

Winter Outlook 2020/21





Disclaimer: While every effort has been made in the compilation of this Winter Outlook to ensure that the information contained herein is correct, EirGrid and SONI cannot accept responsibility or liability whatsoever for any damage howsoever caused by reliance on the information presented here. Note that the fuel mix is reliant on third party data.



Winter Outlook 2020/21

The EirGrid and SONI Winter Outlook is an annual summary that provides information on expected electricity demand and capacity margin on an all-island basis. The capacity margin is the excess generation and interconnection available to meet the peak electricity demand in Ireland and Northern Ireland. The outlook covers the period from 1 November 2020 to 28 February 2021.

The all-island capacity margin this winter is predicted to be 929 MW. As per Figure 1 the all-island winter capacity margin has reduced every year over the past five years mainly due to increasing demand, dispatchable generation exiting the market and increasing generator forced outage rates. If the high generator forced outage rates that were experienced in the past year continue over the winter period, there is a risk of System Alerts¹, particularly when renewable generation is at a low output and support is not available from Great Britain across the interconnectors.

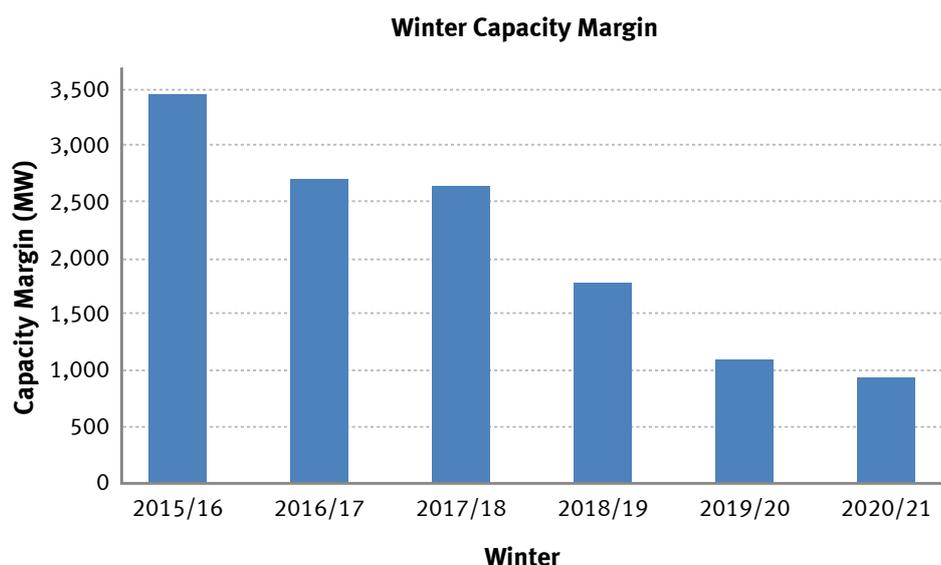


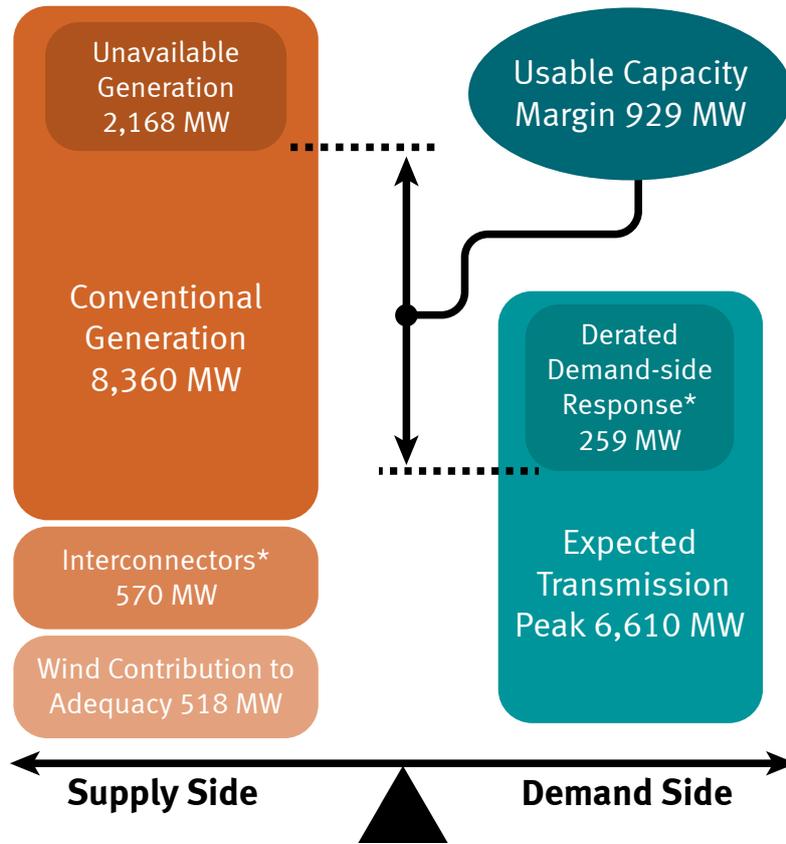
Figure 1: Historical Winter Capacity Margin

