital to ensuring that all customers – industrial, commercial and residential – have a safe, secure, reliable, economic and efficient electricity supply.

What is Grid25?

Grid25 is EirGrid's plan to develop and upgrade the electricity transmission network from now until 2025. It will support economic growth and ensure we can use our renewable energy resources to their maximum potential.

This major initiative will put in place a safe, secure and affordable electricity supply throughout Ireland. It is a major undertaking which will take several years and represents an investment of €3.2 billion.

It involves extensive work throughout the country which includes building 800 km of new power lines and upgrading 2,000 km of existing lines.

This new infrastructure is every bit as essential to the future growth of the country as any investment in road, rail and broadband.

Is Grid25 still needed given the current economic downturn?

Although demand for electricity declined substantially in recent years, it started to grow again in 2013.

EirGrid's job is to plan for the development of the grid on a long-term basis. This means that we are looking at what is required for the secure running of the system over the years and even decades to come.

In terms of renewable energy, we estimate that between 3,500 and 4,000 megawatts of wind capacity need to be installed in Ireland to generate 40% of electricity from renewables by 2020.

We need to invest in grid development now to get this energy on to the system.

Importing and Exporting of Electricity

EirGrid's Grid25 projects are internal to the Irish system. They are planned to reinforce the Irish transmission network and to continue to ensure security of supply for all electricity users. Grid25 projects will facilitate wind generated in Ireland to connect directly to the Irish grid to meet Ireland's domestic renewable energy targets.

The requirement for Grid25 and Grid West still remains.

Currently, the East – West Interconnector linking Wales and Ireland facilitates the import and export of electricity between the Irish and British markets.

During 2013, we imported 2.11 million MWh of electricity and exported 66.8 thousand MWh. Access to the British energy market allows us to import cheaper electricity, contributing to a 9 per cent reduction in wholesale electricity prices since the interconnector began operation.

5. Public consultation

What is the project roadmap?

The public will be consulted extensively through a series of non-statutory and statutory consultations to gather information and feedback from the earliest stages of project development right through to the completion of the project.

The core approach in delivering the Grid West project is the EirGrid Project Development & Consultation Roadmap, which identifies the key stages of project development and aligns this with public and stakeholder consultation in order to ensure that the views of the public, stakeholders and all other interested parties are considered. EirGrid follows a structured framework of project development, which provides for a clear and transparent process to everybody's benefit

This Roadmap ensures that we move through the project stages step-by-step from information gathering (including seeking public input), to evaluation (with further consultation), before endorsing an emerging preferred corridor and, following further public input, producing a specific project proposal.

This Roadmap is common to all major Grid25 projects and its purpose is to assist the project team, working with the public and key stakeholders, to gather the most comprehensive information available in order to choose the best line route.

As part of the Grid25 Initiatives announced in January 2014, a review of the EirGrid's consultation process will be undertaken, including the Project Development & Consultation Roadmap. This review will recommend changes and improvements to enhance future consultation.

How can the public input into this project?

Following this Roadmap, the public will be consulted extensively through a series of non-statutory and statutory consultations to gather information and feedback from the earliest stages of project development right through to the completion of the project.

Information relating to current status of the Grid West project and the public consultation channels open to the public and stakeholders is available on the project activity section of the Grid West project site. <http://www.eirgridprojects.com/projects/gridwest/projectactivity/>

Is the project information available in the Irish language?

The project team is committed to engaging with local communities at the earliest opportunity. The project information brochure is available in Irish. This sets out the rationale and benefits of the project as well as giving the latest developments. Irish speakers were present at all of the project open days. In addition, we have participated in a number of media interviews as gaeilge.

How will my feedback be considered?

After to each consultation period, EirGrid produces a Report on the Consultation which sets out the feedback received. At every stage of the process the report is reviewed fully by the project team before the project proceeds to the next stage. The reports on previous rounds of consultation are available <http://www.eirgridprojects.com/projects/gridwest/stage1report/>

Personal information will not be published in non-statutory consultations

What activity is currently taking place?

Information on current and previous consultation activities is available here; <http://www.eirgridprojects.com/projects/gridwest/projectactivity/>

What form will the public consultation take?

EirGrid has led an extensive programme of public consultation with both stakeholders and the general public. This has included establishing a number of dedicated project information offices, holding open days (27 in total so far), employing a Community Liaison Officer, presentations, meetings and dedicated one-to-one briefings. This will continue for the duration of the project. The Route Corridor and Substation Evaluation Report and the Stage 1 Report include information on all of the work which has been carried out to date and EirGrid welcomes your feedback on these reports. EirGrid is committed to open, inclusive and mutually beneficial communications.

6. Constraints and corridors

What are Constraints?

A 'constraint' is any physical, technical, legal, environmental, topographical or other condition that may potentially affect, limit, restrict or confine the location or other aspect of the project, within the study area.

What is the Grid West Project Constraints Report?

Having identified the need for a major investment in the electricity transmission network in the west

of Ireland, the Grid West project team has gathered as much information as possible.

In particular, the team examined a wide range of environmental and other considerations that may influence or constrain the identification of corridors within which the proposed transmission lines will be routed. The constraints report outlines the information we have gathered and explains how it has been collected.

It contains detailed maps which illustrate how each constraint impacts on the study area. Examples of constraints include elevated topography such as mountains; bodies of water such as rivers and lakes; designated or protected areas such as Special Areas of Conservation (SAC); existing infrastructure such as roads and railways; archaeological and heritage sites such as national monuments; and many more.

Constraints are mapped to facilitate the identification of corridors. The Grid West project Constraints Report is available at <http://www.eirgridprojects.com/projects/gridwest>.

What are Corridors?

In order to fairly compare different potential routes the project team identified corridors, generally about 1 km wide, that connect the two substations and within which a line could be routed in order to meet the needs of the project.

Wider or narrower areas may be included along the length of the corridor in response to the constraints encountered.

How are Corridors determined?

Following the second round of consultation, the Constraints Report was confirmed by the project team. The report, together with professional judgement and consultation feedback, was used to identify corridors. The methodology for determining corridors broadly consists of the following steps:

- Consider all feedback from the first and second round of consultation and the Constraints Report;
- Having regard to mapped constraints, identify areas that may present opportunities to develop corridors;
- Ensure that the corridors meet the objectives of the project.

