



Winter Outlook 2023/24



Introduction

Gas Networks Ireland's Winter Outlook sets out the demand and supply outlook for winter 2023/24 (October 2023 to March 2024) for both the Republic of Ireland (ROI) gas demand and the Gas Networks Ireland system demand.

The Gas Networks Ireland system demand refers to the combined demands for ROI, Northern Ireland (NI) and Isle of Man (IOM) which are all transported through Gas Networks Ireland's system.

Key messages

- 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 severe winter peak day.
- In the event of a 1-in-50 winter peak day, Moffat is anticipated to account for 88% of ROI demand, with Corrib providing the remaining 12%. Moffat and Corrib are forecast to supply 92% and 8% of Gas Networks Ireland system demand respectively.
- The Gas Networks Ireland system peak day gas demand forecast for the forthcoming winter is 37.8 mscm/d in the case of 1-in-50 winter peak day, and 33.1 mscm/d in the case of an average winter peak day.
- A further sensitivity scenario on the 1-in-50 peak day has been considered in the event that forced outages should occur on other thermal generator units in the electricity market.
- The Corrib gas field is anticipated to meet 18% of ROI demand, and 13% of Gas Networks Ireland system demand over the entire winter 2023/24.
- Gas supplies from Great Britain (GB) via the Moffat Entry Point are expected to account for the balance of gas supply requirements for winter 2023/24; 82% of ROI demand and 87% of the Gas Networks Ireland system demand will be met by Moffat.
- Biomethane injection to the gas grid currently provides relatively low levels of supply to the network. Biomethane is expected to grow to a larger share of indigenous supply in the near future. Relative to last year, production is expected to increase by approx. 57% to deliver c. 46GWh over the winter period.
- Gas Networks Ireland encourage gas shippers to nominate on a timely basis throughout the day to encourage efficient compressor station operation and allow for more flexibility in the broader system to deal with changes in gas flow.
- Gas Networks Ireland continues to monitor developments in gas supply in Europe and the GB following the invasion of Ukraine by Russia. It is not currently envisioned that there will be any disruption to the supply of gas to Ireland this winter which is consistent with National Gas's Winter Outlook.

Supply and demand overview

This Winter Outlook report sets out Gas Networks Ireland's analysis and view 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 gas to the end user.

The Corrib gas field is estimated to fulfil approx. 19% of the gas demand in ROI during 2023/24, having reached a production plateau in early 2018. A steady decline in production has been observed at Corrib since January 2018, in line with supply profile projections as provided by the operators of the Corrib gas field. Corrib operated at a level of 36% of historic maximum production capacity when averaged over winter 2022/23.

Indigenous biomethane production is a growing supply source with production doubling in 2022/23 vs. 2021/22. It is anticipated that biomethane production will increase by a further 70% in the gas year 2023/24.

Given the decline in indigenous gas supply from Corrib, imports from GB through the Moffat Entry Point continue to be the dominant supply source and provide the balance of gas supply after Corrib and biomethane.

Historic 2022/23 gas supplies

Figure 1 below shows the actual supply breakdown for gas year 2022/23.

In gas year 2022/23 (October 2022 to September 2023) indigenous gas supply sources (i.e. Corrib and biomethane) met 23% of **annual ROI gas demand**. Imports from GB through the Moffat Entry Point accounted for the balance of 77%.

Indigenous gas supply sources met 17% of **annual Gas Networks Ireland system demand** while imports from GB through the Moffat Entry Point accounted for the balance of 83%.

Indigenous sources accounted for 15% of the ROI gas supply sources that met the 2022/23 **ROI peak day gas demand**, with Moffat contributing the balance of 85%.

Moffat and indigenous supply sources accounted for 89% and 11% respectively of **Gas Networks Ireland system peak day gas demand in 2022/23**.

Forecast 2023/24 gas supplies

The Corrib gas field is expected to meet approximately 19% of **annual ROI gas demand** in gas year 2023/24 (October 2023 to September 2024). Corrib is anticipated to be flowing at up to c. 31% of its historic maximum daily capacity over the coming year. Corrib and biomethane are the two remaining indigenous gas supply sources. Biomethane injection to the gas grid currently provides low levels of supply to the network. Its contribution is expected to grow to a larger share of indigenous supply in the near future, supported by a national target of 5.7TWh of biomethane production by 2030.

