

# Quarterly Review

OF THE IRISH ELECTRICITY MARKET

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*Pictured above are (from left to right): Minister Noel Dempsey, T.D., Bernie Gray, Chairperson EirGrid, Dermot Byrne, CEO EirGrid and Michael Tutty, Commissioner, CER.*

## Foreword

EirGrid held its 1st Annual Customer Conference this year, on Wednesday 18th and Thursday 19th October at Croke Park, Dublin.

The event was a resounding success with approximately 220 customers and market participants attending the conference on the 18th, and in excess of 120 in attendance at the Generation Portfolio Workshop on October 19th.

The conference was opened by Bernie Gray, Chairperson, EirGrid, and was followed by an address by Minister Noel Dempsey. Minister Dempsey's comments captured clearly the aim of the conference: *"I welcome this Customer Conference as evidence of EirGrid's commitment to delivering quality services to all electricity customers."*

Presentations followed from Pat O'Donnell, Senior Electrical Engineer, Intel; Peter Harte, Technical Manager, SWS; Eileen Sharpe, Divisional Manager, IDA and John Ryan, CHP Co-ordinator, Aughinish Alumina among others. The customer presentations were very well received with over 88% of attendees rating these presentations as a highlight of the conference.

All the presentations both by internal staff and customers are available by contacting the Customer Relations Team on (01) 702 26642 or by emailing [info@eirgrid.com](mailto:info@eirgrid.com).

### EIRGRID MARKET OPERATIONS

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## Transmission Forecast Statement 2006-2012

EirGrid has published its first Transmission Forecast Statement for the period 2006-2012, since taking up its role as transmission system operator (TSO) of the Irish electricity system. The purpose of the Forecast Statement is to assist major developers seeking connections to the grid; enable users to undertake their own power flow analyses if required; and provide users with an understanding of the dynamic nature of the transmission network. The information provided in the Forecast Statement is based on a set of TSO assumptions relating to future demand growth, generation connections and planned transmission developments. Three specific years are taken: 2007 (the second year of the review period); 2009 (the middle year); and 2012 (the last year of the review period). The main findings in the report are outlined here.

Forecast peak demand is expected to increase by around 3.7% year on year over the period as indicated in the following table.

YEAR	SUMMER PEAK	SUMMER VALLEY	WINTER PEAK
2006	3,803	1,711	4,754
2007	3,961	1,782	4,951
2008	4,126	1,857	5,158
2009	4,292	1,931	5,365
2010	4,453	2,004	5,566
2011	4,586	2,064	5,732
2012	4,716	2,122	5,895

There was around 6,524MW installed generation capacity at the start of 2006 (6,057MW transmission connected and 467MW distribution connected). New generator connection agreements account for an additional 1,058MW. The analyses indicates that by 2012, the total installed capacity is expected to be 7,490MW, with 6,716MW of this connected to the transmission system.

### Planned Generators with Signed Connection Agreements – start 2006

TYPE OF GENERATION	CONNECTED TO	NO. OF CONNECTIONS	MW
Thermal (Huntstown)	Transmission	1	400
Windfarm	Transmission	7	379
Thermal	Distribution	4	8
Windfarm	Distribution	32	271
<b>TOTAL</b>		<b>44</b>	<b>1,058</b>

The Forecast Statement considers the best opportunities for large new generation are at Cullenagh in Co. Waterford and smaller new generation around Ennis and Cahir. Short lead-time network reinforcements would provide additional opportunities in the northern part of the network. Over half the stations examined provide opportunities for additional large demands. The Forecast Statement highlights opportunities for generator connections at 50 points on the grid, 28 points for demand connections and 9 points for interconnection with Great Britain.

The planned additional North-South interconnector and grid reinforcements will significantly improve transmission flexibility on the island. None of the locations examined as a suitable connection point for the Ireland-Great Britain interconnector would have the capacity to both import and export 500MW without additional reinforcement.

Analysis of network performance against standards was carried out for the specific years 2007, 2009 and 2012. The results indicate that a number of areas are outside of standards pending the completion of ongoing projects. The performance of the network is expected to improve in 2007 when these reinforcements are completed. However, the analysis for 2009 and 2012 reveals that an increasing number of areas are outside standards, indicating the onerous requirements placed on the grid and the need for continuous network development.



## *Proposed 2007 costs for Capacity Margin, Powersave and WPDRS Schemes*

The Capacity Margin Scheme and Winter Peak Demand Reduction Scheme (WPDRS) are administered by EirGrid and it is proposed that the Powersave scheme in 2007 will be taken over by EirGrid from ESB Power Generation. The costs of all three schemes in 2007 will be recovered through the Capacity Margin Charge (CMC), which is levied on all demand users. The CER is proposing that 2007 capacity margin costs should not exceed €14.07 million for the 10-months leading up to the introduction of the SEM with a provision of €5.08 million for WPDRS. This would result in total allowable costs of €20.15 million for all three schemes. Taking an over-recovery of €14 million in previous years into account, the total amount recoverable in 2007 through the capacity margin charge is €6.15 million.

Only one change has been proposed to the rules for the fourth season of the WPDRS in 2006/07. The introduction of a de minimis participation size of 250kVA maximum import capacity (MIC) for customers who did not participate in last year's scheme has been proposed to reduce the potential administrative burden of the WPDRS scheme on EirGrid, with increasing numbers of customers now having quarter hour meters in place.

## *EirGrid increases information provision on generation connection applications*

Following a proposal from EirGrid, the CER has directed EirGrid to publish more detailed standardised information on all completed generator connection applications on the EirGrid website. The following information is to be published:

- Applicant's name (legal and project name);
- Applicant's contact details;
- Applicant's date of completed application;
- Status of application;
- Specific location, including grid co-ordinates;
- Capacity of the project;
- Interacting group where applicable.

## **All-Island Project**

# *SEM Timeline*

The CER, Ofgem, DETI and DCMNR have extended the delivery period of the Single Electricity Market (SEM) by five months from 1st July 2007 to 1st November 2007 as outlined in an SEM update on 8th August 2006. Key milestones in the project will proceed on schedule, with:

- Northern Ireland/ Ireland legislation in place by April/May 2007;
- SEM Go Active (introduction of SEM transitional obligations within licences) in May/June 2007;
- SEM Market Trial formally beginning on 1st June 2007.

The benefit of extending the timeline to November 2007 is to allow additional time for the market trial to allow participants, system operators (EirGrid & SONI) and the market operator (SMO) to test and try the robustness of the SEM arrangements while continuing to meet the Framework Document timetable.

## *Generation Connection Policy in the SEM*

A decision was reached in September 2006 on Generation Connection Policy in the Single Electricity Market (SEM) with decisions relating to transmission use of system (TUoS) charges to follow separately. In the decision the Regulatory Authorities propose that:

- the identification of connection costs, for the SEM should be based on the Guiding Principles currently applied in the Republic of Ireland;
- firm access should be provided only from the actual completion date of deep reinforcements, but that the system operators and network owners should be obliged to complete such reinforcements in a timely manner;
- the costs or consequences of any fast-acting control scheme should be borne by that user;
- connection offer processes do not require full harmonisation in terms of timescales or in the requirement for planning permission;

- rebates may be appropriate where generators have paid deep connection charges in respect of assets that are not fully depreciated and which are no longer treated as connection assets under the SEM;
- the contestability in constructing connections will not be a prerequisite of the SEM, and can be considered through the appropriate regulatory channels.

The date of introduction of harmonised connection charging will be 1st January 2008. The consultation on the Guiding Principles is planned for December 2006.

## Treatment of Transmission Losses

The Regulatory Authorities have proposed a number of provisions for the treatment of transmission losses in the SEM. Some of these proposals are that:

- the methodology for the calculation of TLAFs currently used in ROI should generally be applied on an all-island basis for the SEM;
- the system operators will seek to improve options for transparency;
- the definition of daytime and night time will be adjusted to better reflect the profile of system demand;
- TLAFs will be calculated monthly rather than seasonally;
- the merit of separate weekday/weekend TLAFs will be investigated;
- no measures will be taken to modify the extent to which losses incurred on the transmission system in one jurisdiction may be recovered from generators connected in the other jurisdiction;
- forced outages will not be modelled in the calculation of TLAFs;
- TLAFs will be applied to the tradable quantities of all generators whether directly-connected or embedded, as is the case in ROI presently;
- no measures will be taken to modify the extent to which losses incurred on the transmission system in one jurisdiction may be recovered from generators connected in the other jurisdiction;
- forced outages will not be modelled in the calculation of TLAFs;

- TLAFs will be applied to the tradable quantities of all generators whether directly-connected or embedded, as is the case in ROI presently;
- volatility of TLAFs, and the modelling of wind generation and use of historic data in the calculation of TLAFs will be reviewed during future refinement of the methodology;
- no special provisions will apply to Moyle.