What is the least constrained corridor?

The 'least constrained corridor' is the corridor that achieves the most acceptable balance between competing constraints, while meeting the needs of the project.

What is the impact of the Grid25 Initiatives on the corridors?

The corridors which have been identified for the overhead line solution should not be affected by the Grid25 Initiatives.

However, as mentioned previously, in July 2014 a number of underground options for an underground cable route were identified by the project team, including a preferred underground option.

7. Renewable energy

Will Grid West help wind farms connect to the grid?

The northwest of Ireland has more potential renewable energy generation than anywhere else in the country. Approximately 35% of our renewable electricity could come from this region.

The area is particularly rich in wind and ocean renewable energy resources, as well as having

potential for biomass and other renewable technologies. The current transmission infrastructure is not designed to accommodate the level of renewable energy planned for this region. The Grid West project is critical to connecting these resources to the national grid.

It is important to note that it is EirGrid's role as transmission system operator to operate and maintain a safe, secure, reliable, economical and efficient transmission system – otherwise known as the national grid – which includes the 110kV, 220kV, and 400 kV networks.

It is important to note that EirGrid has no role in the generation of wind power, nor in selecting sites for the development of wind farms, which is a matter for the relevant developers, the local authority and An Bórd Pleánála.

However, EirGrid has no mandate to develop alternative generation facilities and does not specify generation requirements on the basis of one technology or another

How do wind farms gain access to the existing grid?

Wind farm developments are offered connections to the grid as part of a Gate application procedure. EirGrid, as the Transmission System Operator (TSO), in conjunction with ESB Networks Ltd, the Distribution System Operator (DSO), administer issuing connection offers to all generators, including wind farms. This process is overseen by the Commission for Energy Regulation (CER). EirGrid is generally responsible for issuing offers to generators greater than 40MW.

Applications, made by generators/producers to connect to the grid are processed in a group system known as a 'Gate'. The developer must also obtain planning permission/approval for the development. This is an entirely separate process.

Applications for planning permission/approval are made by the developer directly to the relevant planning authority (either An Bord Pleanála or the Local Authority). For connection to the Transmission System, the process is described on the EirGrid website at the link: <http://www.eirgrid.com/customers/gridconnections/generatorconnections/>

If you require further information on distribution connections, please refer to the [ESB Networks website](#) or contact them at +353 1 850 372 757.

Once an application is received and checked it is placed on the application queue (Connection Offer Disclosure of Applications) which is available on the EirGrid website at the link <http://www.eirgrid.com/customers/gridconnections/completedgenerationapplications/>

Once on this queue the application is awaiting a direction from the Commission for Energy Regulation (CER) which deems it eligible for processing.

8. Jobs and investment

One of the key purposes of the Grid West Project is to ensure a secure supply of electricity for the future, for homes, businesses, farms, factories and communities in the region.

Research carried out by Indecon Consultants suggested that EirGrid's Grid25 programme, of which the Grid Link Project is the largest part, will support nearly 3,000 full-time equivalent jobs between 2012 and 2025.

A majority (83%) of leading companies surveyed for Indecon's report judged that additional available capacity on the grid was important or very important to their expansion plans.

The same study found that 90 per cent of those surveyed believed access to Ireland's electricity transmission network was a very important or important factor in attracting additional foreign direct investment to Ireland.

The IDA has stated that they consider access to a high quality power grid to be very important in attracting new investment, highlighting the ICT and high-tech manufacturing sectors in particular.

Will there be jobs out of the project?

By connecting the region's huge renewable energy resources into the national grid, the Grid West project will facilitate significant job creation and investment through:

- the construction and maintenance of wind farms and other renewable energy sources;
- making the region more attractive for inward investors, particularly those requiring a secure supply of high-voltage electricity;
- a significant portion of the earmarked investment in the Grid West project will be made in the western region providing direct and indirect employment

Currently there are around 100 people working on the development of the Grid West project. This is expected to rise to 300 people during construction phase. This figure does not include the numerous indirect jobs which will be created through the development of this critical infrastructure.

How is it envisaged that the new connection will attract inward investment?

The Grid West project will provide a high-quality; secure supply of electricity to the west making it better placed to attract inward investment.

How do you apply for a job with EirGrid?

Vacancies which might arise at EirGrid are filled through our general, publicly advertised recruitment process. The [careers section of our website](#) lists all current vacancies. You may wish to visit our site from time to time for an update. Should you wish to submit a speculative application at this stage you can do so via the email address provided (careers@eirgrid.com).

EirGrid provides only a portion of the opportunities that are created by our projects. Service providers, contractors and their sub-contractors across all engineering, environmental and technical fields will help us to construct the project.

Will this reduce the cost of my electricity bill?

The Grid West Project will make the grid more efficient which will help to put a downward pressure on the price of electricity.

However, there are many factors that influence the cost of electricity, such as the price of oil and gas. These factors will determine whether you'll notice a reduction in your bill when the connection is energised, but it should be noted that increasing the amount of renewable electricity on the transmission grid will make customers less dependent on imported fossil fuels.

By providing greater capacity in the electricity grid, the Grid West project will also enable a larger number of generators to compete for market share.

9. Overhead vs. Underground

Ireland's high-voltage transmission network operates at three different voltages. These are 110 kV, which makes up two-thirds of the network, 220 kV and 400kV, similar to the lines proposed for the

Grid West Project.

There are approximately 440 km of 400kV line already in existence in Ireland connecting Moneypoint power station to substations in the east of the country. EirGrid has a statutory obligation to operate and develop a safe, secure, reliable and efficient transmission system while minimising impact on the environment.

There are a number of different ways to transport electricity over the transmission system and it is EirGrid's job to ensure that the right choice is made to ensure a safe and secure energy supply for homes, farms and businesses throughout Ireland.

EirGrid examines a number of different methods to transport electricity when developing our transmission system:

Option 1 – Alternating Current Overhead Line

Option 2 – Alternating Current Underground Cable

Option 3 – Direct Current Overhead Line

Option 4 – Direct Current Underground Cable

There is no single right answer. Each option has different strengths or weaknesses and depends upon the nature and parameters of each project. What works for one project might not work in another.