Figure 2 below shows the supply outlook for the gas year ahead.

Gas supplies from GB via the Moffat Entry Point are expected to account for the balance of supplies, after indigenous supplies, to meet 81% of **annual ROI gas demand** in 2022/23.

Indigenous supplies and imports via Moffat are anticipated to account for 14% and 86% respectively of **annual Gas Networks Ireland system demand** in 2023/24.

In the case of a **1-in-50¹ winter peak day**, indigenous supplies are anticipated to account for 12% of **ROI gas demand**, with Moffat contributing 88%.

Indigenous supplies and Moffat are anticipated to account for 8% and 92% respectively of the **Gas Networks Ireland system demand** in the event of a **1-in-50 winter peak day**.

Figure 1. Indigenous vs. imported gas supply 2022/23

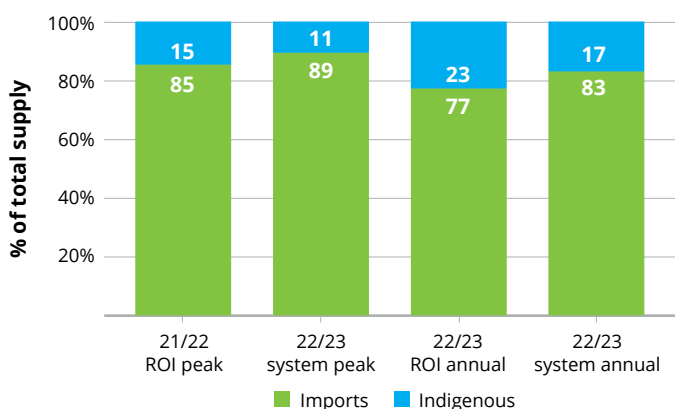
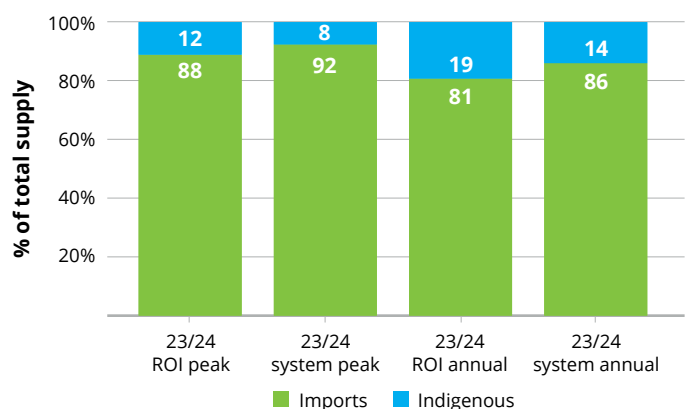


Figure 2. Indigenous vs. imported gas supply forecast 2023/24



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



Historic winter 2022/23 supply and demand

In winter 2022/23, 23% of ROI gas demand was met by indigenous supply sources while imports from Moffat accounted for the remaining 77%.

Indigenous supply sources accounted for 17% of Gas Networks Ireland winter 2022/23 demand while Moffat provided the balance of supply of 83%.

The winter period 2022/23 saw a decrease in Residential sector gas demand of 12.8% compared to the previous winter. The winter period 2022/23 was 3% warmer than the previous winter period based on a Composite Weather Variable (CWV) comparison. Correcting residential gas demand for winter 2022/23, based on CWV to the reference year, showed a decrease of 7% when compared to the previous winter period.

In the Industrial and Commercial sector, gas demand decreased by 3.7% compared to the previous winter period. This decrease can be, in part, attributed to the relatively high gas prices in winter 2022/23; on average gas prices were four times higher in winter 2022/23 compared to 2021/22.

