

**Submission by the
Irish Wind Energy Association
on the Green Paper:**

***Towards a Sustainable Energy
Future for Ireland***

December 2006

Prepared by IWEA Ltd with the Assistance of Goodbody Economic Consultants

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1. Introduction

The Minister for Communications, Marine and Natural Resources has invited views and comments on the Green Paper – Towards a Sustainable Energy Future for Ireland. It is anticipated that this consultation process will culminate in publication of a White Paper, which will set out a strategy for creating a sustainable energy future for Ireland. This document is the contribution of the Irish Wind Energy Association (IWEA) Ltd to this consultation process.

1.1 Wind Energy Development in Ireland

The contribution of wind energy to electricity generation has grown rapidly in recent years. Table 1 below shows reported levels of wind generation capacity in Ireland in recent years. It is estimated that at the time of writing, a total of 672 MW of wind energy capacity is installed.

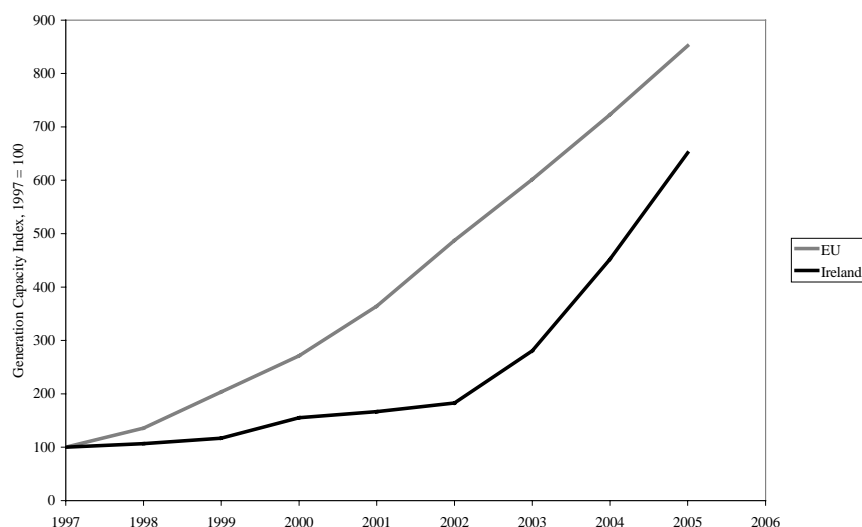
Table 1: Connected Wind Generation Capacity

Year	Connected Capacity (MW)
1997	76
1998	81
1999	89
2000	119
2001	127
2002	140
2003	214
2004	345
2005	497
2006	672

Source: EirGrid. Figures were subject to rounding.

While the expansion of capacity in Ireland has been impressive, Ireland has been a relatively slow starter in European terms. Figure 1 below depicts indices of wind generation capacity in Ireland and the EU. It is clear that, until 2003, the rate of growth in wind generation in Ireland lagged behind that of the rest of Europe. Since then growth rates have been above the European average, but relative to the whole period, Ireland still lags behind. This serves to indicate that there is no guarantee of continued progress on this scale, unless market conditions are right.

Figure 1: Index of Wind Generation Capacity 1997 = 100



Source: EirGrid and the European Wind Energy Association

1.2 The Green Paper

The Green Paper identifies three key pillars that Energy Policy must be built upon. These are security of supply, sustainability, and economic competitiveness.

With regard to the **security of supply**, the Paper discusses a number of key issues such as generation adequacy, interconnection, diversifying fuel use, encouraging investment in oil and gas exploration, and the putting in place of contingency plans to mitigate the impact of supply disruptions. The Paper recognises the role of renewable energy, including small-scale renewables, in contributing to fuel diversification.

Turning to **sustainability**, the Paper outlines measures to reduce demand through energy efficiency and research and development based technology. Renewable energy is seen as having a key role in promoting sustainability.

With regard to **competitiveness**, the Paper focuses on reforming market structures and institutional arrangements.

The key proposals with regard to renewables that affect the wind energy sector are:

- A new 2010 target of 15 per cent of electricity consumption to be met by renewable energy;

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- A further target of 30 per cent penetration by 2020, subject to technical considerations;
 - A minimum of 400MW of new renewable capacity to be supported by the REFIT Scheme; and
 - Support for offshore wind, wave and tidal ocean devices through research, development and demonstration to reach a stage when significant deployment has the potential to become commercially competitive;

The Green Paper poses a number of questions amounting to twenty-two in total. These questions in so far as they relate to renewable energy in general and wind energy in particular are as follows:

- What can be done to improve the pace and range of development of renewable energy resources for electricity generation on a sustainable basis?
- In addition to electricity generation, what actions should be taken to develop renewable energy usage in the transport and heat sectors?
- Do we need to choose between mandatory targets and better incentives for renewable energy and energy efficiency?
- Does the Green Paper generally set the right policy directions for energy sustainability?

1.3 General Observations

The Myths about Wind

The development of wind energy has been inhibited by a series of myths that need to be challenged:

- It is argued that there is a technical limit to wind energy on the grid and that variability is an insoluble problem, but a number of international studies show otherwise.¹
- The myth that wind is unduly expensive is shown to be erroneous by the fact that wind is currently keeping the Public Service Obligation on consumers' bills at zero.
- The myth that renewable energy cannot meet all of our energy needs is shown to be false by the resource work of ESBI.²

¹ "No Limits to High Wind Penetration", David Millborrow, Wind Power Monthly, Sept 2006, p51 (enclosed).

² "Renewable Energy Resources in Ireland for 2010 and 2020", ESB International on behalf of SEI, 2004.

Before examining a number of issues in detail, the IWEA wishes to comment on the overall stance of the Green Paper.

- The bulk of the Green Paper is focused on brown energy, despite the fact the renewables offer the best hope for secure and sustainable energy supply;
- This lack of focus on renewables is reflected in the very few questions posed that are directly relevant to renewables;
- The Green Paper treats renewables as a single entity, despite the fact that wind energy is the only renewable that is likely to make a significant contribution to electricity generation or energy supply over the short to medium term; and
- The Green Paper avoids the key issues raised in the Deloitte report, relating to the role of ESB within the liberalised market, and specifically the proposed separation of network ownership.

The IWEA suggests that the White Paper should:

- Have a greater focus on renewables;
- Address and dispel the pervasive myths as described above;
- Quantify the real economic benefits of increased security of supply through renewables using portfolio theory;³
- Separately consider the role of wind energy, both on and off-shore, and specifically address smaller scale generation;
- Deal with the overarching market issues that hinder renewables, such as the dominance of ESB, the various hindrances in the proposed Single Electricity Market, and the long delayed transposition of the RES-E Directive into Irish law;
- Critically analyse the factors that could impede the rapid development of wind energy; and
- Propose policies and initiatives to address these barriers.

With this in mind, the next sections of this document set out the proposals of the IWEA on some of these key factors. It commences with views on the setting of renewable energy penetration targets.

2. Renewable Energy Targets

2.1 Introduction

The Green Paper sets out targets for the proportion of total electricity consumption arising from renewable sources at 15 and 30 per cent by 2010 and

³ Schimon Awerbuch: <http://www.awerbuch.com/>

2020 respectively. The Green Paper acknowledges that the bulk of the renewable energy produced by 2010 will be from the wind sector.