EirGrid must analyse the various options and then pick the one that best suits the needs of each unique project and the transmission system as a whole. As stated above, EirGrid is committed to carrying out a detailed analysis of an underground option for the Grid West Project. This analysis will be reviewed by an independent panel of experts chaired by former Supreme Court Justice Catherine McGuinness. This work is currently ongoing.

Many submissions received in respect of the consultation regarding the Grid West Stage One Report raised the issue of undergrounding. It is important to be clear that an underground option for the Grid West Project is technically possible, but it does not perform in the same way as the existing transmission system is configured, as is explained below in more detail.

Alternating Current versus Direct Current

“Transmission” refers to the carrying of bulk electricity from where it is generated (e.g. a wind farm or power station) or imported (via an interconnector from a neighbouring network), to the wider area where it is required (also known as “demand centres”).

Ireland's electricity transmission network, as with every other national transmission network in the world, is an Alternating Current (AC) system. From the electricity generators, through the transmission network and into your home, everything is run on AC power.

Direct Current (DC) is also an effective means of transporting electricity. In fact, DC can be more efficient over long distances.

In January 2012 the Government published a report by an International Expert Commission that had been appointed to examine the possibility of undergrounding the North – South Interconnector. They concluded that it is not feasible to carry high-voltage power over long distances by means of underground AC cables. Our analysis has shown that in small and relatively isolated AC systems such as Ireland's AC network, it may be possible to accommodate AC cable lengths of relatively short distances on a particular circuit. However, this always has consequences for the stability of the system, which needs to be very well understood.

This means that for anything other than short distances, an underground option would require DC technology. EirGrid recently completed the East – West Interconnector between Ireland and Britain using a DC underground cable, as clearly it is not possible to construct an AC overhead line across the Irish Sea.

The distance of the sea crossing, combined with the required capacity, is too great to use an AC underground cable but does not pose a difficulty for a DC underground cable.

In addition the electricity networks on the islands of Ireland and Great Britain are controlled and operated independently of each other. The only way to transfer electrical power between two such networks is to use DC technology. In the case of the East – West Interconnector, therefore, a DC scheme, with DC underground cable, was the only technically feasible option available. At each end of the DC cable converter stations are installed to convert the power from DC to AC and vice versa.

This DC technology has an extensive track record in the application as an interconnector or to transport power from a generation source over a very long distance, and the operational requirements and risks are well understood.

The same cannot be said for the introduction of a DC circuit into a single AC meshed network and making it operate like an AC circuit. At each point where the DC circuit meets the AC network very large, complex, converter stations would be needed to convert the power from DC to AC and vice versa. In a meshed AC network the AC circuits link together to naturally reinforce each other. If there is a sudden increase or drop in power supply or demand in one area, the system automatically compensates and adapts instantly. In addition, if a transmission circuit goes out of operation, due to an unplanned outage or as part of planned maintenance, power can still flow to the area supplied by that circuit using other circuits also serving the area.

A DC circuit embedded in an AC network could not “naturally” work like that. Instead it needs to be “instructed” by computers to respond using a limited number of programmed scenarios.

This creates a risk to supply if, for example, there is a sudden loss of a major generator or another line and the system does not respond sufficiently fast to rectify the resulting imbalance between supply and demand. This could endanger power supply to tens of thousands of homes, businesses and factories. EirGrid’s preference is to always use the most appropriate technology for new circuits to ensure integration with our existing electricity system and guarantee a safer, more secure energy supply. This preference reflects that of all other transmission system operators in Europe and internationally.

There are advantages and disadvantages to both overhead line and underground cable options.

Overhead lines are usually more cost effective, more compatible with the existing network and easier to repair than underground cables. But the size and number of pylons required for an overhead line can make a substantial visual impact and communities are often reluctant to host the infrastructure required for overhead lines.

Underground cables have a greatly reduced visual impact and are consequently more likely to win community acceptance. However, they can also introduce other environmental impacts through increased excavation and construction works that would not be required for overhead lines and they are more expensive per kilometre length.

The International experience

Overhead AC lines are the most common choice for transmitting high-voltage electricity across Europe. They make up more than 98 per cent of the continent’s current transmission network and 94 per cent of planned new on-shore developments between now and 2022 according to the 10-Year Network Development Plan published by the European Network of Transmission Systems Operators for Electricity in 2012. High-voltage lines are being successfully undergrounded elsewhere in Europe, but it is important to note that these are at the lower voltages – comparable to Ireland’s 110 kV and 220 kV networks.

Denmark is sometimes cited as an example of what can be done in relation to undergrounding. They examined the feasibility of undergrounding their entire transmission network. Work is well advanced with the lower-voltage network at 132 kV and 150 kV.

However, they concluded that it was not technically feasible to underground the entire system, particularly at 400kV.

EirGrid under its licence as the Transmission System Operator is obliged to operate, maintain and develop the electricity transmission network in the most safe, secure, economic and reliable way possible. A review of the two technologies available for transmitting power, i.e. Alternating Current (AC) and Direct Current (DC), both underground and overhead has been undertaken for the project as presented in the Technical Foundation Report in the Stage 1 Report for the project. This review indicated that for the requirements of this project an underground solution, either AC or DC, is not the most technically suitable or cost effective solution.

However, since publication of the emerging preferred route corridor and following the feedback received to date on the major Grid25 projects, EirGrid has announced a number of Grid25 initiatives including a series of community gain initiatives and a commitment to undertake a comprehensive analysis of an underground option for the Grid West project.

To provide the public with assurance that the undergrounding analysis is carried out in a fair and objective manner, then Minister for Communications, Energy and Natural Resources, Mr. Pat Rabbitte T.D., appointed an independent panel of experts, chaired by former Supreme Court Justice Catherine McGuinness, to conduct an independent review of the overhead and underground options.

This independent panel has recently published its terms of reference and EirGrid has committed to carrying out our analysis of an underground option according to the requirements and standards set by the panel.²

The comprehensive analysis will require the overhead and underground options to be developed side-by-side in objective and comparable terms. The project will not proceed to the next stage until the review is complete.

Did EirGrid consider using existing lines?

A principle of the Grid25 strategic development plan is to make the best use of the existing network. As a result, EirGrid first considered using existing lines by using higher capacity conductors or operating at a higher voltage.

