

Overview

This Winter Outlook report sets out Gas Networks Ireland's analysis and views of the adequacy of the gas network for the coming winter. The gas supply position is dependent on both the supply of gas and on the system's ability to transport the gas to the end user.

The Corrib gas field, following commencement of production in December 2015 and a subsequent period operating at full capacity, reached a production plateau at the beginning of 2018. A steady decline in production has been observed at Corrib since January 2018, in line with supply profile projections as detailed in the Network Development Plan. Corrib operated at a level of c. 69% of full production capacity in October 2019.

PSE Kinsale Energy Limited has advised Gas Networks Ireland that blowdown of Southwest Kinsale cushion gas is progressing. Cushion gas is currently being supplied from the Inch Entry Point and is anticipated to continue for winter 2019/20, and onwards until production ceases completely, currently anticipated in the first half of 2020.

Actual 2018/19 Supplies

In 2018/19, indigenous gas supply sources met 51% of **ROI annual gas demand** (Corrib met 46% of ROI demand, and Inch met 5%). Imports from GB through the Moffat Entry Point accounted for the balance of 49%.

Indigenous gas supply sources met 39% of **annual Gas Networks Ireland system demand** (35% from Corrib and 4% from Inch). Imports from GB through the Moffat Entry Point accounted for the balance of 61%.

Corrib accounted for 35% of ROI gas supply sources to meet the 2018/19 **ROI peak day gas demand**, with Inch accounting for 4% and Moffat contributing the balance of 61%.

Corrib, Inch and Moffat accounted for 26%, 3% and 71% respectively of **GNI system peak day gas demand**.

Forecast 2019/20 Gas Supplies

The Corrib gas field is expected to meet approximately 40% of **ROI gas demand** in 2019/20. After reaching production plateau in early 2018, Corrib is anticipated to be flowing at c. 63% of its full capacity over the coming winter period and the Gross Calorific Value of Corrib Gas is consistently 37.7 MJ/scm. Inch production is expected to meet 2%. While Gas supplies from Great Britain (GB) via the Moffat Entry Point are expected to account for circa 58% of **ROI gas demand** in 2019/20.

Corrib, Inch and Moffat are anticipated to account for 31%, 1% and 68% respectively of **Gas Networks Ireland system demand** in 2019/20.

In the case of a **1-in-50² peak day**, Corrib would be expected to account for 25% of **ROI gas demand**, with Inch and Moffat contributing 2% and 73% respectively.

As a portion of the **Gas Networks Ireland system demand**, Corrib, Inch and Moffat are anticipated to account for 19%, 1% and 80% respectively in the event of a **1-in-50 winter peak day**.

Figure 1: Actual 2018/19 Supplies

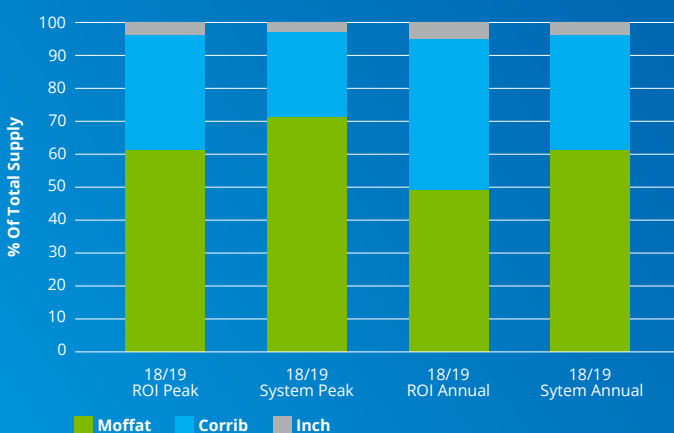
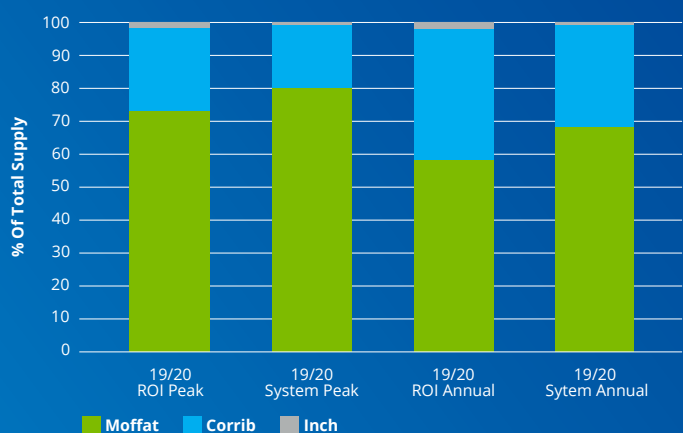


Figure 2: Forecast 2019/20 Supplies



The Integrated Single Electricity Market (I-SEM) went live on the 1st October 2018. The Gas Networks Ireland transmission system continues to supply gas to flexible gas-fired power generation, with gas contributing an average of c. 51% of Ireland's power generation fuel mix in the 12 months following commencement of I-SEM (i.e. gas year 2018/19). On days of low wind, gas has contributed towards 80% of the generation fuel mix.