In the Power Generation sector, gas demand was up 10.3% in winter 2022/23; this is in contrast to a 5.6% decrease observed in winter 2021/22. Coal and oil-fired generation were down 58% and 57% in winter 2022/23 respectively compared to the previous winter period, while electricity imports via the East-West Interconnector more than doubled and imports from NI via the North-South tie-line² were up 26% compared to winter 2021/22. Wind powered generation for winter 2022/23 increased by 8%. Electricity demand was up 5% in winter 2022/23 compared to 2021/22. All of these factors when combined together had the net effect of increasing gas demand for power generation for winter 2022/23 year-on-year.

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 43.1% of Ireland's power generation fuel mix during the winter 2022/23 period. Over gas year 2022/23, gas accounted for 49% of the fuel mix; gas typically contributes a higher portion of the fuel mix during the summer months due to the likelihood of lower wind generation compared to the winter. On days of low wind, during the last winter, gas has contributed to almost 79% of the generation fuel mix.

Gas demand for transport increased by 5.7% in winter 2022/23 vs. the previous year, equating to a demand of 12GWh in winter 2022/23.

Overall, ROI gas demand for winter 2022/23 was 1.6% higher than the previous winter period, driven by the increase in gas demand for power generation.

The ROI peak day gas demand for winter 2022/23, which also transpired to be the highest daily gas demand ever recorded, occurred on the 15th December 2022 with a demand of 23.6 mscm/d. Demand on this peak day was driven by the power generation sector, accounting for 60% of gas demand, with Industrial and Commercial and Residential demand accounting for 19% and 21% of demand respectively. While the 15th December 2022 was a cold day with an average temperature of -1°C, this does not correspond to a severe 1-in-50 weather event where an average temperature of closer to -8°C would be expected. On this day, gas-fired power generation accounted for 59% of the SEM fuel mix, with wind generation accounting for 15%. It is notable that wind generation was not exceptionally low on this peak day.

The 15th December 2022 was also the all-time peak day for Gas Networks Ireland system demand. Total Gas Networks Ireland system throughput on the peak day was 31.1 mscm/d including flows to ROI, NI and IOM of 23.6 mscm/d, 7 mscm/d and 0.5 mscm/d respectively.

2 The East-West Interconnector connects Ireland to Wales while the North-South tieline is a high voltage transmission tie-line between ROI and NI

Forecast winter 2023/24 supply and demand

Table 1 presents the 1-in-50 and average peak day system demand forecasts for 2023/24. The Winter Outlook projections consider forwards fuel prices along with current installed generation capacity and planned plant outages.

Gas supply forecasts for winter 2023/24 indicate that for a 1-in-50 peak day, Moffat would be required to operate at c. 99% of current technical³ flow capacity to meet Gas Networks Ireland system demand. On an average winter peak day, 86% of the available capacity at Moffat would be required to meet Gas Networks Ireland system demand.

Table 1: Projected gas demand for Winter 2023/24

	1-in-50 winter peak day (mscm/d)	Average winter peak day (mscm/d)	Annual 2023/24 total (bcm/yr)	Winter 2023/24 total ⁴ (bcm/yr)
ROI demand	25.5	22.2	5.5	3.1
Gas Networks Ireland system demand ⁵	37.8	33.1	7.5	4.1
Corrib supply	3.1	3.1	1.1	0.6
Biomethane supply	0.02	0.02	0.01	<0.01
Gas Networks Ireland system Moffat supply	34.7	30.0	6.4	3.5
ROI Moffat supply	22.4	19.1	4.4	2.5

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 2023/24 to incorporate a notional scenario where a significant amount of other thermal generation is unavailable. Hence, this scenario investigates the impact of the coal/oil-fired generators at Moneypoint being unavailable on the peak day.

This scenario resulted in an increase in gas demand in the Power Generation sector in comparison to the base case. Table 2 below quantifies the increase in gas demand in this sensitivity for both ROI and Gas Networks Ireland system gas demands.