The IWEA believes that:

- These targets should represent commitments and be set as minima that must be reached. As a result, the 2020 target should not be subject to technical constraints as indicated in the paper;
- With regard to the 2020 target, in addition to the minimum target level of 30 per cent, higher “stretching” targets should also be set both for 2020 and beyond;
- Given the prominent role that wind energy will play in achieving these targets, sectoral targets are needed which clarify the contribution required from various renewable energy sub-sectors;
- Achievement of the 2010 target is crucially dependent on the removal of existing barriers to wind farm development.

2.2 Committed Targets

The single most important issue regarding targets for renewable generation for the IWEA is their credibility and impact. Targets have little impact if they are not credible or do not represent a committed policy goal. If targets remain lip service rather than real ambitions for achievement they will simply be a distraction from the real issues.

The IWEA notes that the Green Paper qualifies the 2020 renewables target by stating it is subject to ‘technical considerations’. Such a disclaimer on a policy target invalidates it completely. Consequently, this raises doubts as to whether there is any genuine policy commitment to achieving such a target. Accordingly, the IWEA calls for targets to be set without qualifications. This will signal a genuine commitment to progress and provide a much-needed boost to the renewables sector.

The IWEA believes that the White Paper should include a commitment by Government to adopt the 2010 and 2020 targets as minimum goals. To reinforce these targets, the IWEA suggests that they be adopted as corporate goals by the Department of Communications, Marine and Natural Resources, Sustainable Energy Ireland, EirGrid and ESB Networks and included in their relevant Statements of Strategy.

2.3 Sectoral Targets

The IWEA is also calling for sector specific targets. Categorising all renewable resources together masks many significant differences between the various

renewable resources and the technology behind them. It also permits ambiguity regarding expectations of progress in each resource, further softening the impact of targets.

The range of renewable resources is wide and diverse. The technology behind some resources is proven, while in others it is immature. There are also some renewables that are particularly suited to Ireland and its resource base, while there are others that have limited long term potential.

With regard to these differences, wind energy is in a particularly strong position. Wind energy has grown rapidly and now represents the largest single renewable resource by generation capacity. Although wind technology is new relative to long established hydroelectric infrastructure in Ireland, it is proven both by extensive international experience and more than a decade of widespread application in Ireland. Other resources, such as biomass, show promise, but do not have the benefit of cumulative experience or the confidence of financiers in the context of large-scale electricity generation. Wind energy also has the distinct benefit of being a resource that is particularly abundant in Ireland, with truly vast potential.

Given that wind energy stands out so clearly as a proven, mature renewable resource, it should be given its own targets. This is particularly important as the growth in renewables is currently the single most important energy question, and wind is at the forefront of that process. As wind will be the main driver of renewable generation in Ireland, it should be given clear recognition with individual targets.

The Green Paper indicates the 2010 target of 15 per cent of electricity consumption will require a total renewable generation capacity of 1,650MW. The IWEA believes that wind energy will be required to provide up to 1,300MW of capacity, if the overall target is to be achieved. This represents an approximate doubling of 2006 wind energy generation capacity levels.

2.4 Stretching Targets

The IWEA believes that the 2020 target of 30 per cent of electricity consumption to come from renewable resources is too low. The amount of wind energy available to Ireland far exceeds its energy requirements. A report for SEI by ESB International estimated a total resource of 620 TW 2020.⁴ Thus, it is clear that high levels of renewables penetration can be achieved if the right Government policies are adopted.

⁴ “Renewable Energy Resources in Ireland for 2010 and 2020”, ESB International on behalf of SEI, 2004.

The IWEA feels that a higher stretching target for renewables is feasible and should be adopted. A 2020 target of 8,000 MW is suggested by the IWEA. This is within the bounds that the SEI report considered ‘socially acceptable’. This target is considered reasonable in light of the wind resource available in Ireland and the need to achieve sustainable energy supply without undue dependence on imported fossil fuels.

Beyond 2020, the IWEA considers that Ireland's overall goal must be complete energy independence, suggesting that 100 per cent of its primary energy needs would come from renewable sources in the longer-term. While the IWEA would like to see this as a target for 2050, we would suggest that SEI fund a public good study, taking on board similar studies elsewhere, to identify a target date by which this could be achieved.

While the IWEA’s 2020 stretching target for renewable penetration is significantly higher than that proposed in the Green Paper, it is important to remain ambitious when setting targets, not least to give the right signals to potential wind farm investors.

2.5 Achievement of Targets

Significant further wind energy generation capacity is anticipated from new wind farms either planned or under construction. The projected end year capacity connected for the period 2006 to 2009 derived from current connections and contracted connections is shown in Table 2 below. Based on these data, it is clear that there is **the potential** for wind energy to reach 1200 MW by the end of 2009, and thus make the necessary contribution to the 2010 target for renewables of 1,650MW.

Table 2: Projected Potential Wind Energy Capacity

Year end	Projected Capacity (MW)
2006	783
2007	1050
2008	1157
2009	1195

Source: Compiled by Goodbody Economic Consultants Based on EirGrid Data.

However, the IWEA wishes to state unequivocally that **this potential will not be realised** under current market conditions.

At present, for many wind farm projects, the risks, financial and otherwise are too high. As a result, many of the potential projects may falter. The sources of these risks are the relatively low feed-in tariffs available, the escalation in the underlying costs of wind farm development, the delays in getting grid connections and the difficulties of the planning process. These risks are the subject of further comment below.

While these risks and obstacles have proven very difficult for all developers, they are particularly problematic for SME (small and medium enterprise) developers, since they normally fund all planning, connection application and booking costs and turbine deposits from personal resources and not company balance sheets. To reflect general policy on SMEs, the IWEA suggests that all measures be designed so as not to unduly create hurdles for SME developers.

3. Grid Access and Use

3.1 Introduction

Wind energy generation needs to receive equal treatment to established fossil fuel generation in the Irish electricity market, if the penetration targets are to be reached. The IWEA is strongly of the view that wind energy currently does not enjoy such a level playing field and is at a competitive disadvantage. This unequal treatment damages the investment climate for the wind energy sector, hampering the prospects for sustained growth in wind energy capacity. Given the importance of wind to Ireland's renewable mix, any unnecessary constraints on the wind energy sector will seriously limit Ireland's success in reducing dependence on imported fossil fuel.

The IWEA would like to stress that many of the issues that deny parity of treatment between wind and more traditional forms of generation are artificial and unnecessary. Consequently, the IWEA is calling for all artificial barriers to the wind energy to be removed in order to provide the sector with an equal footing in the energy market.

The lack of parity is particularly manifest in relation to grid access and use. Wind energy is at a disadvantage relative to fossil fuel generation with regard the following:

- Grid Access
- Grid Connection Offers
- Constraint and Curtailment

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- Grid Codes
 - Micro-Generation

3.2 Grid Access

The IWEA is calling for improved access to the grid for wind energy generation. Connection to the grid is a vital part of developing a wind farm. Additional costs, delays and uncertainty surrounding grid connection seriously impinge on the successful development of wind generation.

We would argue that the way to unblock the system and simplify the process is to move to a connection charging system that we might call ‘interface charging’. That would involve the cost of shared assets and all connections to the nominated interface being paid for and owned by the grid owner, while the actual individual project connection would be paid for and owned by the wind farm development. The need for elaborate cost sharing exercises and cost offers would be completely removed. Offers would deal instead with the location of the nominated interface, the timing of connection and non-firm access issues, etc. Rules would have to be discussed and agreed on the location of the interface, so that it is far enough away from the existing network to allow for future anticipated connections of both generation and demand, and close enough to the generator to allow the project to own its connection to the interface.

