REPORT ON DRAFT TRANSMISSION DEVELOPMENT PLAN 2013 PUBLIC CONSULTATION

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1. Introduction

EirGrid is the licenced Transmission System Operator (TSO) for the Irish Transmission System. The Commission for Energy Regulation (CER) issued a Transmission System Operator (TSO) Licence to EirGrid plc pursuant to Section 14 (1) (e) of the Electricity Regulation Act, 1999, as inserted by Regulation 32 of Statutory Instrument (SI) No. 445 of 2000 - European Communities (Internal Market in Electricity) Regulations 2001.

EirGrid's role is to manage and operate Ireland's national transmission system, ensuring a safe, secure, supply of electricity to homes, businesses and industry across Ireland. This also includes developing key infrastructural projects, which are vital for Ireland's social and economic development.

As TSO, EirGrid is regulated by the Commission for Energy Regulation (CER).

EirGrid issued its draft Transmission Development Plan (TDP)[1] for the ten year period from 2013 in accordance with its obligations under Statutory Instrument 445 (2000), TSO Licence and EU Directive 2009/72. Regulation 8(6) of SI 445/2000 requires the TSO to consult on the plan before submitting it to the Commission for Energy Regulation (CER) for approval and states:

(e) The development plan shall be submitted to the Commission for approval.

(f) The transmission system operator shall-

(i) engage in a public consultation process, including any other form of consultation that the Commission may direct, before submitting the development plan to the Commission for approval, and

(ii) report in writing to the Commission on the results of that process not later than when submitting the development plan to the Commission for approval

This report is prepared to fulfill regulation 8(6) (f)(ii). It describes the consultation process, provides an overview of the submissions and the EirGrid's response to the issues raised.

1.1. Description of Consultation Process

The CER, ESB and System Operator Northern Ireland (SONI) were consulted prior to the draft plan being issued for public consultation. The draft plan was posted for consultation on the EirGrid website on the 25th October 2013. The consultation ended on the 6th December 2013, a period of 6 weeks.

In accordance with Article 22 of European Directive 2009/72 the CER also held a separate public consultation on the draft TDP 2013-2023 at the same time. Respondents could reply to either consultation or both.

Notification of the consultations was made in the following ways:

- A notification of EirGrid's consultation was sent, via email, to all EirGrid's stakeholders that were subscribed to EirGrid's info@eirgrid.com mailing list; and
- A notification of CER's consultation was sent, via email, to all CER's stakeholders that were subscribed to CER's info@cer.ie mailing list.

In addition, a workshop on the draft plan took place on the 22nd November 2013.

[1] Please note that this is not an all island (i.e. Ireland and Northern Ireland) transmission development plan.

1.2. Responses to the Consultation

EirGrid and the CER together received seven submissions in response to the consultation. These were from:

- The Irish Wind Energy Association;
- Meitheal Na Gaoithe;
- Art Generation; and
- Four from members of the public, one of which was labelled confidential.

The six non-confidential submissions are attached as separate documents to this report.

EirGrid would like to thank those who responded to the consultation.

The rest of this report deals with the issues raised in the submissions.

In the following sections, submissions are summarised and are followed by EirGrid's responses. It is noted in the response if changes have been made in the final Transmission Development Plan to take account of the comments and suggestions made.

2. EirGrid's Grid25 Initiatives & Grid Development Strategy Review

Since the publication of the draft TDP 2013, EirGrid, on the 28th January 2014, announced a range of initiatives in response to public concerns about some of the major projects proposed to develop and upgrade Ireland's electricity transmission network. EirGrid feels it is helpful to provide this information to the reader in advance of reading this consultation report.

It is important that we listen and respond to the concerns raised 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 (IEP) 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, details of which can be found here.

To provide the public with assurance that the undergrounding analysis referred to above is carried out in a fair and objective manner, the former 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.

The IEP has published its terms of reference and EirGrid is committed to carrying out our analysis of an underground option according to the requirements and standards set by the panel.

The Grid West project report was submitted to the IEP in February 2015 and in April 2015 the panel provided a positive opinion to the Minister for Communications, Energy and Natural Resources on the completeness and objectivity of the studies undertaken for each option. It is expected that the Grid Link project report will be submitted to the IEP later in 2015.

More details on the other Grid25 Initiatives can be found throughout this document. Some of the reviews are complete and are available on www.eirgrid.com.

In addition in 2014 we undertook a comprehensive review of our grid development strategy. The review resulted in the publication of a discussion paper on a new draft grid development strategy, "Your Grid, Your Views, Your Tomorrow." published in March 2015. The review outlines our proposed strategy for the long-term development of the network. The proposed grid development strategy is being developed in consideration of our three new strategy statements:

- Strategy statement 1: Open engagement and inclusive consultation with local communities and stakeholders will be central to our approach to network development.

- Strategy statement 2: All practical technology options will be considered for network development.
- Strategy statement 3: The network will be optimised to minimise requirements for new infrastructure.

The final strategy, to be published later this year, will support Ireland's wider policy objectives: economic; environmental and social (including the Government's Energy White Paper); the Government's Action Plan for Jobs; and the Industrial Development Authority's (IDA Ireland) Regional Development Strategy.

The outcome of these initiatives may alter current network development policies and projects. Any changes that are relevant to the TDP will be captured in future TDPs.

3. Purpose of the Transmission Development Plan

3.1. Summary of Feedback

A number of comments were received that are not directly related to the Transmission Development Plan (TDP) and are outside the scope of the document; thus, it is useful to outline the plan's purpose and list those comments that lie outside the scope of the TDP.

3.2. EirGrid's Response

The TDP forms part of EirGrid's statutory and licence obligations. The primary objective of the TDP is to describe the reinforcements planned for the next 10 years. The TDP explains the drivers for investment, the network needs, expected project completion dates and in so doing raises awareness of those reinforcements. The TDP is not a strategy-forming nor a policy-forming document.

Broad national and European strategic objectives set the context for investment in the Irish transmission system to ensure security of electricity supply, competitiveness of the national economy, and long-term sustainability of electricity supply in the country.

To achieve these strategic objectives, it is necessary to invest in the development and maintenance of the electricity transmission system. The drivers for each TDP investment project are described in the TDP. Specific drivers of investment in transmission network infrastructure are: securing transmission network supplies, promoting market integration, and promoting the integration of Renewable Energy Sources (RES).

To ensure transmission system reliability and security, the performance of the network is compared with the requirements of the Transmission Planning Criteria (TPC). EirGrid's licence obliges EirGrid to maintain and develop the transmission system in accordance with the TPC. The TPC requires the transmission system to remain stable and secure for a variety of critical contingencies, for example, network outages as a result of faults or maintenance.

The drivers for future network investment are investigated and analysed. This generates a number of development options from which the optimum TDP network reinforcement projects emerge. These projects address a range of system needs.

The TDP project needs are categorised as: inter-regional power flow, local constraint, connection of demand or generation, interconnection and asset condition.

Feedback outside the scope of the TDP consultation

A number of comments were received concerning issues that are outside the scope of the TDP. These are listed below:

- One respondent queried the impact on long term costs of the proposal to change Rate of Change of Frequency (RoCoF). This issue is being dealt with by EirGrid and the Regulatory Authorities in the DS3 Programme.[2]
- Several respondents queried discrimination in the connection offer process/Group Processing Approach. This issue is a matter for the CER.
- One respondent raised the issue of 'Wind Turbine Syndrome', linking it to public acceptability of wind farms. While some of the projects described in the TDP will facilitate the connection of wind farms, EirGrid is not involved in the construction of wind farms. As such, this is a matter for the individual generators when progressing through the design, planning and consenting process.

[2] More information about the DS3 Programme is available online at: http://www.eirgrid.com/operations/ds3/

- Several respondents queried the reliability of wind energy. This matter is not related to the TDP, however, EirGrid, as TSO, continually operates and manages the dispatch and variability of wind.

4. Network Development Approach – Need for TDP Projects & Impact on Generation and Interconnection

4.1. Summary of Feedback

A number of respondents questioned:

- The basis of the Transmission Development Plan (TDP) and the need for the projects in the TDP; in particular, the 400 kV projects.
- Plans to reach renewable targets without considering all RES technologies and their cumulative effects, and risks to the transmission system.
- The economic and environmental implications of large scale generation.
- Plans to reach renewable targets and to comply with inter-governmental policies on exporting energy to the UK.

4.2. EirGrid's Response

4.2.1. The Transmission Development Plan, Investment Drivers and Needs

Broad national and European strategic objectives set the context for investment in the Irish transmission system to ensure security of electricity supply, competitiveness of the national economy, and long-term sustainability of electricity supply in the country.

Specific drivers of investment in transmission network infrastructure are:

- *Securing transmission network supplies;*

In the TDP security of supply is delivered by securing transmission network supplies. This is the ability of the transmission network to reliably transport electrical energy from generation sources to demand centres.

- *Promoting market integration;*

Increased interconnection will facilitate greater market integration and more opportunities for power exchanges across Europe. This will enable increased penetration of Renewable Energy Sources (RES), competitive electricity prices, improved efficiency and network security across Europe.

- *Promoting the integration of Renewable Energy Sources (RES).*

European and Irish government targets and policies encourage the development of RES. This is expected to lead to a decarbonisation of energy supply, a reduction in greenhouse gas emissions and improved energy security with less dependence on imported fossil fuels.

To ensure transmission system reliability and security, the performance of the network is compared with the requirements of the Transmission Planning Criteria (TPC). EirGrid's licence obliges EirGrid to maintain and develop the transmission system in accordance with the TPC.

