Winter Outlook **2020/21**

Gas Networks Ireland

Key messages

- Gas Networks Ireland in setting out the demand outlook for the winter period ahead (Winter 2020/21) presents both the Republic of Ireland (ROI) gas demand and the Gas Networks Ireland system demand. The Gas Networks Ireland system demand refers to the total demand transported through the Gas Networks Ireland system, i.e. the combined demands for ROI, Northern Ireland (NI) and Isle of Man (IOM)
- The Corrib gas field is anticipated to meet 35% of ROI demand, and 27% of Gas Networks Ireland system demand in the gas year 2020/21 (October 2020 to September 2021)
- Gas supplies from Great Britain (GB) via the Moffat Entry Point are expected to account for the balance of gas supply requirements in the gas year 2020/21: 65% of ROI demand and 73% of the Gas Networks Ireland system demand will be met by Moffat
- Gas year 2019/20 represented the final year where gas from the Kinsale fields flowed into the Gas Networks Ireland transmission system via the Inch Entry Point
- The outlook for ROI indicates sufficient gas supply sources and network capacity to meet the anticipated demand projections over the coming winter period including in the case of the 1-in-50 winter peak day
- In the event of a 1-in-50 winter peak day, Moffat is anticipated to account for 85% of Gas Networks Ireland system demand, with Corrib contributing 15%
- The Gas Networks Ireland system peak day gas demand forecast for the forthcoming winter is 36.2 mscm/d in the case of 1-in-50 winter peak day, and 31.8 mscm/d in the case of an average winter peak day. Further sensitivity scenarios have been considered in the event that forced outages should occur in the power generation sector
- Gas shippers are advised to ensure that D-1 nominations are as accurate as possible and to provide re-nominations in a timely and accurate manner so that the gas network is operated in an effective and efficient manner
- The effects of the COVID-19 pandemic and the associated restrictions on commercial and societal activity since mid-March 2020 saw an overall decrease in gas demand from April to September 2020 of 0.8% YoY (year on year) compared to 2019. The effect was most apparent within the Industrial and Commercial (I&C) sector seeing a reduction of 7.6% but offset by strong power generation gas demand, up 3.5% for the same comparison period
- In the context of Brexit, in addition to continued collaboration with our UK counterparts, Gas Networks Ireland is fully committed to ensuring that gas will continue to flow through its interconnectors and that gas supply will not be negatively impacted following completion of the transitional period

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. 56% of full production capacity when averaged over the gas year 2019/20.

The final commercial volumes of indigenous Irish gas flowed through the Inch Entry Point in County Cork in July 2020, as PSE Kinsale Energy Limited (KEL) ceased production. Gas Networks Ireland acknowledge the key role the Kinsale Gas Fields have played in the supply of natural gas to Ireland since 1978, delivering all of Ireland's natural gas from 1978 to 1995. KEL has been producing natural gas from its facilities off the Old Head of Kinsale since 1978, with Ballycotton (1991), Southwest Kinsale (1999) and Seven Heads (2003) coming into production later. The South West Kinsale reservoir was repurposed to act as a storage facility from 2006 to 2017 allowing gas to be taken from the onshore network in periods of low gas demand and price, and delivered back to the onshore network in periods of high gas demand and price.

Actual 2019/2020 supplies

In 2019/20 indigenous gas supply sources met 39% of **ROI annual gas demand** (Corrib met 36% of ROI demand, and Inch 3%). Imports from GB through the Moffat Entry Point accounted for the balance of 61%.

Indigenous gas supply sources met 30% of **annual Gas Networks Ireland system demand** (28% from Corrib and 2% from Inch). Imports from GB through the Moffat Entry Point accounted for the balance of 70%.

Corrib accounted for 27% of ROI gas supply sources to meet the 2019/20 **ROI peak day gas demand**, with Inch accounting for 2% and Moffat contributing the balance of 71%.

Corrib, Inch and Moffat accounted for 20%, 2% and 78%, respectively of **Gas Networks Ireland system peak day gas demand in 2019/20**.

Forecast 2020/21 gas supplies

The Corrib gas field is expected to meet approximately 35% of **ROI gas demand** in 2020/21. After reaching production plateau in early 2018, Corrib is anticipated to be flowing at up to c. 57% of its full daily capacity over the coming winter period and the Gross Calorific Value of Corrib Gas is consistently 37.7 MJ/scm. With production at Inch Entry Point having ceased in July 2020, gas supplies from Great Britain (GB) via the Moffat Entry Point are expected to account for the balance of supplies to meet 65% of **ROI gas demand** in 2020/21.

