# Winter Outlook 2012-2013

## SUMMARY

This Winter Outlook report examines the capability of the generation portfolio available to EirGrid and SONI to meet energy demand in Ireland and Northern Ireland between November 2012 and March 2013 inclusive. The growth in demand, the capacity and performance of generation (both conventional and wind) and the impact of increased interconnection via the East West Interconnector is examined. Both deterministic and probabilistic analyses were carried out. **The expected outlook is that there should be sufficient capacity for the winter period to ensure the appropriate level of security of supply is maintained across both jurisdictions.**

## DEMAND

Chart 1 shows the 3-month Rolling Electricity Growth Rate from January 2011 to March 2012 for Ireland and Northern Ireland. It shows the impact of the extreme weather of winter 2010/2011, with an increase in electricity demand during that period. However, following on from the winter period, energy growth was mostly negative and due to the milder winter conditions during winter 2011/2012, the negative demand growth was even more pronounced. Since January 2012, the rate of decline in energy demand has decreased in both jurisdictions.

**Chart 1 –** 3-Month Rolling Electricity Growth Rate January 2011 to April 2012

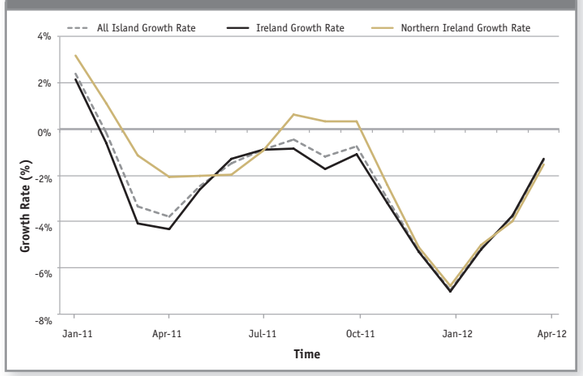
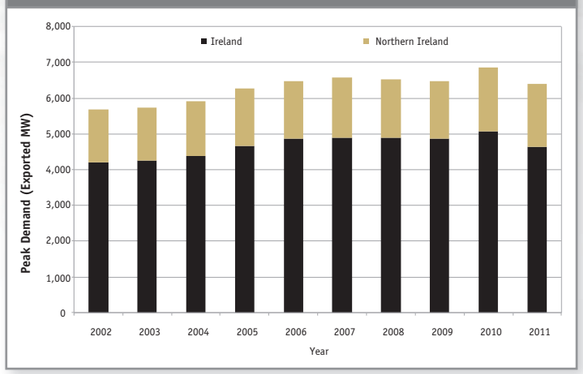


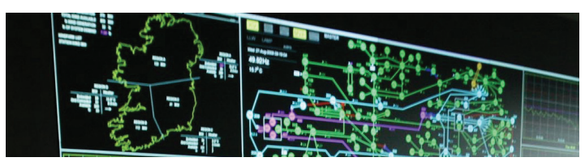

Chart 2 shows the All-Island Peak Demands for each year from 2002 to 2011. It also illustrates the contribution of both the Irish and Northern Irish systems to the All-Island Peak Demand.

The Annual Peak Demand is dependent on a number of factors, including the decline in overall energy demand since late 2008. Notwithstanding the decrease in energy demand, the Peak Demand on some days during winter can be high due to bad weather and cold temperatures and this was evident in 2010. In 2011, the peak was lower as the weather during the 2011/2012 winter period was significantly milder in than the previous 2 years.