## Capacity Payment Mechanism

The Regulatory Authorities have published a decisions paper and response to comments received on the capacity payment mechanism in the SEM. The regulators have decided that the annual revenue amount (the Annual Capacity Payment Sum) will be profiled prior to the start of the year into 12 monthly amounts (Capacity Period Payment Sum), weighted based upon forecast demand so as to deliver a relatively high unit price at times when most capacity will be required. The weighting will be scaled to induce an appropriate differential to negate incentives for generators to withhold capacity in winter rather than in summer.

For suppliers, each Capacity Period Payment Sum will be allocated into each Trading Period in the relevant month. This will occur prior to the start of the year so as to provide suppliers with certainty in the charging profile. The allocation within month will again be based on forecast demand. For generation each Capacity Period Payment Sum will be split into three separate sums - Fixed, Variable and Ex-Post (Capacity Period Fixed Sum, Capacity Period Variable Sum and Capacity Period Ex-Post Sum respectively). It is expected that the allocation will be of the order of:

- Capacity Period Fixed Sum 30%
- Capacity Period Variable Sum 40%
- Capacity Period Ex-Post Sum 30%

The Capacity Period Fixed Sum will be allocated into all Trading Periods in the relevant month based upon a forecast demand weighting. The allocation of the Capacity Period Variable Sum will be weighted by month ahead forecast values of LOLP (Loss of Load Probability). The Capacity Period Ex-Post Sum will also be allocated based on LOLP values derived from the look-up table, but based on margins determined using actual demand and availability data at the end of the month (Ex-Post LOLP).



Generators who are available in any given Trading Period (availability being measured as Eligible Availability as described within the T&SC) will receive an amount of the total money allocated to that Trading Period for payments (Fixed plus Variable plus Ex-Post) in proportion to their available capacity when compared with the total available capacity in that Trading Period, scaled by a price factor.

Suppliers will be charged an amount of the money allocated to that Trading Period for charges in proportion to their metered demand when compared with the total metered demand in that Trading Period, scaled by a price factor.

- The contracts will be allocated on a voluntary basis;
- Suppliers do not have to accept their entire allocation and can choose to accept part of their allocation in each element of the load curve.
- The proposed allocation will be based on a fixed quantity of contracts for each eligible supplier with the eligibility determined by a total of customer's MIC as held by each supplier.

Another decision reached in September related to the Bidding Principles and Local Market Power. The Regulatory Authorities have said they are committed to the implementation of the Short Run Marginal Cost (SRMC) bidding principles. The requirements for generators to bid SRMC have been set out by the regulators as has the reasoning why the regulators believe SRMC is the correct bidding principle for the SEM.

## Market Power Mitigation in the SEM

A number of decision papers were published during the third quarter relating to market power mitigation in the SEM. On 6th July 2006, the Regulatory Authorities appointed themselves the role of Market monitor in the SEM. The functions of this new Market monitoring Unit (MMU) were outlined later in September and include:

- Serving as an interface for complaints from market participants;
- Investigations of the exercise of market power, including violations of the bidding principles;
- Recommendations for changes in market rules;
- Reporting alleged infractions of market rules to the Regulatory Authorities for enforcement;
- Continuous assessment of the performance of the SEM, including periodic reports on the performance of the market.

The Regulatory Authorities will jointly undertake the role of Market monitor and establishment of the MMU.

A decision on Directed Contracts was also published in September 2006, with the regulators in favour of a market based approach with directed contracts in the currency of the seller and having a term of one year. In relation to the form of the directed contracts a number of determinations have been made:

- The contracts will be both one-way and two-way contracts with fixed strike prices and will be available in baseload, mid-merit and peaking sections of the load curve;

## Current Market

### ESB Tarriff Review

The CER is proposing an average price increase of 19.7%<sup>1</sup> for ESB PES customers, effective from 1st January 2007 to 31st October 2007. It has also decided to remove tariff regulation from the top end of the supply market as it believes sufficient competition already exists in this segment of the market with around 90% of electricity sold by suppliers other than ESB PES.

#### Increases in Unit Rates – 2007 over 2006

COMPONENT	2006 €/MWH	2007 €/MWH	% CHANGE
ESB PG	89	106	20%
Constraints	1.5	2.3	49%
Transmission*	7.4	8.5	14%
Distribution	25	27	8.5%
ESB PES	5.1	9.3	82%

\*Excludes constraints

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<sup>1</sup> The CER has since revised this figure down to 12.6%.

**Generation**

ESB Power Generation's proposed allowable revenue for the first 10 months of 2007 up to the introduction of the SEM is €1,053 million with ESB Power Generation recovering around €779 million (74%) of its allowable costs from ESB PES. This is a 20% increase in the average price of electricity charged by ESB Power Generation to ESB PES from the previous year with fuel price increases sited as the primary reason for the increase. This includes an under-recovery of €151 million from 2005 and 2006.

**Transmission**

The allowed revenue for transmission covers both the Transmission Asset Owner (TAO) ESB Networks and the Transmission Asset Operator (TSO) EirGrid. The CER has proposed an allowed revenue of €291.9 million for 2007, an increase of 20% on the average unit transmission tariff in 2006, or 14% if constraints costs are excluded. The expected increase in Transmission Use of System (TUoS) costs calculated in the 2006-2010 Transmission Price Control Review was 12.4%. The rest of this increase can be accounted for in network investment costs to meeting growing electricity demand; EirGrid establishment costs and the costs of constraints. Given expected fuel cost trends, the CER is proposing allowing a constraint cost recovery of €62 million in 2007 by EirGrid, rather than €44 million as provided for in the Transmission Price Control Review.

**Distribution**

The distribution business has been allowed revenues of €634.9 million in 2007, an 8.5% increase in distribution tariffs from the previous year. The main reasons for the proposed increase are the high level of approved network renewal and reinforcement capital expenditure and a higher than expected level of new connections to the system. The CER is proposing to reprofile DUoS revenues over the revenue control period, effectively removing around €10 million from DUoS revenues in 2007.

**Supply**

For the 2006-2010 revenue control period, a revenue allowance totalling €583.8 million in allowable costs (in 2004 prices) was approved. It is proposed to allow ESB PES to recover €133.5 million in 2007, significantly up on the €72 million allowed in 2006. ESB PES's allowable costs consist of operating expenditure, depreciation charges on capital expenditure and an allowable margin. Two reasons are given for this increase: the allowable revenue in 2006 was unusually low to take account of over-recoveries in previous years; and ESB PES has had to pay higher than expected costs for its energy.

## PSO Levy 2007

The Best New Entrant Price in 2007 is up around 30% on the previous year, primarily due to increases in gas costs. As a result the amount to be recovered through the PSO Levy is significantly reduced with the total cost of the PSO Levy for 2007 only €2.8 million, compared to €44.2 million in 2006. The CER has therefore decided to set the 2007 levy to zero and roll it over to 2008.

**PSO Levy 2007**

Lough Ree Power Station	€16,925,688
West Offaly Power	€8,158,548
AER	(€29,853,286)
Peaking Capacity	€24,289,679
Edenderry Power Ltd	(€15,570,948)
Sub-total	€3,949,681
Other	(€1,163,515)
<b>TOTAL</b>	<b>€2,786,166</b>

## Best New Entrant (BNE) Price 2007

The Best New Entrant Price 2007 was published in August 2006. The same methodology employed in 2006 has been used to calculate the 2007 Best New Entrant Price, with the exception of gas costs where a forward price has been used. The Heren index forward market gas price for 2007 (full year) is considered appropriate in determining the gas price input in the BNE model. The average of that forward price as calculated from the market prices over the period 19th July 2006 to 31st July 2006 inclusive will be the input for the 2007 BNE price with the same determination applied to the carbon price. Gas and carbon prices account for over 80% of the final BNE price.

The estimate of total investment costs for a 401MW CCGT plant in Ireland is €273.471 million, compared to €260.850 million in 2006. Including a notional 1.5% premium on the gas price to account for shrinkage and gas purchasing transaction costs gives a total delivered cost of gas of €97.77/therm with a carbon cost of €0.17/kWh. The changes to the calculation methodology result in a 2007 BNE price of €86.40/MWh,



compared to €66.10/MWh in 2006, an increase of 30.7%. This increase is primarily due to an increase in forward gas prices. According to EirGrid's Generation Adequacy Report and Forecast Statement for 2006-2012, the BNE should still be located in the south-west of the country.