The predicted capacity margin in Northern Ireland is 175 MW and 786 MW in Ireland.

Note: The data used to calculate the capacity margin is the latest available data as at 10 September 2020.

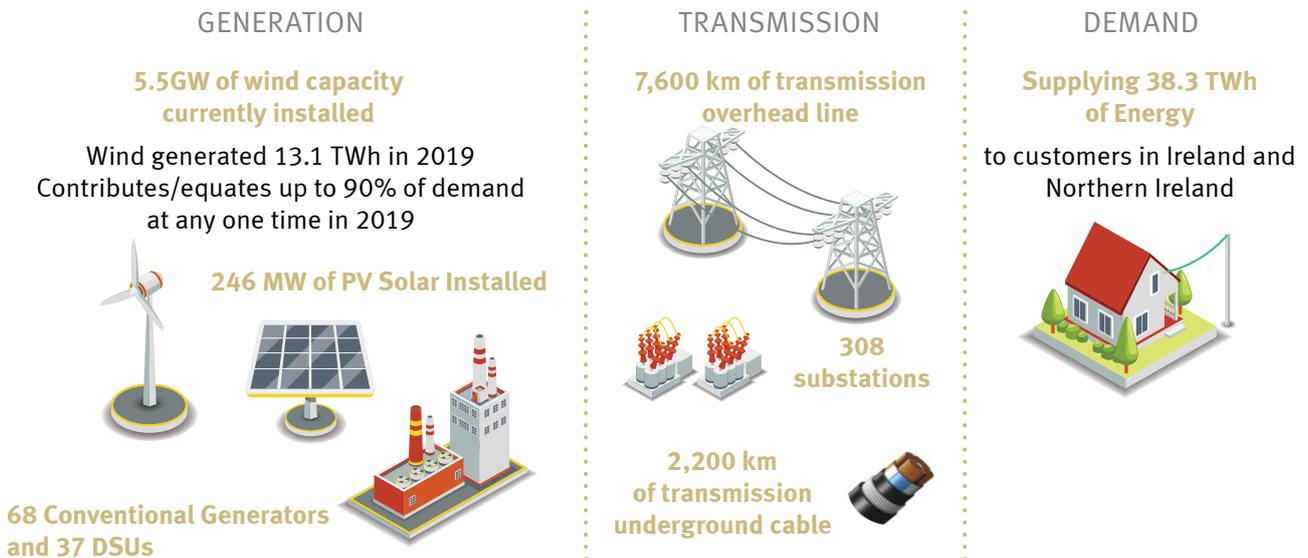
¹ https://www.sem-o.com/documents/general-publications/BP_SO_09.2-Declaration-of-System-Alerts.pdf

All-Island Capacity Margin



*Capacity after availability factor is applied
Note: Not to scale

Figure 2: All-Island Capacity Margin at time of lowest margin (different day to that with highest peak)





Demand

Figure 3 shows a typical all-island winter's day demand profile. Whilst the lowest daily demand in Ireland and Northern Ireland usually coincides, the daily peak demand in Northern Ireland usually occurs 15-30 minutes before the peak in Ireland. The graph shows the typical shape of the daily demand curve throughout the winter period, with two major demand increases occurring from 06:00 to 08:00 and from 16:00 to 18:00.

