Micro Electricity Generation Association Of Ireland (MEGA)

NREAP CONSULTATION PROCESS
Submission To Department Of Communications Energy and Natural Resources

Consultation by the Department of Communications, Energy & Natural Resources on sub-section 4.2.6 of the NREAP template

Submission, as requested by DCENR,
Submitted by email to Una Dixon at NREAP@dcenr.gov.ie

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NOTE:
Please note that all comments put forward by the Micro Electricity Generation Association Of Ireland (MEGA) are designed to be constructive and to re-inforce the current policy-forming framework which is developing the final text for Ireland's National Renewable Energy Action Plan, NREAP.

The MEGA Methodology: In this consultation process MEGA will concentrate on specific areas where MEGA members have real experience and expertise. MEGA will first quote text from the sub-section. This will help to pinpoint the issue. Second, MEGA will make a submission below in this regard. This will be followed by a proposed text change. MEGA recognises that plans, once made, generally require some amendment during implementation and arising out of new knowledge but credibility is at the core of international collaboration, in this regard. Therefore, our NREAP must not only be detailed and comprehensive – it must also be credible and amenable to assessment. Ireland's NREAP will sit together with the NREAPS (Renewable Energy Action Plans) of every single other country in the EU, available to the public and once published – final. It is of extreme importance that Ireland presents itself in this context as an intelligent, smart, forward-looking and business-like country. MEGA submission, therefore, are designed, in this context, to help achieve these ends.

ITEM 1 of 3
Quote 1 from NREAP Sub-section 4.2.6: (b) How is it ensured that transmission and distribution grids will be developed with a view to integrating the targeted amount of renewable electricity while maintaining the secure operation of the electricity system? How is this requirement included in the transmission and distribution operators' periodical network planning?

The 2007 Government White Paper[1] on energy policy 'Delivering a sustainable energy future for Ireland - The Energy Policy Framework 2007-2020' sets out a number of strategic goals to support achievement of the overall policy objectives. The 4th strategic goal is 'delivering electricity and gas over efficient, reliable and secure networks.'

ITEM 1 MEGA SUBMISSION:

MEGA submits that none of the measures, legislative or other, put in place by the government take into account the possibility of rising opposition, militancy or civil protest which could seriously hinder the ability to develop our grid and network systems from developing in tandem with the largescale increases of on-shore windfarm development.

Lessons learned elsewhere have shown that unless the citizenry are involved more openly and more directly in the issues and challenges of electricity production there is a high risk of a negative attitude development and growing opposition. Farmers in Ireland are already disgruntled by the failure of the system to empower them to become RE electricity producers (the REFIT does not work for farmers either). All of the farmers representative bodies have already protested to the Government and are seeking that Irish farmers be given the same opportunities that are now being afforded to UK farmers. This is a potentially explosive situation because all transmission and distribution lines have to cross farm land.

The solution is to put in place support measures and appropriate systems which call on citizens to take what measures they can to use electricity more efficiently and to produce whatever renewable electricity they can, while supporting larger projects which are required to displace fossil fuel based electricity generation. This is exactly what UK legislators have done. The reason is clear – it makes it possible to launch major positive awareness building campaigns to support the development of the grid, as the means to link all RE efforts.

ITEM 1 MEGA PROPOSAL:
MEGA proposes the addition of the following text to this section – "The expansion and extension of grid and network distribution systems is subject to a number of sensitivities, not just legislative, public support for such is understood to be crucial to success. It is accepted that the inclusion of the general population in the issue and challenges of energy saving and production is the essential building block to the development of positive and upbeat public awareness campaigns. SEAI is empowered to research and develop such indirect support systems to strengthen the implementation of the direct measures which are being put in place to ensure the appropriate upgrading, expansion and extension of the grid and network distribution systems.

ITEM 2 of 3
Quote 2 from NREAP Sub-section 4.2.6:
"(c) What will be the role of intelligent networks, information technology tools and storage facilities? How will their development be ensured?

Ireland is committed to developing a robust electrical power system that has the infrastructural capacity and technological capability to facilitate the development of Ireland's renewable energy potential…."

ITEM 2 MEGA SUBMISSION:
MEGA submits that the text under this heading is misleading. All countries are facing serious challenges in the development of intelligent network 9or smart) systems.

One key element of the problem ahead is the active and steady reduction of transmission distribution system losses. MEGA has long campaigned for support for the development of Smart Clustering arrangements which promote local area electricity pool(or exchanges) and reduce significantly the need to longhaul electricity promoting local power sharing arrangements which use intelligent networking technologies to reduce needless losses in the transmission and distribution system and optimise the use of local area network capacities. It is unrealistic to expect largescale operators and R & D projects to produce solutions for small scale problems. Much of the intelligent networking systems will be focused on the solution of large numbers of small problems rather than low numbers of big problems. The SME sector is well positioned in Ireland to become a real driver in this arena. The NREAP plan must recognise the opportunity and necessity to develop new ways of involving the SME sector in the advancement of intelligent networking systems which can reduce losses and wasteful power generation significantly."

ITEM 2 MEGA PROPOSAL:
MEGA proposes the addition of the following text in this section – "It is recognised that not all of the needed intelligent networking innovations will come from large scale operators or large scale R & D projects. The SME sector will play a significant, if not readily predictable role. Enterprise Ireland is empowered and positioned to advance the significant potential of the SME sector in this new area of opportunity for power saving and sharing.

ITEM 3 of 3
Quote 3 from NREAP Sub-section 4.2.6:

"(l) How will it be ensured that transmission and distribution system operators provide new producers wishing to be connected with the necessary information on costs, a precise timetable for processing their requests and an indicative timetable for their grid connection?

There is publicly available information on the standard transmission charges and timelines. This information is approved by the CER under Section 35 of the 1999 Electricity Regulation Act.[2] ……"

ITEM 3 MEGA SUBMISSION
MEGA submits that this section of NREAP needs a careful review. At 16.55 hours on April 29, 2010, all of the vital information linkages on the internet were tested. No valid or useful information, relating "information on costs … grid connection.