Table 2: Increase in gas demand vs. base case for each sensitivity

	Increase vs. base case ROI 1-in-50 peak day demand	Increase vs. base case Gas Networks Ireland 1-in-50 peak day demand
Sensitivity (all 3 Moneypoint units out of service)	4.5%	3.0%

The increased gas demand in this sensitivity exceeds the supply capacity of the Moffat Entry Point, and of the Gas Networks Ireland system capacity, in the event of a 1-in-50 winter peak day. Operational measures have been identified which can be called into action to meet the deficit in the event of this sensitivity, or similar, occurring in reality and thereby continue to meet the peak day demand.

A series of physical upgrades are currently being progressed at both compressor stations in Scotland to permanently increase available capacity at the Moffat Entry point. Incremental increases in capacity are planned for winter 2024/25, 2025/26 and 2026/27. Given the intrusive and complex nature of the upgrade works, careful planning and programming of work packages is necessary to ensure ongoing operational requirements can be fully met whilst the upgrade measures are completed within the planned timeframes.

³ Moffat Entry Point has a technical capacity of 35 mscm/d

⁴ Winter total refers to the aggregate forecast demand / supply for the period between 1st of October 2023 and 31st of March 2024

⁵ 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)

Operational challenges for Winter 2023/24

Gas Network Ireland's operational challenges for winter 2023/24 remain similar to those of 2022/23, with the continuing challenge posed by gas price volatility (and consequent impact on gas demand levels), uncertainty in the wider energy market and the progression of upgrade works at our compressor stations in Scotland as outlined above. Ideally Gas Networks Ireland 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.

Shipper actions that aid Gas Networks Ireland in this regard include:

- ensuring nominations and re-nominations are accurate and timely;
- avoiding large within day imbalances;
- providing re-nominations in a timely and accurate manner in compliance with the requirements of the Code of Operations and;
- operating in accordance with the flow nomination information provided to Gas Networks Ireland.

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

- within-day pressure volatility at Moffat on the National Gas Transmission System in GB may impact on efficient compressor station operation. The frequency and magnitude of such volatility has increased in recent years, as a result of a change in demand/supply patterns in GB;

- gas with a lower Gross Calorific Value (GCV) at Moffat means higher volumes are required to meet downstream energy requirements;
- Current technical capacity of Moffat is 35 mscm/d and;
- the average GCV at Moffat over the Winter 2022/23 was c. 40.2 MJ/m³.

The gas industry arrangements for managing a natural gas emergency are tested on an annual basis by means of an emergency exercise. The 2023 exercise titled 'Exercise Everest' followed the National Gas Transmission (NGT) exercise scenario and was held over 3 days on the 3rd, 4th & 5th October. The exercise simulated a natural gas emergency arising from a progressively worsening gas supply deficit from GB, based on real-time supply and demand data on the dates of the exercise.

With the retirement of the Kilroot coal-fired generators in Northern Ireland at the start of winter 2023/24, and the upcoming commissioning of the gas-fired generators at the same site, Gas Networks Ireland are anticipating that some gas flow will be required through the South-North pipeline during the winter ahead. This is contingent on the gas-fired generators being commissioned during this period, which is yet to be confirmed. Gas Networks Ireland have the necessary operational procedures in place if the demand at Kilroot materialises this winter.



Commercial arrangements

Gas Networks Ireland monitors transmission system imbalances resulting from shipper balancing activities on a daily basis. Ongoing increased liquidity on the Marex Spectron Trading Platform allows Gas Networks Ireland to trade out system wide imbalances in an efficient manner. With Europe now entering its second winter with reduced Russian pipeline flows, gas price volatility remains a significant risk for the foreseeable future, with the potential to impact near-term gas demand, and subsequently shipper booking strategies. As a result of this, Gas Networks Ireland is encouraging shippers to maintain balanced positions and we expect that imbalance charges will encourage shippers to do so.

Upstream security of gas supply

The ongoing conflict in Ukraine, following the invasion by Russia in February 2022, continues to pose a risk to security of gas supply in Europe and has resulted in the sustained possibility of volatile gas prices.

Measures have been identified and implemented in the intervening period to mitigate these risks. These include a voluntary reduction in gas demand of 15% for all EU countries, initially introduced from August 2022 to March 2023, and extended further to April 2024, and a target for European natural gas storage sites to be 80% full on 1st November 2022, increasing to a 90% target for 1st October 2023, to help mitigate the effect of any supply challenges.