A precedent for this approach has been set in Denmark and something similar is being attempted, though not very successfully in the UK (due to excessive bonding requirements). What must be avoided in any such approach is a complex guarantee procedure to ensure project construction. Stranded assets are not in fact a major concern since, as argued by ESRI, spare grid capacity is a key to electricity competition.⁵

Projects would still be grouped, but in regular (say annual) gates. Grid costs arising from such a policy would be recovered through general transmission charges and spread equally over all users, as is generally the case in Denmark.

If the current Grouping scheme is adopted for the AIP (All Island Project), what is now causing difficulties in the Republic of Ireland will become a major problem for the whole island. We, therefore, propose the adoption of a much simpler ‘interface’ approach.

Even under the current policy, issues on grid access stem from inconsistencies in the contestability of grid connections. There are number of problems that stem

⁵ “Aspects of Irish Energy Policy”, ESRI, Sept 2005, p17.

from the issue of contestability, including planning difficulties, cost control and increased uncertainty.

The transmission network is owned by ESB Networks and operated by EirGrid, the distribution network is both owned and operated by ESB Networks. New connections to the transmission network are contestable, so that they be installed either by the ESB or by a contractor for the wind farm developer. New connections to the distribution network are not contestable and can only be installed by the ESB.

This monopoly on connection works presents two problems to wind farm investors:

- Reduced cost control; and
- Weaker control of the planning permission application process.

Overall, these problems reduce the ability of developers to bring wind farms into production quickly and cost effectively.

Experience shows that a grid connection can be installed at lower cost, if the work is undertaken by the wind farm developer instead of the ESB, as it can be competitively bid by a number of contractors. While the ESB is obliged to charge no more than the least cost technical acceptable price (LCTA); private developers are able to install the same infrastructure for less as they have a clear interest to ensure costs are minimised. The ability to undertake the work also affords the developer more oversight of the likely costs, consequently there can be greater confidence of accurate costing at the project planning stage.

The issue of grid access costs has grown in importance recently, as the costs of installing a grid connection have inflated dramatically. This escalation of costs reinforces the need for developers to be able to take control of connection costs.

If a developer is dependent on the ESB to install a connection to the distribution network this also reduces control at the planning stage. Wind farms require planning permission for both the turbine site and the grid connection. If the ESB is installing the grid connection, the wind farm developer must rely on it to make the planning application in a speedy fashion. Developers have, unlike the ESB, a vested interest in expediting the planning process.

Private developers are also in a better position to manage the planning application in a way that avoids conflict and allows issues to be resolved quickly with local landowners and interested parties. The ESB may not be able to engage with landowners in the same constructive and commercial way as wind developers for

fear of creating precedents. This lack of commercial freedom strongly supports a move to contestability.

The overall project can be jeopardised if the separate planning permission for wind farm lapses due to delays in the planning application for the grid connection. As these delays are beyond the control of the developer, they add an additional source of uncertainty, which seriously compromises the bankability of wind farms.

In light of the problems of contestability described above, the IWEA is calling for connections to the distribution connection to be made contestable as soon as possible. The current situation represents an artificial and unnecessary barrier to wind energy development and requires immediate attention. Resolving this issue will reduce uncertainty and improve the investment environment for wind energy. This will confer an immediate benefit on the wind energy sector, allowing an expansion of capacity at zero cost.

The barrier to wind energy presented by the problem of contestability represents a lack of parity with conventional generation. This is because the demand for additional grid connections is particular to wind generation. As wind resources are dispersed and largely located on the sparsely populated West Coast they have significant connection requirements. New conventional electricity generation capacity is typically located at existing generation sites where there already is an established grid. Consequently, unnecessary obstructions to grid access represent a barrier particular to wind generation.

The IWEA understands that extension of contestability to distribution is supported by both the Commission for Electricity Regulation and the Department of Communications, Marine and Natural Resources and that reform is currently pending legislative changes. The IWEA would like to commend the efforts to remove this unnecessary barrier and urge that required legal changes be made as soon as possible.

3.3 Grid Connection Offers

Access to the grid is also hampered by a slow and cumbersome grid connection application process. Again, delays to project completion reduce developer control, increase financial risk and jeopardise the planning application process.

The CER introduced a moratorium on grid connections in December 2003, as there were concerns regarding the grid's ability to accommodate further wind penetration. The IWEA believes this was an overly cautious decision, which unnecessarily stymied connection applications. The grid codes were amended to accommodate wind generation and the moratorium was lifted.

Gate 1 of the connection applications process handles applications that were in train at the time of the moratorium. EirGrid has now made grid connection offers to all applicants under Gate 1. The Gate 2 process contains applications that were made subsequent to the imposition of the moratorium. Applications in Gate 2 are still being processed; some applicants have received offers while many are still waiting.

In principle, the EirGrid connections applications process is adequate, but in practice the process is simply far too slow. Applications under Gate 1 have taken several years to process since the moratorium was introduced. Applications under Gate 2 are taking up to three years before connection offers are made. The IWEA holds that these unnecessary delays represent a serious obstacle in the process of developing wind generation.

Once a grid connection offer has been made, developers are then subject to further delays caused by the ESB, if their grid connection is not contestable. Typically, the ESB has taken 2 years from the date of the actual grid connection offer to complete a connection. This slow process on the part of the ESB exacerbates an already very slow grid application process.

The IWEA feels that the number of agencies involved in facilitating the necessary components of wind developments pay too little attention to the impact of timing. A wind farm needs to secure planning permission, grid connection offers, a grid connection and, in most cases, a REFIT tariff agreement. The cumulative delays in these four components can seriously retard the successful development of a wind farm. These relevant agencies need to be aware of the need for timely processing of applications in order for the whole process to be completed in a feasible time scale.

The IWEA is calling for a streamlined grid application process, in addition to making all lines contestable. A structured applications framework is necessary for all the relevant components to ensure each can be secured without delay, without causing knock-on delays elsewhere in the application process. The IWEA would wish to see performance targets set for the various actors in the process.

3.4 Constraint and Curtailment

Constraint and curtailment are two issues that have the potential to present serious obstacles to the further successful development of wind energy in Ireland. Constraint (including curtailment) arises out of inadequacies in the grid infrastructure to accommodate generation capacity. Curtailment is a constraint that arises when there is an imbalance between wind generation and electricity demand or in situations where it is unlikely that wind generation capacity can

respond to changes in demand. Both affect the ex post wind generation capacity factor, which can compromise the financial viability of wind development. The IWEA's position is that constraint and curtailment are unnecessary impediments and that more should be done to reduce their impact.

If renewable generation targets and the economically optimal generation mix are to be achieved, it will be necessary to add a significant amounts of wind generation capacity in the coming years. This coupled with the arrival of the All Island electricity market in 2007 will heighten the importance of constraint and curtailment.

Constraint

The 2001 EU RES-E Directive contains the following transmission guarantee: "Without prejudice to the maintenance of the reliability and safety of the grid, Member States shall take the necessary measures to ensure that transmission system operators and distribution system operators in their territory guarantee the transmission and distribution of electricity produced from renewable energy sources". This guarantee implies that constraint be eliminated or minimised for renewable energy generation.

The IWEA requires that wind farms with firm connection offers receive payment for any constraint imposed. This payment will provide the appropriate incentive to the grid operator to make the necessary improvements and to make long term planning provision for renewables.

The IWEA feels that there is a strong mandate from both the RES-E Directive and Electricity Act for establishing priority for renewables over conventional generation to with regard to constraint. That is, renewable generation without firm connection offers should not be constrained before conventional generation with firm offers.