The following Links were tested and results yielded:-

("The documents below contain lists of charges that are applied for various services provided by ESB Networks (the DSO). ")

· Standard Pricing for Connecting Generators to the Electricity Distribution System (PDF | 140KB)

Test Results: **The page you requested cannot be found : HTTP Error 404**

http://www.esb.ie/esbnetworks/commercial-downloads/standard_prices_for_generator_connections_2010.pdf

Test Results: **The page you requested cannot be found : HTTP Error 404**

This document details the approved pricing approach from the Commission for Electricity Regulation (CER) for connecting new generators to the electricity distribution system.

· Application Fees for Embedded Generators (PDF | 21KB)
This document lists the application fees that are charged for connecting an embedded generator as approved by the CER.

Test Results: **The page you requested cannot be found : HTTP Error 404**

· http://www.esb.ie/esbnetworks/commercial-downloads/application-fees-for-embedded-generators-050609.pdf

Test Results: **The page you requested cannot be found : HTTP Error 404**

MEGA is not saying that the information cannot be obtained. We submit that this area of information is not readily available and new applicants have to jump through unecessary hoops to get connected at a fair price within a predictable time frame.

MEGA submits that serious capacity problems and worries are being experience in the transmission and distribution system – there are real fears of new entrants and new connections and both the TSO and DSO lack sufficient expertise and experience to deal with the level of penetration of Windfarm produced electricity.

ITEM 3 MEGA PROPOSAL:

MEGA proposes that the following additional text be added to this scetion –
"The CER will maintain a a Public Enquiry And Investigation Unit to respond rapidly to queries from the public regarding "the necessary information on costs, a precise timetable for processing their requests and an indicative timetable for their grid connection". The SEAI will also take an active role in ensuring the transparencies, fairness and predictable of grid connection procedures and their implementation. The CER will be empowered to pursue individual complaints made against specific employees of both the TSO and DSO who are seen to fail in their duties to the public in this regard. The CER will seek action from the TSO and DSO to end such

practises. These special measures will ensure that the role out of Ireland's NREAP will not be held back by obstacles in this regard."

Consultation by the Department of Communications, Energy & Natural Resources on sub-section 4.2.6 of the NREAP template

Summary:
Section: 4.2.6 (Electricity Infrastructure Development)
Date of circulation: 31/3/2010
Deadline for feedback: 30/4/2010
Email feedback to: nreap@dcenr.gov.ie

REDG Reps to consult those who they represent on the REDG

4.2.6. Electricity infrastructure development (Article 16(1) and Article 16(3) to (6) of Directive 2009/28/EC)Besides the current situation and already existing legislation future actions, planned revisions, responsible bodies for it and expected results have to be described.

(a) Reference to existing national legislation concerning requirements related to the energy grids (Article 16):

There is no single piece of legislation detailing all the requirements related to energy grids in Ireland. At present, there is a range of primary and secondary legislation that together form the legal context for electricity grids in the country and these are listed below.

- European Communities (High Efficiency Combined Heat and Power) Regulations 2009 (SI 499 of 2009)
- Electricity Regulations Act 1999 (Appointment of Person to Calculate Power to Heat Ratios of Combined Heat and Power Units) Order 2009 (SI 299 of 2009)
- European Communities (Internal Market in Electricity) (Electricity Supply Board) Regulations 2008 (S.I. 280 of 2008) (deals with the legal unbundling of ESB Networks Ltd)
- European Communities (Cross Border Electricity Network Access) Regulations 2005 (S.I. 287 of 2005)
- European Communities (Internal Market in Electricity) Regulations 2009 (SI 226 of 2009)
- European Communities (Internal Market in Electricity) (Amendment) Regulations 2009 (SI 59 of 2009)
- Electricity Regulation (Amendment) (EirGrid) Act 2008

· Electricity Regulation Act 1999 Act (Single Electricity Market) Regulations 2007 (SI 406 of 2007)

· Electricity Regulation (Amendment) (Single Electricity Market) Act 2007*

· Energy (Miscellaneous) Provisions Act 2006 European Communities Internal Market in Electricity) Regulations 2006 (SI 524 of 2006)

· European Communities (Internal Market in Electricity) Regulations 2005 (SI 60 of 2005)

· Electricity Regulation Act 1999 (Eligible Customer) (Consumption of Electricity) Order 2003 (SI 632 of 2003)

· Electricity Regulation Act 1999 Levy Order 2003 (SI 692 of 2003)

· European Communities (Internal Market in Electricity) (Amendment) Regulations 2003 (SI 328 of 2003)

· European Communities (Internal Market in Electricity) (Amendment) Regulations 2002 (SI 145 of 2002)

· Electricity Regulation Act, 1999 (Eligible Customer) Order 2002 (SI 3 of 2002)

· European Communities (Internal Market in Electricity) Regulations 2000 (SI 445 of 2000)

· Electricity Regulation Act, 1999 (Establishment Day) Order, 1999 (No. 214 of 1999)

· Electricity Regulation Act, 1999

· Planning and Development (Strategic Infrastructure Act) 2006

· Two standards adopted under European norms EN 50160 ‘Voltage Characteristics in Public Distribution Systems’ and EN50438 ‘Requirements for the connection of micro-generators in parallel with public low-voltage distribution networks’ are relevant to the accommodation of renewable generation at lower voltage levels.

Offshore Environment

Regulatory functions in relation to developments in the offshore environment transferred to the Minister for the Environment, Heritage and Local Government on 15th January 2010. The current legislation is the 1933 Foreshore Act (as amended). It is the intention of the Minister to streamline and modernise the consent process for certain developments in the offshore environment, including offshore renewable energy projects such as wave, wind and tidal technologies on a phased basis in order to ensure service continuity in relation to the processing of offshore

applications and providing an improved timeline for making decisions on these projects.