**Chart 2 –** All-Island Peak Demand from 2002 to 2011




During the 2011/2012 winter period, the All-Island Peak Demand for electricity was 6,419 MW occurring on the 13 December 2011. The Northern Ireland Peak Demand of 1,794 MW and the Ireland Peak Demand of 4,644 MW occurred at different times to the All-Island peak. **For the 2012/2013 winter, it is forecasted that the All-Island Peak Demand will be 6,390 MW.**

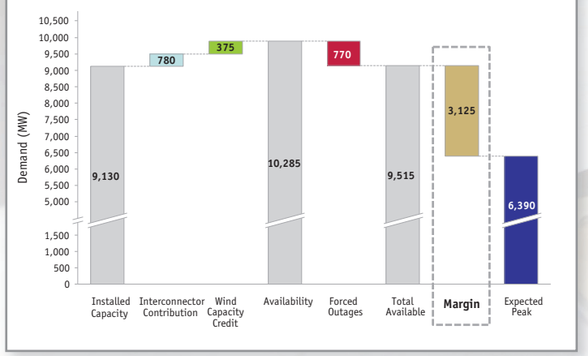


## EXPECTED OUTLOOK

### DETERMINISTIC ANALYSIS

Deterministic analysis was carried out to examine the ability to meet Peak Demands over the winter period. The analysis shows that there will be sufficient generation capacity this winter to meet peak demands and reserve requirements and that the appropriate level of security of supply should be maintained throughout the winter period. Chart 6 shows the expected overall margin during the week of projected peak demand.

**Chart 6 –** Expected Overall Margin at Peak Demand



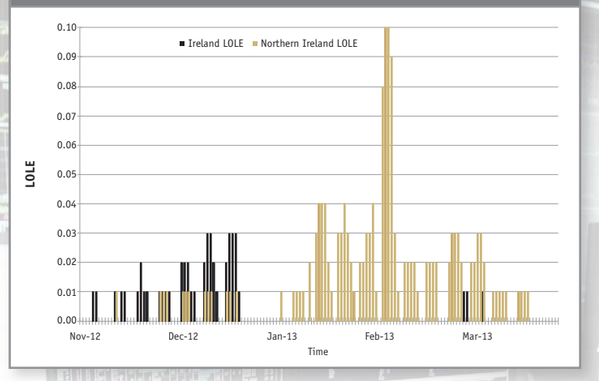

This overall margin includes the available generation capacity (including typical forced outage probability), the wind capacity credit and the imports assumed available from Great Britain via the East West Interconnector and the Moyle Interconnector.

### PROBABILISTIC ANALYSIS

The generation capacity adequacy standard is based on a probabilistic analysis and is defined as a Loss of Load Expectation (LOLE) of 8 hours per year for Ireland and 4.9 hours per year for Northern Ireland.[7] The results of the probabilistic analysis indicate that both systems remain within their relevant capacity adequacy standard. Chart 7 shows the LOLE for each jurisdiction on a daily basis during the winter period.

[7] A single All-Island standard is not possible until the second North-South tie-line is commissioned.

**Chart 7 –** Ireland and Northern Ireland Winter 2012/13 LOLE




### EXPECTED OUTLOOK – All-Island

Considering all factors, it is expected that the capacity margins across both jurisdictions will be sufficient to maintain security of supply standards. The contribution of the new East West interconnector is expected to enhance overall security of supply.

## CONCLUSION

**The outlook for the winter period is that the generation capacity will be sufficient to ensure the appropriate level of security of supply is maintained in Ireland and Northern Ireland. EirGrid and SONI will continue to manage and monitor the system carefully and to keep all stakeholders updated.**

## HOW TO CONTACT US

GENERAL QUERIES:

EIRGRID
Tel: +353 1 7026642
Email: info@eirgrid.com
on the web at:
www.eirgrid.com

SONI
Tel: +44 28 90794336
Email: enquiries@soni.ltd.uk
on the web at:
www.soni.ltd.uk

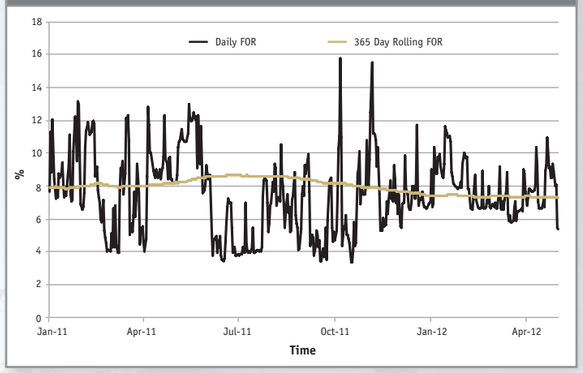
# GENERATION

The All-Island installed capacity of conventional, dispatchable generation for the coming winter period will be 9,130 MW (6,794 MW for Ireland and 2,336 MW for Northern Ireland). This figure does not include any potential import contribution from the Moyle Interconnector or the new East West Interconnector. There is no new, large-scale conventional, dispatchable generation expected to connect in Ireland or Northern Ireland this year.

