Winter Outlook 2010-2011

Summary

This Winter Outlook report examines the capability of the generation portfolio available to EirGrid and SONI to meet peak demands in Ireland and Northern Ireland between November 2010 and March 2011 inclusive. For the first time ever, both jurisdictions will be covered, examining the areas of growth in demand and the capacity and performance of generation (both conventional and wind). It also examines the available import capacity to Northern Ireland via the Moyle interconnector from Scotland. 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.

Demand Growth

There has been strong correlation between economic growth and growth in electricity demand, particularly in recent times. The downturn in the economy that began in 2008, and continued throughout last year, resulted in a reduction in electricity demand.

Chart 1 shows the 3-month rolling electricity growth rate from January 2008 to May 2010. As can be seen, the overall electricity growth rate fell during the second half of 2008 and the first half of 2009. Since the start of 2010, there has been an increase in demand which can be attributed (in part) to the extreme cold weather conditions experienced during the first quarter of 2010.

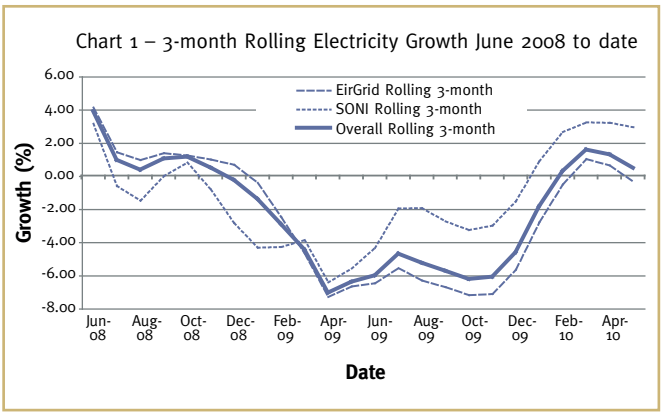

Chart 1 – 3-month Rolling Electricity Growth June 2008 to date

Chart 2 below shows the overall peak demands for each year from 2001 to 2010. The annual peak demand is dependent on weather and other factors, including the recent underlying decline in overall growth in electricity demand. From 2001 to 2007, there was an increase in peak electricity demands each year. However, since 2007, the growth in peaks has been negligible.

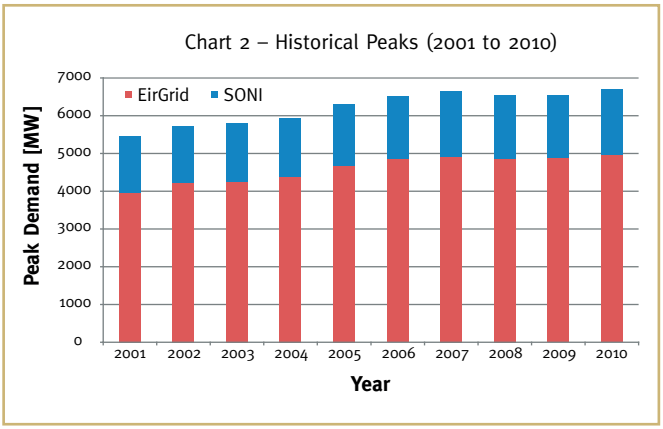

Chart 2 – Historical Peaks from 2001 to 2010

Winter Daily Demand Profile

Chart 3 shows a typical winter's day demand profile. Whilst the lowest demand period for both jurisdictions is usually co-incidental, the peak demand in Northern Ireland usually occurs 15-30 minutes before the peak in Ireland. The graph shows the typical shape of the demand curve throughout the winter period, with two major demand increases occurring from 06:00 to 08:00 and again from 16:00 to 18:00

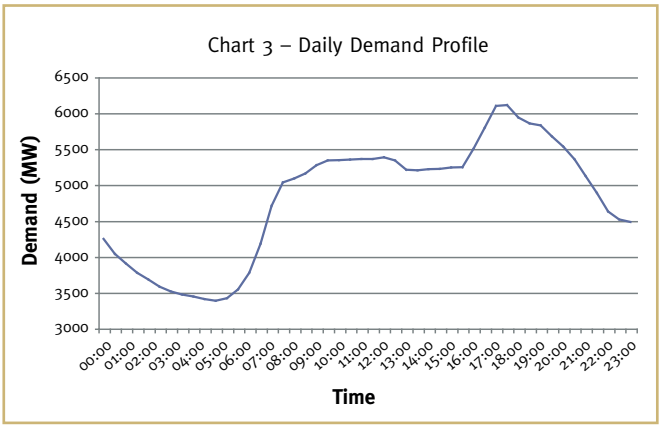

Chart 3 – Demand Profile Wednesday 20th January 2010

Peak Demand

During the 2009/2010 winter period, the peak demand for electricity in Ireland was 4,950 MW. This occurred on Thursday 7th January 2010. This represented an unexpected increase on the previous year's peak, which can be attributed to the extreme weather conditions during last winter. In Northern Ireland, the peak demand for electricity during the 2009/2010 winter period was 1,745 MW. This occurred on Tuesday 12th January 2010. This year, considering all factors, it is expected that the overall peak demand across both jurisdictions will be 6,440 MW.