These phases will include the following.

1. Integration of strategic Projects on the Foreshore, within the Strategic Infrastructure Act: The Strategic Infrastructure Act will be amended to allow for a fast-track consent process for major wind, wave and tidal energy projects.
2. Administration of non-Strategic foreshore cases by local authorities: In parallel with Phase 2, legislation transferring responsibility for the administration of the non strategic infrastructure foreshore cases to local authorities will be in development, as will the preparation of a Marine Spatial Strategy.
3. Development of a Marine Spatial Strategy: The Department of the Environment, Heritage and Local Government, in collaboration with other key stakeholders will develop a marine spatial planning framework that will clarify allowable location/type of development on the foreshore (and beyond the foreshore limits) to guide/direct decision-makers and users towards appropriate spatial uses of the foreshore and the efficient, sustainable use of marine resources.
4. Integrated Coastal Zone Management: A regional approach to integrated coastal zone management will be pursued supported by the National Spatial Strategy.

(b) How is it ensured that transmission and distribution grids will be developed with a view to integrating the targeted amount of renewable electricity while maintaining the secure operation of the electricity system? How is this requirement included in the transmission and distribution operators' periodical network planning?

The 2007 Government White Paper[3] on energy policy ‘Delivering a sustainable energy future for Ireland - The Energy Policy Framework 2007-2020’ sets out a number of strategic goals to support achievement of the overall policy objectives. The 4th strategic goal is ‘delivering electricity and gas over efficient, reliable and secure networks.’

In this context, a commitment was made to ensuring that through Eirgrid’s[4] Grid 25 strategy[5] and in the context of the All Island Grid Study[6], the electricity transmission and distribution networks can accommodate, in an optimally economic and technical way, targets for renewable generation on the island to 2020 and beyond.

The All Island Grid Study 2008[7] examined the way in which the electrical network on the island might be developed up to 2020 so as to enable the integration of increasing amounts of renewables.

Eirgrid's Grid 25 sets out a Government approved high level strategy for the development of the necessary transmission infrastructure to support a national 40% RES-E target (announced by the Government in December 2008) and in the long term a more sustainable electricity supply.

In terms of RES-E, Ireland was set at target under Directive 2001/77/EC of 13.2% RES-E by 2010. Initial estimates are that we will meet and even exceed a higher national RES-E target of 15% by 2010. Under Directive 2009/28/EC, Ireland has been set a 16% target for energy consumption, to be met across the transport, heat and electricity sectors. RES-E will play a significant role in meeting this overall target and in December 2008, the Government set a RES-E target of 40%. It is estimated that between 4630MW and 5800MW of renewable generation would be required, depending on economic growth assumptions and demand projections, to ensure 40% of electricity consumption from renewable sources. Together with existing renewable generation capacity, the Gate process described below is capable of delivering the required additional renewable generation capacity to meet the higher of these scenarios.

Grid 25 provides the framework to build a more cost effective and efficient system to cater for the shift towards the integration of increasing amounts of renewable generation over time. The transmission capacity assumptions informing this grid development strategy are based on the high level principles of ensuring network safety, security of supply and economic transmission development, while delivering on the renewable target in the years ahead. It provides a foundation for more detailed work on specific reinforcements in coming years and will lead to plans for particular projects which will be delivered in consultation with the public and in line with planning legislation.

Grid 25 is fully consistent with the 'Gate' process for the connection of renewable energy in Ireland. The 'Gate' process was put in place by the Commission for Energy Regulation following public consultation. It is a group processing approach (GPA) towards the processing and issuance of grid connection offers to renewable generators.

Under the GPA or 'Gate' process, applications for connections are processed in batches rather than sequentially. Within these gates, applications are further divided into groups and sub-groups based on the optimal network required to connect them. This approach is considered a more efficient process than dealing with applications on an individual basis where projects which are the subject of such applications interact with each other electrically and where large volumes of such applications exist.

The group processing approach allows for a more strategic view to be taken of network requirements and serves to put in place efficient connection solutions to cater for large number of applications and to ensure optimum network development, minimising network costs and, where possible, avoidance of network bottlenecks.

To date there have been 3 ‘Gates.’ Under Gate 1 and Gate 2, 1755MW of connection offers were made and accepted. Under Gate 3, 3900MW of offers are currently in the process of being issued to renewable generators. A Gate 3 liaison group involving the TSO, DSO, regulator and industry representatives meets on a regular basis and all parties are committed to the full roll-out of the Gate. This amount of renewable generation is sufficient for the achievement of Ireland’s RES-E target and with falling demand may even mean that the RES-E target is exceeded.

A ‘shallow’ connection policy exists whereby generators may opt to connect to the network in advance of the full, deep transmission reinforcements required having been completed once the transmission/distribution shallow works, transmission short circuit driven deep works (or any other system integrity works), control systems and all deep distribution assets are in place. This is termed connecting on a ‘non firm’ basis to the transmission system. This is done in a manner that facilitates the secure operation of the electricity system.

Apart from the above, the Commission for Energy Regulation published a decision in 2009 (CER 09/099) that allows for certain renewable, small and low carbon generators to connect to the transmission and distribution grids without going through the full rigours of the Gate process. This includes small projects, research and development projects and those that qualify as they are deemed to provide benefits of a public nature that merit qualification.[8] Eirgrid’s grid development strategy will take full account of this additional procedure going forward.

(c) What will be the role of intelligent networks, information technology tools and storage facilities? How will their development be ensured?

Ireland is committed to developing a robust electrical power system that has the infrastructural capacity and technological capability to facilitate the development of Ireland’s renewable energy potential. The use of intelligent networks and information technology will play an important part in this. Both the TSO (Eirgrid) and DSO (ESB Networks) are working continuously towards optimal technological solutions for the connection of renewable generation.