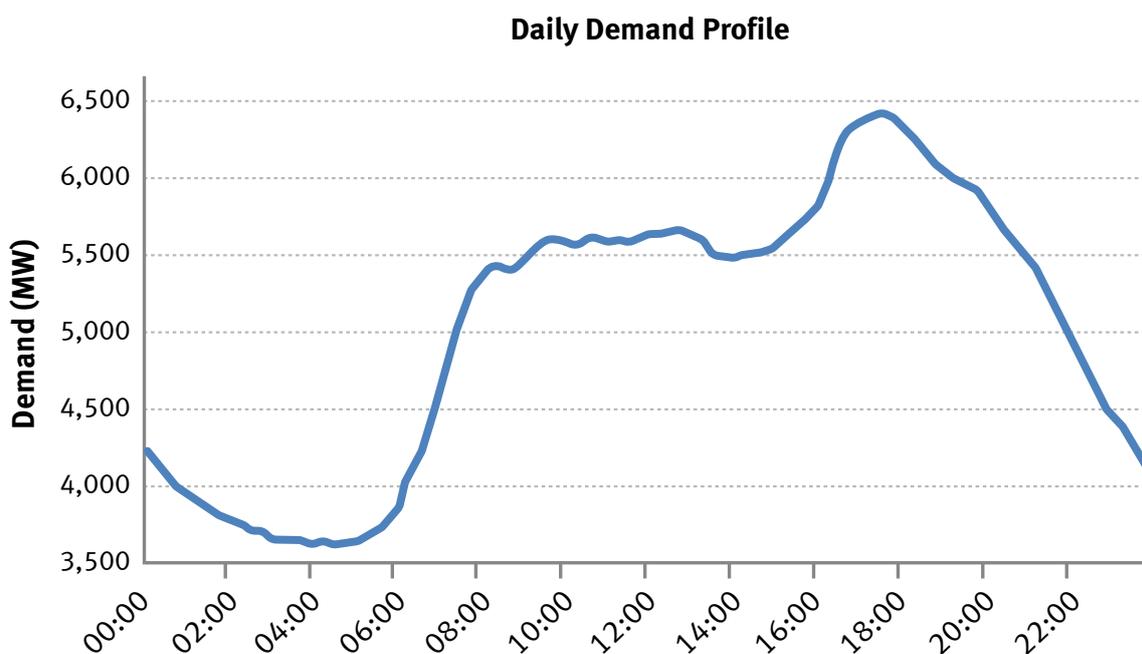


Figure 3: All-Island Daily Transmission Demand Profile

Table 1 details the peak demand for electricity over last winter.

| | Peak Demand (MW) | Date | Time |
|------------------|------------------|------------|-------|
| Ireland | 5,041 | 11/02/2020 | 18:24 |
| Northern Ireland | 1,564 | 18/11/2019 | 17:19 |
| All-Island | 6,559 | 17/12/2019 | 17:27 |

Table 1: All-Island Annual Peak Demand over Winter 2019/20

As can be seen from Figure 4 the Northern Ireland and all-island annual peak demand has remained broadly static over the past 4 years. In Ireland there has been an average annual increase of 1.8% over the same period.

Given the impact of COVID-19 this year, we completed recent analysis and believe the low demand forecasts in the Generation Capacity Statement² are more applicable for this winter. Therefore, we anticipate a peak demand of up to 5,210 MW in Ireland, 1,690 MW in Northern Ireland and 6,840 MW all-island for this winter.

² Demand Growth based on all-island Generation Capacity Statement 2020-2029 Low Forecast

