national gas

Gas Winter Outlook
October 2024


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Welcome

How to use this document

We have published the Gas Winter Outlook 2024 as an interactive document.

Home
This will take you to the home page.

Enlarge/reduce
Hover over the magnifying icon to make charts bigger or smaller.

Arrows
Click on the arrows to move backwards or forwards a page.

'Linked' content
Words in green and underlined have links to other pages in this document, or are URLs.

Welcome to this year's Gas Winter Outlook

Each year, as the gas winter period (October – March) begins, we publish this Gas Winter Outlook document to provide the industry with our forecast view for supply and demand, and to share any other important information that could help the industry to prepare for the coming winter.

We expect that the coming winter will look very much like the previous winter as supply and demand patterns return to more normal levels, and you'll see this reflected in our headline messages.

- We expect to see a similar level of total gas demand this winter when compared with the previous winter.
- Small increases in household demand (NDM) and exports to Ireland are more than offset by reductions in both gas demand for power stations and exports to continental Europe.
- We envisage a similar pattern of behaviour this year, with both the UK Continental Shelf (UKCS) and Norway providing steady, reliable supplies.
- Flexible supplies will predominantly be from LNG and GB storage, along with small levels of continental Europe imports when needed.

We expect a slight reduction in the overall level of power demand. As renewable generation increases, we have seen average gas for power demand decrease. However, this same trend has increased both the volatility of gas demand for power and the maximum daily gas demand for power. We expect this to continue this winter as gas continues to play a key role in supporting the electricity system and enabling the transition to net zero.

We are forecasting a reduction in our exports to continental Europe. Over the past few years there have been significant changes which saw big shifts in how gas flowed across Europe, with GB exporting record volumes of gas to continental Europe during the winter of 2022/23. As continental Europe developed alternative sources of supply last winter (2022/23), export levels from GB started to reduce. We expect this trend to continue this year with exports to continental Europe returning to their normal levels.

Whilst we are, collectively, in a better place than we were two years ago it's important to remain aware of the risks that are present, especially as we are an import dependent country. We continue to closely monitor the market, and it is possible that the information and analysis underpinning this document may change as we progress through winter. Factors beyond our control such as the weather, global market developments, and the wholesale cost of gas will all influence the gas supply and demand situation in GB.

We believe it would take a combination of events (e.g. a very cold winter in the UK, coinciding with a major interruption to one of our gas supply sources) for there to be a material risk to our energy security that could impact the gas and/or electricity systems. It is important to note here that we believe this to be an unlikely scenario, but the exploration and assessment of rare events such as this are an important exercise in winter preparedness.

To mitigate this, we have undertaken significant asset maintenance on our network and are exploring our response to such a scenario through our emergency exercises.

We work very closely with our colleagues in the electricity industry to provide reliable energy infrastructure and prepare effectively for such unlikely events. The Electricity Winter Outlook published by NESO can be found on their website here.

I hope this Gas Winter Outlook provides you with useful insight as we prepare for the winter period. We look forward to continuing to engage with the industry through our various publications and industry forums.

As with all our publications, we really value your feedback – we welcome your thoughts on the structure and contents of this document. If you'd like to get in touch on this or any other matter, you can find contact details towards the end of this document.

Ian Radley
System Operations Director

About us

Other publications in this suite:

- Gas Summer Outlook
  published annually in April.
- Gas Winter Review and publication
  published annually in June.
- Annual Network Capability Assessment Report (ANCAR)) | National Gas
  published annually in June.
- Gas Ten Year Statement (GTYS) including the ANCAR Annex
  published annually in November.

We have created a video to help explain what we do, you can find this on our home page.

Our licence is established under the Gas Act 1986. It requires us to develop, maintain, and operate economic and efficient networks and to facilitate competition in the supply of gas in Great Britain. We have a responsibility to keep the National Transmission System (NTS) within safe operating limits.

In our role as the NTS owner and operator, we have three key responsibilities:

Infrastructure provider

The operational configuration of the NTS infrastructure requires additional flexibility during the winter period to ensure it can transport enough gas to meet the increased demand associated with the colder months. Gas supplies are driven by market dynamics and global prices, which have been particularly volatile in recent years – we are preparing the network, particularly our compressors, to ensure it can react to changing market conditions and subsequent supply patterns.