## *Code of Practice for Customer Billing Guidelines for Electricity Suppliers*

The CER has proposed a Code of Practice for Customer Billing for electricity Suppliers to ensure the provision of a minimum level of information and service to customers. A set of guidelines to the Suppliers' Codes of Practice have been determined by the CER and include:

- Billing timeframes, cycles and options – suppliers must ensure that all bills are calculated accurately and issued promptly;
- Payment options – suppliers may provide different payment methods and options and these must be clearly stated in their terms and conditions of supply and on the electricity bills;
- Tariffs and prices – suppliers are to notify customers of the tariff options available with changes in tariffs clearly indicated on the electricity bills;
- Information on the bill – suppliers must provide a minimum level of information on customer bills;
- Complaints resolution and compensation – all billing complaints are to be resolved through the supplier's complaints procedure, as approved by the CER.

## *Regulator Reports on Security of Electricity Supply for Ireland*

The regulator, in cooperation with EirGrid as TSO, is responsible for monitoring and identifying issues affecting security of supply and initiating measures to ensure electricity supply. The CER has published its first report on the security of electricity supply in Ireland in accordance

with the requirements of Directive No. 2003/54/EC and SI No. 60 of 2005. Under SI 60, EirGrid as TSO is required to report and advise the CER on issues relating to security of supply with studies such as the Generation Adequacy Report, Transmission Development Plan and Transmission Forecast Statement. The CER is required under the provisions of SI 60 to monitor the:

- Balance between demand and supply;
- Level of expected future demand;
- Envisaged additional capacity being planned or under construction;
- Quality and level of maintenance of transmission networks;
- Measures to cover peak demand; and
- Measures to deal with shortfall of capacity by suppliers.

In the report, the CER has satisfied itself that:

- the results of its monitoring activities indicate that the transmission network is currently adequate in terms of the quality and reliability of the connections which it offers to its users and that the current level and quality of maintenance is adequate to ensure that all transmission plant continues to operate in a safe, secure and reliable manner;
- appropriate and sufficient development projects have been identified in the Transmission Development Plan 2006-2012 to address areas of the network which may require development in order to address known or near-future network inadequacies.

The CER has taken a number of supply-side and demand-side measures to help in managing the balance between demand and supply, including:

- an incentivisation mechanism to improve the availability of ESB Power Generation plant;
- a competition to attract over 500MW of new generation capacity to the market for 2005;
- a range of demand-side management measures/incentives; and
- contracts for peaking plant.

The report identifies several key issues which the CER notes may need to be addressed to ensure that demand continues to be met. These are:

*continued on page 8*

- the development of adequate new generation to meet growth in demand;
- addressing poor plant availability and replacement of certain plant from the generation portfolio over the coming years (given the age and condition of certain plant); and
- system operation issues as a result of increased wind.

The Commission has outlined a number of actions being taken to address these key issues, including the development of the SEM and providing for increased interconnection with Northern Ireland and Great Britain.

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## Government Energy Green Paper

The Government's Energy Green Paper, 'Towards a Sustainable Energy Future for Ireland' has been published outlining its policy proposals for Ireland up to 2020. The Green Paper focuses on three pillars – security of supply, environmental sustainability and economic competitiveness, following on from the EU Commission's Green Paper titled 'A European Strategy for Sustainable, Competitive and Secure Energy'.

For Security of Supply, some of the main policy objectives are to ensure the energy supply/demand balance; increase fuel diversity in the generation sector; provide adequate and secure networks and encourage investments in energy infrastructure. To achieve these objectives a number of policy targets are proposed:

- Increased interconnection with delivery of new North-South and East-West interconnectors by 2012;
- Higher renewable targets with 15% of electricity to be met by renewable sources in 2010, increasing to 30% by 2020;
- Co-firing up to 30% at peat-fired plants by 2015;
- Progression of All-Island and SEM market in 2007;
- A more balanced energy portfolio with an appropriate mix of fuels in baseload and peaking plant.

To provide for environmental sustainability the government plans to reduce CO<sub>2</sub> emissions; increase renewables in the generation portfolio of plant; incentivise the development of alternative energy sources through funding and R&D and improve energy efficiency. Policy targets for environmental sustainability include:

- Setting a clear goal of providing 15% of electricity consumption from renewables by 2010 and 30% by 2020, facilitated by the introduction of the REFIT scheme;
- Increasing the installed capacity of CHP to 400MW by 2010 by provision of grants for small-scale CHP and large-scale biomass-fired CHP;
- Improving energy efficiency 20% by 2020 by implementing an energy efficiency action plan to encourage demand side management initiatives and develop national awareness of energy efficiency benefits.

The third pillar deals with the government's objectives of effective liberalisation and provision of competition by reforming the market structure and institutional arrangements. It is expected that 2007 will realise the introduction of the SEM and full opening of the gas market in addition to the electricity market which is already fully open to competition. It will also see the delivery of full legal unbundling of networks. The government in the Green Paper has indicated its intention to retain a strong, commercially viable ESB with the network assets remaining in state hands. Two key proposals to improve competition in the market are to reduce market power in price-setting plant and to establish a land bank of suitable generating sites.

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## Innovative Wind Farm Technology to be tested in Ireland

Sustainable Energy Ireland (SEI) is to provide half of the funding for a study determining the feasibility of using a new innovative electricity storage system which would enable a reliable supply of wind power to the grid when required. The new technology would allow electricity generated by wind off-peak to be stored until it is required to meet demand.

The study will be conducted by Tapbury, which oversees the management of Sorne Hill Windfarm in Co. Donegal where the study is to be conducted. The testing of an Energy Storage System (ESS) from a Canadian company VRB Power Systems Inc when combined with an integrated wind power forecasting system is intended to deliver a reliable supply of electricity from Sorne Hill to the national grid. If the project is successful, Tapbury plans to progress the project to full scale deployment from 2007.



An integrated wind power forecasting system is to be developed which will determine the storage requirements to ensure a smooth reliable delivery of power from the wind farm over a 24 hour period. The system will also determine the optimum schedule of energy release from storage. The study is expected to be completed by the end of 2006 and will be used to determine the economic potential for battery storage operating in the forthcoming SEM in Ireland.

In June 2006, VRB Power Systems Inc announced it had sold a 120kWh energy storage system for use on the Danish grid. The VRB-ESS was sold to Riso National Laboratory as part of a project supported by Energinet.dk, the Danish TSO.

## *New Government Renewable and Energy Efficiency Initiatives*

The Minister for Communications, Marine and Natural Resources, Mr Noel Dempsey, has launched a number of different initiatives intended to promote and develop renewable energy deployment as well as enhance energy efficiency measures in Ireland.

A significant new initiative is the 'Power of One' campaign, a two year campaign to dramatically increase the level of energy efficiency in Ireland and overseen by the Department of Communications, Marine and Natural Resources working with SEI with the involvement of ESB, Bord Gais, EirGrid, Airtricity and the Department of Transport. The primary objectives of the scheme are to:

- Increase awareness on the different types of energy and their underlying costs and environmental impacts;
- Inform consumers on the negative externality of inefficient energy use;

- Encourage small but meaningful daily changes to consumer usage patterns;
- Enable consumers to realise and acknowledge the role they can play to reduce their electricity consumption, improving security of electricity supply and helping the environment in the process.

Another initiative proposes to treble the output of electricity sourced from renewables to 15% of total electricity consumption by 2010, up on the original figure of 13.2%. Support will be given to 55 new renewable projects under the Renewable Energy Feed In Tariff (REFIT) with a combined capacity of 600MW (98% coming from wind energy). The effect of this scheme will be to:

- Increase renewable penetration from 860MW to 1,469MW;
- Reduce annual greenhouse gas emissions by over 2 million tonnes;
- Reduce Ireland's annual energy import dependency by more than 4 million barrels/day (or 60 million barrels/day over the life of the scheme);
- Improve Ireland's national trade balance by over €100 million annually.

The Minister launched the publication 'Renewable Energy Development 2006' in August focusing on CHP, bioenergy technology, ocean and wind power. An €11 million grants package was provided to industry for increased CHP deployment with support for small scale (up to 1MW) fossil-fired CHP and biomass CHP systems. This CHP Deployment Programme will be run over five years and is part of a larger €65 million programme launched in Budget 2006. The CHP programme is expected to deliver 10-15MW biomass CHP, and 100-200 small-scale fossil-fuel CHP installations generating 1-2-MW of CHP electricity.



## Responses to EU Commission's Energy Green Paper

The EU Commission opened the debate on a future common European Energy Policy with the publication of its Energy Green Paper in March 2006. Some of the interested parties to respond to the EU Commission's Green Paper included the Council of European Energy Regulators (CEER), European Transmission Systems Operators Association (ETSO) and European Wind Energy Association (EWEA).