Curtailment

Curtailment is a new concept in electricity supply management that has been developed by EirGrid specifically for wind generation. It has emerged in Ireland due to the particular circumstances of a relatively high level of wind penetration in an electricity market with insufficient interconnector capacity.

EirGrid has failed to adequately demonstrate the technical requirement for curtailment. The IWEA contends that the current grid code requirements of the wind generation mean that there is no reason for curtailment in circumstances of high levels of wind energy generation and relatively low demand.

The IWEA also feels that the grid code requirements on wind generation, in the second set of circumstances when demand fluctuations are anticipated, are not on a par with those for conventional generation. The IWEA calls for grid code requirements of the standard applied to wind to be applied to all generation. The IWEA also calls for a review of the operating capacities of all forms of generation, which will inform the most effective set of dispatch and scheduling rules given current and future energy requirements.

The IWEA is calling for greater efforts to be made to accommodate wind in the generation mix. Currently wind generation is subject to unnecessary curtailment by EirGrid. The IWEA is calling for compensating payments to be made to wind generation that is unnecessarily curtailed or receives low and negative market prices due to the current inappropriate generation mix. Such compensation payments will improve the financial viability of wind and provide incentives for appropriate generation investment.

There are further infrastructural investments required in interconnector capacity and pumped storage in order to avoid curtailment. It is important that such investments are made, despite the advent of a deregulated electricity market and the absence of a single, centrally planned, state owned enterprise. Investment in the necessary infrastructure should be facilitated by a charging system permitting EirGrid to recover costs.

3.5 Grid Codes

Grid codes are a set of technical requirements on generators regarding the operation of their facilities and their contributions to the distribution and transmission grids. There is a grid code for both the transmission and distribution networks, each of which were amended following the emergence of wind power, as part of the ending of the moratorium on grid connections. Specific grid codes were required because the particular characteristics of wind generation had to be integrated into codes already established for conventional fossil generation.

The grid codes that apply to wind energy in Ireland are among the most stringent and technically demanding in Europe. While the IWEA acknowledge that they support and improve the long term prospects for wind energy in Ireland, certain aspects of the grid codes need to be re-examined. In particular, it is important that grid codes demand the same standards of both wind and conventional generation. The IWEA calls for:

- Grid code standards that offer fair treatment to wind; and
- Consistent compliance standards.

The grid codes that apply to conventional generation impose less stringent requirements on conventional generators than apply to wind generation. Furthermore, the enforcement of compliance with grid codes for conventional generation is not at the same standard that is applied to wind generation.

The IWEA recognises the importance of grid codes for ensuring effective and co-ordinated supply to the grid and for the stability of power supply. It wishes to see the same standards and compliance that the wind energy sector adheres to implemented in conventional generation.

The IWEA urges that any reform of grid codes as they apply to conventional fossil generation should acknowledge the need to promote flexibility in generation capacity. By increasing flexibility of conventional plant, the ability of the grid to accommodate additional wind will improve. The addition in recent years of a number of 400MW 'F-Class' gas turbines in CCGT mode has reduced grid flexibility and versatility. Further addition of such large increments of inflexible generation may artificially inhibit future wind penetration.

3.6 Micro-Generation

Due to potential problems of voltage rise, the ESB has proposed export limits on micro-generation of 40 per cent of local substation capacity. The IWEA feels that such a limit is arbitrary and has not been justified on technical grounds. The IWEA also notes the potential legal difficulties of refusing connection to micro-generation, as this could be construed as discrimination.

With regard to notification of micro-generation development, the IWEA broadly agrees with the CER's proposed 'inform, consent and fit' model, but reserves judgement on the detail of the proposal.

The IWEA would like to emphasise the importance of scale in the context of micro-generation when setting requirements. What may be a suitable requirement for larger micro-generation may be an unnecessary constraint on smaller installations. In particular, this applies to proposed insurance requirements that could represent an onerous and unwanted barrier to smaller micro-generation.

The question of payments and billing are central to the viability of micro-generation. The IWEA urges the CER to revise its stance on non payment to micro-generators, which reduces the viability for of installations and provides incentives for rogue installations, compromising safety and the long run prospects of wind generation.

In particular, the IWEA would urge the CER to revisit the debate regarding the viability of the various metering methods. The IWEA feels that metering options

to facilitate payment have been prematurely dismissed as infeasible, when they are in fact technically possible. In particular, the experience in foreign electricity markets shows that metering and payment is possible.

The IWEA is calling for net metering to be introduced for smaller installations below a given threshold, possibly at a 11 kW level. In contrast, where customers are expected to generate more than their own demands and become net exporters, a dual-meter 'net-billing' arrangement is considered appropriate. The IWEA would also urge the CER to examine prospects for 'smart metering' in the future, as technical advances expand the billing possibilities.

Micro-generation currently faces unnecessarily restrictive planning constraints. In particular, a recent consultation on micro-generation suggested that wind turbines should be limited to the curtilage of a house. The IWEA contends that this is an arbitrary and unnecessary limitation that precludes development on many other suitable buildings, including commercial premises, public buildings and agricultural structures.

Overall, the IWEA feels that the technical requirements being imposed on micro-generators, in particular the distribution code, are stifling development and require review. Such a review and a reversion of the CER's stance against payment for micro-generation are required if the sector is to make a meaningful contribution to renewable generation.

4. Reform of the REFIT Programme

4.1 Introduction

The IWEA welcomes the REFIT Programme, which was announced by the Minister in May 2006. The commitment to support the introduction of new renewable energy plant in the context of a fixed feed-in tariff was especially welcome. In September 2006, the Minister announced the allocation of support under the REFIT Programme to 55 new renewable electricity generating plants.

The REFIT Programme is viewed by the IWEA as crucial to the development of wind energy in Ireland from the point of view of putting in place additional wind energy facilities in the short term. However, the Programme is also a means of signalling to project sponsors that they can bring forward medium to long term projects with some confidence that they will prove to be viable commercially.

The IWEA does not consider it necessary that Government should report the REFIT Programme as State Aid to the EU Commission, since almost identical schemes in other Member States have been ruled by the European Court of Justice as not being State Aid, due to absence of state funds. Ireland should insist, as part

of the revision of the Community Guidelines on State Aid for Environmental Protection currently underway, that it be clearly stated that a scheme of this type is not State Aid. This should avoid future reporting and attendant delays and constraints, while removing any uncertainty on the matter for financial institutions.

4.2 Feed-in Tariffs

With regard to the current programme, there is a clear danger that even those projects that have been included to-date may not come to fruition because of the ongoing cost increases to which reference was made above. The increases in turbine prices and grid connection costs mean that projects that were commercially viable at planning stage are now marginal.

In this context, the current pricing structure is deficient from a number of viewpoints:

- The basic feed-in tariffs are generally too low; and
- There is no recognition in the tariff structure of the additional costs of developing off-shore wind energy.

The Green Paper asserts that it is strongly supportive of renewable energy including wind. Despite this, the REFIT Programme offers producers prices that are much lower than those offered by other European countries. Table 3 sets out tariffs available in a sample of European countries that operate similar feed-in tariff structures.

European tariffs are on average 38 per cent above Irish levels. The lowest European tariff is that of Spain which is nevertheless 15 per cent above the Irish level. Moreover, some jurisdictions offer higher rates for offshore wind e.g. 13 cents/kWh in France and 9.1 cents in Germany.