Installed Capacity & Generation Unit Performance

EirGrid and SONI met with all conventional generators and discussed the general condition of the units and the expected performance of the units over the winter period, including commissioning of new plant, outages and de-ratings of plant.

Based on these discussions, it is assumed that:

- The installed capacity of conventional, dispatchable generation in Ireland will be 6,792 MW. This figure includes Whitegate CCGT and Edenderry Peakers, which are expected to become commercially available before the winter period.
- The installed capacity of conventional, dispatchable generation in Northern Ireland will be 2,286 MW, not including the Moyle Interconnector.
- The import capacity of the Moyle Interconnector to Northern Ireland during winter is 450 MW.

The installed capacity figures do not allow for any forced outages which could be expected in the winter period.

Generation Unit Performance

Chart 4 shows the Weekly Forced Outage Rate and the 52-week Rolling Average Forced Outage Rate from January 2009 to date. As can been seen, Weekly Forced Outage Rates can vary sharply on a week-to-week basis. However, the general trend is an improvement in the performance of the plant portfolio and a reduction in forced outage rates.

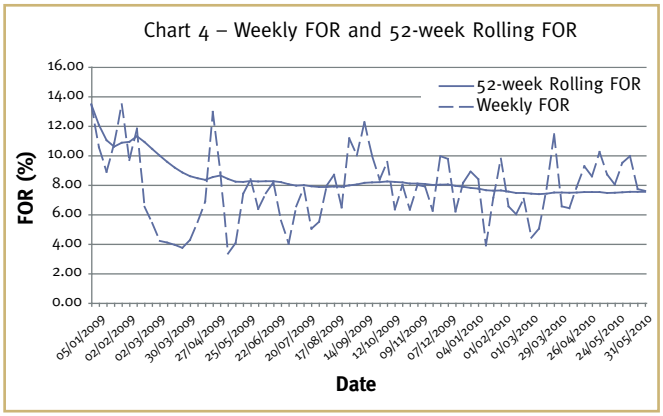

Chart 4 – Weekly FOR & 52-week Rolling Average FOR 2009 to 2010

The Forced Outage Probabilities for the analysis are based on the past performance of the generation units and the discussions with the plant operators. The overall Forced Outage Probability for the analysis is 8%.

Wind Generation

Table 1 below shows a summary of the key wind statistics for Ireland and Northern Ireland during last winter.

	Ireland	Northern Ireland
Installed Wind Capacity	1,175 MW	301 MW
Highest Wind Output at Daily Peak	1,069 MW	273 MW
Average Wind Contribution at Daily Peak	328 MW	81 MW

Table 1 – Summary of Wind Statistics for last winter period.

Chart 5 below shows the overall wind generation at the time of peak demand each day during the winter period. There is significant variance on a day-to-day basis.

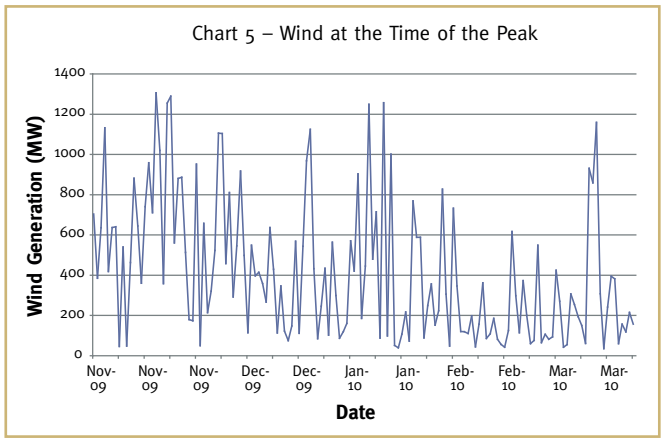

Chart 5 – Wind generation at the time of overall peak demand

There is currently 1,740 MW of wind capacity connected and it is expected that an additional 350 - 450 MW will connect up to the end of March 2011. For analysis purposes, an overall wind capacity credit of 360 MW is assumed for this winter.

Interconnection

The Moyle Interconnector links the electricity grids of Northern Ireland and Scotland through HVDC undersea cables running between converter stations at Ballycronan More in Islandmagee, Co. Antrim and Auchencrosh, Ayrshire, Scotland. The total installed capacity of the link is 500 MW but the transfer capability is curtailed by certain network limitations on both sides. The available Net Transfer Capacity (NTC) from Scotland to Northern Ireland is 450 MW during the winter and 410 MW from April to October inclusive. The Net Transfer Capacity from Northern Ireland to Scotland is 80 MW.

The Moyle Interconnector has enhanced the security of electricity supply in Northern Ireland and Ireland. It enables trading with the wholesale electricity market in Britain. For the purpose of this analysis, it is assumed that Moyle Interconnector has a Forced Outage Probability of 0.2%.