However, even with these reinforcements, the current transmission network would not be sufficient to facilitate the large amount of renewable energy projects planned for the west of Ireland.

Are there any underground cables in Ireland?

Yes, there are, but they are generally at lower voltages. Typically you will find these lower voltage cables in urban areas. While modelling transmission systems is a very complex area of engineering, in simple terms the length of high-voltage AC cable that can be accommodated on a system is a function of the size of that system.

The longest highvoltage underground cable in Europe is in London and is 20km long. The longest in the world is in Tokyo and is 40km in distance (both of these projects are in cities and the cables are installed in underground, air conditioned tunnels).

² The panel's terms of reference can be found here:

<http://www.dcenr.gov.ie/Press+Releases/2014/Statement+by+the+Independent+Expert+Panel+considering+the+EirGrid+Grid+West+and+Grid+Link+projects.htm>

There is no practical example anywhere in the world of undergrounding 400kV AC cables over the distance required for the Grid West project which will be approximately 100km.

Why are the majority of power lines in Ireland overhead?

In Ireland, and globally, overhead lines are generally preferred because they are more reliable and they are less expensive for consumers.

EirGrid follows best international practice in designing the transmission electrical network and, like our counterparts around the world, develops the majority of the network as overhead line.

EirGrid is committed to exploring all options and is currently carrying out a detailed analysis of an underground option for the Grid West Project. This analysis will be reviewed by an independent panel of experts chaired by former Supreme Court Justice Catherine McGuinness. This work is currently on going.

Are they still building overhead lines in Europe?

Yes. Currently, there are almost 27,000 km of high-voltage AC overhead lines being planned for installation in the next ten years throughout Europe whereas only some few hundred km of high-voltage AC underground cables are planned for the same period.

10. Substations, lines and tower types

What is a substation?

A substation acts as a point of common connection or 'node' for several circuits. It is helpful to think of it like a roundabout. Power comes in on one circuit (road) and is sent out along another circuit. This is achieved by using equipment in the substation such as switches and circuit breakers. All of this equipment together is known as a substation.

What type of substation is being proposed for this project and how big will they be?

Two substation technologies are being considered for Grid West. Both technologies are commonly used across the world; however Air-Insulated Substation (AIS) is the predominant technology used in the Irish National Grid.

The choice of technology is likely to be influenced by the availability of land and the ability to screen any potential visual impact and will thus be determined during the development of the project.

The Technical Foundation Report proposes that, as the project is only in the first stage of EirGrid's Project Development & Consultation Roadmap, both technologies should be taken forward into the substation site identification and evaluation process.

More details on the application of technologies for the Grid West project are available in the Technical Foundation Report; this report is included in Volume 3, Appendix 3.2 of the Stage 1 Report.

In addition to the above, should a HVDC underground solution be chosen as the preferred technology solution for the Grid West project, converter stations would also be required at each end of the line to convert the DC electricity to AC electricity so that it would be compatible for use on the Irish Transmission System.

These would be required at each end of the transmission line, i.e. in north Mayo and at Flagford in Co. Roscommon.

When will we know what these overhead line structures will look like?

No decision has been made as to what pylon design, or combination of pylon designs, will be used for the Grid West Project should an overhead line be chosen as the preferred project solution.

Overhead line structures in use in Ireland vary depending on a number of factors including terrain, route and whether they are single or double circuit structures. Should an overhead solution be chosen, EirGrid will examine the available technology at that time and continue to consult with the public and all interested parties before we confirm our design.

What is the typical distance between 400kV pylons?

Typically, there are 3 - 4 structures per km or 5 - 6 per mile, however this may vary depending on the type of structure used. The space between the pylons will also depend on the terrain and whether the line is crossing road, railways or rivers.

What is the clearance above ground?

The 400 kV overhead lines or conductors strung between the pylons should be a minimum of 9 metres above ground.

What is the ground area taken up by the pylon structures?

The footprint of the pylon will depend on the type selected and the terrain. Existing 400 kV pylons in Ireland generally have a footprint of between 6.4 x 6.4m to 11 x 11m .

400kV Tower Information

At 400kV a limited number of steel lattice designs are currently deemed suitable for use on the Irish transmission system. However, in line with EirGrid's Grid25 strategy, we regularly review and assess available technologies, including developments in tower designs.

In the course of preparing the Stage 1 Report on the Grid West project, EirGrid's consultants addressed the issue of tower design in the [Technical Foundation Report](#)³. The report reviews a range of alternative technologies which may be relevant to the Grid West project.

EirGrid is currently considering the feasibility of using alternative tower and monopole designs for use on the Irish transmission system on a project-by-project basis. Further detail of these are available on the Tower Design page on the Grid West project website

11. Technical information

What is a transformer?

A transformer is a piece of equipment that safely changes electricity from higher transmission voltages to lower voltages and vice-versa. Most electricity customers are connected directly to the medium and lower voltage distribution network so transformers help us to supply power to these customers by transferring electricity from the high-voltage transmission system level down to the medium and ultimately low voltage distribution system level.

What is Alternating Current (AC) Electricity Transmission?

An AC transmission system is an interconnected network of lines and substations commonly referred to as a grid. Power flows naturally through the grid with the electricity automatically going to where it is needed.

AC transmission grids are used throughout the world because they are by far the most reliable and economical way of transmitting high-voltage electricity from power stations to electricity substations where it can be distributed to customers at lower voltages.

The flow of power across the transmission network varies from minute to minute as customer

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<http://www.eirgridprojects.com/media/Grid%20West%20Volume%203%20Appendix%203.2%20Technical%20Foundations%20Report.pdf>

demand and generator output changes and as transmission lines are switched out due to unexpected faults (e.g. lightning) or for maintenance. Electricity generation and demand are kept in synch with each other by the AC transmission and distribution network.

This is critical to the secure operation of generators and large industrial motor loads, for example, in order that all are synchronised at the same electrical “speed” (50Hz).

If a generator or motor is unexpectedly disconnected from the grid or loses synchronism with it, this can have serious safety implications.

What is Direct Current (DC) Electricity Transmission?