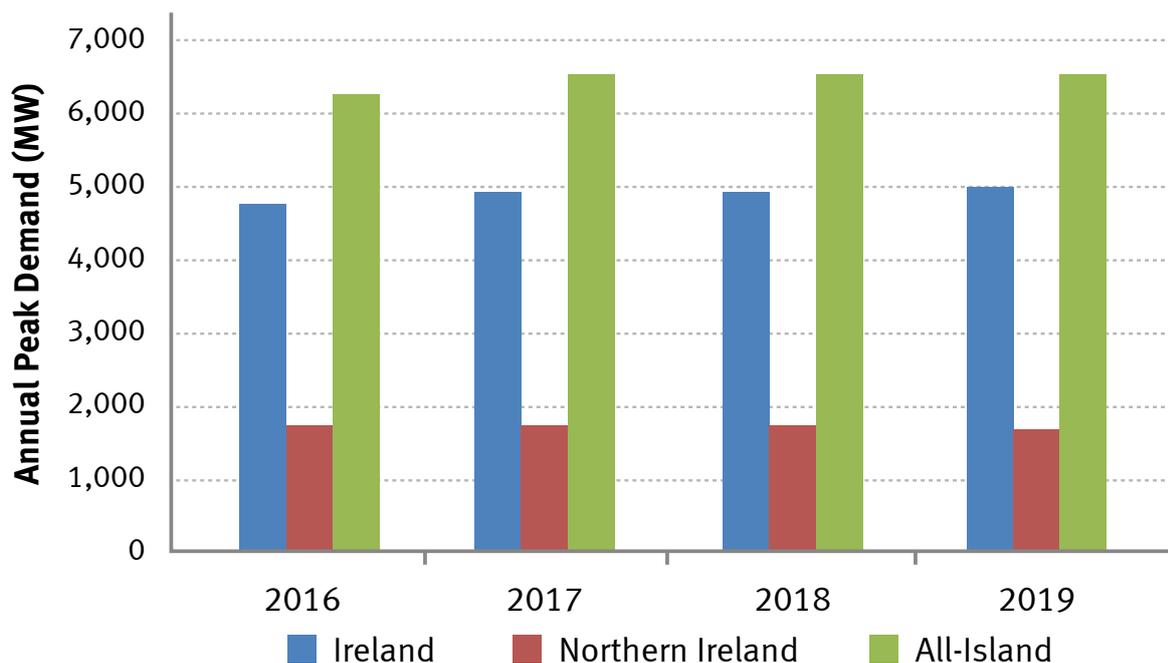