EirGrid is building further interconnection between Ireland and Britain. The link, known as the East-West Interconnector, is being built between Woodland, Co. Meath in Ireland and Deeside in north Wales in Britain. It is on target for commissioning in 2012.

Key Developments Over 2009-10

- Aghada Unit 2, a 432 MW gas-fired CCGT unit, became commercially available on 31st March 2010.
- Whitegate CCGT, a 445 MW gas-fired CCGT unit, is expected to complete commissioning and become commercially available by October 2010.
- Edenderry Peakers, 2 open-cycle distillate peaking units with a total generating capacity of 114 MW, are expected to be commercially available before the start of the winter period.
- There is not expected to be any generating units either commissioned or decommissioned in Northern Ireland before the end of the winter 2010/11 period.
- The Generating Unit Agreements for the coal/oil fired Kilroot Generating Units No. 1 and No. 2 will be cancelled on 1st November 2010. At this point they will become Independent Power Producers. This will affect the declared capacities available, but only by a few MW.
- Poolbeg Units 1, 2 and 3 were decommissioned on 31st March 2010. The steam turbine in Marina was also decommissioned and Marina is now operating as an open-cycle gas turbine. The total decommissioned generation was 497 MW.
- Overall, there is expected to be an increase of 350-450 MW of wind generation connecting to both systems. This will result in an increase in the wind capacity credit to 360 MW.
- Given the extreme weather event last winter, the forecasted peak this winter is not expected to exceed last winter's peak.

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 should 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 that the expected overall margin during the week where the peak demand occurs is over 2,600 MW. This overall margin includes the available generation capacity (taking into account forced outage probabilities), the wind capacity credit and the imports from Scotland via the Moyle Interconnector assuming that the capacity is available from Britain (National Grid).

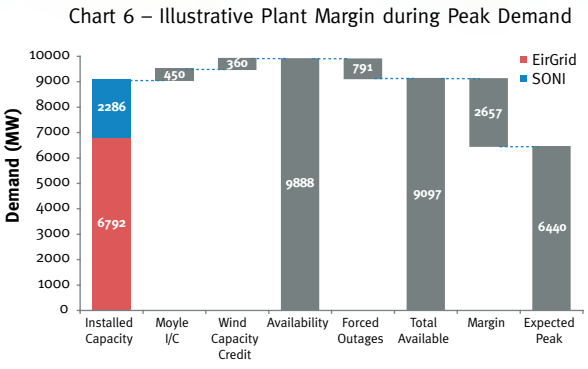

Chart 6 – Expected Overall Margin during Peak Demand Week

North-South Tie-Line

The ability to exchange power over the North-South tie-lines between the Ireland transmission system and the Northern Ireland transmission system is an important feature of the Single Electricity Market (SEM). The level of import/export available at any point in time is dependent on the generation availability in Ireland and Northern Ireland, the status of the Moyle interconnector (from Northern Ireland to Scotland), the status of the transmission network on both the Ireland and Northern Ireland systems and operating reserve requirements.

Probabilistic Analysis

The generation capacity adequacy standard is based on a probabilistic analysis (see box) 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. The results of the probabilistic analysis for the expected scenario indicated that both systems remain well within the capacity adequacy standard.

Chart 7 shows the LOLE and Capacity Margin for each week during the winter period.

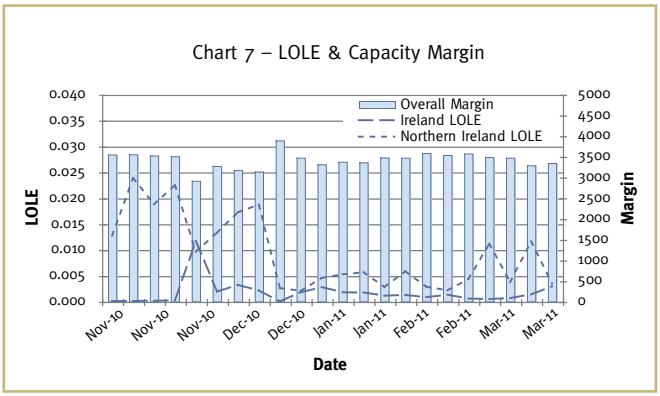

Chart 7 – Winter 2010/11 LOLE and Capacity Margin

Expected outlook

Considering all the factors, it is expected the capacity margins across both jurisdictions will be sufficient to maintain security of supply standards. Interconnection with Scotland will remain an important feature of the SEM and the demand/supply balance. Wind is expected to make a contribution in line with its capacity credit. This outlook is an improvement from previous years, primarily due to the drop in demand in both jurisdictions and also due to the commissioning of new plants at Aghada, Edenderry and Whitegate.

Conclusion

The outlook for the winter period is that the generation capacity will be sufficient this winter to ensure the appropriate level of security of supply standards 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.

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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 for Ireland is 8 hours LOLE per year and 4.9 hours LOLE per year for Northern Ireland.