DC is not usually considered appropriate for general transmission projects because it does not function in the manner required of a transmission line forming part of an integrated grid. Transmission of high-voltage direct current (HVDC) is normally used in situations where, for technical or other reasons, alternating current cannot be used.

DC operating characteristics are very different from those of an AC system, which significantly increase the operational and technical complexity of embedding DC circuits in an AC system.

DC links do not allow synchronous connection of generators and electrical demands in the way that an AC network does, nor do they have the characteristics of AC networks whereby power flows will change automatically in response to changes in generation or demand on the system or outages of transmission circuits.

The above considerations will be evaluated in detail as part of the analysis to be carried out as part of the Grid25 Initiatives, announced by EirGrid in January 2014. The findings of these will be presented in the Stage 2 Report and contrasted with the characteristics of an AC network.

12. EMF

EirGrid designs and operates the transmission network to the highest safety standards and complies with the most up-to-date national and international guidelines.

National and international health and scientific agencies have reviewed more than 30 years of research into EMF. None of these agencies has concluded that exposure to EMF from power lines or other electrical sources are a cause of any long-term adverse effects on human, plant or animal health.

In March 2007, Ireland’s Department of Communications, Marine and Natural Resources (DCMNR) assembled a panel of independent scientists to review EMF and radiofrequency research. In their report, entitled *Health Effects of Electromagnetic Fields*, they concluded that: ‘No adverse health effects have been established below the limits suggested by international guidelines.’

On 4th February 2014, the European Commission’s Scientific Committee on Emerging and Newly Identified Health Risks (SCENIHR) published an opinion for public consultation which found no causal link between electromagnetic fields from transmission lines and any adverse effects to health.

This latest opinion is consistent with the previous SCENIHR view and that of the World Health Organisation (WHO), among others.

Based on its review of EMF research, the WHO has stated that compliance with the International Commission on Non Ionising Radiation Protection’s (ICNIRP) guidelines, which have been adopted for the European Union, ensures that the fields humans encountered are not harmful to health.

The ICNIRP is a publicly funded body of independent scientific experts set up in 1992 to examine any possible risk to public health posed by non-ionising radiation like EMF. It is formally recognised by the World Health Organisation and European Union as the nongovernmental standard setting body for

EMF.

ICNIRP guidelines adopted by the EU suggest that in order to ensure public health and safety, members of the public should not be exposed to electric fields of 5,000 V/m or greater, and to magnetic fields of 100 μ T or greater. EirGrid operates the Irish transmission system well within these guidelines, ensuring compliance with international best practice.

EirGrid recognises that some individuals are genuinely concerned about issues regarding EMF and health. EirGrid is committed to addressing these concerns by continuing to:

- Design and operate the transmission system to comply with the ICNIRP's international guidelines on EMF, as reviewed by the World Health Organisation and endorsed by the EU and the Irish Government;
- Closely monitor engineering and scientific research in this area; and
- Provide information to the general public and to staff on this issue.

At the end of January 2014 the Minister for Communications, Energy and Natural Resources, announced – as part of the Grid25 Initiatives – that the Department of Environment and Local Government will engage expert assistance to review and report on international developments in the scientific literature on potential health effects of EMF emanating from transmission grid infrastructure. It is anticipated that this study will provide the best available information on:

- Published, peer reviewed scientific literature relating to non-ionising radiation and associated epidemiological matters;
- Work carried out under, and findings of, relevant international bodies; as well as
- Relevant international and national standards and guidelines covering the period 2007 to date.

The study will serve as an update on the 2007 report mentioned above, Health Effects of Electromagnetic Fields. EirGrid welcomes this study and commits that it will adopt and adhere to recommendations arising from this review. More detailed information on EMF and health is available on the eirgridprojects.com webpage.

Do power lines affect livestock?

As with human health, some concerns have been expressed about the potential effects of EMF from high-voltage transmission lines on animal health, welfare, behaviour and productivity.

Both economically important domesticated animal species and wildlife have been investigated since the 1970s. Overall, the research does not show that EMF have adverse effects on the health, behaviour or productivity of animals, including livestock.

The substantial body of research on wild and domestic animals is informative for all large mammals and does not indicate any risk.

Thus, there is no scientific basis in the research literature to conclude that the presence of a transmission line would create conditions that would impair the health of horses or would precipitate abnormal behaviour.

Studies on dairy cows, for example, failed to find any consistent variation in fertility, hormone levels, milk fat content or dry matter intake beyond what would be expected due to normal variation even when exposed to EMF far stronger than would occur from the Irish transmission system.

Other research on sheep has examined the effect of EMF on weight gain, wool production, behaviour, onset of puberty and immune function. None of the studies showed consistent or replicated evidence of adverse effects.

EMF and fish

A number of fish and other marine species are reported to orient to or make use of the earth's static geomagnetic field during migration. For example, salmon may detect the geomagnetic field, but their behaviour also appears to be governed by multiple stimuli including light, smell, current flow, etc. The principal hypothesis as to how these species are able to detect the earth's magnetic field involves the movement of tiny magnetic crystals coupled to sensory nerves in the head. Other marine species are reported to respond to slowly-varying electric and magnetic with frequencies less than 10 Hertz (Hz).

The EMF produced by the proposed Grid West transmission line will oscillate at a much higher frequency of 50 Hz and so the frequency of the transmission line fields is largely outside the sensory range of such organisms. This may be explained because the rate of oscillation of a 50-Hz magnetic field is too fast for a force to be effectively mechanically coupled to magnetite particles and it is unlikely that the brief and relatively low levels exposure to 50 Hz AC magnetic field from the line would overcome other thermal and biological processes that govern migration (Adair, 1994). Field studies have reported that Atlantic salmon and American eels do not show evidence of detection or behavioural response to 75 Hz magnetic fields at an intensity of 50 μ T (Richardson et al, 1976)⁴.

In addition, field levels, beneath the conductors, where the overhead line crosses the rivers and streams will be quite low. The electric field in water will be 500,000 to 1,000,000 times lower than in the air above, thereby preventing any meaningful exposure to fish and other species in the water. While the magnetic field will not be appreciably attenuated by water, the intensity in the water will be lower where the conductors are higher than the minimum conductor heights that were assumed for modelling magnetic fields. If the proposed line were to be constructed in a conduit underneath the River Moy, no electric field would be produced in the water because of shielding by the metallic conduit and earth and the magnetic field at the river bottom would be similar to, lower, or higher than from the overhead line depending upon the installation depth and configuration.