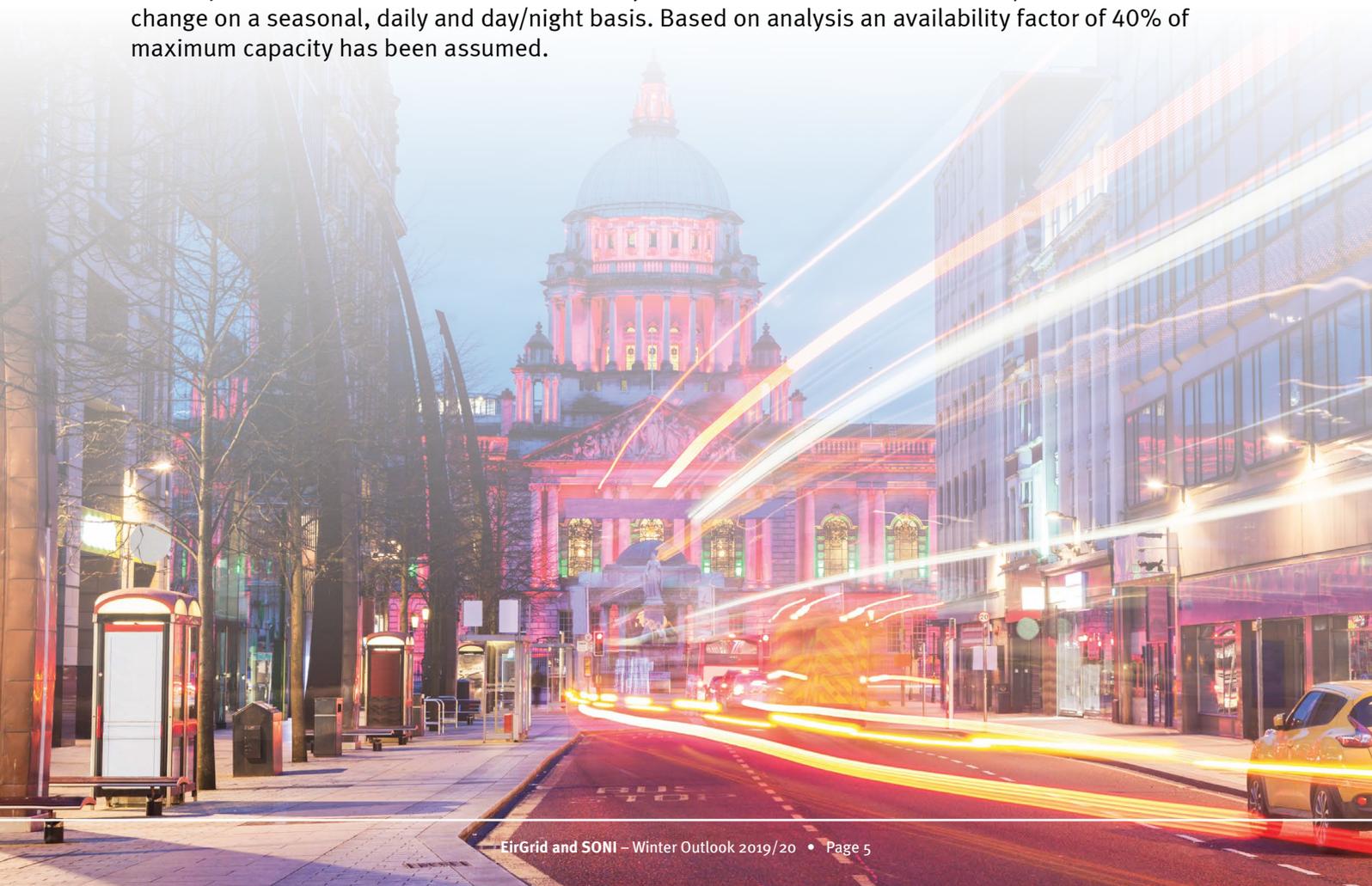