## CONVENTIONAL GENERATION AVAILABILITY

The availability of the conventional, dispatchable generation on the All-Island system continues to be relatively high, with a 365-Day Rolling Average All-Island system availability[1] of 86% from January 2011 to May 2012. Chart 3 shows the Daily Forced Outage Rates[2] (FOR) and the overall 365-Day Rolling Average Forced Outage Rate for the same period. Whilst the Daily FOR can vary on a day-to-day basis, the general performance of the plant portfolio across Ireland and Northern Ireland has been consistent over the past 18 months with an Average FOR of 8%.

**Chart 3 –** Daily FOR & 365-Day Rolling Average FOR January 2011 to May 2012.




The Forced Outage Probability, as distinct from the Forced Outage Rate, assumed for winter 2012/2013 is based on an assessment of the past performance of the generation units and information provided by the power plant operators. **The overall Forced Outage Probability used in the analysis is 7.5%.**

## WIND GENERATION

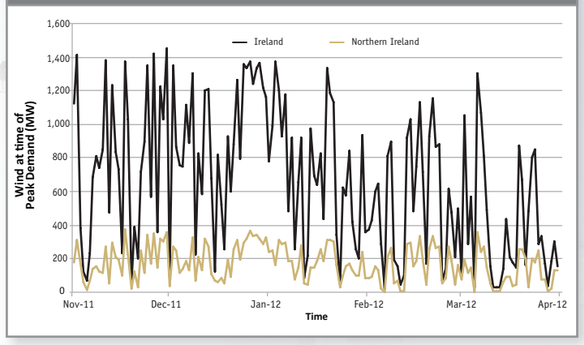
Wind Generation makes an important contribution to meeting All-Island System Demand. Table 1 shows a summary of the key wind statistics for Ireland and Northern Ireland during last winter. Winter 2011/2012 was a particularly windy period especially by comparison to the previous winter period.

**Table 1 –** Summary of Key Wind Statistics for winter period 2011/12.

| | Ireland | Northern Ireland |
|---|---|---|
| Average Installed Wind Capacity | 1,615MW | 451MW |
| Highest Wind Output at Peak Demand | 1,455MW (90.1% of Installed Wind Capacity) | 374MW (82.9% of Installed Wind Capacity) |
| Average Wind Contribution at Peak | 354MW (25.2% of Installed Wind Capacity) | 170MW (37.5% of Installed Wind Capacity) |
| Minimum Wind Output at Peak Demand | 20MW (1% of Installed Wind Capacity) | 0MW (0% of Installed Wind Capacity) |

Chart 4 shows the wind generation at the time of peak demand in each jurisdiction for each day during the winter period 2011/2012. The contribution of the wind to meeting system demand varies on a day-to-day basis.

**Chart 4 –** Wind Generation at the time of Peak Demand in Ireland and Northern Ireland Nov 2011 to April 2012




There is currently 2,066 MW of wind capacity connected across the Ireland and Northern Ireland systems. It is expected that an additional 200 - 300 MW will connect up to the end of March 2013. **For analysis purposes, an overall wind capacity credit of 375 MW is assumed for this winter.**

### Wind Capacity Credit

The capacity credit of a generation unit is a measure of its contribution towards generation adequacy. Wind generation provides a limited capacity credit for two principal reasons:

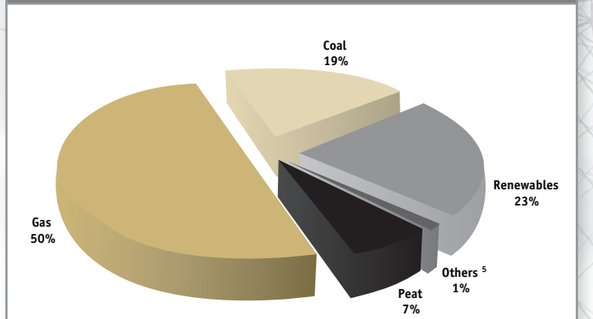
1. The energy provided by wind generation is limited by actual wind conditions; and
2. Due to its small geographical size, wind levels are strongly correlated across the island and wind farms which are geographically and electrically separate from each other may still tend to act in unison when common wind conditions exist.