The transmission system must remain stable and secure for a variety of critical contingencies, for example network outages as a result of faults or maintenance. The network is assessed against a wide variety of possible scenarios, such as: diverse demand levels and generation dispatches, different interconnection power transfers, generation closures, network stability, and asset condition. TDP projects are reassessed as part of the on-going process of project development and delivery as network conditions change.

The drivers for network investment result in a series of reinforcement projects to address identified needs. The project needs are categorised in the TDP as: inter-regional power

flow, local constraint, connection of demand or generation, interconnection, and asset condition.

EirGrid believes that the combined approach of investing in the network and developing new and innovative operational strategies is fundamental to enabling the transmission network to meet future needs.

In summary the TDP reinforcement projects are essential to:

- Developing a safe, secure, reliable and affordable transmission grid for electricity customers across Ireland;
- Providing a high-quality and efficient high-voltage bulk power supply for Ireland that will deliver competitive energy supplies to the Single Electricity Market;
- Exploiting Ireland's natural renewable energy sources, supporting a low carbon economy, and providing a sustainable future with less reliance on imported fossil fuels;
- Helping Ireland to meet its 2020 renewable energy target of 40% of electricity coming from renewable energy sources as set out in Government legislation and policy;
- A high quality, reliable and secure electricity supply that is essential if Ireland is to continue to retain high-tech industrial investment and job creation, support economic growth and to encourage balanced regional investment;
- Increasing Ireland's connectivity to the European grid, allowing for both bulk exports and imports of electricity ensuring competitive energy costs for the Irish consumer

4.2.2. The connection of Renewable Energy Sources (RES) and conventional generation

Under EirGrid's TSO licence, it cannot "engage in the generation, distribution or supply of electricity in the state". EirGrid has no role to play 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 Pleánala.

EirGrid is required "to offer terms and enter into agreements, where appropriate, for connection to and use of the transmission system with all those using and seeking to use the transmission system".

In Ireland, the CER approved Group Processing Approach, or 'Gate' Process, is the means by which generation is offered connection to the grid. To date there have been three 'Gates', in which applications for connections were processed in batches.

In the Gate 1 and 2 connection offer processes in 2004/5 and 2006/7 respectively, a total of approximately 1,700 MW of connection offers were made and accepted.

During the Gate 3 process, under the direction of the CER, both EirGrid and ESB Networks Ltd issued connection agreements to connect approximately 4,000 MW of renewable generation and 1,300 MW of conventional generation. The uptake of Gate 3 offers is particularly high, which is in line with TDP assumptions and covers a variety of generation technologies.

This has resulted, and will continue to result, in many smaller intermittent generators connecting in more dispersed areas of the transmission and distribution networks, remote from traditional larger load centres.

The TDP considers a range of generation dispatch scenarios, including the expected connection of new, larger, conventional generation capacity and closures of existing plants.

In line with its statutory and licence obligations, EirGrid continues to plan and deliver connections to the grid for all generation technology types based on the agreed regulatory approved Gate connection offer process. The cumulative effect on transmission system power flows by smaller generators connected to the distribution system is accounted for in EirGrid's TDP.

EirGrid continues to receive applications for connection to the grid, however, the decision on how or whether those applications will be processed is a matter for the CER.

4.2.3. Importing and Exporting Electricity

EirGrid's TDP projects are planned to reinforce the Irish transmission network and to continue to ensure security of supply for all electricity users. These projects will facilitate renewable generators connecting directly to the Irish grid to meet Ireland's domestic renewable energy targets.

These projects are not related to more recent proposals by private developers to export renewable energy to Great Britain via new links connecting directly to the British grid. One of these proposals is the midlands energy export project. In April 2014, then Minister for Communications, Energy and Natural Resources, Mr. Pat Rabbitte T.D. announced that this project would not now go ahead.

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

5. Network Development Approach – Undergrounding / Overhead Options

5.1. Summary of Feedback

One confidential respondent stated that undergrounding is in the national interest and that a full independent cost benefit analysis should be undertaken comparing undergrounding to overhead. Another respondent felt that overhead line technology was selected on the basis of its greater capacity and tolerance to overheating.

5.2. EirGrid's Response

5.2.1. Undergrounding

EirGrid is responsible for operating and developing Ireland's electricity transmission system. This is a 6,500 km network of high-voltage overhead lines, underground cables and substations used to transport electricity around the country.

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 400 kV.

There are approximately 440 km of 400 kV 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 including:

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 has committed to carrying out a detailed analysis of an underground option for the Grid Link and Grid West Projects. This analysis for Grid West is complete[3]. The IEP report, based on this detailed analysis, considers three options:

- A HVDC underground cable;
- A 400 kV overhead line; and
- A 220 kV overhead line which may incorporate sections of underground AC cable.

[3] The Grid West IEP report is published on the EirGrid website.

This analysis for Grid Link is currently ongoing. There are three options under consideration:

- A HVDC underground cable;
- A 400 kV overhead line; and
- A regional solution, comprising a new underwater circuit across the Shannon Estuary, the introduction of a new technology to Ireland called series compensation, and a number of enhancements to existing plant and equipment.

In line with our strategy statement 2 "All practical technology options will be considered for network development", similar detailed analysis will be undertaken for future network developments.

It is important to be clear that underground options for the Grid Link and Grid West Projects are 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 transferred as 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[4].

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. 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

[4] A copy of that report can be found online here: http://www.dcenr.gov.ie/NR/rdonlyres/5E479E9C-5C4E-4D25-A585-2770FDE3A6B4/0/MeathTyroneReportFinal.pdf

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, the AC power system is self-regulating and can still flow power to the area supplied by that circuit using other AC 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.

The needs for transmission system investment are constantly evolving; for example, as a result of generation or demand connections, or new interconnection proposals etc. AC overhead line technology, when compared to DC underground technology, provides greater flexibility and can be readily extended or modified to meet the constantly evolving needs of the transmission system.

Overhead Lines versus Underground Cable

There are more than 6,500 kilometres of high-voltage overhead lines in Ireland today and 200 kilometres of high-voltage underground cable.

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

Both overhead lines and underground cables can be designed and installed to deliver similar capacities however there are other 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.

Cost comparisons between overhead lines and underground cables can be very difficult because, for example, terrain can vary and the cost of cable itself can fluctuate due to changes in the prices of copper and aluminium. In addition, converter stations are the most expensive aspect of any DC system. Therefore, the number of converter stations required will have a major impact on the cost.

The International Expert Commission established by the Government to examine undergrounding the North – South Interconnector suggested the cost of doing so would be more than three times the cost of an AC overhead line.

Notwithstanding this, the selection of an overhead line or an underground cable is influenced by a number of factors including technology acceptability, reliability, flexibility, the environment – including visual impact – and cost.

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 400 kV level, and Denmark is developing its planned backbone 400 kV AC circuits as overhead line.

Next steps

It is clear from recent public consultations on particular projects that many people want a more detailed analysis of the advantages and challenges of delivering projects using an underground cable solution.

EirGrid has carried out a comprehensive and detailed assessment of the potential to underground the Grid West project, and is currently undertaking similar analysis for the Grid Link project.

As outlined above, this analysis for Grid West was subject to review by the Independent Expert Panel (IEP) who ensures that people can have confidence in this analysis. Similarly, the Grid Link analysis will be submitted to the IEP for review.

Ultimately, we will present overhead line and underground cable options for the Grid Link and Grid West Projects for public consultation, with the advantages and disadvantages of both clearly explained.

In line with our strategy statement 2 "All practical technology options will be considered for network development", similar detailed analysis will be undertaken for future network developments.

5.2.2. Change to TDP 2013

In section 6, Regional Perspective of the Plan, a reference has been added to the work being undertaken by EirGrid to investigate overhead and underground options using various technologies for the Grid West and Grid Link projects which is being overseen by the IEP.

When the grid development strategy is finalised and as projects develop and evolve, future TDPs will be updated to reflect and capture current network development policies and projects.

6. Health & Safety Considerations

6.1. Summary of Feedback

One confidential respondent stated that Article 31(1) of the Charter of Fundamental Rights of the European Union provides that every worker has the right to working conditions which respect his or her health, safety and dignity. In addition, they said that many farmers and employers have health concerns regarding exposure to EMF from 400 kV transmission lines. They suggested that the onus is on the Irish Government and EirGrid to ensure and demonstrate that all employees are aware of any risk and how these could be reduced and eliminated.

The respondent queried EirGrid's response to requests from employers regarding monitoring of EMF and reassurances in the prevention and early diagnosis of any health effects due to short term exposure to EMF.

The same respondent also asked what EirGrid's findings are on air quality surrounding power lines. They went on to say the proposed D2 route for the Grid Link Project is a high radon area and queried how EirGrid can ensure the health and safety of all the public; how EirGrid can demonstrate there is no risk from the corona ion effect; and who is monitoring this.

The same respondent also queried the EMF policy of EU member states and the approach Ireland takes compared to our EU neighbours.

Several respondents were concerned with the effect of surges resulting from large quantities of wind energy, and the impact on sagging of overhead lines.

6.2. EirGrid's Response

6.2.1. Electric and Magnetic Fields (EMF) and Health

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 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.

The Committee reported that new epidemiology studies do not shed light on a previously reported association with childhood leukaemia and that shortcomings in these studies and a lack of experimental support from animal studies or cellular evidence for mechanisms prevent a causal interpretation of this statistical association.

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 non-governmental 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 µT or greater.

EirGrid operates the Irish transmission system within these guidelines, ensuring compliance with international best practice.

EirGrid recognises that some individuals are genuinely concerned about issues regarding EMF and health.

The protection of the health, safety and welfare of the general public and of our staff is a core company value.

That is why we provide clear, factual information on electricity transmission lines and the latest research into the suggestion that they could have implications for human 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 then Minister for Communications, Energy and Natural Resources, Mr. Pat Rabbitte T.D., 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.