Even allowing for varying capacity factors, Irish financial incentives are low by comparison, especially when the tax breaks such as those that operate in Germany are taken into account.

The above data indicate that Ireland, despite its more abundant wind resources, is failing to encourage its development to the extent of its European neighbours. Unless remedial action is taken, Ireland's rate of wind energy development will fall behind that of less favourably placed countries. This is especially the case because as the best sites are developed, the costs of production in Ireland will inevitably rise. There is a need for the REFIT pricing structure to reflect this reality and provide prices with some "headroom".

Table 3: Comparison of Initial On-Shore Wind Energy Tariffs, 2006

Country	Tariff (Cents/kWh)	Relative Tariff (Irish Large Plant Tariff =100)
Austria	7.8	136.8
France	8.2	143.9
Germany	8.0	140.4
Greece	7.3	128.0
Netherlands	7.7	135.0
Portugal	7.4	129.8
Spain	6.6	115.7
Switzerland	10.0	175.4
Ireland:		
Small	5.9	103.5
Large	5.7	100.0

Source: Compiled by Goodbody Economic Consultants.

Notes: Greek tariff for islands is higher at 8.5c.

The costs facing wind energy producers are escalating rapidly:

- Turbine prices have increased by up to 40 per cent in the last eighteen months;
- Grid connection costs have more than doubled in the last two years;
- Interest rates have increased by one-sixth in last two years.

This means that some of the projects accepted for REFIT may prove unbankable as the feed-in tariff was set on wind energy development costs prevailing in spring 2004. The anticipated increase in wind energy production of some 600 MW will not then be realised. The IWEA believes that the White Paper should contain a commitment to:

- Raise the reference feed-in tariff significantly; and
- Adjust the reference feed-in tariff annually based on an index that is more reflective of industry costs.

4.3 Access to REFIT

Even if the reference were to be raised, there is a prospect that some of the projects accepted for REFIT may prove unbankable. In order to maintain the pace of development of wind energy, the IWEA believes that the White Paper should commit to extending the REFIT programme to projects with full planning permission and grid connection that comply with the other programme eligibility conditions.

5. Maximising the Potential of Wind Energy

5.1 Introduction

Ireland's wind resources are more than sufficient to meet the country's long-term energy needs in a clean and sustainable manner. However, the inherently variable nature of wind represents a challenge to fully exploiting its potential. As wind penetration increases, so too must the commitment to additional back up generation and storage.

While the issue of variability is unavoidable it is by no means insurmountable. The IWEA notes an observation by industry experts Garrad Hassan that there are no technical limits to 100 per cent wind penetration in Ireland.⁶ The issue of variability should not be perceived as placing an absolute limit on wind energy generation, nor should the challenge it presents be overstated.

Technical solutions can mitigate the effects of variability, increasing the scope for the penetration of wind energy. The role of public policy is to ensure the correct infrastructural, planning and regulatory framework to enable Ireland to fully exploit wind energy.

5.2 Overstating the Issue of Variability

The challenge presented by variability is frequently overstated. Cumulative experience of wind generation is proving that the actual impact of variability is less than commonly supposed. Technological advances in turbine technology mean that short-term fluctuations in generation are smoothed. The increased geographical spread of wind farms as development increases also provides a mechanism for aggregating supply across the grid, as wind fluctuations are often

⁶ "The impacts of increased levels of wind penetration on the electricity systems of ROI and NI", Final Report; Garrad Hassan, ESBI and UCC on behalf of CER and OFREG-NI, 2003.

location specific. Increased expertise of wind forecasting is enhancing the predictability of generation fluctuations.

5.3 Overcoming Variability

Measures to overcome variability have the potential to dramatically increase the feasible wind penetration levels. Some measures are suitable for adoption in the short run, while there are other measures that may be feasible further in the future. The three main means by which variability can be over come are:

- Flexible fossil fuel generation capacity;
- Interconnectors; and
- Energy storage.

Of the above, the IWEA identifies flexible fossil generation capacity as the priority. It will provide the most immediate means of accommodating additional wind power and is relevant to generation capacity choices being made now. Interconnectors and energy storage are also important, but more relevant in the medium and long run as wind penetration reaches higher levels and additional infrastructure can be put in place.⁷

5.4 Flexible Generation

Increased flexibility in conventional fossil electricity generation can also address variability. Flexible fossil generation take the form of greater flexibility in the operation of existing generation, or the procurement of more flexible forms of generation when additional capacity is required. The aim is to have flexible fossil generation that can provide variable supply at short notice to complement wind generation.

The Green Paper indicates the growing importance natural gas power plants will have in Ireland's generation mix. Combined cycle gas turbines (CCGT) have high thermal efficiencies when compared to open cycle gas turbine (OCGT). However, when considering generation mix in the context of wind, flexibility is also relevant. CCGT plants are typically less responsive than their OCGT counterparts and their efficiency falls when operating at part loads.⁸ Consequently thermal efficiency must be traded off against flexibility. While CCGT may provide more efficient base loads, they are less suitable for generating in conjunction with wind power. Despite the lower efficiency of individual OCGT units, when employed in conjunction with wind generation, the overall efficiency can be higher.

⁷ Many of the points raised below were previously raised by IWEA in the context of their submission in relation to the consultation document on All-Island Energy Market – a 2020 Vision.

⁸ Aero-derivative OCGT can provide both high thermal efficiencies with high degree of flexibility.

In light of these considerations the IWEA calls for careful consideration of the need for flexibility when adding new fossil generation capacity. In particular, the IWEA is calling for an independent evaluation into the trade off between efficiency and flexibility of competing fossil generation systems when operating in conjunction with wind. This will establish whether it would be more efficient to continue adding large, inflexible CCGT, or to move over to OCGT when adding capacity. It is the IWEA's contention that it would be more efficient to add flexible OCGT plant.

With the need for flexibility as a priority, the IWEA is calling for this to be reflected in the following:

- Generation capacity planning processes;
- Price signals in the electricity generation market; and
- Grid codes.

It is essential that the need for flexibility is prioritised in the planning framework when considering the new generation mix. A narrow focus on the efficiency of individual plant rather than the whole network would be detrimental. The preference for flexibility must also be reflected in market prices. Generators should be rewarded for providing flexible, responsive generation. Similarly, the need for flexibility must also be represented in grid codes, detailing the requirement of plant with regard to reserve capacity and response times.

As mentioned above, additional interconnector and energy storage capacity are important. However, the IWEA stresses the priority of flexible generation as the means for accommodating more wind energy in the immediate future.

5.5 Interconnectors

Ireland is unusual in that it has an abundance wind resource but is peripheral to the large electricity markets of Europe. This means Ireland is remote from the markets that could absorb excess energy at supply peaks and provide additional supply at periods of excess demand. Ireland is linked to the UK grid through a 330 MW North-South interconnector with Northern Ireland, which is linked to mainland UK by a 450 MW interconnector. However, the transmission capacity of this existing interconnector is relatively low relative to the wind generation potential in Ireland.

Improved interconnection with the UK would facilitate additional wind generation in Ireland. This could be achieved by adding a second interconnector to Northern Ireland or by means of an East-West interconnector across the Irish Sea. The IWEA supports both additional interconnector projects. Regarding a further North-South interconnector, the IWEA suggests this should be made by means of

a second route in the west of the province. Additional transmission infrastructure will benefit the Northwest of the Island of Ireland, which has significant potential for wind development. The IWEA calls for additional interconnector capacity to be greater than 500 MW in order to facilitate optimal wind generation levels.