Figure 4: Historical Transmission Peak

Demand Side Units

A Demand Side Unit (DSU) is a single demand site, or group of demand sites, that can be instructed to reduce electricity demand. A combination of plant shutdown and/or on-site generation is used to deliver the demand reduction in response to an instruction from EirGrid or SONI. The current capacity of demand side response is 553 MW in Ireland and 95 MW in Northern Ireland. However, these values are subject to the demand reduction availability of the individual sites that make up the DSU which can change on a seasonal, daily and day/night basis. Based on analysis an availability factor of 40% of maximum capacity has been assumed.



Installed Capacity and Generation Unit Performance

The installed capacity of dispatchable conventional generation in Ireland is 6,454 MW, however, this is set to reduce to 6,226 MW with the closure of West Offaly and Lough Ree peat units in the Midlands this December. The installed capacity of conventional generation in Northern Ireland is 1,906 MW. These installed capacity figures do not allow for outages which may occur during the winter period.

Generation Unit Performance

Figure 5 shows the all-island daily forced outage rates over the last year. Forced outage rates can vary sharply with security of supply implications. Over the past year the daily forced outage rate has reached highs of 53% in Northern Ireland and 41% in Ireland. The all-island forced outage rates have increased every year for the past four years.

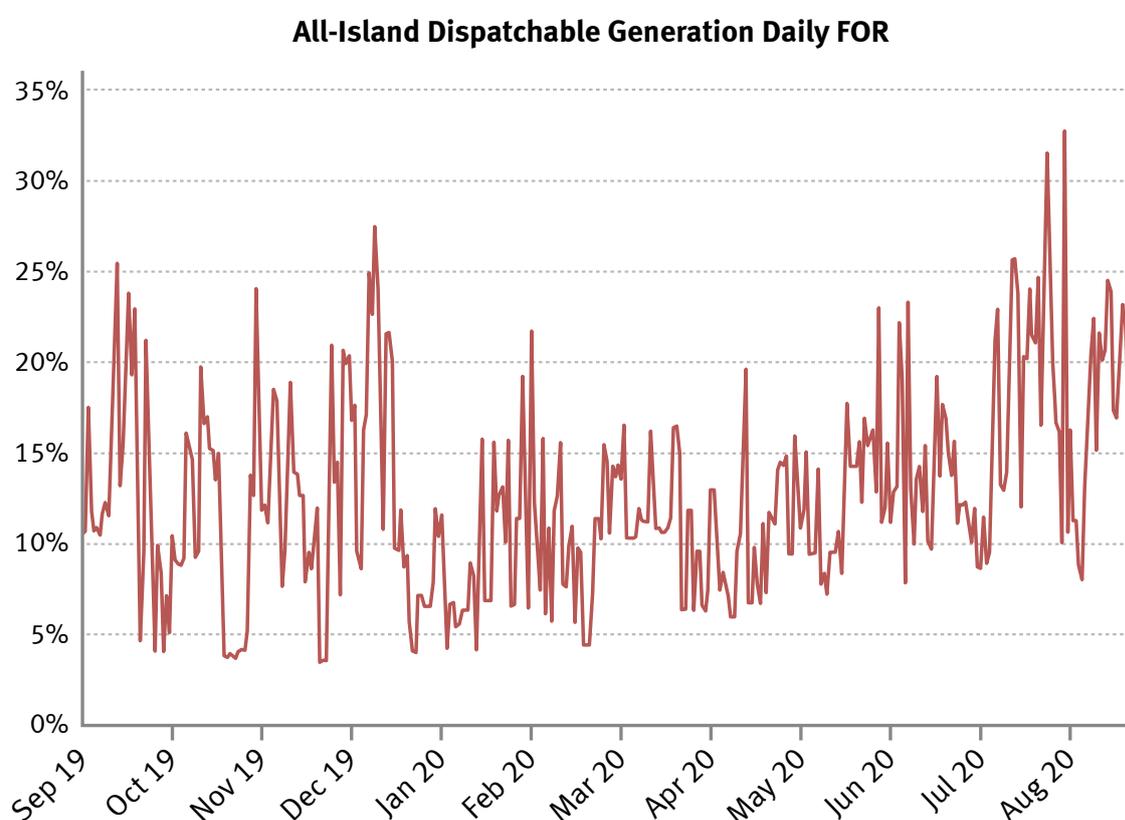


Figure 5: All-Island Dispatchable Generation Daily Forced Outage Rates

Impact of COVID-19 on 2020 Generation Outage Programme

Due to the impact of COVID-19 a number of generators had to postpone maintenance outages from the summer months until later in the year, and later in the year to next year due to unavailability of specialist resources and materials from overseas. As a result, there are outages of large generator units extending into December and also in January. Typically there would not be any outages of large generators in these months due to the higher load levels. Some conventional generators have been and continue to be constrained off to preserve run hours ahead of the units' scheduled maintenance to avoid the situation whereby they run out of run hours ahead of their outages, which would result in the unit becoming unavailable in the winter months.