Market facilitator

The underlying market arrangements in GB are established on the basis that the market will provide the gas itself, and that the market will balance supply and demand. Throughout the winter period, we conduct daily assessments of gas margins and communicate this to the industry via our market information portal. We also produce publications throughout the year, such as this one, to share information relating to the NTS (both short and longer term) with our stakeholders to support their own planning and operational activities.

Residual balancer

When there is an imbalance between supply and demand, we act as residual balancer by taking energy balancing actions via the On The Day Commodity Market (OCM). These title trades can set the system marginal price and encourage shippers who are out of balance to take actions themselves and, if required, we can also look to locationally trade at specific entry points to change the physical flow rate of gas.

In the unlikely event there is insufficient supply to meet demand, and the market is unable to resolve the imbalance, we have the tools we need to ensure the safety and integrity of the gas should there be a Gas Supply Emergency. These emergency tools include requesting additional gas supplies be delivered to the NTS or requiring gas consumers (starting with the largest industrial consumers) to reduce or stop using gas. These tools will be used, if required, subject to authorisation by the Network Emergency Coordinator.

To read more about the tools available to us, please visit our balancing website.

Executive summary

Key messages

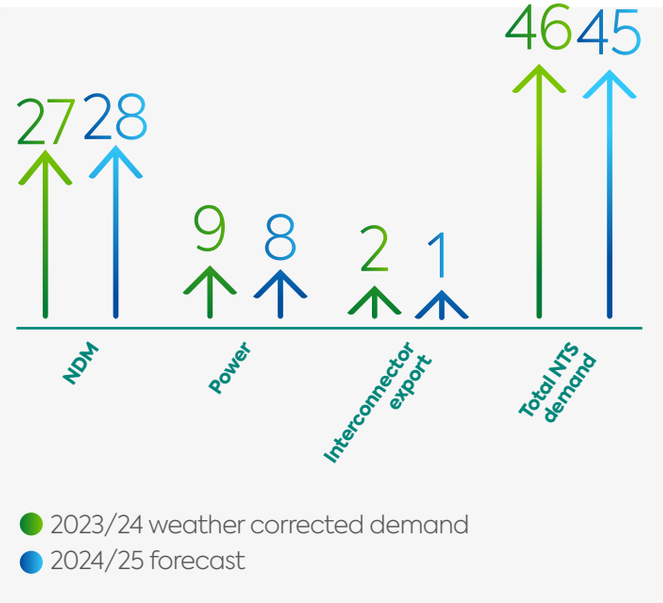
Executive summary

We expect this coming winter to look a lot like the previous winter, and so our key messages are consistent with those in last year's Winter Outlook.

Key messages

1. We have sufficient capability to meet peak (1-in-20) demand, with a positive supply margin under both intact and N-1 network conditions.
2. We forecast that GB demand (excluding exports to Europe and Ireland) for winter will be comparable to last year with the increase in residential demand being offset by reduced demand for power.
3. Total NTS demand is forecast to reduce, as we expect reduced levels of exports to Europe when compared to the previous winter given that the EU will enter winter with extremely high storage levels and now have increased LNG import infrastructure in place.
4. We have illustrated how the NTS could be balanced under a range of credible demand profiles. UKCS and Norway provide baseload supplies with the level of LNG required driven by the overall level of demand. In cold winter scenarios, GB will likely also require imports from the EU.
5. Disruptions to other markets therefore could impact the GB market, with a particular focus on the second half of winter dependent on the extent of EU storage usage. Overall, whilst we have more confidence that the market will perform as expected, we shouldn't discount the risk of events occurring, either in isolation or in combination, to put the EU, and therefore by extension GB, under stress.
6. We have the necessary physical, commercial and market based tools to manage a supply and demand imbalance, including those related to a Network Gas Supply Emergency (NGSE), should it be necessary.

Key statistics (bcm)



Winter demand & supply

Demand forecast

Key messages

- **Total GB demand for winter 2024/25 is comparable to last year, with the small increase in residential (NDM) demand being offset by slightly reduced demand for power generation.**
- **Total NTS demand is forecast to be lower than the previous winter as interconnector exports to continental Europe continue to return to more normal levels following the peak in winter 2022/23.**

Actual demand levels are inherently uncertain due to the significant influence changing factors such as the weather, cost of energy and geopolitical developments can have on energy requirements.