6.2.2. Proximity to dwellings, schools and community facilities

Many people are concerned about the proximity of overhead lines to their homes, and also to schools, community facilities and health centres.

As outlined above, EirGrid designs and operates the transmission network to the highest safety standards and complies with the most up to date international guidelines and recommendations.

With all buildings – whether schools, homes or hospitals – EirGrid will maximise the distance between transmission lines and buildings, although it must be understood that the routing of transmission lines must consider all environmental and other constraints in an area.

EirGrid aims to locate overhead power lines a minimum distance of 50 metres from existing dwellings to the centre of the line. In the vast majority of cases a far greater distance is achieved. Where this is not possible, we will engage with the individual householder on a case-by-case basis.

6.2.3. Ionisation of Particles

Corona activity on transmission lines can ionise air molecules but because of the alternating electric field these are attracted back to the conductor or ground and neutralised, and so levels near the line are vanishingly small, including those derived from the breakdown of radon gas emanating from the soil. In addition, multiple, independent scientific advisory panels to health and scientific agencies have evaluated the hypothesis of increased charged particles near transmission lines without concluding that any health effects are likely (International Agency for Research on Cancer, 2002; Health Council of the Netherlands, 2001; National Radiological Protection Board, 2001, 2004a, 2004b, World Health Organization, 2007).

6.2.4. 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.

Large transmission projects include a statutory assessment of the preliminary design. Specialists in a range of areas, including noise, undertake desk and field based assessments of proposals in line with current best practice and with reference to national and EU guidance on Environmental Impact Assessment (EIA).

EirGrid has commenced 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 an individual 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.

6.2.5. Surges and Sagging

In accordance with its licence obligations EirGrid operates the transmission system in a safe and secure manner. EirGrid's construction and design policies apply international standards and utility best practice. These ensure the safe and secure operation of the network by adopting appropriate ground and safety clearance. For an overhead line the ground clearance is the vertical distance between the ground and the lowest point of the conductor.

Overhead lines temporarily lengthen and shorten depending on a number of factors including weather conditions, ambient temperature and the power flow on the line itself. The sagging of the lines will naturally vary throughout the day as these conditions change. To ensure that overhead lines do not breach their minimum clearances, the lines are subject to a set of ratings, which determine the maximum amount of power that can safely flow along the line.

EirGrid designs and operates the transmission system in such a manner that overhead lines will not be subject to power flows in excess of their rating, either under normal conditions or fault conditions.

The system is designed to be resilient to the sudden changes in power flow that can occur from a variety of factors, including changes to generation or demand, and indeed the changes associated with variations in wind generation.

7. Landscape and Spatial Strategies, Visual Impact, Tourism, Cultural Heritage and Property Values

7.1. Summary of Feedback

A number of respondents queried how EirGrid can determine the effects on the landscape given that there is no National Landscape Strategy, no national standard for Landscape Character Assessment and no national standard or set of statutory designations for landscape.

In addition, a number of respondents have concerns regarding the accumulated effects of the transmission system and the potential impact on cultural heritage, the tourism sector and property values.

7.2. EirGrid's Response

7.2.1. National Landscape Strategy & The Florence Convention

The Department of Arts, Heritage and the Gaeltacht published a draft National Landscape Strategy 2014-2024 in July 2014. It includes 19 key actions which address the six national landscape strategy objectives which in turn address a number of the key requirements of the European Landscape Convention.

EirGrid will have full regard for the National Landscape Strategy when it is published.

In the meantime, EirGrid will continue to liaise with the Department of Arts, Heritage and the Gaeltacht and other relevant agencies to ensure the objectives and actions included in the draft landscape strategy are fully considered in proposed projects.

EirGrid addresses this issue in the first instance by gathering the existing factual information contained in statutory county development plans as part of the constraints mapping exercise.

In light of the differences in approach by different local authorities in identifying sensitive landscapes within their county, a review of both the mapping and text information from each local authority within the study area is undertaken to devise as consistent an approach as possible to categorising landscape constraints.

This is done at an early stage of projects to avoid, as far as possible, those areas of each county that have been identified by the local authorities in their statutory development plans as being of the highest sensitivity.

Further refinement of the landscape inputs are undertaken as part of the route corridor evaluation process, having regard to the issues raised during consultation.

We are confident that the approach being applied to the corridor identification and evaluation process is appropriate, comprehensive and robust.

7.2.2 National Spatial Strategy

The National Spatial Strategy for Ireland 2002 – 2020 (NSS) remains in place. It will remain in place until such a time as the Government develops and approves a new national planning framework for the country. This process is underway however it is not known when the new framework will be made available.

7.2.3 Visual Impact, Tourism, Cultural Heritage and Property Values

EirGrid understands the concerns expressed by many people around the visual impact of the proposed transmission infrastructure on their local communities, and particularly the suggestion that it could have a detrimental impact on tourism.

At the start of the project development process, local authorities are contacted and asked to provide EirGrid with a list of scenic routes, views and prospects, amenity zonings and places of outstanding natural beauty in their areas.

These are mapped and are considered as potential constraints to transmission lines.

During the public consultation phase of a project, members of the public are asked to input into the identification of constraints in their local area. This information is added to the project's geographical information system and is used to inform the corridor evaluation process.

EirGrid always tries to mitigate the visual impact of transmission infrastructure where possible through design techniques, the routing of lines, and the location of the pylons in line with technical, environmental and landowner considerations.

Cumulative impact

There is also the possibility that a new development could have a greater potential impact on a local community because there is already a substantial amount of other infrastructural developments in the area. This is known as cumulative impact.

As part of project development, which includes environmental and other survey work and the subsequent Environmental Impact Statement, EirGrid identifies any other projects that could have a cumulative impact.

The Cumulative Impact Assessment is an important strand of the wider Environmental Impact Assessment process.

Local Community Fund

In line with Government policy to introduce a Community Gain Fund for major infrastructure projects (published in July 2012), EirGrid is introducing a community and residential fund in recognition of the visual impact of transmission infrastructure.

- A fund to which EirGrid will contribute €40,000 per kilometre for communities in proximity to new 400 kV pylons and new rural stations.

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.
- 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 from homes and in exceptional cases where this is not achievable, EirGrid will engage with the affected property owners on an individual basis.

Tourism

Tourist attractions are considered from the very earliest stages of project development.

EirGrid committed, as part of the Grid25 Initiatives announced at the end of January 2014, to address the potential for proposed projects to impact on tourism. This report was published in May 2015 and is available at www.eirgrid.com.

Cultural Heritage

As with tourism, cultural heritage is considered during the constraints gathering stage. A project team collates information on architecture, archaeology, cultural heritage, landscape designations and the main tourist sites within the project area. These features are considered in developing corridor options.

In the case of site based features such as recorded monuments etc. it should be noted that it is not always possible to avoid all such features for the purposes of the corridor identification stage.

However, their importance is recognised and potential to impact on sites and features of an archaeological, architectural or cultural heritage value is listed as a specific criterion as part of the corridor evaluation process.

Where such sites occur within the least constrained corridor further efforts are made to minimise the impact on these sites by sensitive routing of the over-head line in accordance with best practice approaches such as CIGRE and the Holford Rules.

Property values

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.

8. Issues Arising Related to Agriculture and Equine Sectors

8.1. Summary of Feedback

A number of respondents have concerns regarding the potential impact of the transmission system on the agriculture, equine and fishery sectors. One respondent was worried about electrical safety on the farm.

8.2. EirGrid's Response

8.2.1. Agriculture, Equine and Fisheries

There are already approximately 6,500 km of high-voltage transmission lines operating on the Irish network, much of which is crossing working farmland.

It is possible that there may be some disruption to farming activity during the construction of an overhead line, 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.

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 actual 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.

As with any overhead line, an awareness of its presence and safe work practices are required when working in proximity to the line. ESB Networks has produced two booklets, *Farm Well…Farm Safely* and *Farm Safely with Electricity*, which provide more information on how to farm safely in the vicinity of overhead lines.[5]

Recent consultations have raised specific issues regarding the possible impact of new electricity lines on the agriculture and equine industries. EirGrid committed, as part of the Grid25 Initiatives announced at the end of January 2014, to address the potential for proposed projects to impact on the agriculture and equine sectors. These reports were published in May 2015 and are available at www.eirgrid.com.

In addition, a scientific literature has accumulated on the potential effect of electric and magnetic fields from transmission lines on fish. Overall, no confirmed adverse effects on fish have been reported from electric and magnetic field exposures at levels comparable to those near high-voltage transmission lines.

Electrical Safety

Safety is a core value for EirGrid and safety is never compromised. All construction and maintenance work is carried out in compliance with all legislation and Health and Safety Authority guidelines. The lines themselves are designed and constructed to the highest national and international standards and follow best practice in relation to construction and maintenance.

[5] www.esbnetworks.ie

Stray voltage is an undesirable difference in electrical voltage between two objects. Applying the standards outlined above means that stray voltage tends to be caused by other sources.

For example, a well-known form of stray voltage seen in milking parlours usually arises as a result of the farms own electrical installation.

The aforementioned ESB booklets, *Farm Well…Farm Safely* and *Farm Safely with Electricity*, provide more information on how to reduce the possibility of stray voltages.

In addition, as part of the commitments outlined in the report responding to agricultural concerns published in May 2015, EirGrid will develop a Landowner's Handbook, which will contain a full suite of information and provide clarity as is necessary to landowners and farmers to address the issues raised during recent consultations.

9. Transmission Development Plan in Context of Grid25 & Environmental Assessment

9.1. Summary of Feedback

One confidential respondent queried how EirGrid will appropriately assess in its Environmental Impact Assessment the effects of Grid25 on the environment.