Corrib and Moffat are anticipated to account for 27% and 73% respectively of **Gas Networks Ireland system demand** in 2020/21.

In the case of a **1-in-50**[1] **winter peak day**, Corrib is anticipated to account for 20% of **ROI gas demand**, with Moffat contributing 80%.

As a portion of the **Gas Networks Ireland system demand**, Corrib and Moffat are anticipated to account for 15% and 85% respectively in the event of a **1-in-50 winter peak day**.

Figure 1: Actual 2019/20 Supplies

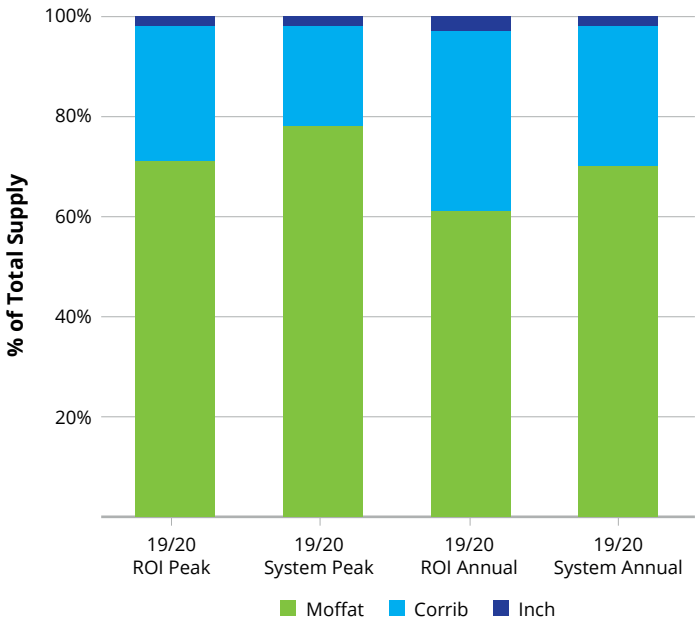
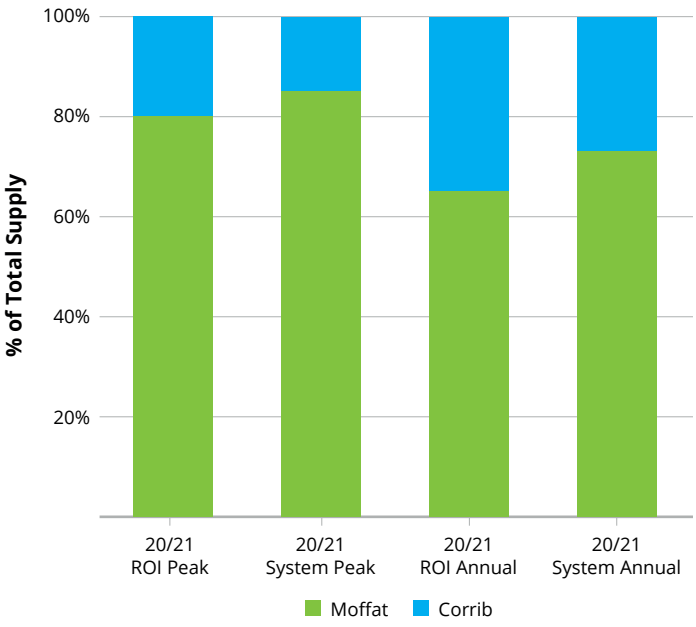


