Winter Outlook 2013-2014

WINTER OUTLOOK – KEY MESSAGE

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 2013 and March 2014 inclusive. In reviewing the combined Ireland and Northern Ireland systems' capacity adequacy, both deterministic and probabilistic analysis was carried out. The effect of the cessation of the Winter Peak Demand Reduction Scheme (WPDRS) in Ireland leading to an increase in peak demand was examined.

The expected outlook is that there will be a sufficient capacity margin for the winter period to ensure the appropriate level of security of supply is maintained across both jurisdictions.

KEY INPUTS FOR ANALYSIS 2013/2014[1]

	Ireland	Northern Ireland	All- Island
DEMAND			
Demand Growth	0.7%	-0.1%	0.5%
Forecasted Peak	4,880MW	1,780MW	6,660MW
CONVENTIONAL GENERATION			
Installed Conventional	6,738MW	2,340MW	9,078MW
Expected Forced Outage Probability (FOP)	7.5%	5.1%	6.9%
WIND GENERATION			
Average Installed Wind Generation	2,140MW	600MW	2,740MW
Expected Wind Capacity Credit	310MW	125MW	435MW
INTERCONNECTORS			
Net Transfer Capacity (NTC)	MOYLE[2]		EWIC[3]
Great Britain → Ireland	250MW		530MW
Ireland → Great Britain	250MW		500MW

[1] The data freeze for this report took place on 31st May 2013.
[2] NTC values for Moyle Interconnector are measured at Ballycronan More in Northern Ireland.
[3] NTC values for EWIC are measured at Deeside in Wales.

IRELAND – KEY POINTS

- Peak electrical demand in Ireland is expected to be 4,880MW which is an increase over last year's predicted peak demand. Following EirGrid's analysis, the impact of the cessation of the WPDRS is expected to lead to an increase in the range of 100-140MW during the peak demand periods of winter 2013/2014.
- Installed conventional generation capacity is not expected to increase. However, a 450MW CCGT plant is expected to be commissioning during Q1 2014.
- Based on EirGrid's analysis, and input from the generators, the expected FOP for Ireland will be 7.5% during winter 2013/2014.
- There is an expected additional 300 – 500MW of wind generation connecting to the Ireland system between June 2013 and April 2014, resulting in a total expected wind capacity credit for Ireland of 310MW.
- The East-West Interconnector is expected to be fully available for the winter 2013/2014 period.

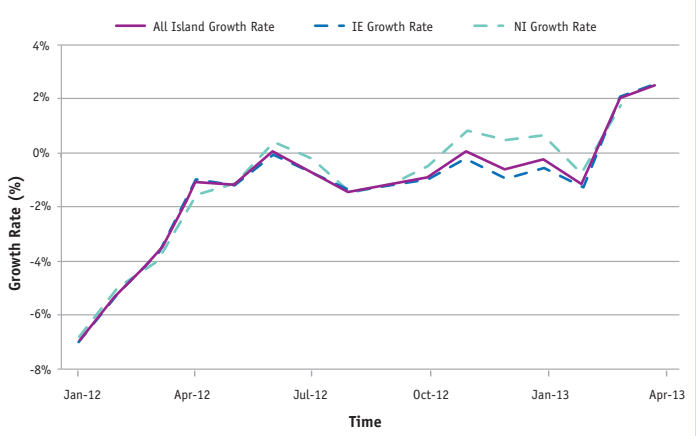
NORTHERN IRELAND – KEY POINTS

- Peak electrical demand in Northern Ireland is forecasted to be 1,780MW.
- Installed wind capacity in Northern Ireland is due to increase over the period of June 2013 to April 2014 from 529MW to 600MW, resulting in a total expected wind capacity credit for Northern Ireland of 125MW.
- There is no additional conventional generation capacity expected to connect to the Northern Ireland system.
- The expected FOP for Northern Ireland will be 5.1% during winter 2013/2014.
- The Moyle Interconnector will continue to be available for 250MW.