There are already proposals for an East-West interconnector to the UK, which has the support of the Department of Marine, Communications and Natural Resources. The proposed capacity for this link is up to 1000 MW. The CER have favoured a lower capacity link of 500 MW, however the IWEA considers this too low. In addition, the IWEA notes that if this link is operated as a base load connector there will be little benefit to the wind generation sector. Therefore, the IWEA calls for the East-West interconnector to be commissioned at the upper capacity bound and that a significant portion of its capacity be used to support variability.

The IWEA recognises that the construction of new interconnectors will take a significant amount of time, at least beyond the first target date of 2010. Accordingly, the benefits of improved interconnection cannot be expected immediately. The lead-in time underlines the need for prompt action to initiate work as soon as possible.

5.6 Energy Storage

Energy storage facilities can address variability, over both short and long time periods. There is a range of technologies for energy storage, some such as pumped storage are mature, while others such as hydrogen electrolysis and recovery are still at the developmental stage.

The IWEA recognises that none of the existing technologies offer easy solutions, most having high capital costs. Despite the constraints on current technology, the IWEA calls for additional storage capacity to be installed, in order to facilitate greater generation mix.

The IWEA would like to highlight the fact that as a proven technology, wind generation receives little attention regarding research and development spending. Research and development policies that ignore proven and commercially viable technologies risk overlooking advances that can be applied readily and effectively. Therefore, the IWEA calls for research and development funding to address the question of more efficient forms of energy storage specifically to complement wind generation.

5.7 Autoproduction

The Green Paper contained no provision for wind generation at industrial sites. The IWEA calls for the White Paper to contain incentives for industrial users to utilise wind energy as the main large-scale market-ready source of renewable energy. Incentives should be available for on-site generation where the majority of the electricity is produced and consumed on-site. It may be necessary to export surplus energy to the grid for some projects to be viable.

Currently autoproduction wind projects must go through the group application process. This is despite the fact that they have an existing grid connection and significant local demand. The IWEA propose that such projects should automatically qualify for an export capacity up to 500kW. This figure would permit these projects the export flexibility required to be viable, but would not facilitate the development of stand alone projects without on-site consumption.

5.8 Policy Relevance

The steps identified above to accommodate additional wind energy require a strong policy lead by government if the targets for renewables are to be reached. Without support for co-ordinated planning of electricity generation and management, the conditions for sustained growth in wind energy will not be realised.

6. Planning Permissions for Wind Farms

Currently, the system operator may take several years to grant grid access and the grid connection works for the building of the grid connection may take several more years. During this period, planning permission for the wind farm development may lapse. Many of the projects already in the connection queue are facing expiry of their planning permissions as 3 years have already elapsed since the moratorium in December 2003. Gate 1 applications were those already in the queue at 3rd December; the remainder were lodged after 3rd Decemeber 2003 and very many of those were lodged during 2004. Some applications for connection made in 2004 will receive their Gate 2 connection offers in 2007 with, in most cases, dates for connection of 2 years or longer and others have no indication whatsoever of when they will receive a connection offer.

A wind farm development requires:

- i) Planning permission for the project;
- ii) A bankable Power Purchase Agreement or merchant market for the electricity generated; and
- iii) A Grid Connection Agreement (The grid connection works themselves will

generally require planning permission).

Prior to the date of the moratorium there was a formal 70 day procedure in place for grid connection and many developers therefore deferred submitting an application for a grid connection until (i) planning permission for the project was obtained and (ii) Power Purchase Agreements under AER (now REFIT) became available. The 5 year planning period is about to expire in respect of many of those applications.

The delays arising from and after the moratorium could not have been anticipated in advance so there is real urgency to rescue those projects which have planning permissions about to expire. Unless this is done, existing renewables obligations and targets will not be met and the grouping system will be extremely difficult to implement.

As a short-term measure, the IWEA is seeking that the conditions under which an extension of the duration of planning permission is permitted be clarified. At present under the Planning and Development Act 2000 and the planning and Development Regulations 2001, extension of planning permission is contingent on the local authority being satisfied that “substantial works were carried out pursuant to the permission...” prior to its expiry.

This is giving rise to problems and differential treatment of wind farm developers, as some local authorities apply an unnecessarily strict interpretation of the legislation. For example, a requirement for all civil works to be completed before expiry to enable an extension to be obtained, requires an investment of potentially several hundred thousand euro (in some cases more than a million) in advance of planning permission for grid connection being obtained. Project finance is not normally available because of the element of risk and the potentially very long delays after the expenditure before the project can be constructed and commissioned.

These matters are completely outside the control of the developer. Planning permissions granted to wind farm projects, which are needed to comply with the Country’s 2010 renewables obligations as well as providing security of fuel supply, are in a unique position and should be treated as such.

The IWEA urgently requests the Government to issue guidelines to clarify the interpretation of the legislation, to the benefit of wind farm development and to enable these projects to obtain an extension of their planning permissions. It should be considered that ancillary works involved in the development which may including turbine purchase arrangements, civil and electrical investigations and design and grid connection negotiation and payments should be treated together

with some site ground works as “substantial works” for the purposes of extending the planning permission.

The current planning guidelines indicate that “planning authorities may grant permission for a duration longer than 5 years if it is considered appropriate, for example, to ensure that the permission does not expire before a grid connection is granted”.⁹ To establish the details of a grid connection and its timing requires detailed design work by the system operator. Therefore, there is generally insufficient information available at the time of making the planning application to convince planning authorities of the necessity for the period of the planning permission to be extended.

The IWEA is of the view that the White Paper should commit the government to extending the duration of planning permission to 10 years from the current 5-year period. It is only by adopting this approach that unnecessary planning risk will be avoided.

7. Reform of the Institutional and Planning Framework

At present, the institutional environment within which the renewable energy industry operates is characterised by a lack of transparency, inadequate forward planning, uneven institutional representation of various stakeholders, and gaps in the institutional framework. The Green Paper is relatively silent on these issues - a gap that the White Paper must address.

Reform of the electricity industry is proceeding very slowly. It is the view of the IWEA that the pace of reform might accelerate, if appropriate institutions were put in place to represent users of electricity at the different levels. There is a need for the White Paper to consider the institutions that could be put in place to represent users.

The Green Paper does not take on board the full package of recommendations from the Deloitte report. The IWEA would support the adoption of the integrated package, in particular:

“We recommend the complete legal and ownership separation of ESB Networks (TAO, DAO, DSO) from the ESB Group and its retention in state ownership.”¹⁰

⁹ “Wind Energy Development Guidelines”, Department of the Environment, Heritage and Local Government, 2006.

¹⁰ “Review of the Energy Sector in Ireland” Deloitte 2006, page 19.

The All-Island Single Electricity Market, due in 2007, does not address the dominance problem adequately, which is far from ideal for the consumer and other market participants. Furthermore, it has not been designed promote the development of renewables in line with the RES-E Directive, on the contrary, the CER requires renewables to conform to the SEM model. The IWEA would suggest that the detailed design of the SEM be adjusted to make it less hostile to renewables, for example through shorter bid periods and more equitable rules on reserves and balancing.

Turning to renewable energy, the single biggest obstacle facing the industry is the lack of timely grid connections. There is a need for EirGrid to develop and publish a grid development programme to accommodate anticipated higher levels of renewable capacity.