Figure 2: Forecast 2020/21 Supplies

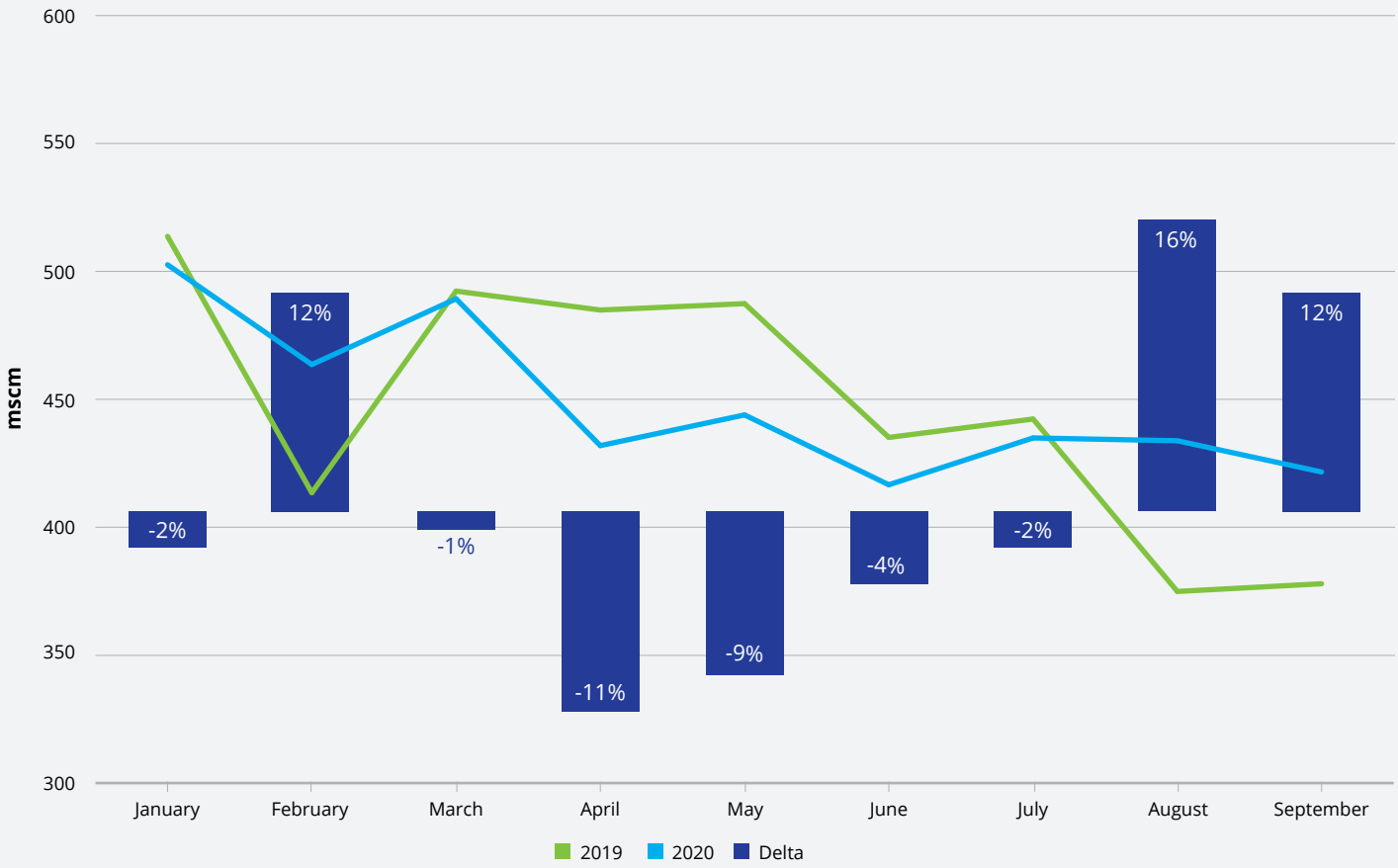


1 Gas demand under weather conditions, statistically likely to occur once every 50 years.

Impact of COVID-19 on gas demand (March to September 2020)

The COVID-19 pandemic has had a notable impact on gas demand in ROI since COVID-19 public health restrictions were first applied nationwide in March 2020. Overall the gas demand figures saw a reduction trend in April and May, coinciding with the commencement of restrictions in late March, and a recovery overall once restrictions gradually eased from May as illustrated in figure 3 below.[2]

Figure 3: Total Gas Demand ROI (by volume)



The COVID-19 related impact on gas demand[3] was most apparent in the Industrial and Commercial (I&C) sector, where a 7.6% reduction YoY from April to September (2nd half of gas year 19/20) was observed. This was offset by strong power generation demand seeing an increase of 3.5%, resulting in total reduction of ROI gas demand of just 0.8% YoY over the same comparison period.