DEMAND GROWTH

Chart 1 shows the rolling 3-month Average Demand Growth Rate from Ireland, Northern Ireland and on an all-island system basis from January 2012 to April 2013. Due to continued economic growth suppression, demand growth was primarily negative last year. However, since January 2013, demand has grown, largely due to the harsh weather conditions in February and March 2013. **The expectation is that overall demand growth for the year 2013 will be approximately 0.5%.**

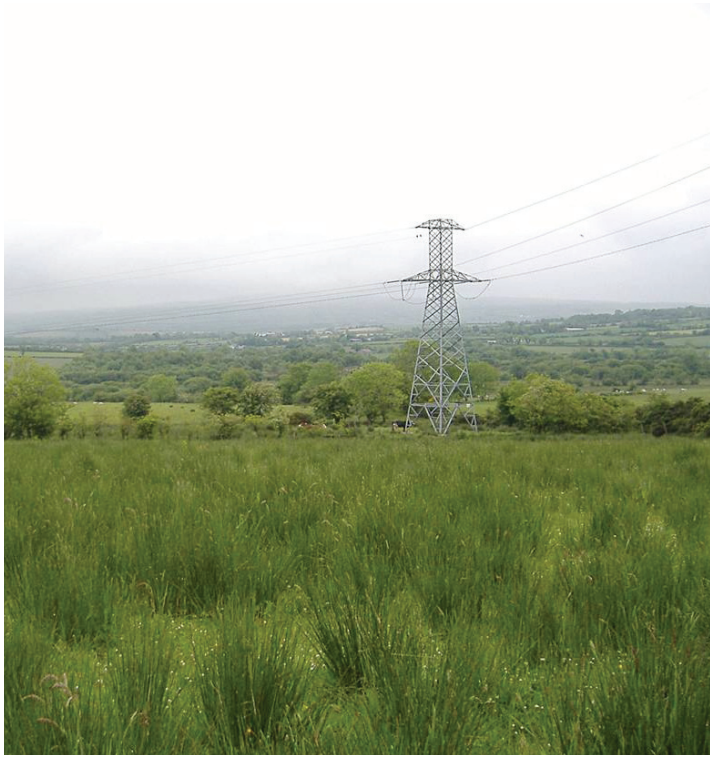
Chart 1 – 3-Month Rolling Demand Growth Rate January 2012 to April 2013



PEAK GROWTH

During the 2012/2013 winter period the all-island peak demand was 6,305MW occurring on 10th December 2012. The individual jurisdictional peak demands were 1,745MW in Northern Ireland and 4,589MW in Ireland. The Northern Ireland peak demand occurred one day after the Ireland Peak Demand. These peaks were lower than the predicted peaks due to mild weather in December 2012.

For winter 2013/2014, it is forecasted that the combined systems' peak demand will be 6,660MW. This increase is due to the ending of the WPDRS and expected demand growth.



GENERATION

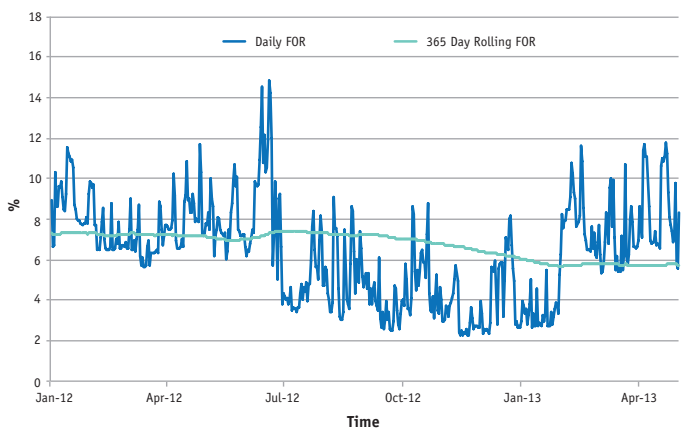
The installed conventional generation capacity on the Ireland and Northern Ireland system for the winter 2013/2014 period will be 9,078MW, with 6,738MW of installed capacity in Ireland and 2,340MW of installed capacity in Northern Ireland. These figures do not include any import contribution from the Moyle Interconnector or the East-West Interconnector. There is no new conventional generation connecting to the Ireland and Northern Ireland system during the winter period. However there will be a new CCGT unit connecting in Great Island during Q1 2014 but whilst undergoing commissioning it does not contribute to capacity.

CONVENTIONAL GENERATION AVAILABILITY

The availability of the conventional, dispatchable generation on the combined system continues to be relatively high, with a 365-Day Rolling Average system availability of 88.6% in May 2013.

Chart 2 shows the Daily Forced Outage Rates (FOR) and the overall 365-Day Rolling Average Forced Outage Rate for the same period for conventional generation. Whilst the 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 12 months with an Average FOR of 5.9%.