With regard to the legal framework for electricity from renewable sources, the EU RES-E Directive has still not been transposed into Irish law, which reinforces the weaknesses in grid access and leaves generators and customers without their entitlement to Renewable Energy Guarantees of Origin (REGOs). This should be rectified at the earliest possible date, to set an unequivocal legal framework for policy and all state agencies and market participants in this area.

The increasing role of wind energy generation should be recognised at institutional levels. In this regard, the Board of Sustainable Energy Ireland should be reformed to include representation from the renewables sector, including the wind energy sector. Similarly, there is a need to give added impetus to the work of the Renewable Energy Development Group.

The Deloitte Report recommended the identification and establishment of a single organisation to take leadership in renewables issues and which would be characterised by a high degree of visibility, accountability and authority in championing the sector. The IWEA supports the thinking behind this recommendation and urges that the White Paper incorporates and develops this approach.

With regard to research and development, while the IWEA recognises the work of SEI, it is of the view that more substantial **industry-driven** research and development is required. The Minister has recently established an Energy Research Council to advise on the priorities for energy research up to 2013 and beyond. The IWEA urges that the Council take due account of wind industry priorities in establishing its strategic approach. The IWEA suggests that there is scope, particularly, for further research into marine technologies, such as wave and floating wind technologies, and on pumped storage options.

As mentioned above, grid connections, to either the transmission or distribution networks are required by new wind farm developments. Once a grid connection has been installed, ESB Networks takes ownership of the asset as a matter of course.¹¹ This ownership arrangement has implications for project financing. As the ownership of the asset reverts to the network owner, this presents an additional cash flow hurdle for the project financing. The cost of paying for the asset must be paid up front, without the ability to offset the cost against an asset on the firm's balance sheet.

The issue of contestability is relevant in the case of the grid cost. In the case of non contestable line, the private investor must pay 25 per cent of the costs of a grid connection up front on application and a further 50 per cent of the costs before work commences. If a connection is contestable and the investor hires a contractor to develop the line, then payment of costs is by negotiation. Consequently, the issue of contestability exacerbates the cash flow problems of up front payment for an asset that is not retained. In the case of a non-contestable line, investors must commit to the connection costs in advance of operation when revenues will flow in.

The IWEA would like to note that the requirement to pay for the cost of a non contestable line up front is particularly unfair. Under this arrangement, developers must put capital up in advance, yet they have no input into the timeframe of development. They provide capital to the ESB, but have no control or guarantees regarding the timing of connection works.

8. General Reform of Energy Policy

A major barrier preventing wind energy from contributing fully to security of supply and sustainability is the failure of energy prices to reflect the full costs to society of producing energy. The real costs of energy from traditional sources such as fossil fuels include the negative impacts on health, local pollution and climate change. If such external costs were included in the energy prices of all sources, then wind energy would be found to be the cheapest source. This relative advantage of wind is set to increase as fossil fuel prices rise.

The current pricing structures are perverse in this regard, in that there are subsidies in place for peat fired electricity generation. The IWEA believes that removal of these subsidies is long overdue. While the Green Paper does not embrace carbon taxation, the IWEA feels that this has to be an essential element of a sustainable energy future for Ireland. Finally, price signals would also be

¹¹ A rebate is offered to a developer if a grid connection financed by them is subsequently used by other wind farms or electricity users, subject to time limits.

improved, if auctioning and not grandfathering of emission rights under emissions trading arrangements were put in place.

The IWEA believes that there are hidden costs and risks in nuclear generation, such as clean-up costs, that are not internalised in nuclear energy prices yet should be. Because of this the IWEA supports the Government's ban on nuclear energy.

9. Summary of IWEA Views

IWEA suggests that the White Paper should:

- Have a greater focus on renewables;
- Separately consider the role of wind energy, both on and off-shore;
- Critically analyse the factors that could impede the rapid development of wind energy; and
- Propose policies and initiatives to address these barriers.

The White Paper should contain the following elements:

- The targets set out in the Green Paper should represent commitments and be set as minima that must be reached. As a result, the 2020 target should not be subject to technical constraints as indicated in the Green Paper;
- With regard to the 2020 target, in addition to the minimum target level of 30 per cent, higher "stretching" targets should also be set both for 2020 and beyond;
- Given the prominent role that wind energy will play in achieving the targets, sectoral targets are needed which clarify the contribution required from various renewable energy sub-sectors.
- To reinforce these targets, they should be adopted as corporate goals by both the Department of Communications, Marine and Natural Resources, Sustainable Energy Ireland, EirGrid and ESB Networks and included in their relevant Statements of Strategy;
- A stretching target of 8,000 MW by 2020 should be adopted. A commitment to further research to determine an appropriate target for 2030 and beyond, with the aim of achieving energy independence by obtaining 100 per cent of primary energy from renewable resources.

The White Paper should commit Government to:

- Grid code standards that offer fair treatment to wind and are the subject of consistent compliance standards;
- Connections to the distribution system being made contestable as soon as possible;
- Raising the REFIT reference feed-in tariff significantly;
- Adjusting the reference feed-in tariff annually based on an index that is more reflective of industry costs;
- Tariff structures that reflect the additional costs of developing off-shore wind energy;
- Extending the REFIT programme to projects with full planning permission and grid connection;
- Providing a supportive framework to facilitate wind generation at industrial sites;
- Adopting an “interfacing charging” approach to grid access;
- Implementing a streamlined grid application process with performance targets set for the various actors in the process;
- Providing payments for grid constraints imposed on generating capacity with firm connection offers;
- Providing compensation payments to wind generators that are unnecessarily curtailed;
- Liberalising planning restrictions on micro-generation;
- Promoting metering arrangements to facilitate payment for electricity exports from micro-generation developments;
- Developing a policy for capacity generation that supports wind energy, especially through the use of OCGT plant;
- Setting target dates for the commissioning of new interconnectors;
- Extending the duration of planning permission for wind farms to 10 years from the current 5-year period;
- Clarifying, in the short term, the conditions under which an extension of the duration of planning permission is permitted;
- Requiring EirGrid to develop and publish a grid development programme to accommodate anticipated higher levels of renewable capacity;
- Proposing institutions to improve user representation;
- Reforming the Board of Sustainable Energy Ireland to include representation from the renewables sector, including the wind energy sector;
- Giving added impetus to the work of the Renewable Energy Development Group;
- Ensuring that renewables’ research and development is industry driven; and
- Considering the establishment of a single organisation to take leadership in renewables issues.

10. Responses to Questions Raised in the Green Paper

Ensuring the Security of Energy Supply

- 3.2.1 In addition to enhancing the contribution of renewable energy, what actions could be taken to further diversify the fuel mix for electricity generation and reduce dependence on oil and gas?

IWEA Response

The grid code for conventional fossil generators needs to be radically revised to demand levels of responsiveness and flexibility corresponding to best available technology. It should be enforced rigorously and consistently, which is extremely far from being the case currently. All derogations granted to conventional generators in relation to responsiveness and flexibility need to be critically reviewed.

- 3.2.2 How can generation and transmission adequacy in the electricity sector be improved?

IWEA Response

The transmission network needs to be reoriented from large discrete conventional power generation units towards more dispersed generation, including developments in rural areas and offshore. In general, transmission adequacy needs to be improved to eliminate constraints on generation.

- 3.2.4 What are the challenges to greater participation by new players in the development and operation of power generation plant - and how should they be addressed?