2 Analysis extends to 30th September 2020 to align with Winter Outlook data freeze and does not account for further restrictions that began in October 2020.
3 Demand is calculated by volume in mscm (Million Standard Cubic Meter)

Winter period 2019/20

The winter period 2019/20 saw a significant increase in residential gas demand of 12.2% compared to the previous winter. The 2019/20 winter period was approximately 12% colder than the previous winter period based on a Degree Day (DD) comparison. Notably, the weather corrected residential gas demand increase on the previous winter was 4.5%, which demonstrates growth in the residential demand, through increased connection numbers.

In the I&C sector, Gas demand increased by 3.4% from the previous winter period.

In the power generation sector, gas demand was broadly in line with the previous winter; a marginal 0.3% increase was observed. This followed a relatively large increase of 9.5% in winter 2018/19 over the previous winter period. The installed all-island wind generation capacity increased by 9.1% in winter 2019/20 from the previous year[4]. Wind powered generation for winter 2019/20 grew by 12.6% on the previous winter, suggesting an increase in wind capacity factors over the period of comparison.

The Gas Networks Ireland transmission system continues to supply gas to flexible gas-fired power generation on the Single Electricity Market (SEM). Gas contributed an average of 51% of Ireland's power generation fuel mix in the gas year 2019/20. On days of low wind, gas has contributed to almost 90% of the generation fuel mix.

The ROI peak day gas demand for winter 2019/20 occurred on the 4th March 2020 with a peak day demand of 21.1 mscm/d. The average temperature on the 4th March 2020 was 3.95 °C. On this peak day, Power generation accounted for 57% of demand with I&C and Residential accounting for 26 % and 17% respectively. On this day, gas-fired power generation accounted for 69% of the SEM fuel mix, with wind generation accounting for 9%.

The 4th March 2020 was also the peak day for Gas Networks Ireland system demand. Total Gas Networks Ireland system throughput on peak day was 27.5 mscm/d. This figure includes for flows to ROI, Northern Ireland (NI) and Isle of Man (IOM) of 21.1 mscm/d, 5.9 mscm/d and 0.5 mscm/d respectively.

The coldest day in winter 2019/20 occurred on the 5th March 2020, with an average temperature of 1.8 °C; the equivalent day in 2018/19 occurred on the 31st January 2019, with an average temperature of -0.9 °C.

Forecasted peak day demands for winter 2020/21

Table 1 presents the 1-in-50 and average peak day system demand forecasts for 2020/21 in line with the Network Development Plan. The forecast indicates that for a 1-in-50 peak day, Moffat flows would be at c. 87% of its technical capacity[5]. An average winter peak day would require 75% of the available capacity at Moffat to meet Gas Networks Ireland system demand.

Table 1: Projected Gas Demand for Winter 2020/21

	1-in-50 Winter Peak day (mscm/d)	Average Winter Peak day (mscm/d)	Annual Total (bcm)	Winter Total[6] (bcm)
ROI Demand	26.3	23.6	5.4	3.1
Gas Networks Ireland System Demand[7]	36.2	31.8	7.1	4.0
Inch Supply[8]	0.0	0.0	0.0	0.0
Corrib Supply	5.6	5.6	2.0	1.0
Biogas Supply	<0.1	<0.1	<0.01	<0.01
Moffat Supply	30.6	26.1	5.1	2.9

In order to stress the peak day gas demand requirement, Gas Networks Ireland carried out a sensitivity analysis on the forecast peak day gas demands for winter 2020/21 to incorporate a notional scenario whereby some or all of the coal-fired units at Moneypoint were to be out of 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 0.4% in Gas Networks Ireland system gas demand and a 0.5% increase in ROI gas demand. Sensitivity 2 resulted in a 1.0% increase in Gas Networks Ireland system gas demand and a 1.4% increase in ROI gas demand.

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

National Grid UK Winter Outlook - Great Britain (GB)

National Grid UK predict sufficient gas availability from a variety of supply sources to meet GB winter 2020/21 demand. Supplies from the UK Continental Shelf and from Norway are expected to be the main sources of supply with Liquefied Natural Gas (LNG) providing a capability to supply higher volumes if required.

National Grid UK do not anticipate any disruption to gas supplies resulting from the end of the transition period of the UK's exit from the EU.