### European Grid Code and network Co-ordination

- CEER noted that a European Grid Code would be different in character from national grid codes and should specify the responsibilities of network companies in relation to the provision of a European electricity grid. It considered that a European Grid Code should be approved, overseen and enforced by energy regulators to ensure it operates in the interests of European consumers.
- ETSO considers that a European Grid Code, in terms of outlining technical rules and standards to secure the power system, grid planning, grid access etc, is not required as the synchronised power systems in Europe have already developed their regional grid codes via organisations such as UCTE, Nordel, UKTSOA, ATSOI and the Baltic TSOs. It noted that the requirement for regional grid codes between TSOs stems from being part of the same electrical system and not from belonging to the same market area. A single pan European Technical Grid Code would be counter-productive in terms of security and economy. Grid and generation physical characteristics of different synchronous systems require different rules and therefore their harmonisation would not in itself improve system security nor encourage greater cross-border trade. Achieving greater compatibility at cross border points (which are not covered by current codes nor regulatory frameworks) would constitute a significant step forward in facilitating the cross border trade of electricity.
- EWEA believed that unless an actual European grid is developed, it is difficult to envisage how a common grid code for wind can be written. It also noted that costly technical requirements should only be applied if there is a real technical rationale and if their introduction is required for reliable and stable power system operation.

### European Centre of Energy Networks (ECEN)

- CEER noted that the formal responsibility of the delivery of an integrated European Grid should be with the national network operators and not a centralised body, though a central body could play an important role in facilitating co-operation between the national network companies.
- ETSO supports the idea of creating a Formal Grouping of TSOs. As to the proposal of the Green Paper on creating another network institution (ECEN), it considers that the activities of both ECEN and the Formal Grouping as described in the green paper could be merged in the same body.

### Role of European Regulators

- CEER believes the powers and independence of national regulators must be broadly harmonised without diminishing the effectiveness of national regulators. European level regulation will be required for certain key EU-wide activities and new legislation is required to provide for regulators to co-operate outside their national borders.
- ETSO agreed that a closer level of collaboration between regulators is required, especially in order to encourage cross border investment. However, ETSO does not feel that a 'European Regulator' is required at this stage. It also noted that giving TSOs a more formal consultation role is an important step in achieving greater co-operation between regulators and network operators.
- EWEA supported the establishment of a European energy regulator as a means of providing for a well-functioning liberalised energy market.

### Effective unbundling

- CEER considers ownership unbundling to be the preferred approach but where this is not feasible consideration should be given to information ring-fencing or structural separation of the system operation function of the network operators.
- EWEA considered that full legal and ownership unbundling between transmission/distribution, production and supply takes place with enforcement measures put in place.



### **Security of Supply and Fuel Diversity**

- CEER noted that fuel diversity is best achieved through liberalisation and it welcomed the establishment of an energy supply observatory as a way of facilitating greater transparency.
- ETSO noted that the IEA may be able to carry out regional focused monitoring instead of setting up a new institution with a Formal TSO Grouping able to provide all relevant electricity data.
- EWEA believes that the overall long term target of at least 20% renewable energy in 2020 should be accompanied by sectoral targets for electricity (35% by 2020), heating (25%) and biofuels (12%). It is also in favour of making current national energy targets (2010) mandatory and of establishing mandatory national targets for 2020.

### **Sustainability and Energy Efficiency**

- CEER believes the EU Emissions Trading Scheme (ETS) is a key instrument for tackling climate change and should be improved and expanded. Renewable schemes, including carbon capture, should be subject to rigorous cost/benefit analysis.
- ETSO noted that all generation sources should be encouraged and enjoy a level playing field, as the benefits of a diverse mix of primary energy sources for the generation of electricity are widely acknowledged. There also needs to be awareness of the system impacts of different types of generation. ETSO considers that the possibility the form and duration of phase 3 of the ETS may not be confirmed until 2010/11, when plant margins are already falling steadily, is a significant concern as investment decisions for new capacity need to be made before this date.
- EWEA proposes adopting more ambitious green house gas reduction targets for 2020 (30%) and 2050 (80%).

## ***ETSO's view on roles and responsibilities in cross-border network investment***

The European Transmission System Operators Association (ETSO) has published its position paper on the roles and responsibilities of TSOs in cross-border network investment, noting that the development of a European interconnected grid has a number of key drivers:

- Non-optimal integration of the EU electricity market and competitiveness due to limited interconnection infrastructure;
- A significant increase in renewable energy impacting the available capacity for cross-border trade;
- The potential expansion of the current UCTE synchronous area to include other systems.

ETSO considers that national transmission networks and cross-border interconnections are now increasingly operated in a way for which they were not originally designed. This has led to less than optimal loading patterns, network constraints and cross-border congestion with the result that the system is operated closer to its technical limits. Although various mechanisms have been established for investment by TSOs in their own control areas, there is no coherent legislative or regulatory framework to support investment by TSOs or merchant developers for cross border infrastructure. The lack of a stable and coherent legal and regulatory framework for cross-border infrastructure acts as a significant barrier to investment. There is no systematic approach with an agreed set of criteria and objectives for cross-border investment.

ETSO believes the adequacy of cross-border transmission should be determined based on two facets: the technical system reliability according to the security standards and the socioeconomic benefit of new transmission reinforcements. It therefore considers the appropriate generic definition for transmission adequacy as follows:

“Adequate transmission capacity, including interconnection capacity, is that which enables operational security standards to be met in the reasonably foreseeable circumstances and meet “economically” the requirements of the market. The latter is achieved when you do not expect any additional net socio-economic benefits from additional investments in transmission capacity.”

*continued on page 12*

Time-consuming licensing procedures and legal proceedings are the most significant obstacles to high-voltage transmission infrastructure development. The time to build a power line may take more than 10 years, if it is possible at all, but to build for example a standardised gas-fired power plant takes only up to 2-3 years. Therefore by the time a power line goes into operation it could be argued that the interconnector is a potentially stranded investment. If interconnector investment is to be encouraged this point needs to be addressed.

ETSO proposes a number of recommendations that should be taken forward by the relevant actors in order to create an environment that encourages cross-border investment and also clarifies the situation where intra-country reinforcement is required to support the new investments. Member States and Governments should be responsible for creating the overarching policy and framework, which would:

- enable permitting procedures to happen in practical and realistic time scales and ensure their compatibility for cross-border lines;
- extend regulatory arrangements (including return on investments) to cross-border investment;
- clarify how investment in one Member State that is for the benefit of the region should be financed; and
- incentivise generators to locate new plant in economically desired areas.

The role of the relevant regulatory authorities would then be to implement a long-term stable framework as above and take further measures, namely:

- giving a long-term guarantee of rate of return on investments;
- provide guidelines on cost allocation principles between national systems, the treatment and recovery of third party costs, revenue-recovery principles;
- implement methods to evaluate the costs and benefits of new interconnection capacities; and
- provide guidelines to potential merchant developers and ensure their compliance.

The TSOs would then take the responsibility to continue to plan the development of their network, perform feasibility and technical studies in a co-ordinated manner to identify required investments and build/upgrade where necessary in a timely and adequate manner.

## IEA considers portfolio of energy technologies

Following the G8 Gleneagles Summit in July 2005, the International Energy Agency (IEA) was asked to develop and advise on alternative scenarios and strategies aimed at a clean and competitive energy future. IEA has published *Energy Technology Perspectives: Scenarios and Strategies to 2050* outlining the status and prospects for key energy technologies and assesses their potential to make a difference by 2050. It also outlines the barriers to implementing these technologies and the measures to overcome such barriers.

According to the IEA, in the baseline scenario, CO<sub>2</sub> emissions will be almost two and a half times the current level by 2050. However, energy-related CO<sub>2</sub> emissions can be brought back in line with current levels if there are strong energy efficiency gains, a shift towards nuclear, renewables, natural gas and coal with carbon capture and storage (CCS) and increased use of biofuels under an Accelerated Technology Scenario (ATC).