Below we highlight the key factors that have influenced our forecast for this winter:

- **Non-daily Metered (NDM)**, which is made up of gas demand from homes, shops and offices – our forecast includes a small increase in demand (circa 2%) which is based on the assumption that with household energy prices slightly lower than last winter, we expect to see some consumers increase their energy usage. Despite the fall in price household energy prices are still high by historical standards so we would expect many of the energy saving techniques to continue limiting the increase in demand.
- **Daily Metered (DM) and Industrial demand –** forecast is comparable to the previous winter. The history for this category shows a very consistent level of demand.
- **Power –** this forecast is comparable to the previous winter, with the slight reduction due to the continuing increase in renewable generation. We do expect to see high maximum daily demands, as was the case last winter, with gas-fired power stations coming on-line to help balance the electricity system when the wind doesn't blow. You can read more about this on the next page.
- **Ireland –** the forecast is based on GNI's preliminary view and assumes an increase in gas demand for power. The final GNI forecast can be found here.
- **Exports to continental Europe –** are forecast to be lower this year, returning to more normal levels post the energy crisis. Read more about this in our European spotlight.

Table 1
Forecast total gas demand for winter 2024/25, and weather corrected actual demand for 2023/24

bcm (including shrinkage)	2023/24 actual demand	2023/24 weather corrected demand	2024/25 forecast
NDM	25.1	26.8	27.4
DM + industrial	3.8	3.9	3.8
Power	8.2	8.2	7.8
Total GB demand	37.1	39.0	39.0
Ireland	3.0	3.0	3.5
Exports to continental Europe	1.7	1.7	0.5
Total NTS demand	42.0	43.8	43.2

Notes:
Actual demand is just that and does not include an adjustment for weather.
Weather corrected demand applies to NDM and DM only.
The forecast demand is based on a 'seasonal normal' view and is therefore weather corrected for NDM and DM.
Total demand also includes shrinkage.

Demand – historic trends and what they suggest for the coming winter

NTS power

As renewable generation increases (and therefore reduces the total gas demand for power over a winter period), the likelihood of larger intra-day swings also increases, with gas providing a critical role in balancing the electricity system when renewables and imports are unavailable.

This trend is evident if we look at the last 4 years (figure 1) which shows that the average daily gas demand for power is reducing whilst the range of daily gas demand for power is increasing year on year. Last winter we saw the highest daily NTS power demand of 102.6 mcm/d.

Based on the trends seen to date, we anticipate the range of daily demands to be similar to the previous winter, with peak daily demands at similar levels to the record high seen in winter 2023/24.

Non daily metered (NDM)

NDM demand is made up of gas demand from homes, shops and offices. The majority of the demand is for heating and cooking in homes.

With unprecedented household energy prices in summer 2022 there were significant reductions in demand as people made significant behavioural changes to save energy.

As these household energy prices began to fall, there was a slight increase in demand last winter, with further increases seen over the summer. It is forecast that prices will increase from the current level, but remain below last winter's prices and we expect to see a continuation of this demand increase. However, household energy prices remain historically high so we do not expect demand to recover to the levels seen in 2021, as consumers continue with many of the behavioural changes.

Exports to Ireland and continental Europe

Exports to Ireland have been fairly consistent and a similar level of demand is envisaged this winter (figure 3).

Exports to continental Europe increased significantly during 2021/22 and 2022/23 as a result of the energy crisis.

Last winter (2023/24) we saw exports begin to reduce as the EU had healthy storage levels, coupled with increased regassification capability.

This coming winter we are forecasting a further reduction in exports, as they return to more normal levels, given the greater stability in the energy market.

Figure 1
Winter power station daily demands. Number of days' demand for electricity at 10 mcm/d intervals