Chart 2 – Daily FOR & 365-Day Rolling Average FOR January 2012 to May 2013.

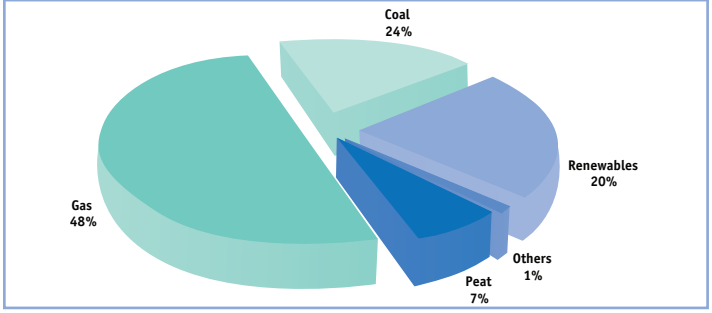


The Forced Outage Probability, as distinct from Forced Outage Rate, assumed for winter 2013/2014 is based on an assessment of the past performance of the generation units and information provided by the generating stations. **The combined Ireland and Northern Ireland system Forced Outage Probability used in the analysis was 6.9%.**

ALL ISLAND FUEL MIX

Chart 3 shows the breakdown of energy by fuel source over the winter 2012/2013 period on a combined system basis.

Chart 3 – All-Island Energy Consumption by Generation Source 1st November 2012 to 1st April 2013



GENERATION

Once again, gas-fired generation was the predominant energy source, with a 48% share in the energy generation. A fifth of the energy on the system was generated from renewable sources during the 2012/2013 winter period, compared to almost a quarter during the same period last year.

WIND GENERATION

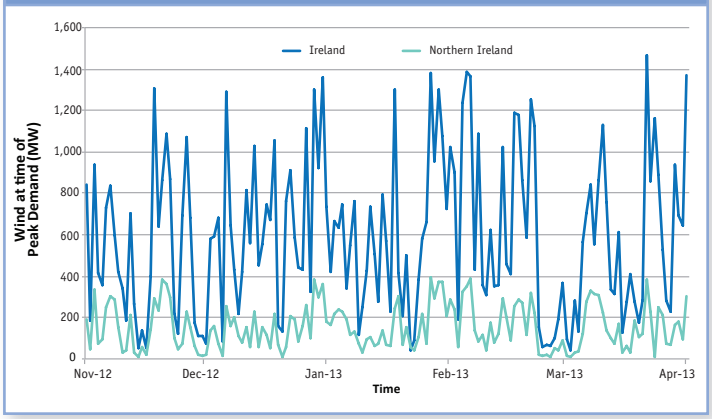
Wind Generation continues to form a large and an important contribution to meeting the combined system demand. Table 1 shows a summary of the key wind statistics for Ireland and Northern Ireland during winter 2012/2013.

Table 1 – Summary of Key Wind Statistics for winter period 2012/13

	Ireland	Northern Ireland
Average Installed Wind Capacity	1,637MW	450MW
Maximum Wind Output at Peak Demand	1,468MW	385MW
Average Wind Contribution at Peak Demand	585MW	146MW
Minimum Wind Output at Peak Demand	30MW	<1MW

Chart 4 shows the wind generation at the time of peak demand in each jurisdiction for each day during the winter period 2012/2013. 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



As of May 31st 2013, there is 2,218MW of wind generation connected to the Ireland and Northern Ireland power system. Between June 2013 and April 2014 it is expected that there will be an additional 400 – 600MW of wind capacity added. For our analysis, an overall wind capacity credit of 435MW is assumed for winter 2013/2014.

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.

INTERCONNECTION & TIE- LINES

EAST-WEST INTERCONNECTOR

The East-West Interconnector (EWIC) links the Ireland and Great Britain power systems and started full commercial operation in May 2013. The interconnector has a rated Net Transfer Capacity of 530MW from Great Britain to Ireland, and 500MW from Ireland to Great Britain. The availability level attributed to EWIC assumes there will be no capacity shortages in Great Britain. EWIC has been assigned a FOP of 2.5% for our analysis.

MOYLE INTERCONNECTOR

The Moyle Interconnector is a 500MW HVDC link connecting the Northern Ireland and Scotland power systems. It consists of two submarine power cables (Pole 1 and Pole 2), each with a rating of 250MW. The interconnector has a commercial availability of 450MW import from Great Britain to Northern Ireland and 287MW export from Northern Ireland to Great Britain.