A number of respondents raised matters in respect of the National Renewable Energy Action Plan.

9.2. EirGrid's Response

9.2.1. Grid25 Implementation Programme 2011-2016 & Strategic Environmental Assessment

Following the publication of the Grid25 Strategy, EirGrid prepared and published the Grid25 Implementation Programme 2011-2016 (the Implementation Programme) which provides a summary of individual projects and how the Grid25 Strategy will be implemented over the short and medium terms.

The Implementation Programme was subject to a Strategic Environmental Assessment (SEA) which complies with the provisions of EU and national legislation[6]. The SEA is a process of determining the likely environmental effects of the Implementation Programme, in order to ensure that these effects are addressed at the earliest stage of decision-making.

A number of environmental considerations were identified in the SEA and integrated into the Implementation Programme. One important consideration is the identification of mitigation measures. These are measures envisaged to prevent, reduce and, as fully as possible, offset any significant adverse impacts on the environment of implementing the Implementation Programme.

It is intended that the IP and associated SEA will have a 5–year lifespan, with the review and drafting process for the subsequent IP and SEA commencing within the final year of that lifespan. However, these documents are subject to on-going review and updating in the context of EirGrid's Transmission Development Plans (TDPs), which are updated annually.

An Environmental Appraisal Report (EAR) is produced to accompany each TDP, to demonstrate how the TDP is in accordance with the provisions of the SEA, or to identify any updates to these documents. This relationship is set out in Figure 9-1 below. On-going monitoring measures as set out in the SEA are addressed in each annual EAR.

[6] Directive 2001/42/EC and the relevant implementing legislation (including the European Communities (Environmental Assessment of Certain Plans and Programmes) Regulations 2004, S.I. 435 of 2004).

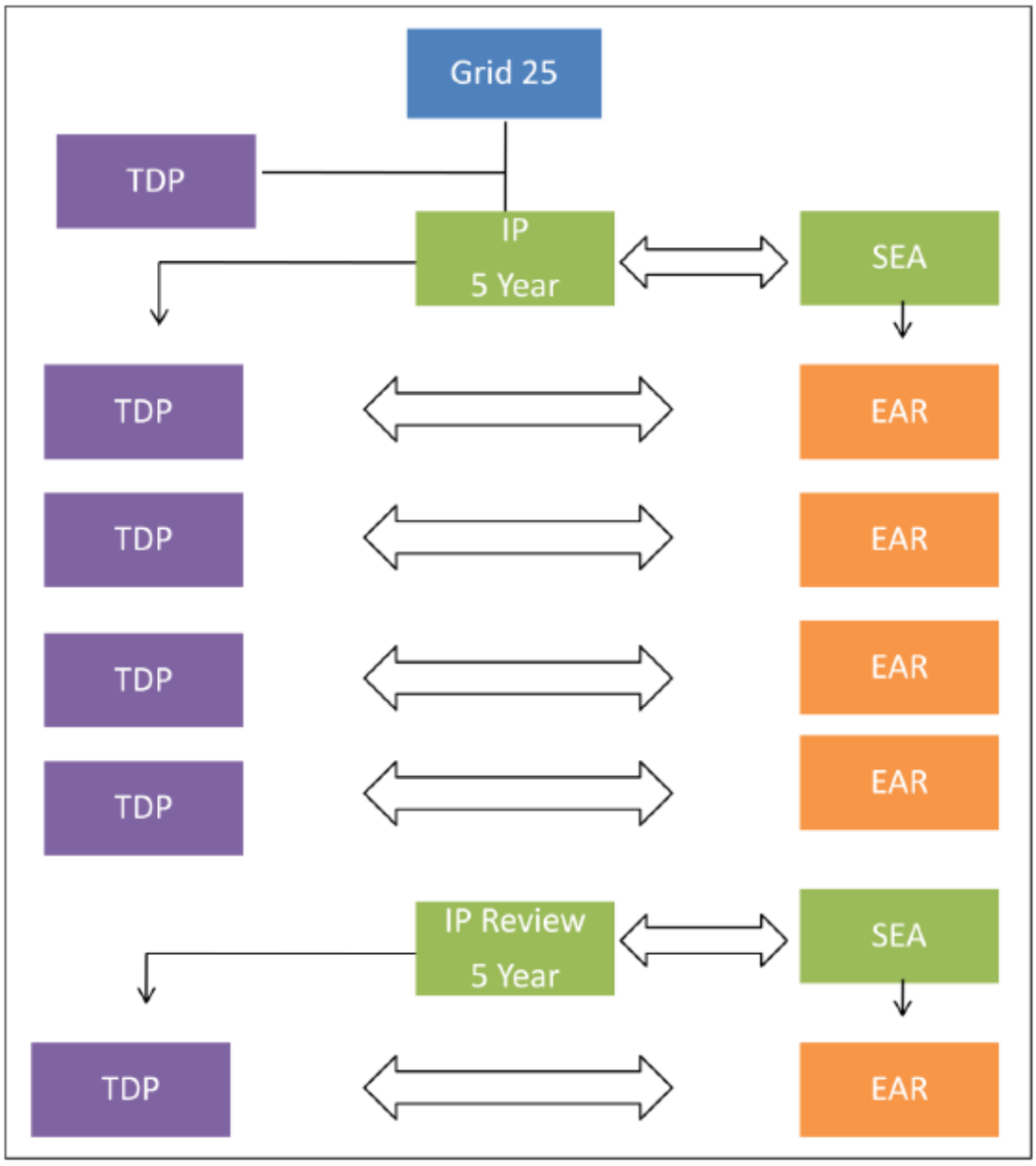

Figure 9-1 Structure for Grid25 strategy and associated Implementation Programme, SEA, Transmission Development Plan and associated Environmental Appraisal Report (extract from EirGrid Grid25 Implementation Programme 2011-2016)

9.2.2. Biodiversity, Natural Habitats and Wildlife, including Birds and Bees

Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) are defined by European Union directives. These sites are of international conservation importance for the natural habitats and species that they are designated for.

They are part of the wider Natura 2000 network of protected sites. Natural Heritage Areas (NHAs) are sites of national conservation importance for habitats and species.

SACs are areas given special protection to conserve natural habitats and wild fauna and flora. SPAs are to safeguard migratory birds and their habitats and certain bird species that are under threat.

Given their protection by European legislation, EirGrid must avoid any significant impact on the qualifying features of these designated sites. These sites are identified as primary constraints and every effort is made to avoid directly crossing them with potential corridors.

However, due to the size and location of some of these EU designated sites it may not be possible to avoid them entirely.

In addition to designated sites, there is also a need to be conscious of the potential for transmission lines to impact on protected bird species outside the boundaries of SACs and SPAs.

To address this, project teams gather information on the sites, the species for which they have been designated and how those species actually use the sites and interact with the surrounding environment e.g., feeding sites, nesting sites, flight paths.

This includes a review of existing literature, consultation with regional and local National Parks and Wildlife Service (NPWS) staff, BirdWatch Ireland and submissions from local organisations and members of the public.

Bird surveys are undertaken and the project ornithologist focuses on particularly sensitive areas.

Targeted bird survey work is developed with the NPWS and BirdWatch Ireland to gather data on bird populations wintering in these areas.

This includes surveys to address both the summer and winter bird populations and bird movements. This is to ensure that any potential impacts on bird populations can be accurately identified and mitigated if required.

Regarding bees, it may be useful to consider a recent study which investigated the potential effects of EMF from transmission lines on native bees in three states in the United States (Russell et al., 2013).

In the study, there was no indication of any effect of EMF on bee abundance, diversity, larval development, or behaviour such as floral visitation and pollination success.

Effects on biodiversity in general and the wider natural and semi-natural environment outside of designated sites are also taken into account. Detailed assessments are carried out as the project progresses.

A planning application, including an Environmental Impact Statement (EIS), is prepared for submission to An Bord Pleanála (ABP).

As part of the planning process, and pursuant to the obligations of the EU Habitats Directive, potential impacts to SACs and SPAs are addressed through the process of Appropriate Assessment.

9.2.3. National Renewable Energy Action Plan

The National Renewable Energy Action Plan (NREAP), as required by Article 4 of Directive 2009/28/EC details the national targets for the share of energy from renewable sources, including assessing the contributions expected of each individual renewable energy technology.

The development of the Irish transmission system is influenced by both National and European Union imperatives, which focus on: security of supply, ensuring the competitiveness of the national economy, and ensuring the long term sustainability of electricity supply in the country.

EirGrid has a number of statutory and licence obligations, including:

- to offer terms and enter into agreements, where appropriate, for connection to and use of the transmission system with all those using and seeking to use the transmission system
- to operate and ensure the maintenance of and, if necessary, develop a safe, secure, reliable, economical and efficient electricity transmission system.

The TDP is not a strategy-forming or policy forming document. Rather the TDP describes the transmission investment projects required to meet the above obligations over the next ten years.

The public consultation in respect of draft TDP 2013 included statements of concern from respondents in respect of the NREAP. However, it remains the fact that EirGrid is obliged to meet its statutory and licence obligations.

10. Grid25 & the TDP Consultation Processes

10.1. Summary of Feedback

A number of respondents stated that the impact of Grid25 on people and communities is not being correctly assessed and that the engagement process in relation to Grid25 and the TDP has been flawed to date.

10.2. EirGrid's Response

10.2.1. Public Consultation and The Aarhus Convention

The EirGrid Project Development and Consultation Roadmap is used by EirGrid in developing its major electricity transmission infrastructure projects. The Roadmap sets out projects into different stages and public consultation is an integral part of the project development process at various stages.

The EirGrid Project Development and Consultation Roadmap was developed taking full cognisance of the Aarhus Convention and its principles and the United Nations Economic Commission for Europe Aarhus Convention Implementation Guide.