Research on extremely low frequency (ELF) electric and magnetic fields at 50-60 Hz has focused on aquatic species near submarine cables laid on the sea bed as part of off shore wind power installations. A review conducted for a US federal permitting agency concluded "Most marine species may not sense very low intensity electric or magnetic fields at AC power transmission frequencies (i.e., 60 Hz in US). AC magnetic fields at intensities below 5 μ T may not be sensed by magnetite-based systems (e.g., mammals, turtles, fish, invertebrates), although this AC threshold is theoretical and remains to be confirmed experimentally." (Normandeau et al., 2011)⁵.

EMF and pacemakers

The general standards for pacemakers, for example the European Commission's Standard EC 50527-1, specify for electric fields below 5.0 kV/m and magnetic fields below 100 μ T that the function of ICDs and other active implanted devices should not be impaired. In Ireland, the only transmission line under which this electric-field level may be exceeded is directly beneath a 400kV transmission line, and the magnetic-field limit would not be exceeded anywhere along the route.

⁴ Richardson NE, McCleave JD, Albert EH. Effect of extremely low frequency electric and magnetic fields on locomotor activity rhythms of atlantic salmon (*Salmo Salar*) and american eels (*Anguilla rostrata*). Environmental Pollution. 10 (1):65-76, 1976. <http://www.sciencedirect.com/science/article/pii/0013932776900963>

Abstract

We investigated the effect of weak, extremely low frequency (ELF) electric and magnetic fields on the locomotor activity of Atlantic salmon (*Salmo salar*) parr and American eel (*Anguilla rostrata*) juveniles. Fish were individually exposed to 60 or 75 Hz electric fields of 0.07 V/m or 0.7 V/m or magnetic fields of 0.5 gauss on alternate days in LD 12:12 or DD light conditions. Neither salmon nor eels showed differences between the level or rhythmicity of locomotor activity on exposed and non-exposed days. Fish were also exposed to a 75 Hz electric or magnetic field for 1 h in every 23 h in LL, DD or LD 12:12. None became entrained to a 23 h periodicity. Thus, there is no indication that proposed ELF communications systems would influence the daily activity of Atlantic salmon or American eels.

⁵ <http://www.data.boem.gov/PI/PDFimages/ESPIS/4/5115.pdf>

The EC 50527-1 standard, however, further states that transient (short term) exposure, most likely to be encountered passing beneath or in the vicinity of a transmission line, may also be acceptable even in excess of these specified levels. EirGrid is not aware of any confirmed interference to pacemakers from its transmission lines.

13. Local impact

Can power lines be built over my house?

With respect to routing overhead transmission projects and residential development, on the grounds of general amenity, where possible EirGrid will avoid routing overhead transmission lines close to residential areas.

With respect to individual houses, the aim at route selection stage will be to achieve the maximum separation distance between existing dwellings and a planned line route, while also seeking to avoid, or minimise impact upon, other identified technical and environmental constraints.

In this context, EirGrid will seek, where possible, to achieve a lateral clearance of 50 m from the centre of the proposed route to the nearest point of a dwelling. In exceptional cases where this is not achievable, EirGrid will deal with the affected property owners on an individual basis.

Could the power lines prevent me from building on my own property?

Buildings can be located in close proximity to and even beneath existing overhead transmission lines; however it must be ensured that there is no risk of injury to anyone from a proposed development either directly because of its proximity to the wires or by weakening of the line.

EirGrid does not intervene in the planning process and if planning permission is granted for applications in close proximity to the final line route, EirGrid will engage with the successful applicant to jointly determine the most appropriate course of action.

However, it should be noted that all these stages towards the identification of a line route will include public consultation, and so there will be a number of opportunities to keep EirGrid aware of the progress of any planning applications you may make, and/or your concerns to protect key development sites as EirGrid progresses from route corridor identification to identification of a line route.

What distances from towns, villages, schools will the connection be located?

One of the main constraints in route selection of overhead lines is avoiding existing residential developments such as houses, schools and hospitals. EirGrid aims to build power lines a minimum distance of 50 metres from existing dwellings to the centre of the line. In the vast majority of cases a much greater distance is achieved.

What is EirGrid's position on Community Gain?

Delivery of critical strategic transmission infrastructure constitutes a significant gain to the local and regional communities that benefit from such infrastructure – both in terms of an assured secure and reliable electricity supply to residents, but also in terms of attracting businesses and other sectors which depend on a reliable supply to locate in an area.

In July 2012 the Government published a policy statement on the importance of energy infrastructure in which reference was made to exploring ways of building community gain considerations into project planning and budgeting.

EirGrid has responded to this and in January 2014, outlined proposals in relation to community

benefit as part of the Grid25 Initiatives.

EirGrid will implement a Community Gain Fund encompassing a fund for localities and for residences located close to new pylons and stations. The Government policy statement published in July 2012 underlined the appropriateness of incorporating community gain considerations into major infrastructure projects. In recognition of the visual impact of transmission infrastructure EirGrid is proposing a community gain mechanism with two elements:

Local Community Fund

- A fund to which EirGrid will contribute €40,000 per kilometre for communities in proximity to new 400 kV pylons and new rural stations and converter stations.
- This fund will be put in place on completion of the line and it is envisaged that it will be administered on a ring-fenced basis by/with the local authority on behalf of local communities

Proximity Allowance

- A once-off payment to owners of occupied residential properties (or those with full planning permission) within 200 metres from the closest point of the property to the centre of the new 400 kV lines or within 200 metres from a new rural station or converter station.
- For 400 kV lines there would be a payment of €30,000 for residences at 50m and this would decrease (on a sliding scale) to €5,000 at 200m.
- EirGrid seeks to locate new lines and stations at least 50m for homes and in exceptional cases where this is not achievable, EirGrid will engage with the affected property owners on an individual basis.

14. Transmission line noise

Noise from energised overhead lines is produced by a phenomenon known as “corona discharge” (a limited electrical breakdown of the air). While conductors are designed and constructed to minimise corona, surface irregularities caused by damage, insects, raindrops or pollution can strengthen the electric field enough for corona discharges to occur.