The IEA has said that a portfolio of technologies will greatly reduce the risk and potential costs to consumers and identified the key technologies as:

- *Energy Efficiency* – energy efficiency measures alone can reduce electricity demand by a third below baseline levels. Energy efficiency gains are a first priority for a more sustainable energy future. In the ACT scenarios, improved energy efficiency in the buildings, industry and transport sectors leads to between 17% and 33% lower energy use than in the Baseline scenario by 2050. Energy efficiency accounts for between 45% and 53% of the total CO<sub>2</sub> emission reduction relative to the Baseline in 2050;
- *Clean coal and carbon capture and storage technologies* – the cost of CCS is high, but it could fall below \$25 per tonne of CO<sub>2</sub> by 2030. When the captured CO<sub>2</sub> can be used for enhanced oil recovery (EOR), costs could be lower and even negative in some cases. However, the global long-term potential for CO<sub>2</sub> EOR is small relative to global emissions from the power generation sector. In the ACT scenarios, CCS technologies contribute between 20% and 28% of total CO<sub>2</sub> emission reductions below the Baseline Scenario by 2050. Clean coal technologies with CCS offer a particularly important opportunity to constrain emissions in rapidly growing economies with large coal reserves, such as China and India;



- **Electricity generation from natural gas** – the share of natural gas in electricity generation remains relatively robust in all of the ACT scenarios, ranging from 23% to 28% of total generation in 2050;
- **Electricity generation from nuclear power** – in the ACT scenarios, nuclear accounts for 16% to 19% of global electricity generation in 2050. The increased use of nuclear power relative to the Baseline Scenario accounts for 6% to 10% of the emissions reduction in 2050;
- **Electricity generation from renewables** – by 2050, the increased use of renewables such as hydropower, wind, solar and biomass in power generation contributes between 9% and 16% of the CO<sub>2</sub> emission reductions in the ACT scenarios. The share of renewables in the generation mix increases from 18% today, to as high as 34% by 2050.

IEA has noted that improving energy efficiency is often the cheapest, fastest and most environmentally friendly way to meet the world's energy needs. Improved energy efficiency also reduces the need for investing in energy supply. A wide range of policy instruments are available, including public information campaigns, non-binding guidelines, labels and targets, public-sector leadership in procurement, binding regulations, standards, and fiscal and other financial incentives. For technologies that are already commercial, the private sector is best placed to tailor ongoing research and development to the market's needs. Government funded R&D will remain essential, especially for promising technologies that are not yet commercial. The deployment phase can require considerably more resources than the R&D phase. Several new technologies that are already on the market need government backing if they are to be mass deployed.

IEA believes there is a need to commercialise advanced coal-fired power plants with CO<sub>2</sub> capture and storage. If this is done, coal can continue to play a major role in the energy mix to 2050. To accelerate the introduction of CCS, at least 10 full-scale integrated coal-fired power plants with CCS are needed by 2015 for demonstration. These plants will cost between \$500 million and \$1 billion each.

The ACT scenarios include widespread implementation of technologies with an incremental cost of up to \$25 per tonne of CO<sub>2</sub> in 2050. This could be achieved in many ways, such as national or international cap-and-trade schemes, but also through national fiscal or regulatory action. Incentives are needed in developed as well as in developing countries.

## Progress made on renewable targets

The EU 2001 Renewables Directive set an indicative target for the EU as a whole of increasing the share of electricity produced by renewables to 21%, including large-scale hydro. Against this 21% target, the share of renewables in the gross consumption of electricity amongst the EU-25 in 2003 was 12.8%. Of this 9.3% came from hydro (excluding pumped storage), 1.6% from wind, 2.0% from biomass, and 0.2% from geothermal. According to Platts, a number of countries, based on current figures, look likely to fail their national targets (*see table*).

### EU-25 Renewable Share of Power Consumption

COUNTRY	2010 TARGET	2004 ACTUAL	TREND	ON TARGET?
Austria	78%	76%	Up	Yes
Belgium	6%	2.8% Flanders 3.7% Wallonia	Up	Yes No
Cyprus	6%	0%	Stable	No
Czech Republic	8%	3.3%	Down	No
Denmark	29%	27.7%	Up	Yes
Estonia	5.1%	1%	Up	Unclear
Finland	31.55%	28.8%	Up	Yes
France	21%	12.72%	Down	No
Germany	12.5%	9.3%	Up	Yes
Greece	20.1%	12.9%	Up	Yes
Hungary	3.6%	2.2%	Up	Yes
Ireland	13.2%	5.2% (6.8% 2005)	Up	Exceed
Italy	22.5%	26%	Up	Yes
Latvia	49.3%	46.5%	Up	Yes
Lithuania	7%	3.7%	Up	Unclear
Luxembourg	5.72%	3.45%	Up	Yes
Malta	5%	0%	Stable	No
Netherlands	9%	4.39%	Up	Yes
Poland	7.5%	2.6%	Up	Just
Portugal	39.04%	36.4%	Up	Yes
Slovakia	31%	14.2%	Up	No
Slovenia	33.6%	29.1%	Down	No
Spain	30.3%	19.4%	Down	No
Sweden	51%	47.2%	Down	Unclear
UK	10%	3.51%	Up	No

Source: Platts: Energy Economist

## July

### Australia

- Australian Energy Market Commission releases draft rules for regulation of electricity transmission revenue in the National Electricity Market

### Bulgaria

- Energy regulator raises preferential prices for electricity produced from domestic wind farms by up to 46%

### China

- IEA launches publication 'China's Power Sector Reforms: Where to next?'

### EU

- CEER responds to EU Commission Energy Green Paper
- ETSO publishes position paper on roles and responsibilities in cross-border network investment
- EU Energy Commissioner Piebalgs welcomes the EU Council decision to adopt the EU Commission's proposal for a revision of the Trans-European Energy Network (TEN-E) Guidelines
- ERGEG issues proposals aimed at promoting competition once electricity market is fully liberalised on 1 July 2007

### France

- French regulator, CRE, calls for EDF to provide base-load and peak electricity to alternative suppliers at its nuclear production cost price to promote more competition
- Industry Ministry publishes 2005-2015 Electricity Generation Investment Plan (PPI)

### Germany

- Energy regulator, BNA, calls for standardised, automated power supply formats and switching processes
- Energy regulator, BNA, announces cuts in grid access fees of high-voltage grid operators

### Iberia

- Trade commences on new unified Iberian power market (Mibel) with low volumes posted on Operador do Mercado Iberico (Omic) exchange

### International

- G8 summit is held in St Petersburg with calls for increased energy efficiency

### Italy

- Energy regulator, AEEG, instructs on new transparency requirements in electricity bills by 1 January 2007

### UK

- Department of Trade and Industry publishes 'The Energy Challenge: Energy Review Report 2006'
- Ofgem receives responses to its Offshore Electricity Transmission scoping document
- Defra initiates consultation on the Energy Efficiency Commitment from April 2008 to March 2011

### US

- Airtricity, Inc. announces \$500 million financing mandate for 2007 US wind farm projects
- US Environmental Protection Agency releases report to promote deployment of Integrated Gasification Combined Cycle (IGCC) technology for coal-fired generation

## August

### EU

- New European Technology Platform for Wind Energy calls for applications for membership of the Steering Committee

### France

- CRE criticises new feed-in tariffs for renewable energy sources recently approved by the French government

### Germany

- Energy regulator, BNA, presents first monitoring report of the German energy market

### India

- Power Ministry proposes independent transmission system operator

### Italy

- AEEG publishes consultation intended to spread new and advanced electricity meters to all low-voltage customers

### New Zealand

- Vector and Transpower sign memorandum of understanding outlining plan to deliver improved security of supply within Auckland
- Commerce Commission announces it intends to declare control of Vector's electricity distribution network. Vector places NZ\$630 million or proposed infrastructure investment on hold

### Portugal

- Government completes tender for licences to build and operate 1,000MW of wind capacity



#### **Turkey**

- Energy Market Regulatory Agency approves privatisation and tariff structure of 20 electricity distribution grids

#### **UK**

- Ofgem consults on Review of Competition in Gas and Electricity Connections
- Progress on the first year of the Energy Efficiency Commitment 2005-2008 is submitted to Government
- Ofgem invites bids on Energy Demand Reduction Pilot
- Responses to financing networks paper is published by Ofgem and Ofwat

#### **US**

- Demand response produces \$650 million in savings during early August heat wave in PJM
- FERC reports to Congress on demand response and advanced metering
- California introduces new renewable legislation, setting a target of reducing emissions by 25% by 2020
- Governor agrees deal to make California the first state to impose cap on green house gas emissions

## *September*

#### **Austria**

- Chancellor looks to increase share of renewables in power generation to 45% by 2020

#### **EU**

- EWEA responds to EU Commission Energy Green Paper
- ETSO responds to EU Commission Energy Green Paper
- EU Energy Commissioner addresses public hearing on Green Paper on European Energy Policy

#### **France**

- Government publishes new regulation on guarantees of origin for electricity produced from renewable sources

#### **Sweden**

- Sweden and Lithuania launch feasibility study into possibility of subsea interconnector

#### **UK**

- Updated proposals on the Transmission Price Control Review are published
- Ofgem consults on regulatory arrangements for the new Dutch-Great Britain electricity interconnector
- £50 million hydrogen, fuel cell, and carbon abatement technologies demonstration scheme is launched
- DTI launches initiative to increase investment in energy with £500 million in funding for proposed Energy Technologies Institute