The public consultation, and indeed the statutory planning process, facilitate public participation in environmental decision making.

Further information on this roadmap is available on the EirGrid Projects website.[7]

Extensive consultations have been carried out over the past few years on various proposed projects (e.g. North – South Interconnector Project, Grid Link, Grid West, etc.).

Many of the submissions received during these consultations suggested ways in which the consultation process could be improved.

In response, EirGrid conducted a thorough review of our consultation processes to enhance future public engagement.

To ensure the independence and objectivity of this work, EirGrid requested that the Chair of the Chartered Institute of Arbitrators appoint a number of experienced professionals to undertake an independent external review.

As part of this work, a number of stakeholders (as selected by the external reviewers) were asked for their opinions on EirGrid's consultation process and how it could be improved. This was to ensure that the widest possible opinions are included in the review.

The findings of this review were published here, including recommendations to enhance future public engagement.

This demonstrates our commitment to listening to, and responding to, feedback from communities and stakeholders in relation to the development of the national grid.

In addition, details regarding the consultation process undertaken for draft Transmission Development Plan 2013-2023 are outlined at the beginning of this report.

10.2.2. Change to TDP 2013

In section 2, Approach and Methodology, a reference has been added to the review of the consultation and engagement processes that was conducted.

[7] A copy of the roadmap is available online here:
http://www.eirgridprojects.com/media/EirGrid%20Roadmap%20Brochure%20July%202012.pdf

11. Transmission Development Plan – Timing, Process & Document

11.1. Summary of Feedback

11.1.1. Timing & Process

One respondent questioned the value of the report as the data freeze date is the 31st March 2013, especially now that EirGrid produces updated Associated Transmission Reinforcement (ATR) information on its website. The respondent also stated that the data freeze date should be in Q3 of the year of publication (and thus presumably closer to the time it is issued for public consultation).

11.1.2. TDP and TFS Documents

One respondent questioned the need to have a transmission forecast statement (TFS) and a transmission development plan (TDP) as separate documents as there may be an opportunity to utilise resources more effectively by producing a single "Transmission 10 Year Outlook" report.

11.2. EirGrid's Response

11.2.1. Timing & Process

The TDP outlines EirGrid's approach to network development. It reports on the status of all approved network development projects, including Associated Transmission Reinforcements (ATRs).

While the ATR quarterly publication is very important and complements the TDP, this caters for a specific audience and in no way does it remove the requirement and need for the TDP. In addition, there will always be a time lag between the data freeze date, the publication of the draft TDP for public consultation and the final approval of the TDP.

The issue of timing and data provision will be a recurring feature in the annual TDP process and the quarterly publication of the ATR information. To ensure that all users of the TDP understand this, TDP 2013 includes references to both the EirGrid[8] and CER[9] websites containing project information.

The European requirements of the TDP are described in section 1.1.2. All system operators must cooperate at a community level through the European Network of Transmission System Operators for Electricity (ENTSO-E).

ENTSO-E is required to adopt a community-wide ten year network development plan (TYNDP) every two years and to produce regional investment plans.

EirGrid has taken these European requirements into consideration in preparing the TDP. EirGrid is a member of the Regional Group North Sea and participates in the preparation of the TYNDP. The EirGrid TDP explicitly aligns with the ten year assessment period of the TYNDP.

The TDP and freeze date also lends itself to an annual comparison with the previous year's report. This allows users to compare project completions, identify new projects or projects which have been cancelled or deferred.

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[8] EirGrid's ATR website: http://www.eirgrid.com/customers/gridconnections/generatorconnections/associatedtransmissionreinforcements/

[9] CER's PR3 Transmission Capital Expenditure Monitoring website: http://www.cer.ie/document-detail/PR3-Transmission-Capital-Expenditure-Monitoring/457

In order to complete the annual TDP process of drafting/reviewing/consulting on and finalising the document within the publication year it is prudent to use a data freeze date earlier in the year.

11.2.2. TDP and TFS Documents

The TDP is a requirement of EirGrid's TSO licence and both national and European legislation. The TFS is a requirement of EirGrid's TSO licence and national legislation. Both documents form part of EirGrid's statutory and licence obligations. It is also important to note that the emphasis of the two documents is different.

The TDP outlines EirGrid’s approach to network development; the drivers of network development; the resultant needs of the network; and the solutions to those needs.

The TFS describes and presents technical network data such as the network configuration, network parameters, generation connections and power flows, and fault levels for future network conditions. This enables the reader to carry out their own network analysis if they wish. In addition, the TFS outlines opportunities for demand and generation connections in Ireland and Northern Ireland.

Thus, while there is some overlap, EirGrid does not believe there is any opportunity for resource savings, nor any advantage to the reader, in combining the two documents.

12. National & EU Legislation - Renewable Energy

12.1. Summary of Feedback

12.1.1. Legal Requirements of the RES Directive

A number of respondents requested that the Transmission Development Plan should place more emphasis on the legal requirements of the RES Directive regarding priority access, priority of dispatch and guaranteed transmission of renewable generation, and how these obligations are being achieved.

A number of respondents also questioned the implementation of these obligations and suggested that these obligations are being ignored by EirGrid.

12.2. EirGrid's Response

EirGrid agrees with the respondents' views that the RES Directive (2009/28/EC) and Statutory Instrument (SI) 147/2011 are very important legal obligations in this area. The TDP includes specific references to the directive and the SI. All statutory and licence obligations are outlined in section 1.1.

EirGrid refutes the suggestion that statutory obligations regarding the Directive on renewable energy and its transposition instrument are not considered when planning the future transmission system. Our transmission development plans directly take account of priority access.

Access to the transmission system is firstly accorded through connections to the system and secondly through the development of the system to facilitate full access. Our licence requires us to make connection offers to parties seeking connection in accordance with regulatory approved processes, terms, conditions and directions. The current Gate 3 scheme has resulted in offers having been issued to approximately 4,000 MW of renewable projects.

In respect of wider development, it is EirGrid's statutory responsibility to develop a safe, secure, reliable, economical and efficient electricity transmission system. In accordance with this responsibility we produce a Transmission Development Plan (TDP) outlining the transmission network developments planned over the subsequent ten year period.

In selecting the optimum transmission network development solutions we perform extensive network planning studies where generators are modelled based on a number of key considerations. For example, in the case of wind, we take account of:

- Expected connection dates of generators;
- Availability of wind generation based on historical wind profiles; and
- Priority dispatch of RES generation should it be available.

Finally, reflecting the requirement in the renewable energy Directive and SI 147/2011 to provide priority dispatch for renewable generation, the SEM Committee, in its scheduling and dispatch decision SEM-11-062, requested that EirGrid provide priority dispatch for renewable generation. This now forms a central part of system operations.

In addition, EirGrid believes that the combined approach of investing in the network and developing new and innovative operational strategies is fundamental to enabling the transmission network to meet future needs.

EirGrid's infrastructural programme is integral to ensuring an adequate and appropriate transmission network and is a vital to helping Ireland meet its renewable energy targets.

Operational strategies, as part of the DS3 project, will also be required to enable Ireland meet its targets. It should be noted that the TDP documents EirGrid's infrastructural programme and does not specifically document the DS3 programme.[10]

[10] More information about the DS3 Programme is available online at: http://www.eirgrid.com/operations/ds3/

13. Network Reinforcement Delivery – Project Risk

13.1. Summary of Feedback

A respondent said that the risks associated with projects should be identified and that it should be noted that the generator bears the risk of delays to transmission infrastructure.

A respondent stated that details on the success of project roll-out to date based on dates provided in previous TDPs should be provided, as this would enable stakeholders to have a reasonable estimate of future success.

13.2. EirGrid's Response

EirGrid publishes a quarterly Associated Transmission Reinforcement (ATR) report to provide customers with up to date information regarding the progress of the delivery of all ATR projects. In addition, section 5.3 in the TDP summarises the risks associated with transmission project delivery.

Project completion dates in the TDP are forecasts based on the best project information available at the time of the data freeze date. Certainty with regard to completion dates increases as a project moves through the various phases in its lifecycle. The project schedule at the concept stage is developed based on standard lead times for generic project types. As a project moves forward a detailed schedule is developed, milestones are achieved and greater certainty as to the completion date exists.

To give a reasonable estimate of the likely progress of TDP projects, based on its past experience EirGrid provides, in section 2.4 of the TDP, the typical lead times for various types of development projects in Phases 2 (preliminary design and public planning) and 3 (detailed design, procurement, construction to energisation).

Regarding the provision of information on project roll-out/success - EirGrid will investigate, how this could be reported on in future.

TRANSMISSION DEVELOPMENT PLAN 2013

RESPONSES TO PUBLIC CONSULTATION

RESPONSES TO THE DRAFT TRANSMISSION DEVELOPMENT PLAN 2013 PUBLIC CONSULTATION

Seven submissions were received in response to the consultation on the draft plan. These were from:

- Irish Wind Energy Association
- Meitheal Na Gaoithe
- Art Generation; and
- Four members of the public, one of which is confidential.

The six non-confidential submissions are attached below.

IWEA response to the EirGrid Transmission Development Plan 2012-2020

6th December 2013

The Irish Wind Energy Association (IWEA) welcomes the opportunity to comment on the Draft Transmission Development Plan 2013-2023.