In certain conditions this can be heard as a “crackling” sound, accompanied by a low frequency hum.

The noise level generated by a high-voltage overhead line is weather-related, with highest noise levels occurring during damp conditions. Overhead lines are normally quiet during dry weather, except during long, dry spells when airborne debris sticks to the conductors.

EirGrid is commencing extended noise surveys to obtain an evidence-based understanding of noise from 400 kV transmission lines in a range of typical Irish weather conditions.

If the Grid Link Project proceeds as an overhead line EirGrid will aim to locate power lines a minimum distance of 50 metres from existing dwellings to the centre of the line. In the vast majority of cases it is anticipated that a far greater distance will be achieved. Where this is not possible, we will engage with the individual householder on a case-by-case basis.

16. Landowner access and compensation

What compensation is available to landowners?

In the event that the Grid West project receives planning approval and proceeds to construction any losses incurred by the landowner of lands on which the line is constructed will be compensated by means of a statutory compensation process. A landowner who is dissatisfied with the amount of compensation offered has the statutory right to have the compensation amount assessed by an independent arbitrator.

It is possible that there may be some disruption to farming activity during the construction of the Grid West Project, for which there is compensation available to the landowner. If agreement cannot be reached on the levels of compensation, the matter can be referred to arbitration.

If the project proceeds using an overhead solution once construction has been completed the land underneath the overhead lines can be used as before, with the exception of the area directly under the pylons, which will not be accessible for agricultural machinery, but can be used for grazing.

It is recognised that having pylons in a field represents an inconvenience and an obstacle for farm machinery and that is why compensation is provided to farmers through annual Mast Interference Payments administered by ESB Networks. EirGrid will work with the landowner to try and site pylons to minimise any potential impact on farm operations.

Landowners will also be entitled to the Proximity Payments (see question 13)

Further to this, for other transmission projects, monies have been paid to landowners to facilitate the efficient construction of these lines. It is envisaged that a similar scheme will be put in place once planning approval is received for the proposed development.

Is there an agreement in place between EirGrid and the IFA?

There is an agreed 'Code of Practice' that exists between the IFA and ESB / EirGrid for 'survey, construction and maintenance of overhead lines in relation to the rights of landowners'. Copies of the 'Code of Practice' are available on request.

Will this connection impact on my farming enterprise?

Impacts on farming enterprises may occur during the construction phase of the project, however any such impacts will, where practicable are kept to a minimum through careful routing, positioning of structures and consultation with landowners.

Notwithstanding this recent consultations have raised specific issues regarding the possible impact of new electricity lines on the agriculture and equine industries.

As part of the Grid25 Initiatives EirGrid is carrying out separate reviews of the implications for both the agriculture and the equine industry of overhead transmission infrastructure. These reviews will examine best practice approaches in Europe and internationally. They will also include consultation with representative organisations in both industries and with the relevant Government departments.

17. Property devaluation

Property development (primarily one-off houses in the countryside) has occurred in many areas in close proximity to existing electricity transmission infrastructure, including in proximity to the existing 400 kV high-voltage lines between Moneypoint power station, Co. Clare, and the receiving substations in the east of the country.

Such development has occurred subsequent to the construction and operation of these transmission lines, suggesting that there are other factors contributing to a decision to buy or build property in a particular location.

While there may be perceived short-term negative impacts (essentially during the planning and construction stages) the existence of transmission infrastructure by itself does not unduly influence property values. In fact, there are a multitude of factors that can affect property prices.

Such a conclusion is consistent with other international research on this subject carried out over a number of decades in relation to property values and potential devaluation as a result of the construction of transmission lines, which have typically failed to show any statistically significant negative impact on property values.

There is a statutory entitlement to compensation for directly affected landowners. While agreement regarding compensation is always sought by EirGrid with landowners, there is also a process of independent arbitration, should such agreement not be reached.

The statutory entitlement to compensation is considered to offer an appropriate mitigation to landowners in respect of the impact, if any, upon property arising from the development of strategic transmission infrastructure.

18. Grid West Project planning

The Strategic Infrastructure Act was introduced in 2007 as part of the Planning and Development Acts. It states that certain developments, including electricity transmission projects under Section 182A of the Act, are deemed as strategic infrastructure because of they are critical to national or regional development.

An Bord Pleanála, as the relevant planning authority, can decide whether a project falls into this category.

As part of the application process, An Bord Pleanála designates a number of “Prescribed Bodies” to whom the application must be sent, and who are invited to make a written submission to An Bord Pleanála in respect of the proposed development.

This, in EirGrid’s experience, always includes the County Council Planning Authority within whose administrative area the proposed development is located. The current practice is for the Applicant to send a copy of the planning application to the relevant County Manager, who would co-ordinate a submission to An Bord Pleanála with input usually from the various relevant technical, planning and environmental professionals within the County Council.

As a Prescribed Body, the view of the relevant County Council is a key input into the planning process, particularly given its technical and environmental knowledge of the receiving environment of the local environment.

EirGrid will always engage with the Local Authority at the earliest appropriate stage of the Project development. In this way the views of individual County Councils are considered early on in the development of the project and EirGrid can take relevant considerations on board.

Appropriate mitigation measures can also be included in the planning conditions of a successful grant of planning.

Stakeholders who object to a decision by An Bord Pleanála to grant planning have the right to take a judicial review of the decision.

19. Broadband

EirGrid and ESB recognise the importance of the inclusion of optical fibre in the construction of electricity transmission projects in Ireland, bringing much needed broadband capacity to local networks, businesses and homes.

Optical fibres are included in the construction of power connections to provide the necessary communication for the control of power flow and to protect power systems. Over 1,300km of these fibres are already installed on the Irish electricity network.

The expansion and development of the electricity transmission network will also increase Ireland's optical fibre capacity and enhance the geographical spread of high speed broadband services in line with the Government's "National Broadband Plan for Ireland".

In developing the electricity transmission network in Ireland, EirGrid and ESB are committed to ensuring the rollout of high quality fibre infrastructure to protect the power network and enable delivery of affordable high speed broadband services.

Regardless of whether an overhead or underground option is selected optical fibre will be included in the project.