Wind and Solar Generation

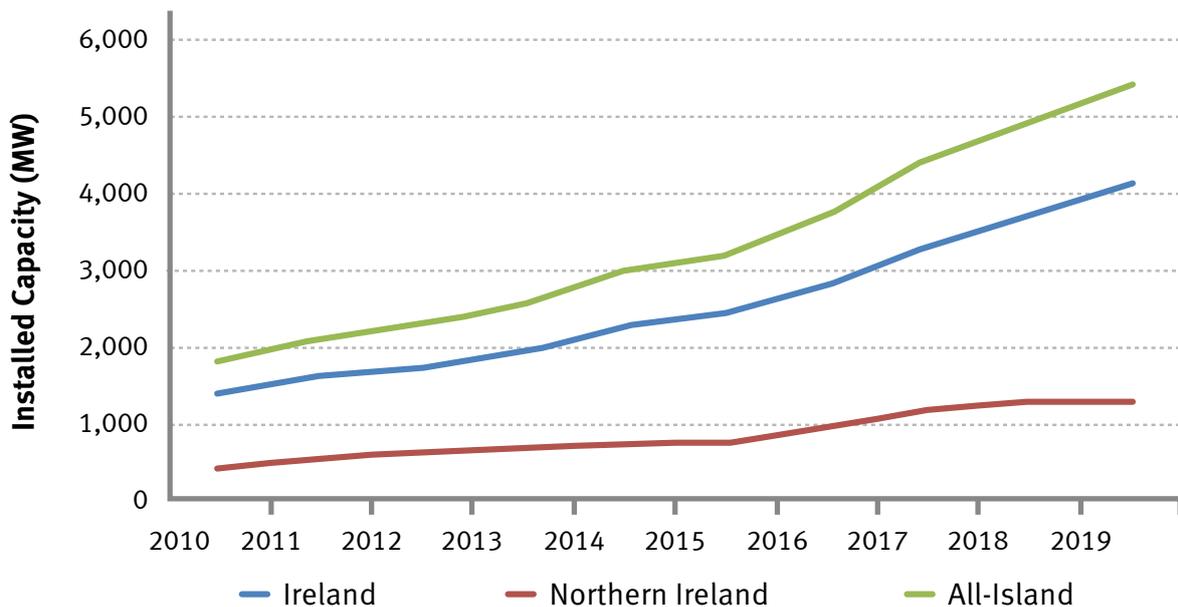


Figure 6: All-Island Installed Wind Capacity

Installed wind generation continued to grow in Ireland but remained static in Northern Ireland. As of June 2020, the all-island installed wind capacity was 5,511 MW. Based on the Capacity Market derating factor of 0.094 for wind in the 2020/2021 T-1 Capacity Auction³, this corresponds to 518 MW of wind capacity for adequacy purposes.

In Ireland, installed wind capacity grew by over 450 MW in 2019 and now stands at 4,234 MW, with a corresponding contribution of 398 MW to capacity for adequacy purposes. Installed wind capacity in Northern Ireland is 1,276 MW (including small-scale), with a corresponding contribution of 120 MW to capacity for adequacy purposes.

Installed solar capacity in Northern Ireland is 246 MW. As the winter peak typically occurs after sunset, solar capacity has been assigned a capacity credit of zero.

Interconnection

The East West Interconnector (EWIC) links the electricity grids of Ireland and Great Britain (GB) through a High Voltage Direct Current (HVDC) undersea cable. The available net transfer capacity (NTC) from GB to Ireland for winter 2020/21 is expected to be 500 MW.

The Moyle Interconnector links the electricity grids of Northern Ireland and Great Britain through two HVDC undersea cables. The total installed capacity of the link is 500 MW but the transfer capability is constrained by network limitations on both sides. The available NTC from GB to Northern Ireland for winter 2020/21 is expected to be 450 MW.

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. The level of import/export available at any point in time is dependent on generation availability in Ireland and Northern Ireland, the status of the Moyle interconnector, the status of the transmission network on both the Ireland and Northern Ireland systems and operating reserve requirements.

³ https://www.sem-o.com/documents/general-publications/Final-Auction-Information-Pack_FAIP2021T-1.pdf

Key Developments

- The all-island and Ireland forced outage rates have increased every year for the past four years. The all-island, Ireland and Northern Ireland annual forced outage rates currently stand at 10.6%, 12.2% and 6% respectively.
- Due to the impact of COVID-19, a number of generators had to postpone maintenance outages from the summer until later in the year due to unavailability of specialist resources and materials from overseas. As a result, there are outages of large generator units throughout the winter period.
- The West Offaly and Lough Ree peat units in Ireland will close in December 2020. This reduces the generation capacity by 228 MW.

Outlook

Analysis was carried out to examine the ability to meet peak demands over the winter period. The analysis indicates an expected all-island capacity margin of 929 MW this winter. However, if the high generator forced outage rates that were experienced in the past year continue over the winter period, there is a risk of System Alerts, particularly when renewable generation is at a low output and support is not available from Great Britain across the interconnectors.

The margin is predicted to be at its tightest at the end of November and start of December. This is in part as a result of maintenance outages of a number of large generators that moved from earlier in the year due to COVID-19.

In Northern Ireland, if the forced outage of just one large generator over the winter period coincides with low renewable generation there is a risk of a System Alert.

The overall margin includes the available generation capacity (including a representation of forced outages), the wind contribution to adequacy and imports from Great Britain via the interconnectors. Security of supply is dependent on a number of factors, not just the capacity margin. The following assumptions have been used in the analysis:

- There will be uninterrupted reserves of natural gas from the Corrib gas field as well as from the Moffat terminal with no shortage issues.
- A 15% forced outage rate for available conventional generation in Ireland.
- A single large unit is forced out in Northern Ireland.
- Unavailable capacity takes into account forced outages, scheduled outages and a known operational constraint on dispatchable generation in the south region of Ireland⁴.
- In line with the Generation Capacity Statement 2020 – 2029, we assume the capacity credit value of interconnectors to GB to be 60%.
- A fully intact network will be available.
- In line with the Generation Capacity Statement 2020 – 2029, we assume capacity reliance between Ireland and Northern Ireland of 100 MW north to south and 200 MW south to north.
- Demand Side Units are energy limited and we have assumed an availability factor of 40% of their capacity.
- The availability of system services will not affect capacity margin.