IWEA has responded to previous consultations on the Draft Transmission Development Plan and notes that the following suggestions still apply in making the document more useful to stakeholders in the energy industry, while making better use of the resources required to complete the document and fulfil EirGrid's regulatory obligations:

1. IWEA notes that all project data for this report is frozen as of 31st March 2013 which makes the value of this report questionable, especially now given that EirGrid produce updated ATR information on their website. The Data Freeze should be in Q3 in the year of production (The majority of information in the report is static, and therefore the bulk of the report can be completed before this date).
2. The risk associated with projects should be identified. It should be noted that the generator bears the risk of delays to transmission infrastructure and information regarding the risks should be made available.
3. Details on the success of project roll-out to date based on dates provided in previous TDP's should be provided. This will enable stakeholders to have a reasonable estimate of future success.
4. IWEA questions the need to have a transmission forecast statement and a transmission development plan as separate documents. There may be an opportunity to utilise resources more effectively my producing a single "Transmission 10 year outlook" report.

IWEA notes that the Transmission Development Plan should place more emphasis on the legal requirement of the RES Directive in terms of the obligation to have priority access, priority of dispatch and guaranteed transmission of renewable generation, and how these obligations are being achieved.

To summarise, all of the information contained within this report has already been superseded by information available in the public domain. While we think a regulated report is necessary it should be of a format that is useful to all stakeholders. IWEA would welcome the inclusion of additional information as outlined above in an effort to make the document more useful to stakeholders in the energy industry.

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6th December 2013/final

by email to: info@eirgrid.com & info@cer.ie

Submission to both CER and Eirgrid on

Eirgrid's

Draft Transmission Development Plan 2013-2023 (undated)

We commented on the 2012-2022 Draft TDP to the effect that the EU legal obligations on grid enshrined in the EU's 2009 Renewables Directive were overlooked, and not even referred to in the Statutory Obligations section of that Draft TDP. We attach that submission, to avoid having to repeat much of its contents since it is, unfortunately, still relevant on almost every point.

The omission we had identified was subsequently corrected by Eirgrid, and CER then approved the revised Plan. However, that correction was merely superficial, in that the changes were only made to the Statutory Obligations section. The 2012-2022 TDP proceeds to ignore the three grid obligations in the Directive, namely Priority Access, Priority of Dispatch and Guaranteed Transmission, and also makes no effort to set out their implementation. The last two became obligations in 2003, while Priority Access became an obligation in 2010.

The current Draft TDP adopts exactly the same approach. For example on page 47, we are shown a table where the legal framework is simply absent, while it should sit between the first two sets of boxes, setting out the overall legal framework (as opposed to policy framework) in which the Irish electricity sector must operate.

It appears necessary to remind CER and Eirgrid that Ireland sits within an EU legal framework, where EU law effectively supercedes national law, however much we may not like it. There are three major laws setting the legal framework for the electricity sector in Europe, namely the 3rd package, the interconnector regulation and the Renewables Directive. It is not for the Irish authorities to pick and choose from these laws, or to make trade-offs where the application of these obligations is diminished,

rather they must make choices within the legal framework set by the EU, without exception. Either this continues to elude CER and Eirgrid, or they simply choose to ignore certain obligations, to protect the status quo and/or to try to reduce short-term cost. We would question the legal advice being received by both CER and Eirgrid on this subject, and would caution them to seek a second opinion from a more independent source.

It is an obligation on Ireland (through its regulator, CER) to ensure that Eirgrid takes the necessary measures to give effect to these rules, subject only to grid safety and reliability (as well as 'secure operation' in the case of dispatch), and where these exceptions are applied, then only on the basis of transparent and non-discriminatory criteria. It could be argued that the SEMC decision effectively sets out such criteria for dispatch. However, since neither CER nor Eirgrid have publicly set out such criteria for the other two obligations, these should be fully applied, without exception.

The wind sector has been insisting on the full implementation of the last two obligations since 2004. The long-drawn-out discussion on dispatch within SEM ultimately led to the implementation of priority of dispatch, which is to be welcomed. However, the other two obligations have been systematically ignored. CER and Eirgrid have an anomalous approach to these obligations, since they tend to argue that these rights/obligations are qualified. If anything, priority of dispatch is more qualified than the other two, so the approach of Eirgrid and CER is in not only ultra vires, but evidently so from their own actions.

Participants within the wind sector have repeatedly requested all of the authorities to fully implement these obligations and warned that they face legal action if they don't, because they remain in direct breach of EU law, and would inevitably have these rules forced upon them.

And if CER and Eirgrid truly wish to act in the interests of Ireland, then they ought to willingly implement these rules fully and enthusiastically, since these rules strengthen our utilisation of secure indigenous sources of sustainable energy, which are now fully competitive with fossil based energies, and increasingly so.

We note that Eirgrid tends to quote the objectives of its licence as the framework in which it must operate, which on the face of it, is correct. However, if that licence has not been updated to require full and proper implementation of these three obligations arising from the Renewables Directive, subject only to the qualifications therein, then that licence needs to be revised in order that it does so.

We strongly urge and advise Eirgrid to withdraw this draft plan and to carefully reconsider it in light of this central argument. In the revised version, we would expect to see the considered development of measures within the plan to give full effect to the three obligations enshrined within the Directive, subject only to the qualifications therein and then only where there are relevant published non-discriminatory criteria. The concerns about grid stability expressed by Eirgrid over recent years can easily be addressed through the application of appropriate technology, designed to add inertia and the like to the network. To be clear, it is not

that CER and Eirgird can wash their hands of these obligations on the grounds of stability, it is that they must take additional measures, like adding appropriate additional technology, which enables them to meet these obligations while preserving the stability of the grid. As was the case with priority of dispatch, cost is not a valid excuse for inaction (since it is not a qualification in the Directive). That is what the Directive means, while the interpretation given to date is simply meaningless and wrong.

May we also remind CER and Eirgrid that many wind projects have been discriminated against in the implementation of CER's group processing approach, because, as they struggled to get connections or even connection offers (some waiting 15 to 20 years for firm access), their fossil-based competitors were given connections and early firm access on the flimsy argument of 'security of supply', which is not an qualification in the Directive. Not only were they not treated equally, many have received the very opposite of priority access since 2010.

An even bigger issue is on the way, and will inevitably lead to legal conflict unless CER urgently takes the necessary measures to avoid the emerging situation. All the signs are in place, such as the failure to date of DS3 and the large take-up in Gate 3, that would suggest rapidly increasing levels of curtailment. This is a direct breach of the Directive, where renewables have a right of guaranteed transmission, never mind the obligation on Ireland to reduce curtailment. Should those levels bring into question the financability or even viability of wind projects at an advanced stage of development, then it seems inevitable that those projects will proceed against the authorities for non-implementation of this obligation. And this has been repeatedly pointed out to CER and Eirgrid since 2004, and there can be no excuse whatever.

Yours etc,

James Carville,
Chairman

Meitheal na Gaoithe,
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8th January 2013/final

Submission to Eirgrid in response to the:

"Transmission Development Plan 2012 – 2022" – Draft for Public Consultation

Published 11th November 2012

The preparation by Eirgrid of this draft plan is very important, and its publication for public consultation is to be very much welcomed. Our submission is unavoidably late, due to the holiday season. But we hope it can nevertheless be considered prior to submission of the plan to CER for approval. Indeed, we would strongly urge that be done, since there is a very significant issue with the Draft Plan as presented.

The plan does recognise the important and growing role of renewable energy, as this country moves towards producing some 40% of its electricity from those sources by 2020, primarily from wind energy projects. This is mentioned in the Introduction, and elaborated on in section 3.2.2 on Pages 34-35.

However, the approach is one focused purely on the binding national targets. The Plan sets out the measures to develop the Transmission system believed to be necessary to achieve wider national objectives, including meeting those renewable energy targets. Experience to date suggests that the measures foreseen will be completely inadequate, even if they were delivered on time. That is because the circumstances in which wind energy projects are obliged to connect and operate compromise their viability, meaning that they cannot be built.

This arises from three main issues:
- severe delays in connecting projects via their shallow assets, which can amount to 15 years from the date of the original connection application;
- further long periods of delay in achieving firm access, which can add another 5 years or even more;
- even after nominal firm access, the ongoing imposition of constraint and curtailment of wind projects of unknown extent, which undermine the payment of supports.

All of these issues arise as result of inadequate grid development in the widest sense of that phrase (ie: including operational measures).

When adopting the Directive on renewable energy in 2009, the EU realized that even binding national targets were insufficient to ensure the success of those targets by 2020. As with the RES-E Directive in 2001, the Renewables Directive as adopted therefore further strengthens the measures required to facilitate the incorporation of renewable energy projects into the network and the market, as set out in Article 16. The three key obligations enshrined in that Article are priority of dispatch, priority or guaranteed access and guaranteed transmission. As regards the decision on access, Government elected for priority access in Section 4.2.7(a) of the NREAP in mid 2010.

Article 16 imposes obligations on Member States to ensure that their TSOs and DSOs take measures to give effect to these obligations. The qualifications in the Article on the reliability and safety do not obviate the need to take those measures, otherwise the Article would be meaningless. Rather, they require that the measures be adopted while maintaining or improving reliability and safety, which all market participants, including the wind sector, can only agree with.

Clearly, these obligations require TSOs to take the requisite measures, and presumably they would therefore incorporate these measures into their operational procedures, and in particular the Transmission Development Plans. It is therefore most odd that a search reveals neither the word 'priority' nor the word 'guaranteed' anywhere in the current draft Plan.

Indeed, examination of Section 1.1 of the draft document, which purports to set out the relevant Statutory Obligations, reveals why this is so. The Directive on Renewable Energy and its transposition instrument (SI 2011/147) are completely overlooked, as setting part the legal framework in which the Plan needs to be drawn up. This appears to be a major oversight by Eirgrid, in particular by its legal team.