20. Grid25 Initiatives - January 2014

On 28th January 2014, EirGrid announced a range of initiatives in response to public concerns expressed about some of the major projects proposed as part of the Grid25 strategy to develop and upgrade Ireland's electricity transmission network.⁶

It is important that we listen and respond to these concerns in a meaningful way and that is why we set out a number of initiatives, which include:

- A comprehensive analysis of undergrounding for the Grid Link and Grid West projects, which will be reviewed by the independent expert panel appointed by the Government;
- A commitment to adopt any new recommendations from the Department of the Environment's expert review of Electric and Magnetic Fields and public health;
- Community gain funds for localities and a proximity allowance for residences located close to new pylons and substations;
- A commitment to address major issues that have arisen such as tourism, agriculture and equine concerns; and
- A commitment to review our consultation process to enhance future engagement.

⁶ Further details of the "Grid25 Initiatives" are available here:

<http://www.eirgrid.com/media/Grid25Initiatives.pdf>

To provide the public with assurance that the undergrounding analysis referred to above is carried out in a fair and objective manner, then Minister for Communications, Energy and Natural Resources, Mr. Pat Rabbitte T.D., appointed an independent panel of experts, chaired by former Supreme Court Justice Catherine McGuinness, to conduct an independent review of the overhead and underground options.

The intention of this work is to ensure a transparent, 'side-by-side' comparison of overhead and underground options, which will be assessed and analysed against technical, environmental and economic criteria.

This independent panel has recently published its terms of reference and EirGrid has committed to carrying out our analysis of an underground option according to the requirements and standards set by the panel.⁷

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Community Gain Fund

The Government policy statement published in July 2012 underlined the appropriateness of incorporating community gain considerations into major infrastructure projects. In recognition of the visual impact of transmission infrastructure EirGrid is proposing a community gain mechanism with two elements:

Local Community Fund

- A fund to which EirGrid will contribute €40,000 per kilometre for communities in proximity to new 400 kV pylons and new rural stations and converter stations.
- This fund will be put in place on completion of the line and it is envisaged that it will be administered on a ring-fenced basis by/with the local authority on behalf of local communities

Proximity Allowance

- A once-off payment to owners of occupied residential properties (or those with full planning permission) within 200 metres from the closest point of the property to the centre of the new 400 kV lines or within 200 metres from a new rural station or converter station.
- For 400 kV lines there would be a payment of €30,000 for residences at 50m and this would decrease (on a sliding scale) to €5,000 at 200m.
- EirGrid seeks to locate new lines and stations at least 50m for homes and in exceptional cases where this is not achievable, EirGrid will engage with the affected property owners on an individual basis.

EMF and Health

- We will adopt and adhere to recommendations arising from the Government initiated expert review of Electric and Magnetic Fields. EirGrid designs and operates the transmission network to the highest safety standards and complies with the most up-to-date national and international guidelines. We will continue to monitor the latest research and developments in the area of Electric and Magnetic Fields and public health. We will continually review and improve our communication around this issue.

Tourism, Equine and Agriculture

- We will comprehensively address major issues such as concerns about the potential for Grid25 projects to negatively impact on the tourism, agriculture and equine sectors.

⁷ The panel's terms of reference can be found here:

<http://www.dcenr.gov.ie/Press+Releases/2014/Statement+by+the+Independent+Expert+Panel+considering+the+EirGrid+Grid+West+and+Grid+Link+projects.htm>

- These reviews will examine best practice approaches in Europe and internationally. They will also include consultation with representative organisations in both industries and with the relevant Government departments.
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 - This work will also be informed by expert assistance, as required.
- We will review the consultation process in order to enhance public engagement. The Grid25 projects are being implemented across Ireland and affect a large number of people. At the outset, we outlined the roadmap for developing these projects, and the opportunities for public participation throughout.

We have received feedback that the consultation process could be improved. We are keen to respond positively to this feedback and will conduct a thorough review of our consultation process to enhance future public engagement

21. Aarhus Convention

The Aarhus Convention establishes a number of rights of the public (individuals and their associations) with regard to access to information, public participation in environmental decision making and access to justice.

Public Participation in Environmental Decision Making

The EirGrid Project Development and Consultation Roadmap was developed taking cognisance of the Aarhus Convention and its principles. The Roadmap is used by EirGrid in developing its major electricity transmission infrastructure projects; it sets out projects into different stages, with public consultation comprising an integral element at each stage of the project development process, and most particularly in the early stages of the process.

An illustrative summary of the Roadmap is outlined below at Figure 1. Further information on the Roadmap is available on the EirGrid Projects website:

<http://www.eirgridprojects.com/media/EirGrid%20Roadmap%20Brochure%20July%202012.pdf>



Figure 1 - EirGrid consultation roadmap

These non-statutory consultations are designed to ensure early access to information and to provide the opportunity for members of the public to participate in the ongoing decision-making process. This is in advance of the statutory decision-making process when the planning application is submitted, and which also includes considerable opportunity for public participation.

Access to Justice & the Grid West Project.

Legal rights exist for the public and environmental organisations to access justice via the Courts. Specific legal advices should be sought with respect to access to justice in relation to environmental matters.

Access to Environmental Information & the Grid WestProject.

Since the inception of the project, the project team has responded to a large volume of requests for information, including requests for environmental information. While EirGrid proactively responds to all requests for information received, the public also have defined rights under the European Communities (Access to Information on the Environment) Regulations 2007 to 2011. EirGrid is a public authority under European Communities (Access to Information on the Environment) Regulations 2007 to 2011 and the public may request environmental information from EirGrid under the provisions of the Regulations. Information on the Regulations, together with an unofficial consolidated version of the Regulations, is available on the Department of the Environment, Community and Local Government website at the following link:

<http://www.environ.ie/en/AboutUs/AccessToInformationontheEnvironment/>.

Your feedback is important. There are a number of channels through which you can contact the team and provide your feedback:

Telephone: LoCall 1890 940 802

Email: gridwest@eirgrid.com

Visit: Grid West Information Centres in (see website for opening hours)

- Ballina, Bury Central, Bury Street, Ballina, Co. Mayo
- Ballagherreen, The Square, Ballagherreen, Co. Roscommon
- Castlebar, Linenhall Street, Castlebar Co. Mayo (by appointment – call 1890 940 802).