² Gas demand under weather conditions, statistically likely to occur once every 50 years.



Winter Period 2018/19

The mild winter weather experienced in 2018/19 resulted in a significant decrease in residential gas demand compared to the previous winter. The 2018/19 winter period was approximately 17% warmer than the previous winter period, based on a Degree Day (DD) comparison. Winter 2018/19 residential gas demand decreased by 12.7% on the previous winter period. This decrease was driven primarily by the milder temperatures. Notably, the weather corrected residential gas demand decrease on the previous winter was 0.6%, which demonstrates a slight negative growth in the residential demand, despite growth in new connections on the previous winter period.

Coinciding with a status yellow snow-ice warning, the coldest day in winter 2018/19 occurred on the 31st of January 2019, with an average temperature of -0.9 °C; the equivalent day in 2017/18 occurred on the 1st of March 2018, with an average temperature of -2.8 °C. However, the overall demand on this day was not an overall peak day for winter 2018/19 as strong winds reduced gas demand in the power generation sector.

The ROI peak day gas demand for winter 2018/19 occurred on the 22nd of January 2019 with a peak day demand of 21.0 mscmd. The average temperature on the 22nd of January 2019 was 2.25 °C. The 22nd of January 2019 was also the peak day for Gas Networks Ireland system demand. Total GNI system throughput was 27.9 mscmd. This figure includes for flows to ROI, Northern Ireland (NI) and Isle of Man (IOM) of 21.0 mscmd, 6.4 mscmd and 0.5 mscmd respectively.

In the Industrial & Commercial sector, Gas demand remained at the same level as the previous winter period.

In the power generation sector, an increase in gas demand of 9.5% on the previous winter period, was driven by continuously changing dynamics in the sector. Amongst the drivers for this increase on the previous winter (2017/18) were outages at coal-fired Moneypoint power station and carbon prices favouring gas fired generation ahead of coal. This increased gas demand for power generation, follows a reduction of 7% in the previous winter period. Aside from economic trends, multiple factors have an influence on gas demand in the power generation sector, among them: Prevailing market conditions on the I-SEM and its UK equivalent BETTA³ directly influence flow direction (IE-UK or UK-IE) on the EWIC⁴; The level of installed wind generation capacity in Ireland and Northern Ireland increased by 11% in 2018, while the average wind generation capacity factor was slightly higher than 2016 and 2017 (27%)⁵; levels of wind generation constraint and curtailment impact on the demand for gas-fired power generation as do electricity interconnector and generator outages.

³ British Electricity Trading and Transmission Arrangements

⁴ East West Interconnector

⁵ EirGrid Annual Renewable Energy Constraint and Curtailment Report 2018

Great Britain National Grid UK Outlook

National Grid UK predict sufficient gas availability from a variety of supply sources to meet GB winter 2019/20 demand. Supplies from the UK Continental Shelf and from Norway are expected to be high, similar to last year. National Grid UK do not anticipate any disruption to gas supplies from the Moffat Entry Point as a result of the UK's planned exit from the European Union.

Gas demand in GB for winter 2019/20 is expected to be slightly higher than experienced in winter 2018/19. The gas demand forecast for winter 2019/20 is 52.3 bcm, and the 1-in-20 peak day demand is forecast at 499 mscmd. The main driver for the higher gas demand arises from the increasing level of exports to both Ireland and Europe, however the underlying trend shows gas demand for electricity generation continuing to reduce as growth continues in the renewable power generation sector.

Storage, Liquefied Natural Gas (LNG) and interconnectors are important components in the GB supply mix, providing flexibility to the market. National Grid UK expect the cycling of gas into and out of storage to continue, similar to the patterns observed last year.

Average flows from IUK gas interconnector are expected to be similar to last winter, with the majority of GB interconnector imports via BBL pipeline. IUK flows are expected to pick up when BBL reaches its capacity. Interconnector supply is to continue competing with LNG as demand increases.

Global LNG production is outstripping demand, high levels of LNG are expected to be supplied, similar to last winter in Great Britain. LNG forecasts are subject to uncertainties such as Asian prices, shipping costs and weather sensitivity.

Forecasted peak day demands for Winter 2019/20

Table 1 presents the 1-in-50 and average peak day system demand forecasts for 2019/20 in line with the Network Development Plan. The forecast indicates that for a 1-in-50 peak day, Moffat flows would be at c. 86% of its technical capacity⁶. An average winter peak day would require 71% of the available capacity at Moffat to meet GNI system demand.