With regard to the current situation, intelligent networks are already playing a role. EirGrid already operate a transmission network which has remote control capability at all transmission stations and provides real time voltage, current and power readings. The current transmission network permits power measurands from all 400 kV, 220 kV and 110 kV stations in real time. These measurands help the TSO to control and manage the power flows on the transmission network. Employing sophisticated information technology tools with this information, the TSO is able to remotely control wind farms, conventional generation and network topology.

Similarly to Eirgrid, the DSO (ESB Networks) also operates an extensive Supervisory Control and Data Acquisition (SCADA) system with all substation Transformers and CBs monitored and controlled at all voltage levels and with a further 1,000 controlled points (generally at reclosers) embedded on the individual feeders.

A more immediate impact on the ability to accommodate large volumes of wind energy will be provided by the adoption of High Temperature Low Sag conductors for Transmission uprating with the first such HV line uprating scheduled to take place in July 2010.

Given that information tools are key to managing the penetration of renewables on the system, as well as maximising the efficiencies from the capability embedded within intelligent networks, both the DSO and TSO are engaged in significant research and development work.

Currently Eirgrid is engaged in a number of domestic and European funded projects to develop the appropriate Information Technology tools to manage the renewable challenges. Some specific projects include dynamic line rating, improving wind forecasting in operations today and for the future including high wind scenarios, implementing wind dispatch from the control centre to every wind farm within 10 seconds and applying stochastic wind forecasts in the scheduling of plant.

ESB Networks is conducting significant research and development with EirGrid and the Electric Power Research Institute (EPRI)[9], which will in particular facilitate the accommodation of greater renewables on the system at less cost. Initiatives include reactive power control on embedded wind farm generators, the development of home area networks to be used in conjunction with smart meters and charging infrastructure for electric vehicles which has the potential to allow vehicle to grid flow of energy.

In addition, EirGrid is engaged in research & development to examine the merits of adopting particular network technologies and/or storage facilitates. EirGrid's Grid25 strategy foresees the use of new 'Smart Grid' technology in the form of smart metering, which will establish a two-way flow of information between supplier and user and help end-users control their consumption levels and overall energy efficiency.

The purpose of Grid25 is to put in place a safe, secure and affordable electricity supply network throughout Ireland for the 21st century; a supply network that is flexible enough to allow for an increased use of renewable and sustainable energy and innovative enough to stimulate efforts to reduce our overall CO2 emissions through energy efficiency. This will be achieved in part by integrating new and innovative grid technologies.

In addition, in line with Government policy, smart meters are being rolled out in Ireland. To this end the Government has mandated that the Commission for Energy Regulation (CER) implement a pilot Smart Meter project. This is currently underway with an examination of over 6000 users for a behavioural trial with a further 3000 users for a technology trial. This pilot programme is being implemented by ESB Networks in the electricity network.

Commission for Energy Regulation (CER) Smart Metering Pilot

The European Commission adopted EU Directive EC 2006/32 on 5th April 2006 [10] Article 13 of this Directive requires that where technically possible and financially reasonable, energy metering should record the time of use and customer billing should be sufficiently comprehensive so as to enable the self regulation of energy consumption.

Smart metering is believed to be one method which encourages the self regulation of energy consumption, provides the potential to improve energy efficiency, change demand patterns and is also seen as a key method to support the development of 'smart grids'. . This method is supported by the government who has said in the Programme for Government 2007[11] that it will ensure that the ESB installs a new smart electronic meter in every home in the country which will allow people to reduce their bills by cutting back on unnecessary use of electricity and allow consumers to sell electricity back into the grid from any renewable power supplies they have.

The Commission established a Smart Metering Project Phase 1 in late 2007, the results of which will inform an analysis of the feasibility of implementing smart meters throughout Ireland. The necessary governance structures have been put in place to support the project and four work streams established in relation to networks/ technical issues, customer behaviour, tariffs and billing/data provision. The first phase of the project involves the setting up and running of two main trials, namely a trial to ascertain the potential for smart metering technology (gas and electricity) to change customer behaviour and technology trials that are aimed at attaining an understanding of the smart metering communications technology mix suitable to the Irish environment. The former are due to be completed at the end of 2010 (electricity) and mid 2011 (gas), with the latter due to conclude in quarter three of 2010.

The Commission for Energy Regulation in conjunction with the Economic and Social Research Institute (ESRI)[12] will produce a Smart Metering Cost Benefit Analysis (CBA) by the end of the first quarter in 2011, which will utilise the findings from these trials and inform decisions to be made regarding a national rollout of smart metering.

Further information in relation to the smart metering pilot can be found in the 'Smart Metering Project' section of the Commission for Energy Regulation's website.[13]

Storage

Ireland currently has a hyrdo pumped storage facility of 292MW at Turlough Hill. In addition, the Commission for Energy Regulation has recently approved the construction of a further pumped hyrdo storage facility of 70MW (Knocknagreenan.)

There is a clear and growing interest in developing electricity storage facilitates on the power system. A number of studies have been commissioned by interested parties. In recognising this, EirGrid has conducted a study to examine how different types of storage can be utilised most effectively in the Irish power system. In EirGrid's most recent Generation Adequacy Report (GAR) 2010-2016[14], there is a section on an Eirgrid study on the operation of varying levels of storage on the Irish power system and an illustrative set of results.

The findings indicate that only pumped hydro and compressed-air energy storage are currently suitable for providing a reliable supply of electricity on a large scale. In the study, at 40% of electricity from renewables on the Irish power system, very little curtailment of wind occurred. This indicates low value in adding large pumped storage at the 40% penetration level. However, in excess of 50% renewables penetration, storage can contribute to avoiding wind curtailment and thus reduce production costs. When examined in the presence of increased interconnection however, this benefit is less significant with additional interconnection providing a competitive alternative. The study found that it may be more economic to export wind than to store it using pumped hydro and incur the efficiency loss of the pumping cycle.