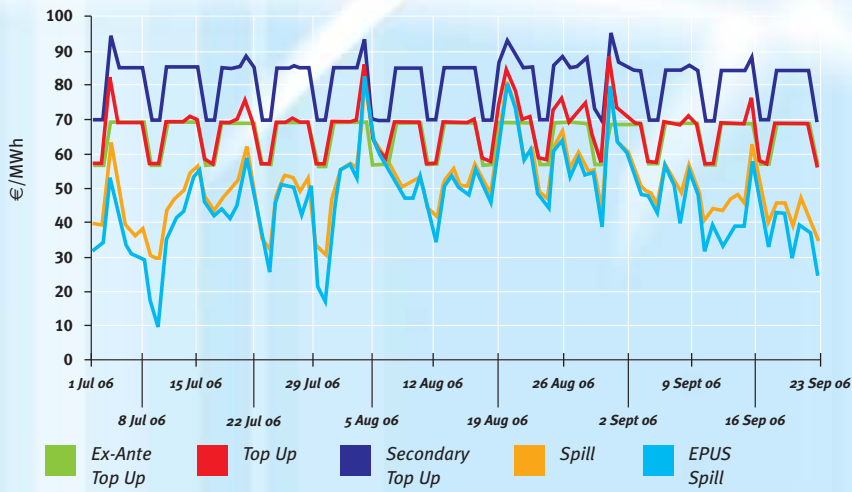
#### **US**

- FERC approves establishment of Spare Transformer Equipment Program (STEP) to improve power system security
- Department of Defence (DOD) issues report on 'The Effect of Windmill Farms on Military Readiness 2006'
- FERC conditionally approves the California ISO's Market Redesign and Technology Upgrade (MRTU)
- FERC submits Strategic Plan for 2006-2011 to Congress



# Market Prices

## MARKET PRICES July-September 2006



In the third quarter 2006, the average daily spill price was €50.72/MWh, up slightly on €49.17/MWh during the previous quarter but down on the same period last year when the spill price was €55.29/MWh.

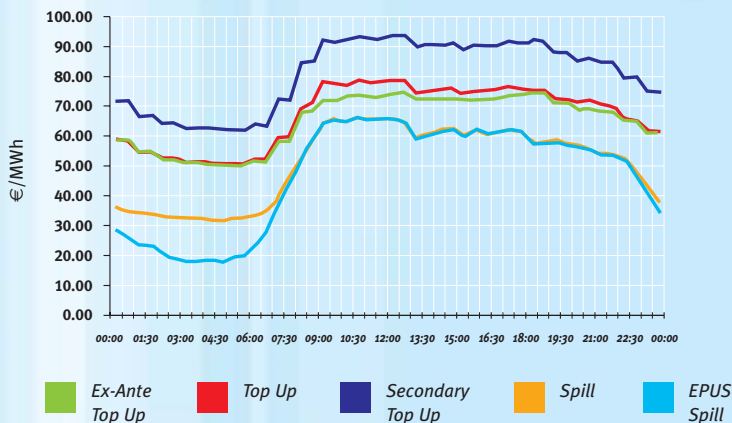
Top up prices also remained relatively stable. The administered ex-ante top up price was €65.07/MWh with top up and secondary top up prices averaging €66.82/MWh and €80.77/MWh respectively.

Although prices rose over the three months from July to September from €45.03/MWh to €49.89/MWh for spill and €65.75/MWh to €66.68/MWh for top up, prices were highest in August with spill resetting top up on a number of occasions. The spill price for August was €57.21/MWh, resulting in a corresponding increase in the top up price to €68.03/MWh. This increase in the spill price was due to a number of peaks on 4th August, 22nd August and 4th September respectively with prices rising to €83.60/MWh.

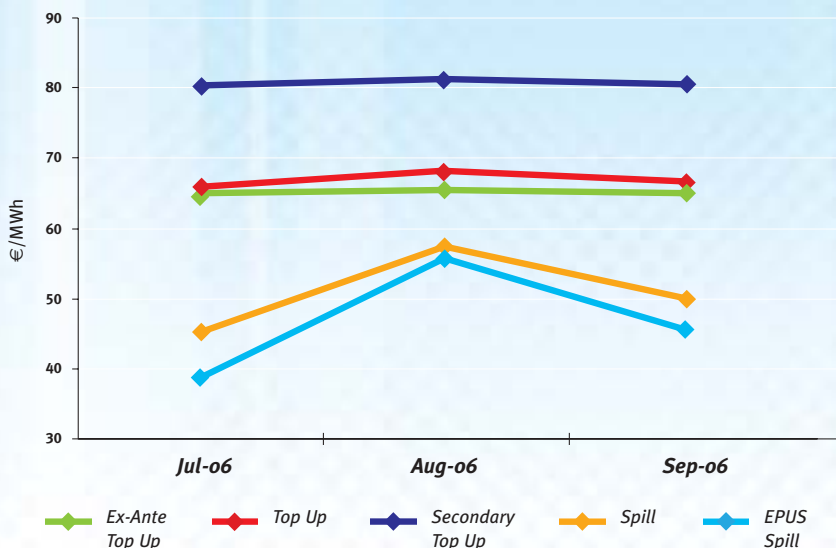
The EPUS spill price remained above the spill floor for much of the quarter but did fall below it on a number of occasions in July, falling to as low as €10.61/MWh on 9th July 2006.

Price differentials between the EPUS spill price and the spill price tend to occur during the night when demand for energy is low. On a trading period basis, the EPUS spill price fell below the spill price of over €30/MWh and top up prices exceeding €50/MWh during the night but rose to match spill during the day at around €60/MWh. Top up prices generally exceeded €70/MWh during the main course of the day.

## MARKET PRICES BY TRADING PERIOD July-September 2006

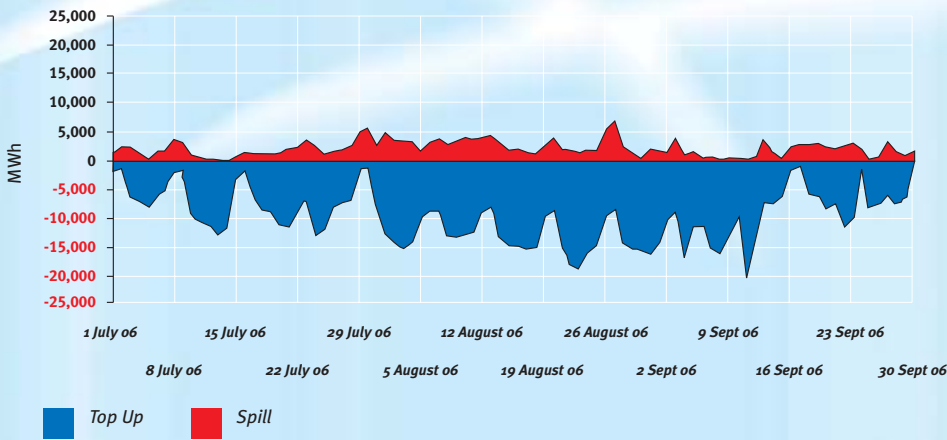


## AVERAGE DAILY PRICES BY MONTH July-September 2006



# Imbalance Volumes

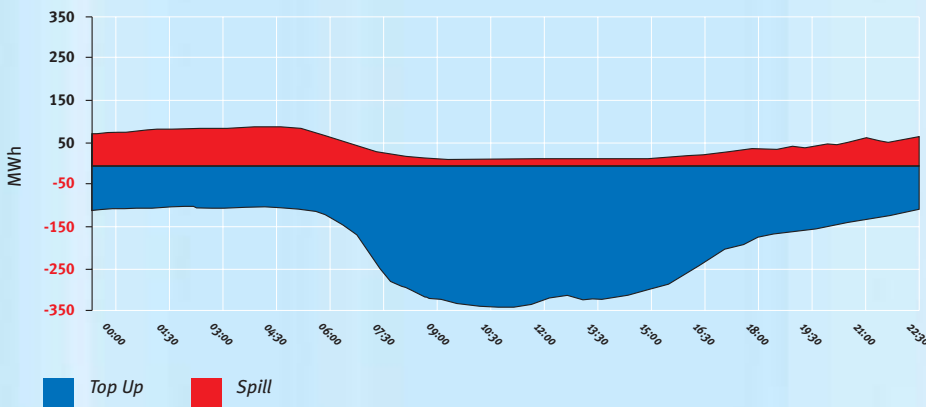
DAILY VOLUMES OF TOP-UP AND SPILL July-September 2006



Over 893GWh of top up energy was purchased by the independent sector during the third quarter 2006, up on the 727GWh and 650GWh purchased during the previous two quarters. Top up volumes increased from 219GWh in July to 270GWh in September but were highest in August at 404GWh. The average daily top up volume over the three months was 9,709MWh.