Table 1: Projected Gas Demand for Winter 2019/20

	1-in-50 Peak day (mscmd)	Average Winter Peak day (mscmd)	Annual Total (bcm)	Winter Total* (bcm)
ROI Demand	27.4	24.2	5.4	3.3
GNI System Demand*	36.6	31.8	6.9	4.2
Inch Supply	0.5	0.5	0.1	0.1
Corrib Supply	6.3	6.3	2.2	1.2
Biogas Supply	<0.1	<0.1	< 0.01	< 0.01
Moffat Supply	29.9	25.0	4.6	3.0

* Winter total refers to the aggregate forecast demand / supply for the period between 1st of October 2019 and 31st of March 2020

Gas Networks Ireland notes ongoing outages of power generation units leading into the winter period, notably Moneypoint (coal-fired) units MP2 (transmission constrained) and MP3. The current status at the time of the Winter Outlook data freeze, is for the units in question to return to service in the first half of the winter period. Gas Networks Ireland carried out a sensitivity analysis on the forecast peak day gas demands for winter 2019/20 to incorporate a scenario whereby some or all of the above units do not return to service for the peak day:

- Sensitivity 1: Peak Day outage at Moneypoint (1 unit out of service)
- Sensitivity 2: Peak Day outage at Moneypoint (2 units out of service)

Both sensitivity scenarios resulted in an increase in gas demand in the power generation sector, in comparison to the base case. In Sensitivity 1, the increased demand in the power generation sector resulted in a 1.4% increase in ROI gas demand, and a 1.1% in GNI system gas demand. Sensitivity 2 resulted in a 3.6% increase in ROI gas demand, and 2.7% in GNI system gas demand.

The increased gas demand in both of the above scenarios remain within the capacity of the Moffat Entry Point and on the GNI system as a whole to maintain gas supplies in the event of a 1-in-50 peak day.

⁶ Following completion of the twinning of the South West Scotland Onshore System in 2018, Moffat Entry Point now has a technical capacity of 35 mscmd.

Operational challenges for Winter 2019/20

GNI's operational challenges for Winter 2019/20 remain consistent with those of 2018/19. Ideally the Transporter strives to maintain flat, steady flow profiles at each of the Entry Points where possible, and to minimise variations in network pressures. Network configuration and physical limitations, coupled with late nomination/re-nomination behaviour can prevent this from always being the case. We can expect some within day variations in network pressures to continue as a result of within day volatility in supply and demand patterns.

Shipper actions that aid the Transporter in this regard include the following:

- Ensure D-1 nominations/re-nominations are as accurate as possible;
- Avoid large within day imbalances where possible;
- Provide re-nominations in a timely and accurate manner in compliance with contractual arrangements; and
- Operate in accordance with the flow nomination information provided to the TSO.

In addition to the occurrence of 1-in-50 winter peak day demands, there are a number of other factors which need to be considered with regard to system flexibility:

- Within day pressure volatility at Moffat on the GB National Transmission System (NTS) also impacts on compressor station operations. The frequency and magnitude of such volatility has increased in recent years, as a result of a change in demand/supply patterns in the GB NTS.
- Gas with a lower Gross Calorific Value (GCV) at Moffat means higher volumes are required to meet downstream energy requirements.
 - Current technical capacity (35 mscmd) is based on a GCV of 39.8 MJ/scm.
 - The average GCV at Moffat over the Winter 2018/19 was c. 39.3 MJ/m³, typically ranging between 38.9 MJ/scm and 40.2 MJ/scm⁷. during winter 2018/19.

⁷ Validated by actual GCV observations at the Moffat Entry Point





Commercial Arrangements

There has been some improvement in the situation whereby Shippers are significantly re-nominating their Moffat Entry requirements late in the day, leading to the inefficient use of the Compressor fleet in Scotland. Ongoing engagement between Gas Networks Ireland and Shippers has helped to highlight the issue while the decline in both Corrib and Inch production has also led to a natural increase in Moffat demand overall.

Much of the fluctuation in intra-day flows has been ascribed by Shippers to variations in Power Generation demand from day to day and also within day. The “go-live” of the I-SEM project on the 1st of October 2018 means that power generation shippers are now operating in a new commercial environment which has the potential to introduce increased variation on their instructed demand from EirGrid. In relation to nominations, Gas Networks Ireland continues to engage with industry on developing potential solution(s) to this issue in the context of general discussions around balancing arrangements on the network. There has been no discernible change in behaviour since the introduction in April 2019 of Imbalance Cashout Prices based on the traded System Average Price on the IBP based EBI Trading Platform. Gas Networks Ireland will monitor the general imbalance situation during the winter as Shippers may see an incentive to leave the system short in order to avoid higher daily capacity charges at the Moffat Entry Point.