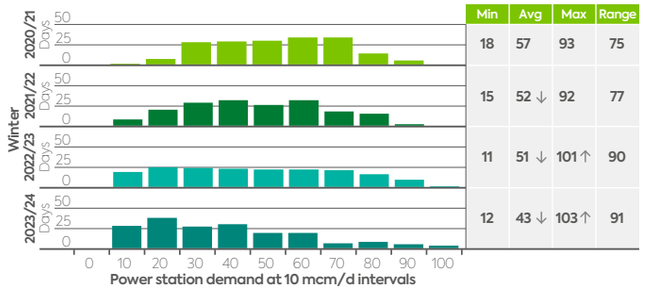


Figure 2
Weather corrected NDM winter demand – actuals and forecast

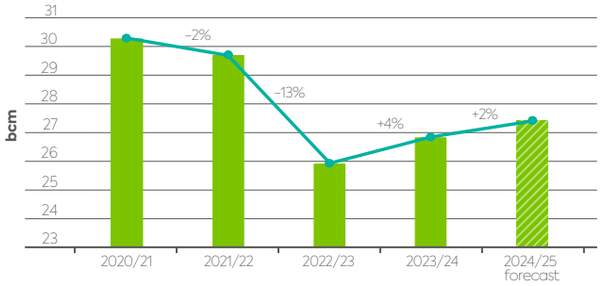
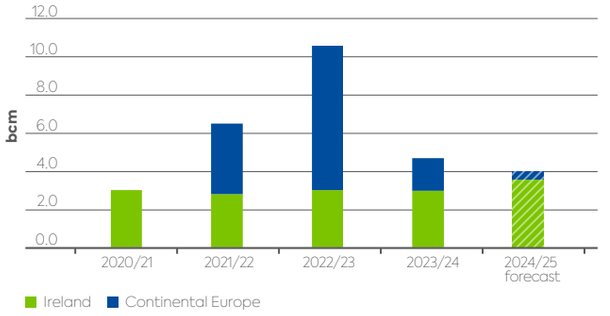


Figure 3
Total winter exports – actuals and forecast



Supply range

GB benefits from having diverse supply sources, which include the UKCS and Norway, coupled with flexible supplies from LNG, interconnectors and GB storage.

Table 2 shows the actuals for the last two winters, along with our forecast for winter 2024/25. Table 3 shows the observed supply ranges for winter 2023/24, along with the max capability for each supply type.

UKCS – we expect UKCS to continue to deliver baseload supplies to GB. Production levels have been steadily declining over recent years and we expect that to continue this winter. The max capability is 17 mcm/d lower than we stated in our previous Winter Outlook, this reflects the decline in production over the last couple of years (which wasn't fully considered last winter) and is now reflective of the maximum daily supplies we saw in the winter 2023/24.

Norway – for the coming winter we would expect similar levels of Norwegian supply as we saw last winter. We are not expecting any significant changes in overall production levels or changes in how Norwegian exports are split between GB and continental Europe.

LNG – supplies were much lower in winter 2023/24 when compared to 2022/23, at 8.3 bcm or an average of 45 mcm/d. The decline in LNG flows was largely due to the decline in demand (mostly as a result of the reduction of exports to continental Europe), which fell around 8 bcm last winter or an average of 45 mcm/d. For the coming winter we expect LNG to remain as the primary source of flexible supply, with the overall level highly dependent on demand with the potential for very high flows on days where demand is high. Further detail on LNG can be found in our LNG focus section.

GB storage – behaviour is largely market driven. Last winter we saw GB storage either injecting or withdrawing on most days. We would expect to see similar behaviour for the coming winter with storage remaining important for balancing supply and demand. The net storage in the winter can be significantly impacted by when the injection season begins and ends. Our forecast of 0.8 bcm for this winter is reflective of the average we would expect to see.

Imports from continental Europe – imports were low last winter (comparable to previous years), we expect the same for the coming winter. Given that imports are market driven, we would expect to see imports during cold weather in GB when demand is high.

*Due to the offshore configuration at St Fergus we are unable to measure UKCS and Norwegian supplies separately as they enter our system at the same point. Therefore the individual contribution of these supplies is partially based on our estimates of the split at St Fergus.

Table 2
Historic and forecast supplies

Winter bcm/ (average mcm/d)	2022/2023 actual	2023/2024 actual	2024/2025 forecast
UKCS	18.8 bcm (103 mcm/d)	16.5 bcm (90 mcm/d)	15.5 bcm (85 mcm/d)
Norway	14.4 bcm (79 mcm/d)	15.6 bcm (85 mcm/d)	15.7 bcm (86 mcm/d)
EU imports	0.1 bcm (0 mcm/d)	0.1 bcm (0 mcm/d)	0.2 bcm (1 mcm/d)
LNG	15.7 bcm (86 mcm/d)	8.3 bcm (45 mcm/d)	10.7 bcm (59 mcm/d)
Net storage withdrawal	0.2 bcm (1 mcm/d)	1.3 bcm (7 mcm/d)	0.8 bcm (4 mcm/d)
Grand Total	49.2 bcm (270 mcm/d)	41.8 bcm (228 mcm/d)	42.8 bcm (235 mcm/d)