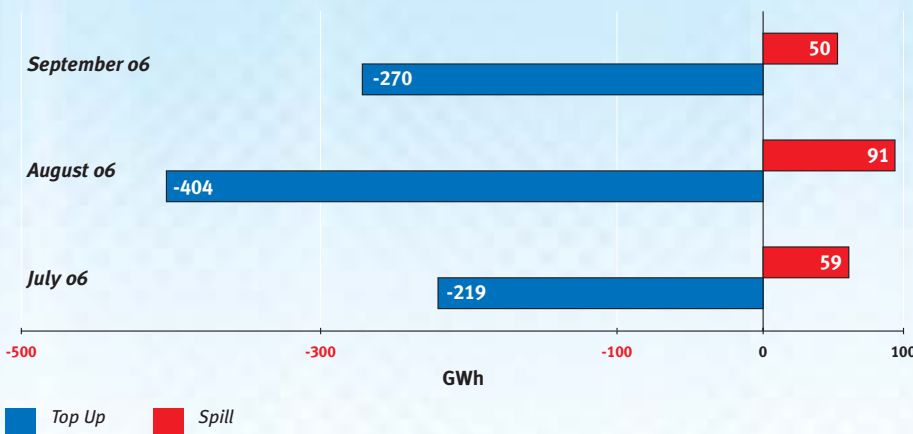
The volume of spill sold onto the system was well below the volume of top up purchased at 199GWh, up on the 130GWh sold in the second quarter but well below the 327GWh spilled during the first quarter 2006. Spill volumes were also highest in August at 91GWh. The average daily volume of spill sold by the independent sector was 2,163MWh.

VOLUMES OF TOP-UP AND SPILL BY TRADING PERIOD July-September 2006



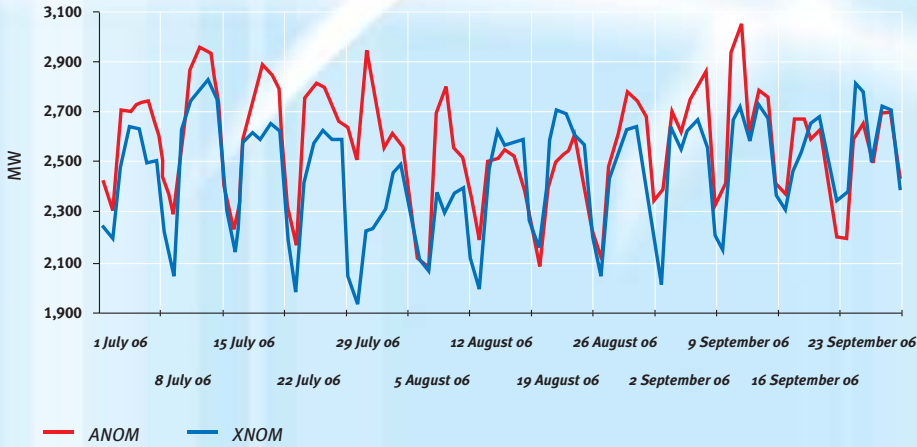
On a trading period basis, volumes of top up were nearly double the volumes of spill during night time hours at around 100MWh. Spill volumes fell to around 20MWh during the day as top up volumes rose steadily, approaching 350MWh.

IMBALANCE VOLUME TRENDS July-September 2006



# Ex-post Unconstrained Schedule (EPUS) Nominations

AVERAGE DAILY GENERATOR NOMINATIONS IN EPUS July-September 2006

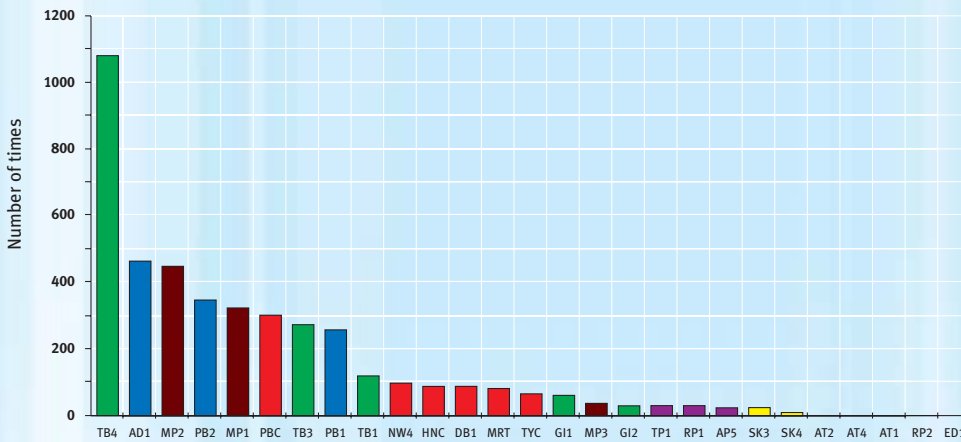


Generator’s ex-ante nominations (ANOMs), reflecting how generators wished to run, were marginally ahead of the ex-post nominations (XNOMs) determined by the ex-post unconstrained schedule (EPUS). The average daily ex-ante nominations were 2,568MW with ex-post nominations of 2,458MW.

On a trading period basis, both sets of nominated values tracked each other quite closely during the day, peaking at just over 3,000MW around midday with the main difference occurring during the night when generator’s preferred operating schedule exceeded what EPUS determined was required to meet demand.

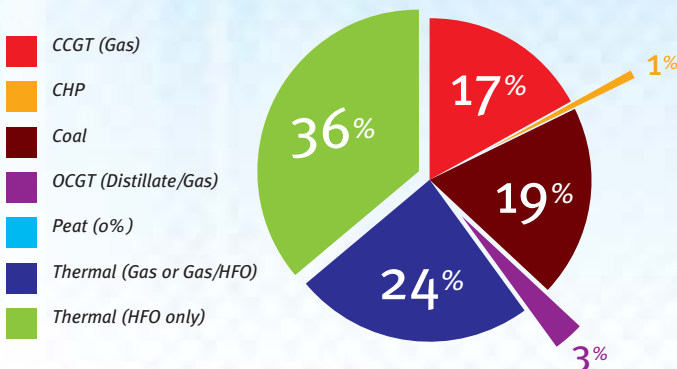
## Spill Unit

GENERATOR UNITS SETTING THE SPILL PRICE July-September 2006

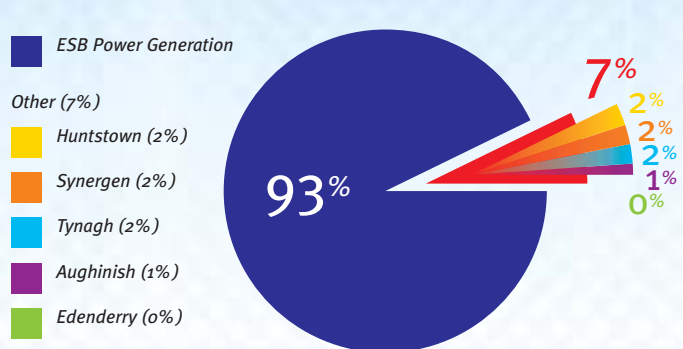


The spill price was set by Tarbert’s TB4 around 25% of the time during the third quarter 2006, significantly more than any other unit. ESB Power Generation continues to dominate price-setting plant, though other non-ESB units set the spill price 7% of the time, namely Huntstown, Tynagh, Synergen and Aughinish Alumina. Around 60% of the spill setting units are thermal plant with coal and gas-fired plant constituting much of the remainder, with 19% and 17% respectively.