(d) Is the reinforcement of the interconnection capacity with neighbouring countries planned? If so, which interconnectors, for which capacity and by when?

The development of further electricity interconnection between Ireland and the UK is a key priority in the context of supporting increased penetration of renewables and progressive development of a regional electricity market.

Current Situation

At present there is just one major line between the Ireland and Northern Ireland grids. The current Louth to Tandragee line consists of a 275 kV double circuit (two circuits on the same tower) overhead line. There are also two small existing 110 kV standby North-South lines, Strabane to Letterkenny and Enniskillen to Corraclassy, which allow mutual short term technical assistance.

Since November 2007, a regional electricity market (the 'Single Electricity Market' (SEM)) is in place on the island of Ireland. The establishment of the SEM trading arrangements on the island mean that what was considered as a North-South interconnector is now considered as a tie line. The Moyle electricity submarine cable links the electricity grids of Northern Ireland and Scotland and has a capacity of 500MW.

East West Interconnector (EWIC)

Construction of an East-West Interconnector (EWIC) to the United Kingdom is underway to schedule and the contract for build has been placed. EirGrid has received planning permission and full notice to proceed with the EWIC which will have an import and export capacity of 500MW. The EWIC is one of the projects to receive funding (€110m) under the European Economic Recovery Plan (EERP.) It has also received significant financial support from the European Investment Bank (EIB) and will be completed for 2012. The EWIC project forms an integral part of Ireland's plans to integrate increasing amounts of renewable generation and is central to our ability to export excess energy abroad in the coming years. Further information on the progress of the EWIC is available on the EirGrid website.[15]

Second North South connection

It is aimed to complete a second North-South line between Ireland and Northern Ireland by 2012. The two main operators on the island (Ireland and Northern Ireland) have applied for planning for the 400kv line running between Meath (Ireland) and Tyrone (Northern Ireland) under the respective legislation. The project will facilitate cross-border electricity flows and the further integration of renewables onto the network.

Further Interconnection

A private company has applied for and was granted an exemption from EU Third Party Access Rules for two proposed East West Electricity Interconnectors between Ireland and Great Britain. Construction of these interconnectors has not yet commenced.

Further interconnection is planned with the UK and mainland Europe. EirGrid has carried out an assessment of the costs and benefits of further interconnection between the island of Ireland and Great Britain or France. The Interconnection Economic Feasibility Report[16] provides the results of this work and indicates a prima facia economic case for more interconnection in the years ahead. In carrying out this assessment, EirGrid has examined a broad range of scenarios such as number of interconnectors, different fuel prices and different generation portfolios. This analysis is part of EirGrid's commitment to assess and examine the benefits of further integration with other European Member States and will help inform decisions regarding the timeframe for future interconnection.

Offshore Grid

In addition to the interconnection outlined above, Ireland is also actively progressing development of an offshore grid with regard to offshore wind, wave and tidal energy potential and is involved in a number of initiatives and developments in the EU context.

Apart from involvement in the Adamowitsch group[17] examining offshore grid, Ireland also participates in the following:

North Seas Offshore Grid Initiative

A political declaration was signed by 10 countries (9 EU MS + Norway) in December 2009[18]. Ireland is one of the signatories. The Political Declaration was a strong statement about the importance of developing an offshore grid. Ministers will sign a Memorandum of Understanding in December 2010 on taking this initiative forward.

ISLES project The Irish Scottish Links on Energy Study (ISLES) is a joint EU Interreg funded feasibility project between the Department of Energy, Communications and Natural Resources (Ireland), the Scottish Government and the Department of Enterprise, Trade and Investment (Northern Ireland.) The project will examine the feasibility of the construction of an offshore electricity transmission network linking potential offshore sites for the generation of renewable energy in the coastal waters of Ireland, Northern Ireland and Western Scotland. The feasibility study will take over eighteen months to complete. The work is seen as a key part in developing thinking

on the EU's concept of a European offshore grid. The two-year study is due to finish by the end of 2011.

European Network of Transmission System Operators in Electricity
EirGrid, the Irish TSO, actively participates in the European Network of Transmission System Operators in Electricity, ENTSO-E, which is now fully established. For the purpose of system development ENTSO-E is organised in a number of regional groupings. EirGrid participates in the North Seas Regional Group, which will in due course be an important contributor to the development of proposals for an off-shore grid in this region.

Off-shore Grid Connection Study
The TSO, Eirgrid, is involved in carrying out a preliminary study on how significant offshore wind resources (beyond the 800MW in Gate 3) off the east coast of Ireland could be integrated into the Irish transmission system, if developed. The research conducted to date has considered the implications and merits of how an off-shore and onshore grid would work together. Early indications from the study suggest that there are positive synergies between on and offshore systems. Of course, any decision regarding the development of an offshore grid is dependent on assumptions relating to cost and reliability performance of the off-shore assets.

British Irish Council
http://www.british-irishcouncil.org/
The British Irish Council was established under the Good Friday Agreement and has been given legal footing in Ireland by the 1999 British Irish Agreement Act.[19] Membership of the British-Irish Council comprises representatives of the Irish and British Governments and of the devolved administrations in Northern Ireland, Scotland and Wales, together with representatives of the Isle of Man, Guernsey and Jersey. Within the last 12 months, the British Irish Council commenced an energy work programme which is looking at the potential to develop grid interconnections between the member administrations and potentially between the member administrations and continental Europe. This work is also looking at the additional market facilitation issues necessary to encourage renewable trade between the administrations and areas of mutual interest as regards offshore grid developments.

Offshore export potential
The Sustainable Energy Authority of Ireland[20] is examining Ireland's potential to develop offshore renewable generation for export. The Authority intends to commission an economic study in this area.

(e) How is the acceleration of grid infrastructure authorisation procedures addressed? What is the current state and average time for getting approval? How will it be improved? (Please refer to current status and legislation, bottlenecks detected and plans to streamline procedure with timeframe of implementation and expected results.)