IWEA Response

There are many challenges to new wind generation development articulated in this document. These can be summarised as follows: a slow and cumbersome grid connection application process; an expensive and time consuming grid connection works process that does not afford control to wind farm developers; unnecessary constraints on renewable generation due to inadequate grid capacity; a lack of parity with conventional generation with regard to the grid codes and their enforcement; a lack of timely or co-ordinated processes for planning and connection applications complicated by multiple agencies lacking a single organisation with a leadership role.

The IWEA suggests that these challenges be addressed by a series of reforms including: a complete overhaul of the grid application and connection process, based on streamlined and co-ordinated planning approach with charging for connections based on an 'interfacing' model; investment in grid capability to

remove constraints; a review of grid codes and their enforcement; the development of a single agency that could support and promote co-ordination in the planning and connection process.

- 3.2.5 How, and over what timeframe, should Ireland pursue greater electricity interconnection with Europe?

IWEA Response

Due to the long lead time it is essential that works on an East-West and an additional North-South interconnector with the UK begin immediately. The IWEA also supports the development of a direct interconnector with France in the future, subject to feasibility constraints. Additional interconnector capacity is essential for further renewable generation and will be increasingly important in the future as renewable penetration increases.

- 3.2.6 What measures could be taken to encourage the exploration and production of indigenous energy resources?

IWEA Response

Barriers to existing indigenous renewable energy generation need to be removed as a priority. This will permit further development of commercially viable generation by the market. In addition, there needs to be sustained research and development, not just on emerging technologies, but also the resources that are already proven in Ireland to further improve their effectiveness and efficiency.

- 3.2.8 Does the Green Paper generally set out the right policy directions for security of energy supply?

IWEA Response

The Green Paper is not nearly ambitious enough with regard to reducing dependency on imported fossil fuels. Increased renewable generation will bring a double dividend of environmental benefits in accordance with Ireland's Kyoto and EU emissions obligations and increased energy security due to greater domestic production. Renewables, as indigenous resources, need to be recognised as being integral to security of supply.

Promoting the Sustainability of Energy Supply

- 3.2.9 What can be done to improve the pace and range of development of renewable energy resources for electricity generation on a sustainable basis?

IWEA Response

As mentioned above, the priority must be to remove the obstacles to market development of renewables that are currently commercially viable. Further efforts

in carefully targeted research and development are required, in particular to understand what mix of generation best complements each other.

- 3.2.11 What significant new initiatives could be taken to increase energy efficiency across the economy and in particular in households, businesses, the public sector, the transport sector and the built environment?

IWEA Response

Advances in metering options could promote more sophisticated demand management, which provides scope for improved energy awareness. This might be most appropriate for businesses and the public sector, as they are more likely than the household sector to respond to variable electricity pricing.

- 3.2.12 What additional policy measures should be introduced to significantly expand energy RTDI and what are the priority areas of research, which need to be targeted?

IWEA Response

The IWEA would like to highlight the fact that proven technologies such as wind receive little attention in discussions of research and development. The prevailing attitude appears to be that once a resource is proven to be commercially viable it is no longer a worthy candidate for research and development spending. The IWEA strongly counters this view, as proven technologies have some of the greatest potential for benefits from research and development funding. In addition, wind energy should be seen as a research and development priority for Ireland, given the potential of the resource available.

- 3.2.15 Do we need to choose between mandatory targets and better incentives for renewable energy and energy efficiency - or is a mix of both the best way forward?

IWEA Response

There is no conflict between mandatory targets and better incentives. Mandatory targets should be pursued as a priority, with the levels of incentives being adjusted accordingly to ensure targets will be met: incentives should be driven by targets.

Mandatory targets are important as they provide a mechanism to secure the co-operation and support of the relevant government departments in achieving greater renewable penetration. The IWEA would also like to stress that success in promoting renewables is not simply a matter of providing incentives, but also removing obstacles, where they exist.

- 3.2.16 Does the Green Paper generally set the right policy directions for energy sustainability?

IWEA Response

Unfortunately the Green Paper does not provide the correct policy directions. The Green Paper is not ambitious enough regarding increasing renewables penetration, consequently it does not send out the right signals to those in the renewables energy sector, the conventional fossil fuel generation sector or the investment community. The Green Paper indicates that there is little aspiration to reduce dependence on imported fossil fuel.

The Green Paper also provides no real commitment to increasing renewables penetration by 2020. Attaching a proviso to the 2020 target for renewables by stating the target is subject to ‘technical considerations’ renders the target meaningless. This further compounds the lack of impact of the targets contained in the Green Paper.

The Green Paper does not provide any long-term target of increased energy independence for Ireland. This lack of commitment to a significant increase in renewables is not as sustainable stance in the long run.

Enhancing the Competitiveness of Energy Supply

- 3.2.17 In the context of liberalisation of the Irish energy market, what further actions should be taken to develop more fully competitive electricity and gas markets and what specific barriers need to be overcome?

IWEA Response

The IWEA welcomes further liberalisation of the Irish energy market. Notably, the Green Paper does not comment on Deloitte’s recommendation for further liberalisation, in particular the separation of operation of transmission and distribution from generation under the ESB. The IWEA sees such reform as vital for a fair playing field for renewables to compete with conventional generation.

In the short term, contestability needs to be extended to all grid connections. This will remove an unnecessary barrier to wind generation that unfairly places it at a disadvantage.

- 3.2.18 What policy measures and targets should be introduced to reform institutional arrangements and market structure, particularly in the electricity and gas sectors?

IWEA Response

In addition to the Deloitte recommendation that ownership and operation of the grid be separated completely from generation, the IWEA is calling for a streamlining of the various institutions concerning wind energy. In particular, the multitude of agencies involved with planning and grid connections function in an

chronically poorly co-ordinated manner. A single body with a co-ordinating role could make the process of wind farm development far more efficient than it is currently.

The IWEA is also calling for greater industry representation in decision making processes. This is required as there is a lack of appreciation by government agencies of the problems faced by developers. Industry has the benefit of actual experience of implementing renewables development and should be given more opportunity for constructive input.

- 3.2.19 While a significant proportion of our energy prices are determined by international oil and gas prices, what actions should be taken domestically to reduce the cost of electricity and gas to consumers?

IWEA Response

The Green Paper fails to acknowledge the cost advantage of wind energy, both now and its future potential. Increased wind generation represents a safe, sustainable path to secure low cost electricity for Ireland. Consequently, increased wind generation and the required supporting infrastructure should be supported.

- 3.2.20 State-owned enterprises (e.g. ESB, BGE, BnM) have played a central role in the development of the energy sector. How should the role of State-owned energy enterprises respond to the challenges of meeting our energy needs in the future?

IWEA Response

The IWEA reiterates its call for Government to take heed of Deloitte's recommendation for restructuring the ESB. The IWEA is calling for greater co-operation from state-owned enterprises, in particular the ESB. Imprudent use of monopoly positions has the potential to severely hinder the development of renewables in Ireland. Strong regulatory frameworks and increased transparency are required if state-owned enterprises are to fully support the sustained development of renewables.

- 3.2.22 Does the Green Paper generally set the right policy directions for enhancing the competitiveness of the Irish energy sector?

IWEA Response

The Green Paper provides little policy direction on enhancing competitiveness in the energy sector. The conspicuous absence of comment on calls to restructure electricity generation and distribution shows that the issue has largely been ignored. The IWEA feels that Green Paper has failed to acknowledge the issues, either at a sector wide level, or with respect to specific issues, such as line contestability or parity of grid code standards.

The IWEA is calling for the White Paper to more robustly address issues of competition, in particular, the position of renewables in relation to conventional generation with respect to grid access and the relationship between fossil generation and operation of the grid.