

Winter Outlook

2008-2009

1. Key Message

EirGrid expects that the generation capacity will be sufficient to meet the expected peak demands this winter and to ensure that the appropriate level of security of supply is maintained.

As with any analysis or forecast, there are potential risks that need to be considered. The two most significant risks at this time are:

- Generation availability fails to meet the expected levels; and
- Significant limitations to the imports available from Northern Ireland, particularly if at a time when wind generation is low.

2. Overview

This Winter Outlook report examines the capability of the generation portfolio available to EirGrid to meet peak demands during the winter period. The installed conventional generation capacity is 6,013 MW¹ of dispatchable plant. This figure excludes Poolbeg Unit 3 (242 MW) which will not be available over the period. This report examines the areas of growth in demand, the capacity and performance of generation and the available import capacity from Northern Ireland. For the purposes of this analysis the following assumptions have been made:

- 1. This figure and all other figures are in terms of Exported MW, which is exclusive of generation unit house load, or the electricity needed to run the generating station itself.*
- 2. To calculate the capacity credit for wind (the amount of wind you can rely on) see Appendix A of 'Wind Powered Generation - An analytical framework to assess generation cost implications' at www.eirgrid.com*
- 3. If there were insufficient capacity to meet peak demands, the situation would be managed very carefully and would not mean that all or a majority of customers would be affected. In that event, only a small proportion of demand would be affected for a number of hours on any one occasion.*

- The installed capacity of wind generation is currently 855 MW. It is assumed that this will increase to approximately 1,050 MW this winter and the capacity credit² for wind is assumed to be 220 MW.
- Generation unit performance, and specifically Forced Outage Probabilities, are based on past performance and EirGrid's discussions with the generators.
- There will be 200 MW available to import from Northern Ireland at peak times.
- Energy demand growth will continue with a peak demand during the coming winter period of 5,125 MW.

In examining the winter period 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. However, there would be a risk of inability to meet peak demand if generation availability failed to meet expected levels or if there were limits to availability of imports from Northern Ireland and wind generation was low.³

3. Growth

The peak demand for electricity in 2007 was 4,906 MW. This occurred on Tuesday 18th December. This was only a small increase on the previous year's peak. Looking forward to the expected growth demand for this coming winter, the peak growth is estimated to be in the range of 2% - 4.5% (giving a peak demand of 5,000 MW - 5,125 MW). The actual peak is highly dependent on the weather i.e. whether there is a mild or cold winter. For the Winter Outlook analysis, a peak of 5,125 MW (the upper end of the range) has been chosen.

4. Capacity & Generation Unit Performance

4.1 Conventional Generation

In preparing the Winter Outlook report, EirGrid has met with all Generators and discussed in respect of each generation unit:

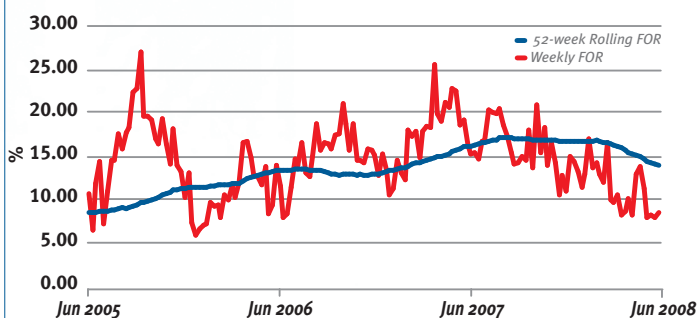
- Assessment of the condition of the unit(s).
- Known faults, limitations and shortcomings.
- Any operational restrictions needed to guarantee, sustain or improve reliability .
- The Generators professional judgement of the expected Forced Outage Probability, Scheduled Outage Duration and availability.
- Confirmation of the Generators' outage plans.

Based on this, it is assumed that the installed dispatchable generating capacity will be 6,013 MW. This is based on the following key assumptions:

- Poolbeg Unit 3 will not be available for the winter period.
- Turlough Hill U1, currently unavailable, will become available in January 2009.
- Great Island and Tarbert stations, which are currently being sold by ESB, will continue in operation throughout the winter period.
- The peaker in Aghada (52 MW) will be moved and installed in Tawnaghmore before the end of October 2008.

There are no major scheduled outages planned from 3rd November 2008 to 2nd March 2009 but there may be some maintenance carried out at low load periods.

CHART 1: Weekly Average FOR versus Rolling Average FOR



*These figures include Turlough Hill Unit 1 and Poolbeg Unit 3

The average Forced Outage Rate (FOR) used in the analysis is 11.5%. This is based on EirGrid's knowledge of the system, past performance of generation units and on EirGrid's discussions with the Generators. Chart 1 shows the Weekly Average FOR and the 52-week Rolling Average FOR for the last 36 months. FOR is the percentage of generation capacity not available due to forced outages and outage overruns (as opposed to scheduled outages for planned maintenance or ambient deratings).

4.2 North-South Tie-Line

With the advent of the Single Electricity Market, the generation portfolio on the island of Ireland is scheduled for dispatch as one entity rather than two separate systems. Imports from Northern Ireland provide an important contribution towards the ability to meet system demand in Ireland. The level available at any point in time is dependant on the generation availability in Northern Ireland, the status of the Moyle interconnector (from Northern Ireland to Scotland) and the status of the transmission network on both the Irish and Northern Ireland systems.