This appears to either lead to, or simply reflect, an almost complete absence of consideration of these legal obligations on the TSO when planning the future transmission system. If these obligations were seriously considered by Eirgrid, then they would have considerable implications. Taken in the logical sequence of a generation project from planning to operation, then these implications would be as follows:

1. In selecting both the type, scale and timing of transmission system reinforcements, a significant and obligatory criterion would be the shallow connection of and the allocation of firm access to renewable energy projects at the same time as, or more correctly before, non-renewable generators. The current practice of connecting and giving firm access to fossil plant ahead of renewables would have been ended as of the date of this obligation arising, namely 5th December 2010.

2. A system design would be have been made since the original RES-E Directive in 2001, which would now enable the full (priority) dispatch of all

renewable projects when they were available, whether for local consumption or export. (While this obligation has been formally accepted in principle by the SEMC, after a similar previous engagement with the RAs, its implementation by the TSO, as regulated by the RAs, falls far short of what is required by the Directive.)

3. A system design, including the proper use of interconnection and storage, as well as operational measures (such as the DS3 Programme, system services and DSM), would have been made since the original RES-E Directive in 2001, which would guarantee the transmission of all output from renewable energy projects at all times.

It is worth noting that the draft Plan as presented is pretty light on operational measures, even if dynamic stability is one of the Transmission planning criteria (TPCs). It therefore also seems odd that the DS3 Programme, for example, seems not to be even mentioned. Some of the measures in that programme are designed at least in part to meet the above obligations. This seems to imply that the Transmission Planning process needs to be updated to incorporate operational measures to a much greater extent.

Admittedly, to have planned the physical and operational aspects of the Transmission system in a manner that fully met the three obligations discussed above would have been an expensive undertaking. The TSO would have had to engage in a cost-benefit analysis on each aspect of the plan, to decide if it were more economical to provide the physical infrastructure and operational measures, or to keep projects whole (ideally in their support payments).

However, while economic analysis may assist in reaching the correct choice as between physical and financial measures, as previously accepted by the SEMC in relation to priority of dispatch, economic criteria cannot actually qualify the other two obligations – priority access and guaranteed transmission.

We are aware that the SEMC now wishes to avoid financial measures, even if current guidance to the TSO requires exactly this type of measure, where the CBA so indicates. It is of course much more efficient to pay for delivery of energy than non-delivery, and everyone including generators are generally happier with that outcome. But it may prove to be more economically efficient to provide financial measures in many cases, rather than being obliged by those with rights within the system (as discussed above) to implement physical measures instead to give effect to the legal obligations.

Thomas Cooke, Chairman

6th December 2013

Submission to both CER and Eirgrid on

Eirgrid's

Draft Transmission Development Plan 2013-2023 (undated)

By email to: info@eirgrid.com and info@cer.ie

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Office Address: Synergy Global, 3015 Lake Drive, Dublin 24 **Tel**: ++ 353 1 5242301 **Fax:** ++353 1 6865451 **Email:** artltd1@gmail.com **Directors:** Richard Walshe (Managing Director), Michael Butler (Director). Registered in Dublin Ireland No. 356924

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We strongly urge and advise Eirgrid to amend this draft plan, having carefully reconsidered it in light of this central argument. In the revised version, we would expect to see the considered development of measures within the plan to give full effect to the three obligations enshrined within the Directive, subject only to the qualifications therein and then only where there are relevant published non-discriminatory criteria. The concerns about grid stability expressed by Eirgrid over recent years can easily be addressed through the application of appropriate technology, designed to add inertia and the like to the network. To be clear, it is not that CER and Eirgird can wash their hands of these obligations on the grounds of stability, it is that they must take additional measures, like adding appropriate additional technology, which enables them to meet these obligations while preserving the stability of the grid. As was the case with priority of dispatch, cost is not a valid excuse for inaction (since it is not a qualification in the Directive). That is what the Directive means, while the interpretation given to date is simply meaningless and wrong.

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Yours etc,

Richard Walshe

Managing Director

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Published 11th November 2012

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Indeed, we would strongly urge that be done, since there is a very significant issue with the Draft Plan as presented. That issue has a direct bearing on a dispute we raised with Eirgird in early December last, as regards firm access for our projects in the Blanchfield Group.

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This appears to either lead to, or simply reflect, an almost complete absence of consideration of these legal obligations on the TSO when planning the future transmission system. If these obligations were seriously considered by Eirgrid, then they would have considerable implications. Taken in the logical sequence of a generation project from planning to operation, then these implications would be as follows:

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We are aware that the SEMC now wishes to avoid financial measures, even if current guidance to the TSO requires exactly this type of measure, where the CBA so indicates. It is of course much more efficient to pay for delivery of energy than non-delivery, and everyone including generators are generally happier with that outcome. But it may prove to be more economically efficient to provide financial measures in many cases, rather than being obliged by those with rights within the system (as discussed above) to implement physical measures instead to give effect to the legal obligations.

On the specifics of the projects which we are engaged in, we would like Eirgrid to carefully consider what other measures it could adopt within the Transmission Plan that could give effect to our right to priority access within the Blanchfield Sub-Group, and do so at reasonable cost to the consumer. Eirgrid will be well aware that we do not accept that the current set of ATRs associated with our projects at Blanchfiled are either adequate, appropriate or economically optimal. We would advise Eirgrid to consider the dispute on this matter before concluding its draft plan for approval by the CER.

Richard Walshe for Art Generation

8th January 2013

-----Original Message-----
From: Sacha Maxwell [redacted]
Sent: Fri, 06 Dec 2013 12:55:32
To: info@eirgrid.com
Subject: Draft Transmission Development Plan 2013?2023

Good afternoon

I would like to lodge a submission to the Draft Transmission development plan.

I only saw this today whilst looking at the Eirgrid website - I would have thought that under the Aarhus Convention a project of this size should have been more widely publicised.

As such with the development of low energy products and 'greener' technologies the current Grid should be 'fit for purpose' with correct maintenance.

In several European countries mico-generation projects are coming on line which are more efficient as they provide local power negating the transmission of high voltages over long distances and the loss of power along the way.

In this current environment it would be prudent to look at local cost benefit analysis of such projects.

The development of large scale power generation units is no longer sustainable both economically & environmentally.

The effects of 'wind turbine syndrome' and other perceived health issues are no longer acceptable to the public. If you can understand that the human body is subjected to over a million stimuli every second but the brain filters out everything bar 2000 to make us aware of our surroundings. Some people will be more sensitive to 'touch' ie pressure changes, some to 'sound' again changes in air pressure and as such it may affect their sub-conscious in that data that brain filters out.
Only in the last ten years or so has research started into these effects on the body - better to err on the side of caution.

Ireland is noted for its tourism industry and the unspoilt landscape - please consider how these projects may influence this industry in the future.

Who knows in 60 - 80 years time we may not need electricty to the same extent but be left with indelible scars. People thought that coal and steam was the only way 150 years ago and that has left a huge mark on the UK.

Thank you for your time.

Kind regards

Sacha

-----Original Message-----
From: gerard flynn [redacted]
Sent: Fri, 06 Dec 2013 12:21:48
To: info@eirgrid.com
Subject: Transmission system

We object to the Transmission Development plan 2013-2023.Â Eirgrid's proposed wind energy harnessing has not and cannot project the amount of electrical energy surges produced by the largest wind turbines in the world and in addition the accumulated energy of the propose and imminent wind farms on the transmission systems. Eirgrid have not done a complete cost analysis of the true accumulated effects of this transmission system.Â Furthermore, Ireland have no SEA or AA or implemented Article 3 of the EIA directive for the NEARP in particular of the national wind strategy, and the proposed transmission system, of which, directly facilitates for this energy in an overwhelming dominant way.Â Presently, we as a nation already meet EU recommendation for renewable energies productions and the risks of the proposed electricity transmission outweigh any benefits gained from exporting excess generation.

1)Electrical energy cannot be stored, and therefore must be generated as needed. AÂ control system is required to ensure generation of electricity matches it's demand.Â Wind energy cannot be controlled easily, when wind energy is produced it must be dispersed through the transmission lines as produced,Â wind energy by nature has surges. Most electrical currents,63% of electrical currents flow skin deep and wind power is prone to unbalanced loads. This was proven recently in delays from the BRAND NEW eastwest interconnector because of interference experienced by mobile phones and the harmonics heard on lines living in these areas.http://www.independent.ie/regionals/fingalindependent/news/daly-raises-fears-about-eirgrid-interconnector-29079802.htmlÂ Harmonics are by products of non-linear electric loads.Â Â Â Â Eirgrid is insisting on overhead lines because over head lines have greater capacity for overloads and more tolerant of over heating of the lines.
Ecofys reports acknowledges that sagging in overhead lines will occur for these precise reason, and therefore acknowledges that these surges are part of the transmission system.Â As the ESB are the only body to regulate the energy flow on our lines and the true exposure from these lines can't be quantified because of these surges we find that Eirgrids transmission system is not only reckless and in proposing a system that is quite clearly unstable andÂ wholly unnecessary for our national consumption needs.

2)Ireland have no regulatory instrument for health and safety of people working on these lines or below these lines. This is against EU directives 2004/40/EC, specifically this document acknowledges the dangers involved in the direct exposure of people working in and around high voltage lines.Â It specifically calls for protection of workers and those expose to high doses of electromagnetic fields.Â This legislation can and will be ofÂ particular concern forÂ farmers whose lands these high voltage lines transverse andÂ of which they will be working under daily. Eirgrid have not considered the health and safety factors of this transmission system, and these laws must and will be adopted by Irish laws in the very near future.