A fault on Pole 2 in June 2012 has resulted in a prolonged outage of the interconnector. This has led to a reduced capacity of 250MW. Mutual Energy, the asset owner, is exploring the options available to restore the interconnector back to full capacity. No decision has been taken on what option will be implemented. The interconnector will continue to operate at 250MW until further notice. On the available 250MW capacity, the Moyle Interconnector has been assigned a FOP of 5% for our analysis.

NORTH-SOUTH TIE-LINE

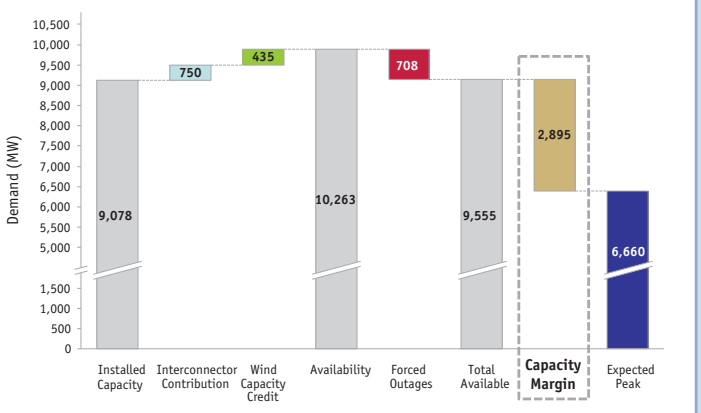
The North-South tie-line remains an important feature of the transmission system, facilitating power flow between the Ireland and Northern Ireland systems. The power flows and direction can vary due to a number of operational conditions. Typically, 200MW of capacity credit is available from Northern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

EXPECTED OUTLOOK

DETERMINISTIC ANALYSIS

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 5 shows the expected overall capacity margin during the week of projected peak demand.

Chart 5 – Expected Overall Capacity Margin at Peak Demand



This overall capacity margin includes the available generation capacity, the wind capacity credit, the imports assumed available from Great Britain via the East West Interconnector and the Moyle Interconnector and takes account of typical forced outage probabilities.

Generation Adequacy & Loss of Load Expectation

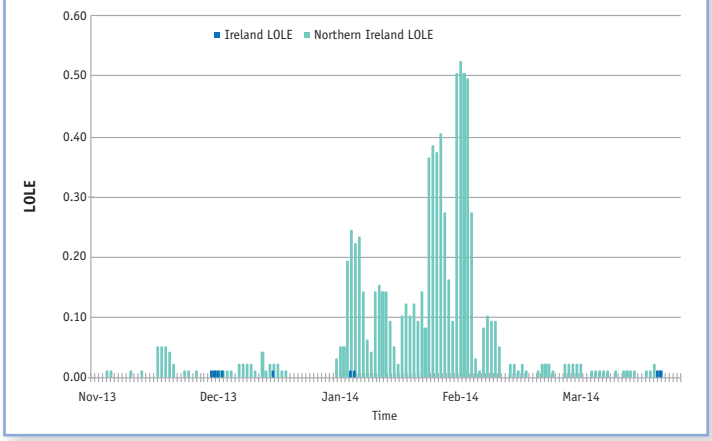
The balance between the supply of electricity and the demand is quantified using a statistical indicator called the loss of load expectation (LOLE). When this indicator is at an appropriate level, called the generation adequacy standard, the supply/demand balance is judged to be satisfactory.

The accepted generation adequacy standard for Ireland is 8 hours LOLE per year and 4.9 hours per year for Northern Ireland. A single Ireland and Northern Ireland standard is not possible until the second North-South tie-line is commissioned.

PROBABILISTIC ANALYSIS

Chart 6 shows the LOLE for each jurisdiction on a daily basis during the winter period. The results of the probabilistic analysis indicate that the Ireland system remains within its relevant capacity adequacy standard. However, there is a LOLE spike in Northern Ireland in February 2014 due to a number of planned outages at AES Ballylumford. The smaller capacity margin has increased the LOLE. This will continue to be monitored by SONI to ensure security of supply standards are met.

Chart 6 – Ireland and Northern Ireland Winter 2013/14 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. Despite an increase in peak demand, the addition of the East West Interconnector will 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 keep all stakeholders updated.

EIRGRID

SONI
System Operator for Northern Ireland

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