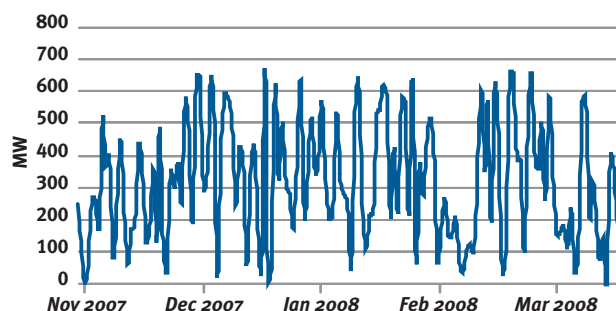
Consistent with previous years, the analysis has assumed that 200MW of capacity is available from Northern Ireland.

4.3 Wind Generation

There is currently 855 MW of wind capacity connected to the system. It is expected that an additional 150 - 200 MW will connect by the end of 2008. For analysis purposes, a capacity credit of 220 MW for wind is assumed for this winter.

Chart 2 shows the wind generation output at the time of the peak demand for each day during last year's winter period, from 1st November 2007 to 31st March 2008. During the winter period, the installed capacity was 805 MW and the actual wind generation at the time of the peak demand varied from a high of 670 MW to a low of 0 MW. At the time of the 2007 peak demand (4,906 MW at 17:45 on 18th December), the total wind generation was 61 MW.

CHART 2: Wind generation at the time of peak demand



5. Key Changes from Winter 2007-2008

- No new conventional generation has connected to the system since last winter.
- There is expected to be an increase in the level of wind connected of approximately 200 MW by year end resulting in an assumed total capacity credit for wind of 220 MW in this years analysis (versus 200 MW last year).
- The demand for electricity is still growing with mid-year data showing a rate of approximately 3% per annum.
- Last year's peak demand (due to the relatively mild weather before Christmas) was an increase of only 60 MW on the previous year. Typically the peak demand grows by 3-5% per annum and hence this year's peak could increase by up to 200 MW, depending on the weather.
- Generation availability over the portfolio remains poor and is unlikely to significantly improve over the next 6 months.
- Coincident with the start of the Single Electricity Market there has been a reduction in the power imported over the Moyle interconnector into Northern Ireland. This has the effect at times of reducing the capacity margins on the island.

6. Winter Outlook 2008-2009

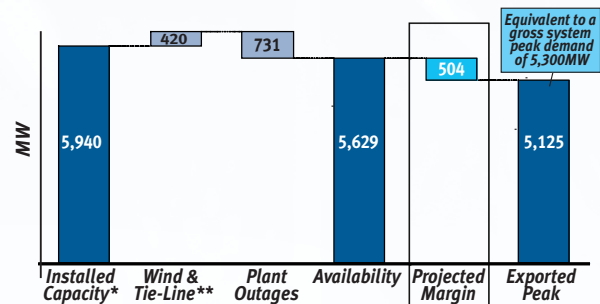
Deterministic and probabilistic analyses were carried out to examine the ability to meet peak demands over the winter period. As outlined above, the key assumptions include:

- Installed generation capacity is 6,013 MW.
- Imports from Northern Ireland are available (200 MW capacity).
- Wind generation contributes to capacity at the peak demand.
- Peak demand is 5,125 MW.
- Forced Outage Probabilities are in line with past performance (11.5% system average).

6.1 Expected Outlook

The deterministic analysis shows that there should be sufficient generation capacity this winter to meet peak demands and operating reserve requirements. It should be possible to maintain the appropriate level of security of supply throughout the winter period. Chart 3 shows the illustrative margin during the week where the peak demand occurs.

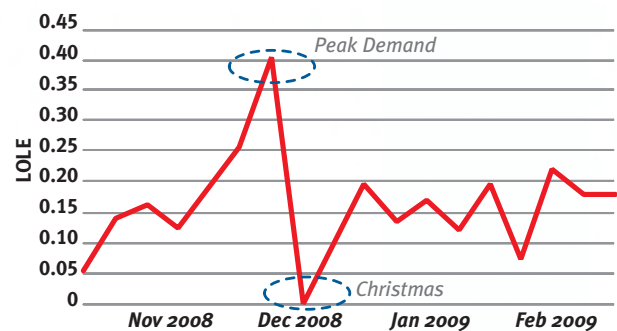
CHART 3: Illustrative Margin during Peak Demand Week



* Turlough Hill Unit 1 is not included in Installed Capacity as it will be unavailable until Jan 2009;
** Wind & Tie-Line included in Forced Outage Calculation

The Generation Adequacy Standard is based on a probabilistic analysis (see box overleaf) and is defined as a Loss of Load Expectation (LOLE) of 8 hours per year. The results of the probabilistic analysis for the expected scenario indicate that the system will remain within the capacity adequacy standard for the winter period. Chart 4 shows the predicted Loss of Load Expectation in hours over the winter period. When annualised this value is within the Generation Adequacy Standard.

CHART 4: – Loss of Load Expectation for Winter 08-09



6.2 Sensitivity Analysis

In predicting generation availability over a 6-12 month horizon there are many uncertainties and potential events that could affect the available capacity. These include:

- Generation unit availability performance below expected levels.
- Limited ability to import power from Northern Ireland (due to loss of a tie-line, a loss of generation in Northern Ireland or limitations on the import via the Moyle interconnector).
- Sustained low wind generation on a weekly basis.