Table 3
Observed maximum, minimum and average daily supplies

	Observed daily volumes in winter 2023/24 (mcm/d)			Max capability 2024/25
	Maximum	Minimum	Average	
UKCS*	100	74	90	100
Norway*	110	36	85	141
LNG	111	9	45	150
EU imports	7	0	0	112
GB storage	92	0	18	121

Peak day demand, supply & supply margins

Peak demand

The forecast 1-in-20 peak demand (the highest level of gas demand that we should expect to experience only once in every 20 years) for winter 2024/25 is 474 mcm/d, which is slightly higher than forecast for the previous winter (table 4, figure 4). This is due to:

NDM – we anticipate a small increase in demand on a peak day, equivalent to just under 3%. This is consistent with the trends we expect for the winter as a whole with households turning up their heating in response to slightly lower household energy prices.

Power – our forecast for power demand on the peak 1-in-20 day has increased slightly. As shown in figure 1, there has been a trend of the maximum daily power demands increasing over the last few years. This has been reflected in the increase in the power demand on the 1- in-20 peak day. This does not reflect the highest power demand we expect to see over the winter, but a forecast of the power demand under 1-in-20 peak conditions – which could be accompanied by either very high winds, as was seen during the Beast from the East, or cold still conditions. Under very still conditions, the power element could increase by around 20 mcm/d.

The assumptions for DM and Industrial are consistent with previous years; based on annual trends, these types of demand are not responsive at peak.

Ireland – based on cold weather coinciding with higher gas demand for power in Ireland.

Figure 4
Peak 1-in-20 demand for 2023/24 and 2024/25

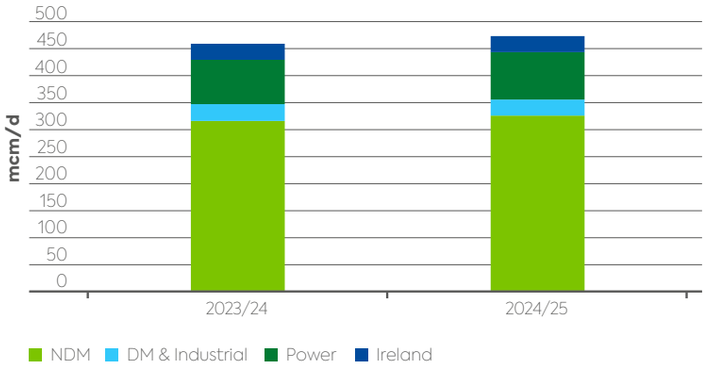


Table 4
Peak 1-in-20 demand for 2023/24 and 2024/25

Demand mcm/d	2023/24	2024/25	
NDM	317	326	↑
DM and Industrial	31	30	↓
Power	82	88	↑
Ireland	30	30	↔
Total demand	460	474	↑

Note: excludes shrinkage

Supply capability

GB benefits from having diverse and flexible supplies. The max supply capabilities for each supply type (table 5) have been refreshed to reflect market intelligence, commercial capacities and observed flows.

UKCS – has reduced by 17 mcm/d when compared to our previous Winter Outlook. Our forecast has been refreshed considering the steady decline in production, which wasn't fully taken into account in our Winter Outlook last year, and is now reflective of the maximum daily supply we saw in the previous winter.

Norway – the max capability is based on pipeline capacity and our assessment has not changed from last year.

LNG – the max capability is based on commercial capacities, which have not changed.

EU imports – the max capability has reduced from 125 mcm/d to 112 mcm/d. The max capability is based on commercial capacity. About half of the reduction is as a result of standardising the conversion factors used to define the physical capability and does not represent any physical changes. In addition there has also been a reduction of about 5 mcm/d to BBL (Changes in available technical capacities | BBL Company).