Gas demand in GB for winter 2020/21 is expected to be comparable to 2019/20 before the effects of COVID-19 are taken into account. The total winter gas demand (incl. export to Ireland) forecast for winter 2020/21is 50.9 bcm (billion cubic meters), and the 1-in-20 peak day central demand is forecast at 514mcm/d (million cubic meters per day). The forecast demand from Ireland has again increased from 2.6 bcm last winter to 3.2 bcm in 2020/21 due to the economic expansion and reduction in gas supplied from the Corrib gas field.

Average flows from IUK (Bacton UK to Zeebrugge, Belgium) gas interconnector are expected to be similar to last winter, with the majority of GB interconnector imports via BBL (Bacton UK to Balgzand, Netherlands) pipeline. IUK flows are expected to pick up when BBL reaches its capacity. Interconnector supply is to continue competing with LNG as demand increases. Longer term capacity bookings are reduced on last year for both IUK and BBL but this is likely to be offset by an anticipated increase in short term capacity bookings due to a change in charging arrangements.

Storage, 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.

5 Moffat Entry Point has a technical capacity of 35 mscm/d
6 Winter total refers to the aggregate forecast demand / supply for the period between 1st of October 2020 and 31st of March 2021
7 The Gas Networks Ireland system demand refers to the total demand transported through the Gas Networks Ireland system, i.e. the combined demands for ROI, Northern Ireland (NI) and Isle of Man (IOM)
8 Note that Inch Entry Point may flow gas to facilitate the decommissioning of the terminal and associated infrastructure

COVID-19 Response

There has been no resulting negative impact on the operation of the gas network due to COVID-19. Throughout the COVID-19 pandemic, Gas Networks Ireland continues to implement the recommendations and guidelines from the HSE and Irish Government to minimise the spread of the COVID-19 virus, and are in frequent contact with relevant Government Departments to ensure that the Government is kept fully up to date on our activities.

The gas network has continued to maintain security of supply to residences, businesses and power generation customers without interruption during this period. Gas Networks Ireland's Grid Control team in Cork is one of the business critical teams working day and night, seven days a week to ensure that gas flows reliably and safely across our network, to meet our customers' gas requirements in homes, power generation stations and other essential services and businesses around the country.

Gas Networks Ireland has activated the use of its backup control centre at Midleton, Co. Cork. This has allowed the Grid Control team to alternate day-shift and night-shift crews between the locations in Cork City and Midleton, thereby adhering to social distancing guidelines, while scheduled deep cleaning of both locations is performed between shifts.

Gas Networks Ireland continues to provide essential support for vulnerable customers and works in support of other services and industries deemed essential by the Government in the current crisis. Gas Networks Ireland has offered its assistance to the COVID Engineering Alliance, which has been setup to provide support to help increase resilience and capacity in the healthcare system. The Alliance has requested support regarding equipment needs and professional expertise in the event that a surge in the number of COVID-19 patients occurs. Should the need emerge, Gas Networks Ireland has identified stock in the form of Nitrogen bottles which could be repurposed for use by the HSE.

Operational challenges for Winter 2020/21

Gas Network Ireland's operational challenges for Winter 2020/21 remain consistent with those of 2019/20. 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.
- Operate in accordance with the flow nomination information provided to the TSO (Transmission System Operator).

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.
- The average GCV at Moffat over the Winter 2019/20 was c. 39.3 MJ/m3, typically ranging between 38.9 MJ/scm and 40.2 MJ/scm[9].

9 Validated by actual GCV observations at the Moffat Entry Point

Commercial Arrangements

Gas Networks Ireland monitors transmission system imbalances as a result of shipper activity on a daily basis. System imbalance relates to the balance of incoming entry flow to the network and exit flow leaving the network throughout the gas day. Gas Networks Ireland continues to observe a trend, whereby shippers in aggregate are leaving the system long on a consistent basis, i.e. these shippers are entering more gas into the system than they offtake.

The increasing price of gas, and the associated 3.5% of the System Average Price that is levied as a penalty against the shippers for imbalances, should increase the incentive to shippers to closely manage and balance their portfolios. Gas Networks Ireland is required to actively sell the excess volumes into the market, currently carried out via the Marex Spectron Trading Platform in order to keep system pressures below the required operational limits.

The previously highlighted issues of shippers providing very late Entry Nominations to Gas Networks Ireland at Moffat and its associated impact on the efficient running of the compressor stations has improved. This is due to increased co-operation on the timing of nominations and also a natural increase in flow requirements at Moffat associated with the decline of Corrib flows and the ending of production at Inch.