[1] 365-Day Rolling Average Availability is a capacity weighted average availability over the previous 365 days. Total Availability includes Forced Outages, Scheduled Outages and Ambient De-Ratings.
[2] Forced Outage Rates do not include outages of wind farms as this information is not available

## ALL ISLAND FUEL MIX

Chart 5 shows the breakdown of energy by fuel source over the winter 2011/2012 period on an All-Island basis. Gas-fired generation, including CCGT[3], OCGT[4] and conventional steam boilers, was the predominant energy source, satisfying 50% of total energy demand during winter. Almost a quarter of energy was provided by renewable generation, representing the second largest generation type and comprised mainly wind and hydro generation.

**Chart 5 –** All-Island Energy Consumption by Generation Source November 2011 to April 2012




# INTERCONNECTION & TIE- LINES

The Moyle DC Interconnector links the electricity grids of Northern Ireland and Scotland and the East West Interconnector (EWIC) links the electricity grids of Ireland and Great Britain. The rated Net Transfer Capacity (NTC) for both interconnectors in winter 2012/2013 is summarised in Table 2. The availability level attributed to the interconnectors includes an assumption that there will be no capacity shortages in the Great Britain system, which has approximately 80GW of installed generation capacity and an expected peak demand of 55GW[7].

**Table 2 –** Net Transfer Capacities between Ireland & Wales and Northern Ireland & Scotland for winter 2012/2013

| Net Transfer Capacity | MOYLE | EWIC[6] |
|---|---|---|
| Great Britain → Ireland | 250MW | 530MW |
| Ireland → Great Britain | 250MW | 500MW |

The East West Interconnector will be in the first year of operation for the winter period of 2012/2013, and consequently a Forced Outage Probability of 5% is used to reflect the higher probability of forced outages during the first year of operation.

[3] Combined Cycle Gas Turbine (CCGT)
[4] Open Cycle Gas Turbine (OCGT)
[5] Others includes Oil, Distillate and small scale CHP
[6] Based on NTC values at Deeside in Wales
[7] Source: National Grid Winter Consultation 2012/2013

## MOYLE INTERCONNECTOR OUTAGES

Last winter, both poles of the Moyle Interconnector were on forced outage for a significant period of time. A subsea cable fault on 26 June 2011 reduced capacity to 250MW and a further subsea cable fault on 24 August 2011 reduced the capacity to zero. The logistics of subsea cable repair, which involves contracting for specialised ships and equipment coupled with poor winter weather conditions, meant that half capacity was not restored until 18 January 2012 and full capacity was restored on 19 February 2012.

The subsequent investigation into the Moyle cable faults indicated an early concern over the serviceability of part of the cables and appeared to be supported by a further cable fault on 23 June 2012. It is assumed that no repairs will be carried out before the winter and that subsequently Moyle capacity will be 250MW.

The owners of the Moyle, Mutual Energy, are investigating securing this remaining capacity against another cable fault by reconfiguring the cable connections. For our expected Outlook Analysis, it is assumed that the Moyle Interconnector is operating with an NTC of 250 MW and a Forced Outage Probability of 2%.

## NORTH-SOUTH TIE-LINE

The North-South tie-line remains an important feature of the All-Island transmission system, facilitating power flow between the Ireland and Northern Ireland systems. The power flows and direction can vary due to a number of operational conditions. Typically, 200 MW of capacity credit is available from Northern Ireland to Ireland and 100 MW of capacity credit from Ireland to Northern Ireland.