FUEL TYPE SETTING THE EPUS DERIVED SPILL PRICE

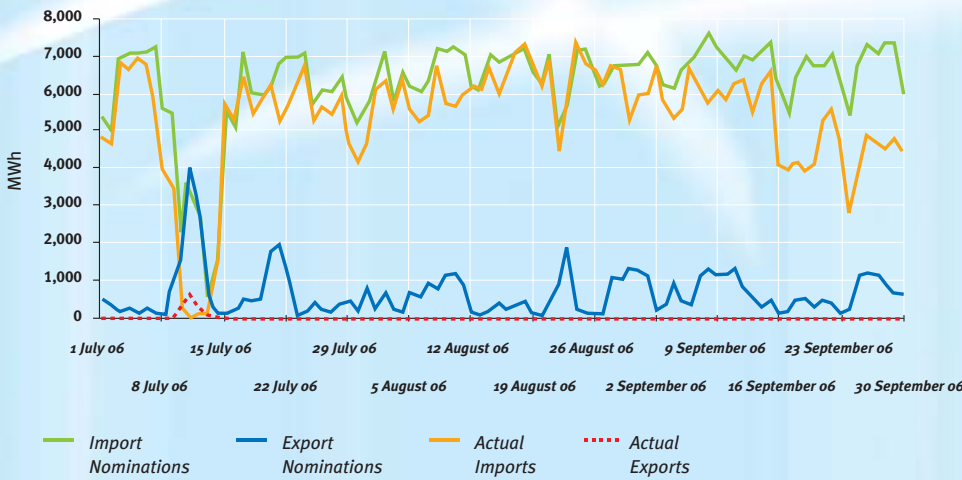


GENERATOR COMPANY SETTING THE EPUS DERIVED SPILL PRICE



# Interconnector

## TOTAL DAILY VOLUMES AND NOMINATIONS July-September 2006

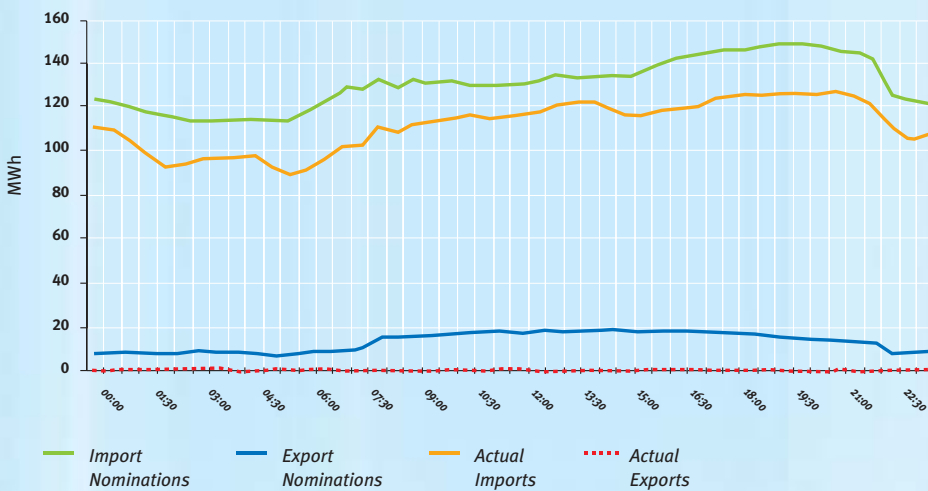


The volume of energy imported across the interconnector from Northern Ireland increased in the third quarter 2006 from 398GWh from April to June to 495GWh between July and September inclusive. August was the busiest month of the quarter with 192GWh imported, though 146GWh and 157GWh was imported during July and September respectively.

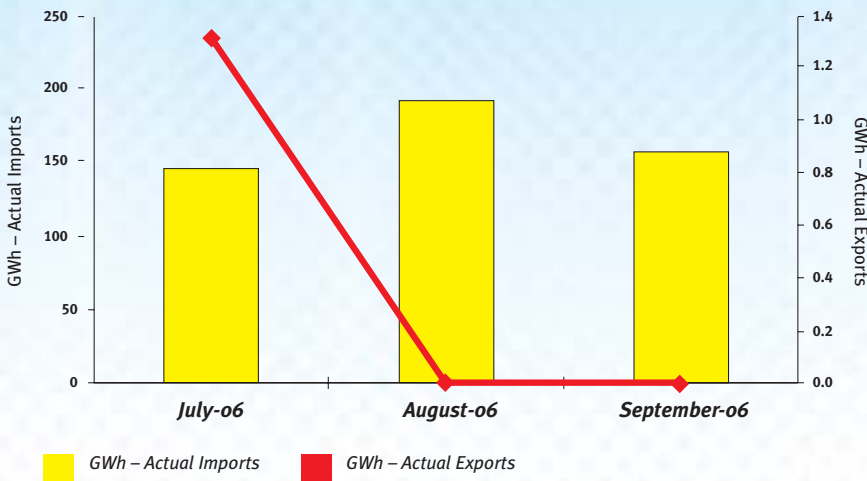
Over 1GWh was exported to the North in July. However, there were practically no exports to the North in August or September.

Taken as a daily average over the three months, imports and exports came to 5,378MWh and 14MWh.

## VOLUMES AND NOMINATIONS BY TRADING PERIOD July-September 2006

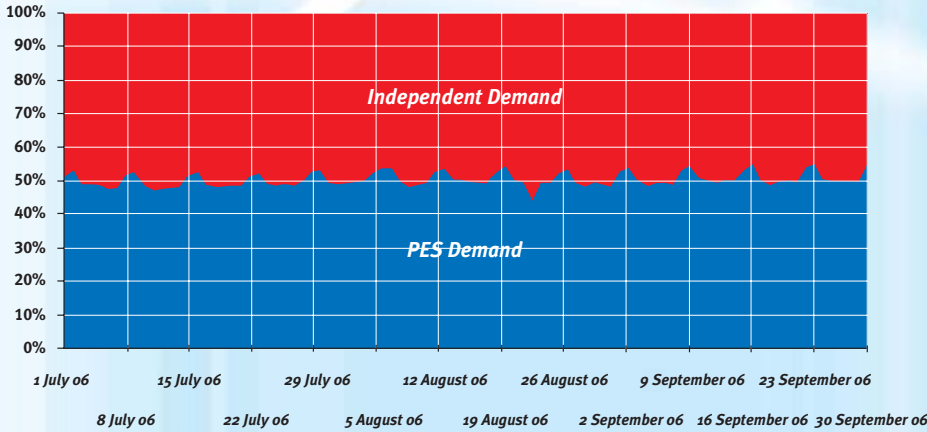


## INTERCONNECTOR VOLUMES July-September 2006



# Demand

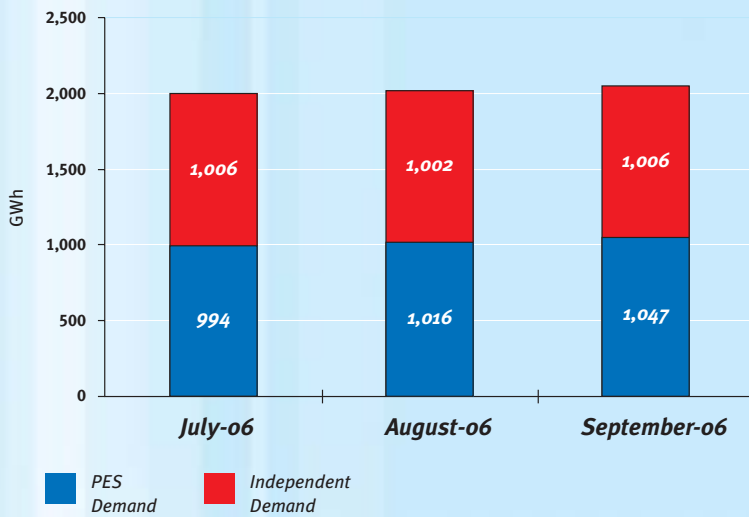
**DEMAND – MARKET SHARE July-September 2006**



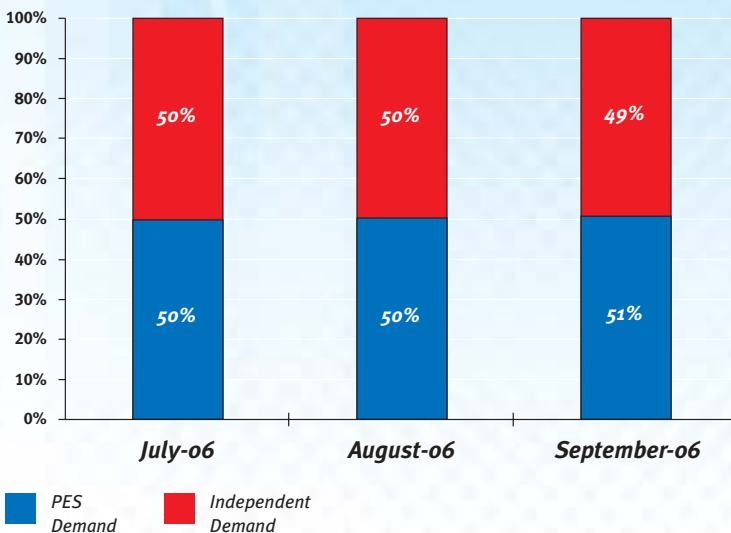
ESB PES and independent suppliers met over 6TWh of electricity demand in the third quarter 2006, similar to the level of consumption during the previous quarter. The level of consumption met by the independent sector increased again, exceeding 1TWh in each month of the quarter. Indeed, the independent sector provided 3.015TWh to the market compared to ESB PES's 3.058TWh between July and September inclusive.

Taken as a percentage, this means that independent market share now meets around half of all electricity consumption in the retail market, up on the 48% in the second quarter and 42% during the first quarter 2006.

**TOTAL CONSUMPTION (GWh) July-September 2006**



**DEMAND – MARKET SHARE July-September 2006**



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