The Irish statutory planning process is an independent process that ensures all views are taken into account when determining whether a project can proceed.

Strategic Infrastructure Consent Process

The key policy aim of the 2006 Planning and Development (Strategic Infrastructure) Act was to provide for a streamlined, single stage consent process for certain classes of infrastructure development of national importance by statutory bodies and private promoters.

This included provisions for both rigorous environmental assessment and full public consultation. Since it came into operation on 31 January 2007 it has been performing well and now provides a streamlined process in respect of development consent for both publicly and privately promoted major infrastructure projects including major renewable energy projects.

From the commencement of the Strategic Infrastructure Act to date, 34 formal applications, including some in the energy sphere, have been received with 20 completed (3 withdrawn and 17 determined). The overall rate of compliance with the statutory objective to decide strategic infrastructure cases within 18-weeks is high in that 11 out of the 17 formally cases to date have been determined within the objective (nearly 70%).

Transmission infrastructure projects are strategic in nature and of national importance and thus much of the transmission permitting falls under the procedures outlined in the Strategic Infrastructure Act. To date the TSO has had two projects go through this new process and a grant of permission was given in both cases (the East West interconnector project and a 110kV overhead line project in Donegal). The experience to date is that it can take from 6 months to a year for a decision. The TSO currently has an application for a new 100km 400kV line presently under consideration.

The schedule of energy projects (which includes transmission projects of 220MW or more) assessed by the Strategic Infrastructure process is attached at Appendix 1.

Under the new procedure projects are now submitted directly to the Strategic Infrastructure Division of An Bord Pleanála for decision. As part of the new process specific pre-application consultations take place to try to ensure that the subsequent application for permission/ approval is of a high standard, e.g. that correct procedures are followed and that issues relating to proper planning and sustainable development and the effects on the environment are adequately addressed from the outset in the application.

Developments covered by the 2000 Planning and Development Act

With regard to the standard planning consent process, generally a decision has to be made by the Planning Authority within 8 weeks. However this process can be extended if there is a request for further information and appeals on a decision can also be made by the applicant or by a third party in certain instances.
http://www.environ.ie/en/DevelopmentandHousing/PlanningDevelopment/Planning/

(f) How is coordination between grid infrastructure approval and other administrative planning procedures ensured?
The 2006 Planning and Development (Strategic Infrastructure) Act outlined at 4.2.6 (e) above deals with strategic development and strategic infrastructure. It is designed to ensure co-ordination between local, regional and national approaches which balance local interests with the national imperative to deliver strategic infrastructure. The majority of the TSO grid infrastructure projects fall under the provisions of this Act.

The policies and zoning objectives that affect a specific project remain the responsibility of the local planning authority. The local planning authority remains an important stakeholder in the process and in many cases is the main beneficiary of the overall outcome of a specific energy or electrical project.

Currently all Development Plans undertaken by Planning Authorities have to have regard to Regional Planning Guidelines as well as guidelines and circulars issued by the Minister for the Environment, Heritage and Local Government.

In addition, a new Planning and Development (Amendment) Bill 2009 is currently going through the legislative process. One of the aims of this Bill also is to ensure a closer alignment between the National Spatial Strategy, Regional Planning Guidelines, Development plans and local area plans.

A key element in the Bill is the introduction of a requirement for an evidence based ‘‘core strategy’’ in development plans which will provide relevant information as to how the development plan and the housing strategy are consistent with regional planning guidelines and the National Spatial Strategy.

(g) Are priority connection rights or reserved connection capacities provided for new installations producing electricity from renewable energy sources?
Under the Group Processing Approach (‘Gate’) as set out in response to 4.2.6 (b) above, connection capacity has been reserved for renewable generation, including enough to specifically meet the 40% RES-E target in the context of the overall target addressed to Ireland under Directive 2009/28/EC.

To date, there have been three ‘Gates.’ Gate 1 was finalised in December 2004 and processed applications equating to 373 MW of renewable capacity. Gate 2 processed applications equating up to 1300 MW and in 2008, the Commission for Energy Regulation approved Gate 3, which provides for 3900 MW of new additional renewable generation.

(h) Are any renewable installations ready to come online but not connected due to capacity limitations of the grid? If so, what steps are taken to resolve this and by when is it expected to be solved?

No. There are no renewable installations ready to come online (i.e. built and ready to generate) but not connected due to capacity limitations of the grid. The Gate 3

process ensures that there is consistency between network reinforcement and development and the physical connection of renewable generators.

The connection offer process uses a baseline plan for when both shallow and deep reinforcements are likely to be completed. These indicate to a generator when the grid network capacity is likely to be able to connect and operate that unit at full output.

Generators are able to connect sooner than this and if they do priority dispatch units, which applies equally to transmission and distribution connected units, are operated at full output unless there is a security threat to the system. This mechanism results in it being unlikely that a unit would be ready to come on line in the future and not be connected due to grid capacity limits.

On the Distribution side the work required for connection is identified and an estimate of the time taken for completion provided. There is ongoing liaison between the DSO and the renewable generator to co-ordinate the completion of both the DSO and works required. Connection requires that all the distribution identified works – including deep distribution reinforcements work is completed. If this is delayed or takes longer than expected, then a renewable connection could be delayed, but in such cases the work required to complete connection is known and already in progress.

To provide greater control to the wind farm operator two changes are in the process of being put in place by the DSO: the provision (for a fee) of a specific date for work completion by ESB Networks (the DSO) with associated contractual penalties, and the ability of the Wind Farm to contestably construct parts of their connection.

(i) Are the rules on cost sharing and bearing of network technical adaptations set up and published by transmission and distribution system operators? If so, where? How is it ensured that these rules are based on objective, transparent and non-discriminatory criteria? Are there special rules for producers located in peripheral regions and regions with low population density? (Cost bearing rules define which part of the costs is covered by the generator wishing to be connected and which part by the transmission or distribution system operator. Cost sharing rules define how the necessary cost should be distributed between subsequently connected producers that all benefit from the same reinforcements or new lines.)