⁴ A weekly Constraint Update report is published on the SEM-O website detailing forecast constraints

- All-Island installed wind capacity of 5,511 MW with a 518 MW contribution to capacity for adequacy purposes.
- Due to the winter peak typically occurring after sunset, the installed solar capacity has been assigned a capacity credit of zero.

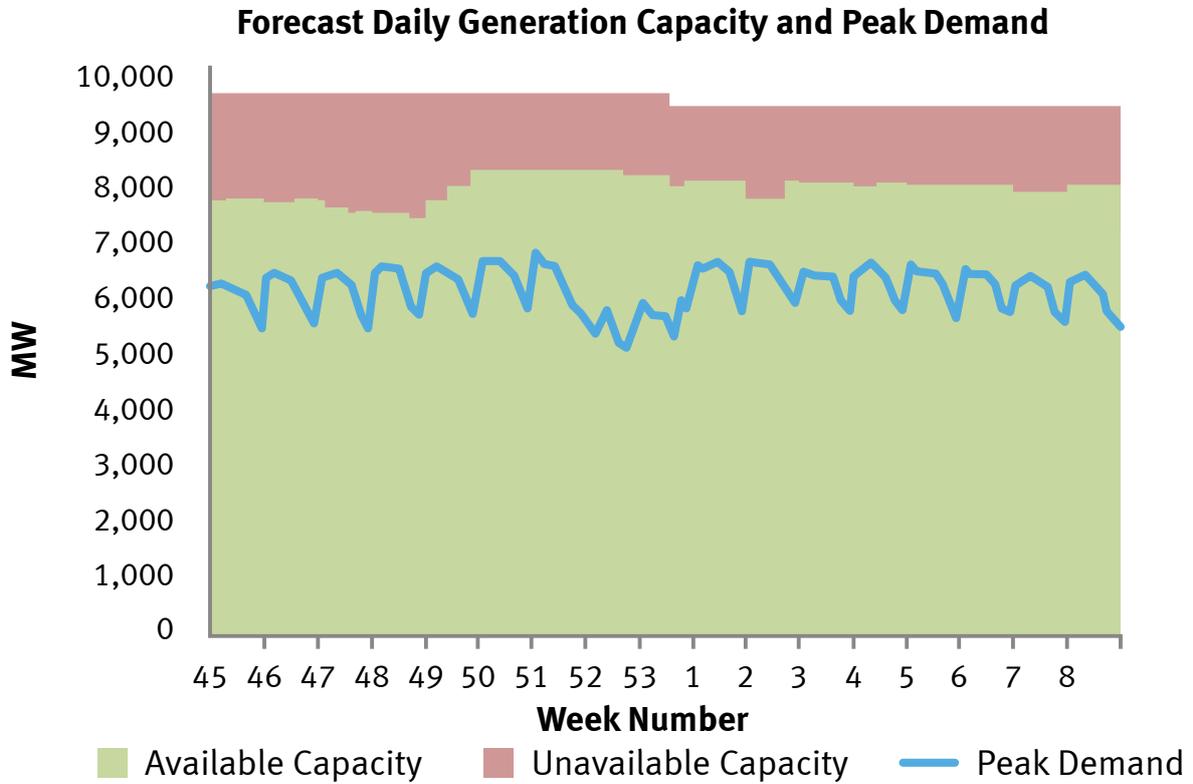


Figure 7: Forecast Daily Generation Capacity and Peak Demand





The Oval, 160 Shelbourne Road,
Ballsbridge, Dublin D04 FW28
Tel: +353 (0)1 677 1700
info@eirgrid.com
www.eirgrid.com



Castlereagh House, 12 Manse Road,
Belfast BT6 9RT
Tel: +44 (0)28 9079 4336
enquiries@soni.ltd.uk
www.soni.ltd.uk



Printed on recycled paper