3) Ireland have on there statues the provision of protection of individuals from Radon.Â Imminently these laws in the Irish statues will include the provision of the monitoring and protection of individuals from Radon progenies of which these propose transmission systems will produce.Â As many of these transmission systems are in close proximity to schools, homes, G.A.A. grounds, and other various local amenities.Â Eirgrid must accept the responsibility that it adheres to the laws that govern the nation. Eirgrid will be in effect breaking the law by emitting unregulated radon progenies (Corona Particles) from these over head lines in populated areas. As there are presently strict regulations on building radon barriers into new homes and 200 people a year die from radon exposure in Ireland; it would be totally irresponsible and reckless of Eirgrid/ the government to not know the accumulative effects of natural radon and the radon progenies on a population.
The government have no studies to reference on this nor have they done any studies themselves.Â The precautionary principal always applies here.

4) Eirgrid have not done a cost analysis of the effects this transmission system will have on the many indigenous industries in Ireland includingÂ tourism, horse industry/agriculture, fishing, and bee keeping to name a few.
Tourism is worth E5.7 billion to Ireland.Â Eco-tourism is the biggest growing sector of tourism niches.Â According to failte Ireland 2006 survey the main reason tourists select Ireland is the quality of sightseeing and scenery offered.Â In fact, cultural and historical attractions and natural unspoilt environment were the many reason for choosing Ireland as a holiday destination.Â This transmission system will significantly detract from the natural beauty of the rolling hill, gentle valleys, cascading coastlines and mountainous ridges that dominate the topography of Ireland.Â The very integrity of what makes Ireland so advantageous comparably to similar areas will be lost to these monstrosities of steel and the caustic statement that they carry with them.Â We quote the new chairman of Eirgrid John O'Connor consensus on thisÂ when asked would you live near a pylon, his response 'NO, and who would', so the question then is evident who would come to Ireland under this new guise and dominating feature of Eirgrid's proposed transmission system.
The horse industry contributes E708 million per year to Ireland's exchequer and the Irish Thoroughbred AssociationÂ has built up a reputation of excellence.Â It would be a huge oversight on the government and Eirgrid not to consider the world perception and the relevance of the propose transmission system on this industry. In fact,Â New Zealand, were so concerned for the welfare of the domestic agricultural economy, specifically in relation to horses, they cautioned and sited references that contraindicated the transmission system coming from Wind turbines, andÂ specified a significant negative impact on these animals.Â Eirgrid must acknowledge that not only is the perception of these transmission lines notÂ in anyway advantageous to Ireland's reputation as a centre of breeding excellence , but the significance of these studies weigh heavily that this could be a potential disaster for it's existence.

http://www.contactenergy.co.nz/web/pdf/our_projects/waikatowindfarm/june2008/R03_HMR_Assessment_of_Potential_Effects_of_HV_Lines_on_Animals.pdf.Â Â Â To further this point Stray voltage is a significant problem with these transmission lines/ system and Ecofys also advises that stray voltage plays a large role in the sustainability of many agriculture livelihoods in Ireland.Â The agricultural industry spurs on 9 billion in 2011 to the exchequer.Â Simon Coveney acknowledges that the farming sector is largely a family run industry here in Ireland and that he is specifically dedicated to this system of Farming in Ireland.Â Â Â Many of these farms are not equipped to deal with stray voltage, it is potentially a time bomb of agricultural mayhem in regard to this.Â The government/ Eirgrid must take on the countries indigenously run agricultural sector within the parameters of this country and specifically apply standards of the electricity transmission system around them and not vice a versa.
The fishing industry has beenÂ decimated in the last few years with EU fishing quota standards.Â This Transmission system has the potential to further isolate this industry by impacting on the migration-al spawning capabilities of the Sea Trout and Salmon in our rivers.Â These lines are being proposed in precarious areas where primary spawning of these species take place.Â The EMF's interfere with the species ability to navigate up stream and complete their reproductive cycle is a significant fact. In fact the Atlantic Salmon Trust,Â the Association of Scottish District Fishery Boards and the Salmon and Trout Associate are ALL issuing cautions about the need for judgements on the impact of high voltage cables and off-shore wind farms and the homing ability of Salar and chums.Â Â Â In addition,Â The policies that dictate the erection of these transmission systems are also polluting the soils in and around the flood plains of these species further endangering their ability to reproduce and will most certainly lead to fatalities in these species and other indigenous protect species like the fresh water pearl mussels.Bees contribute 4 million to the Irish economy.Â Bees have been declining all over the world. Guidelines for the protection of bees have been outlined under protection orders.Â This transmission system as proposed by Eirgrid are an affront to these preservation orders.Â The indigenous bees habitats destruction, sterilisation practices and the sheer presence of the EMF's will have disastrous effects.CCD is a significant problem for bees with the transmission system proposed by Eirgrid , this disorder has become such a problem in the USA, that areas that have high radiation the USA issues warning statements in the agricultural areas .
Â Â Â
5) There has been no SEAÂ or AA done on our NEARP and specifically with, wind energy strategy.Â The wind energy development in this country, is very much a predominating factor in the prolific development of Eirgrid's proposed transmission system.Â Furthermore, because Ireland failed to implement Article 3 of the EIA Directive untilÂ November 2012, the environmental impact of these wind farm developments were not independently investigated and assessed in compliance with an SEA or AA but for Article3 of the.EIA DirectiveÂ ConsequentlyÂ Eirgrid is now proposingÂ to route

the transmission system through these designatedÂ â€œwind energyÂ zoneâ€• , without having considered the full context ofÂ the cumulative environmental impact, because of theseÂ failures and in the absence of aÂ National StrategicÂ Environmental Assessment for Renewable Energy, Eirgrid cannot and should not propose development on a transmission system that the parameters within Environmental EU law's are flawed and dangerous.Â Â Â The fact of the matter is many of these wind developments are in highly sensitive and vulnerable areas, and not only do they infringe on EU environmental protection legislation, but the public were not consulted in the relation to designation of these areas for wind farms, this is in breach of the EIA directive andÂ contravenes both the Arahus convention and the European landscape convention.

6) Ireland has yet to develop aÂ National Landscape Strategy.Â Ireland as a whole has failed in every way to meet it's obligations in relation to landscape. Key components of this legislation seek to recognise the landscape as an essential component of a person's surroundings , to establish an expression of their cultural diversity, national heritage and a foundation for their identity.Â Through this, the country must adopt measures to protect and manage the landscape accordingly. When you consider the historical,cultural and national heritage significance of the many places the transmission system is to transverse, it bewilders the mind of how any landscape strategy fits into the the proposed system.Â A National Landscape Strategy must be recognised before any proposed decision for transmission is considered.Â We as a nation must set limitations on the planning in this country to facilitate for this strategy, as our own identity will be lost, and the accumulative industrial developments will aversely directly impact on all aspects of what makes IrelandÂ individually unique to its the people.

We object to the proposed transmission system, on these grounds and seek to hear a complete and through response regarding the issues raised above.Â It is Eirgrids responsibility to proceed careful and to work within the parameters and confines of what is right and lawful for the country, and not just for fiscal gain.Â Â We as a nation presently, meet all renewable energy requirements set out by EU standards and the reckless development Eirgrid are proposing to facilitate through the transmission system especially the ones that facilitate for the exportation of excess wind energy is not only unnecessary but reckless in that it's proposals do not apply any precautionary principles in them and breach many EU laws and standards. This needs to be acknowledged before the decisions made have done irreparable harm.

Anne and Gerard Flynn

-----Original Message-----
From: Pylon Protest [redacted]
Sent: Fri, 06 Dec 2013 16:49:38
To: info@eirgrid.com
Cc: philip.hogan@oireachtas.ie, pat.rabbitte@oireachtas.ie
Subject: Transmission Development plan 2013-2023

I object to the Transmission Development plan 2013-2023. For a number of reasons:
Eirgrid have not done a complete cost analysis of the true accumulated effects of this transmission system. Have they factored in tourism, affect on flora and fauna, etc.?

Ireland have no SEA or AA nor implemented Article 3 of the EIA directive for the NEARP in particular of the national wind strategy, and the proposed transmission system. Ireland failed to implement Article 3 of the EIA Directive until November 2012, the environmental impact of these wind farm developments were not independently investigated and assessed in compliance with an SEA or AA but for Article3 of the EIA Directive. Consequently Eirgrid is now proposing to route the transmission system through these designated "wind energy zone", without having considered the full context of the cumulative environmental impact. The absence of a National Strategic Environmental Assessment for Renewable Energy is incredible.

Ireland already meets EU recommendation for renewable energies productions and the risks of the proposed electricity transmission outweigh any benefits gained from exporting excess generation.

Wind energy cannot be controlled easily – see link below
http://www.independent.ie/regionals/fingalindependent/news/daly-raises-fears-about-eirgrid-interconnector-29079802.html

ECOFYS reports acknowledges that sagging in overhead lines will occur and acknowledges that these surges are part of the transmission system. Eirgrids is proposing a system that is quite clearly unreliable and totally unnecessary for our domestic consumption needs.

Ireland has no regulatory instrument for health and safety of people working on these lines or below these lines. This is against EU directives 2004/40/EC, specifically this document acknowledges the dangers involved in the direct exposure of people working in and around high voltage lines. It specifically calls for protection of workers and those expose to high doses of electromagnetic fields. This legislation can and will be of particular concern for farmers whose lands these high voltage lines transverse and under which they will be working daily.

Eirgrid have not considered the health and safety factors of this transmission system, and these laws must and will be adopted by Irish laws in the very near future.

Ireland has on its statues the provision of protection of individuals from Radon. Imminently these laws in the Irish statues will include the provision of the monitoring and protection of individuals from Radon progenies of which these propose transmission systems will produce. As many of these transmission systems are in close proximity to schools, homes, G.A.A. grounds, and other various local amenities. Is Eirgrid complying with these laws that govern the nation? Has the

government or Eirgrid carried out studies on the effects of radon on nearby populations?

I object based on the items raised above and expect a response addressing these exact points raised.

Sinead Finn,
[redacted]