Yes. There are rules outlining cost sharing and bearing of network technical adaptations and these are published by EirGrid and approved by the Commission for Energy Regulation (CER.)

The capital costs of connection and technical adaptation are divided between producers, transmission and distribution system operators using a methodology based on a version of the “shallow connection” principle. This means that the costs of the immediate connection assets to the network are born by the connecting producer while the costs of additional reinforcement of the surrounding base network

are recovered through a tariff imposed on all users of the system. This costing mechanism has evolved from a number of CER decisions over a number of years which all were made following appropriate public consultation as legislated for in the powers invested in the CER by Electricity Regulation Act 1999.

Specifically the price of the shallow connection assets charged to the producer is determined by use of standard charging schemes that are approved by the CER. Therefore the costs for shallow connection assets, which are built by the TSO, TAO and DSO, are transparent and non-changing to the producer on signing a connection offer. Where differences arise between the price charged for the asset and the actual cost of the build the difference is born by the Transmission Asset Owner (TAO)[21]and DSO as appropriate. This difference is then part of the annual tariff review process by the CER for the next annual review period. In addition shallow connection assets are now contestable.

The capital costs of construction of the base network is born by the TAO and DSO. The base transmission network is planned and controlled by the TSO. The costs of the base transmission and distribution network are recovered through tariffs imposed on the use of users of both the transmission and distribution system, by all users including generators. The rules of this cost allocation are subject to annual review by the CER which balances conflicting public interests in setting these. There are no current plans to alter the schemes outlined above.

The following document applies to all transmission connections. It was developed as part of the All Island Project with input from the regulatory authorities, industry and system operators. It was also approved by the Commission for Energy Regulation (CER.) http://www.eirgrid.com/media/Connection%20Charging%20Statement.pdf.

In addition to the above, the following gives further details to those processed as part of the Group Processing Approach. The document was developed by the DSO, TSO and CER This document gives the details for those processed as part of Gate 2. The document is being updated for Gate 3 and will be finalised shortly.
http://www.eirgrid.com/media/
Joint%20TSODSO%20Group%20Processing%20Approach.pdf.

The rules outlined are based on objective, transparent and non-discriminatory criteria. There are no special rules for producers located in peripheral regions and regions with low population density.

The DSO (ESB Network) document ‘Standard Prices for Generators 2010’ provides details and descriptions of standard connection building blocks such as a Substation Line Bay, Transformer, typical Cost/km for different Line Voltages etc and may be viewed at:

http://www.esb.ie/esbnetworks/commercial-downloads/
standard_prices_for_generator_connections_2010.pdf

(j) Please describe how the costs of connection and technical adaptation are attributed to producers and/or transmission and/or distribution system operators? How are transmission and distribution system operators able to recover these investment costs? Is any modification of these cost bearing rules planned in the future? What changes do you envisage and what results are expected? (There are several options for distributing grid connection costs. Member States are likely to choose one or a combination of these. According to the "deep" connection cost charging the developer of the installation generating electricity from renewable energy sources bears several grid infrastructure related costs (grid connection, grid reinforcement, and extension). Another approach is the "shallow" connection cost charging, meaning that the developer bears only the grid connection cost, but not the costs of reinforcement and extension (this is built into the grid tariffs and paid by the customers). A further variant is when all connection costs are socialised and covered by the grid tariffs.)

Please see the response at 4.2.6 (i) above. The capital costs of connection and technical adaptation are divided between producers, transmission and distribution system operators using a methodology based on a version of the "shallow connection" principle. This means that the costs of the immediate connection assets to the network are born by the connecting producer while the costs of additional reinforcement of the surrounding base network are recovered through a tariff imposed on all users of the system, regulated by the Commission for Energy Regulation (CER.) Specifically the price of the shallow connection assets charged to the producer is determined by use of standard charging schemes that are approved by the regulator.

The Distribution works associated with a connection are charged in full to the generator or group of generators driving those works. A paper by the CER outlining the rules for charging and rebating for generators being processed under the Group Processing Approach is currently under consultation with a proposed decision expected shortly. The present CER approved policy (approved 2007) can be found at:
http://www.esb.ie/esbnetworks/downloads/joint_dso_tso_gpa_pricing_paper.pdf

(k) Are there rules for sharing the costs between initially and subsequently connected producers? If not, how are the benefits for subsequently connected producers taken into account?

Yes. There are rules for sharing the costs between initially and subsequently connected producers. The rules in place were consulted upon and subsequently approved by the Commission for Energy Regulation.[22] Note: there is also an open consultation ongoing in this area.

(l) How will it be ensured that transmission and distribution system operators provide new producers wishing to be connected with the necessary

information on costs, a precise timetable for processing their requests and an indicative timetable for their grid connection?

There is publicly available information on the standard transmission charges and timelines. This information is approved by the CER under Section 35 of the 1999 Electricity Regulation Act.[23]

Through the Gate 3 process, EirGrid and ESB networks issue a connection offer to each generator wishing to connect that sets out the connection charge and estimate timeline specific to the individual customer for an operational date. This information is calculated using planned transmission capacity assumptions.

EirGrid runs an Incremental Transfer Capacity (ITC) Programme to identify the scheduled firm transmission capacity to be provided to the each of the eligible Gate 3 projects for each year from 2010 to 2025. EirGrid published the Incremental Transfer Capacity programme up to 2023 in January 2010. The ITC helps ensure a level of consistency between network planning and renewable integration on the transmission system. Further information on this issue is available from the EirGrid website.[24]

The documents below contain lists of charges that are applied for various services provided by ESB Networks (the DSO).