On 1 October 2023, the EU gas storage facilities reached 96% on average, which translates to 1,091 TWh, equating to the highest amount of gas stored within the last 5 years⁶. The high storage filling level (56%) at the beginning of the injection period, decrease in gas consumption over the year and dedicated measures introduced by the Member States, together with the individual user's behaviour, contributed to the record volume of gas in storage at the beginning of the winter 2023/24 period.

These current high storage levels, along with the gas infrastructure (established infrastructure, newly commissioned infrastructure projects and enhanced cooperation between the operators) reduce the dependence on Russian supply, allowing for more efficient usage of storage facilities (for injection or withdrawal), and import, as well as the transit, of more Liquefied Natural Gas (LNG) using new LNG terminals. A significant number of new gas infrastructure facilities were commissioned over the past year, with a notable emphasis on the buildup of new LNG import capacities.

To compensate for the drop in Russian gas supply to date since the Ukraine invasion, both LNG and natural gas imports to Europe have increased significantly. Specifically for the winter 2022/23 period, pipeline gas supplied by Russia dropped by approx. 80% in comparison the previous winter 2021/22, while LNG experienced the most notable increase of all supply sources to Europe, accounting for 30% of the supply increase.

National Gas Winter Outlook 2023-24

National Gas Transmission is the Transmission System Operator (TSO) for gas in Great Britain (GB). As over 77% of gas in Ireland is currently imported from Scotland via the Moffat gas terminal, Gas Networks Ireland looks to National Gas' Gas Winter Outlook⁷ to guide our outlook for the upcoming winter season.

There is no significant forecasted change to the supply quantities available to GB, and hence to Ireland, for winter 2023-24 compared to the previous year. The outlook for Ireland indicates sufficient gas supply sources and network capacity to meet the anticipated demand projections over the coming winter, including in the case of a cold winter.

Supplies from the UK Continental Shelf (UKCS) and Norway are expected to be the primary sources of supply to GB, with forecasted flows similar to the previous winter, with LNG, GB gas storage and interconnection with Europe providing flexible supplies to meet demand.

Last winter 2022/23, National Gas witnessed the highest LNG supplies to the National Transmission System (NTS) ever seen, with approx. 15.7 bscm of LNG received during the period. The market view is that the worldwide LNG market will stabilise during the upcoming winter. While there is anticipated to be a decline in the growth of LNG supply compared to the previous year, this will be somewhat counterbalanced by subdued demand for LNG due to economic challenges in China, higher gas storage levels in Europe, and reduced gas demand in Europe's power sector. Consequently, it is expected that LNG imports into GB will decrease during the upcoming winter, as exports from GB to the European Union are anticipated to decrease.

If a shortage of supply to GB occurs, it is expected that storage withdrawals will increase, alongside increased LNG deliveries. This will be done while minimising exports to continental Europe, and only resorting in imports from continental Europe after maximizing storage withdrawals.

While National Gas identifies the need for gas imports from Europe on a cold day in winter, there is scope to instead increase gas supply from other sources, e.g. from Norway or the UKCS. However, given the more flexible nature of the gas interconnectors, imports from the Netherlands and Belgium are seen as the more likely supply source in the situation where markets across Europe are operating as expected.

The forecasted demand, and additional supply capability for winter 2023-24, increases the GB supply margin to 159 mscm/d between forecast peak supply and 1-in-20⁸ peak demand. This indicates an expected 37 mscm/d increase in the capability of supply to meet demand on the 1-in-20 peak day for the winter ahead compared to last winter.

The maximum physical capabilities were updated to reflect market intelligence, commercial capacities, and observed flows resulting in a daily peak supply of 621 mscm, 2.6% higher than the previous winter.

⁶ https://www.entsog.eu/sites/default/files/2023-10/SO0052-23_Winter%20Supply%20Outlook%202023-24%20with%20Summer%202024%20Overview.pdf

⁷ The UK National Gas Transmission Gas Winter Outlook

⁸ Gas demand under weather conditions that are statistically likely to occur once every 20 years.