- Standard Pricing for Connecting Generators to the Electricity Distribution System (PDF | 140KB)

Test Results: The page you requested cannot be found : HTTP Error 404

http://www.esb.ie/esbnetworks/commercial-downloads/standard_prices_for_generator_connections_2010.pdf

Test Results: The page you requested cannot be found : HTTP Error 404

This document details the approved pricing approach from the Commission for Electricity Regulation (CER) for connecting new generators to the electricity distribution system.

- Application Fees for Embedded Generators (PDF | 21KB)

This document lists the application fees that are charged for connecting an embedded generator as approved by the CER.

Test Results: The page you requested cannot be found : HTTP Error 404

http://www.esb.ie/esbnetworks/commercial-downloads/application-fees-for-embedded-generators-050609.pdf

Test Results: The page you requested cannot be found : HTTP Error 404

- Schedule of Operation and Maintenance Charges (PDF | 138KB)

This document outlines the Operation and Maintenance Charges that apply to

Generators, Combined Heat and Power (CHP) and Autoproducer customers. Approved by CER on 21/11/2008

http://www.esb.ie/esbnetworks/commercial-downloads/operation_maintenance_charges_2010.pdf

Also the DSO has initiated customer meetings with generators who will receive a connection offer and appointed a Customer Relations Manager to deal specifically with wind farms. In addition a section of the web site has been developed specifically to provide up to date information on Gate 3 and a dedicated e-mail address has been put in place for all generator related queries. See: http://www.esb.ie/esbnetworks/generator_connections/gate_3.jsp

Finally general information relating to the progression of the Gate 3 offer programme described at 4.2.6 (b) above and providing for an additional 3900MW of renewable generation is communicated in the Gate 3 Liaison Group forum as established by the Commission for Energy Regulation (CER.) The aim of the Liaison Group is to discuss and communicate with stakeholders the progress of the Gate 3 offer programme. The Group meetings, which are held monthly, are organised by the CER and consist of representatives from the CER, the TSO, DSO and industry. Further information in relation to the terms of reference of the group and meeting minutes can be viewed on the Commission for Energy Regulation's website.[25]

Appendix 1

Planning and Development (Strategic Infrastructure) Act 2006
"SEVENTH SCHEDULE
Infrastructure Developments for the purposes of sections 37A and 37B

Energy Infrastructure

1. Development comprising or for the purposes of any of the following:

- An installation for the onshore extraction of petroleum or natural gas.

- A crude oil refinery (excluding an undertaking manufacturing only lubricants from crude oil) or an installation for the gasification and liquefaction of 500 tonnes or more of coal or bituminous shale per day.

- A thermal power station or other combustion installation with a total energy output of 300 megawatts or more.

- An industrial installation for the production of electricity, steam or hot water with a heat output of 300 megawatts or more.

- An industrial installation for carrying gas, steam or hot water with a potential heat output of 300 megawatts or more, or transmission of electrical energy by overhead cables, where the voltage would be 220

kilovolts or more, but excluding any proposed development referred to in section 182A(1).

- An oil pipeline and any associated terminals, buildings and installations, where the length of the pipeline (whether as originally provided or as extended) would exceed 20 kilometres.

- An installation for surface storage of natural gas, where the storage capacity would exceed 200 tonnes.

- An installation for underground storage of combustible gases, where the storage capacity would exceed 200 tonnes. An installation for the surface storage of oil or coal, where the storage capacity would exceed 100,000 tonnes.

- An installation for hydroelectric energy production with an output of 300 megawatts or more, or where the new or extended superficial area of water impounded would be 30 hectares or more, or where there would be a 30 per cent change in the maximum, minimum or mean flows in the main river channel.

- An installation for the harnessing of wind power for energy production (a wind farm) with more than 50 turbines or having a total output greater than 100 megawatts.

- An onshore terminal, building or installation, whether above or below ground, associated with a natural gas storage facility, where the storage capacity would exceed 1mscm.

- An onshore terminal, building or installation, whether above or below ground, associated with an LNG facility and, for the purpose of this provision, 'LNG facility' means a terminal which is used for the liquefaction of natural gas or the importation, offloading and re-gasification of liquefied natural gas, including ancillary services.

[1] http://www.dcenr.gov.ie/Energy/Energy+Planning+Division/Energy+White+Paper.htm

[2] Standard Transmission Charges and Timelines Decision Paper CER/09/077 1st May 2009 http://www.cer.ie/GetAttachment.aspx?id=0e95c64f-80f9-4487-b9c9-88f56b8209a5
[3] http://www.dcenr.gov.ie/Energy/Energy+Planning+Division/Energy+White+Paper.htm

[4] Eirgrid is the Transmission System Operator
[5] http://www.eirgrid.com/transmission/investinginthefuture-grid25/

[6] http://www.dcenr.gov.ie/Energy/North-South+Co-operation+in+the+Energy+Sector/All+Island+Electricity+Grid+Study.htm

[7] http://www.dcenr.gov.ie/Energy/North-South+Co-operation+in+the+Energy+Sector/All+Island+Electricity+Grid+Study.htm

[8] Treatment of Small, Renewable and Low Carbon Renewable Generators outside the GPA, Decision Paper, CER/09/099 July 24th 2009 http://www.cer.ie/GetAttachment.aspx?id=eda74811-2364-4ec4-865e-7c3d84023114

[9] http://my.epri.com/portal/server.pt?
[10] DIRECTIVE 2006/32/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 5 April 2006 on energy end-use
efficiency and energy services and repealing Council Directive 93/76/EEC http://eurlex.europa.eu/LexUriServ/site/en/oj/2006/l_114/l_11420060427en00640085.pdf
[11] Programme for Government 2007 http://www.foe.ie/download/pdf/2007_programme_for_government_final.pdf
[12] http://www.esri.ie
[13] http://www.cer.ie/en/information-centre-reports-and-publications.aspx?article=c03aebf5-8048-456c-ba8b-33a79319a818&

[25] Ref: http://www.cer.ie/en/electricity-transmission-network-overview.aspx?article=35174640-af92-457c-89ab-44a56abea1ce