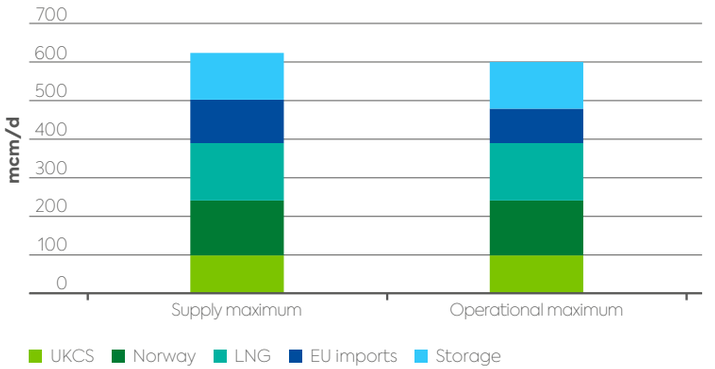
Storage – for most sites the previous year's max available figure was used. In most cases this was very close to the max flow (last 5 years) and the current max indicated on our storage report on our data portal – which is based on submissions from the operators. There is a slight reduction in maximum daily capability, due to a planned outage at one of the storage sites remit.sse.com/Home/GasFilterResult.

Our network has evolved over the years and as a consequence it is not possible to achieve maximum supplies of continental European imports and LNG at the same time. To account for this, we also provide an operational supply maximum (table 5 and figure 5), which is important when considering supply margins. You can read more about this on the next page.

Table 5
Supply capability 2023/24 and 2024/25 and operational maximum

mcm/d	2023/24	2024/25	Operational maximum
UKCS	117	100	100
Norway	141	141	141
LNG	150	150	150
EU imports	125	112	89
Storage	124	121	121
Total	657	624	601

Figure 5
Supply maximum and operational maximum 2024/25



Supply margins

The peak day demand for winter 2024/25 is 474 mcm/d which, as described earlier, is slightly higher than last year (462 mcm/d).

Peak day supply is 601 mcm/d, compared to 621 mcm/d the previous year, all supply capabilities have been refreshed to reflect market intelligence, commercial capacities and observed flows (as described on the previous page).

The supply margin between forecast peak supply and 1-in-20 peak demand for winter 2024/25 is 127 mcm/d. The supply margin is lower than winter 2023/24 (161 mcm/d), due to the increase in forecast demand and the reduction of supply capability as covered in the previous two pages.

Under N-1 conditions we test the event of losing the single largest piece of NTS infrastructure, which is 72mcm/d. We have witnessed similar losses due to infrastructure failures in the past. Earlier this year there was a crack in a Gassco pipeline at the Sleipner riser platform which reduced Langeled flows by around 40 mcm/d.

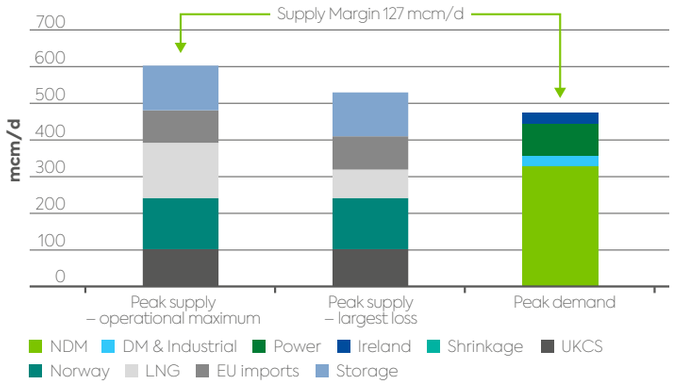
The supply margin under these N-1 conditions at peak 1-in-20 demand for the coming winter is 55 mcm/d.

Table 6
Peak day supply margin for winters 2023/24 and 2024/25

Forecast mcm/d	2023/24	2024/25
1-in-20 peak demand	460	474
1-in-20 non storage supply	497	480
1-in-20 storage supply	124	121
1-in-20 total supply	621	601
1-in-20 margin	161	127
N-1 supply loss	72	72
N-1 margin	89	55

Note: excludes shrinkage

Figure 6
Peak day supply margin for winter 2024/25



Spotlights

Gas demand for power generation

Spotlight

The highest demand for NTS power last winter was 102.6 mcm/d on 1 December, the highest seen to date; this equates to 1,129 GWh.

There were a few days close to this level over the last few winters. But as figure 7 shows the demand for power is extremely volatile, flexing between very low and very high demands in a few days. These trends are driven by the electricity market as gas power stations operate flexibly to balance changes in demand, renewable output and electricity imports/exports.

To understand how these factors impact the demand for gas for power generation we can look at the electricity output of the different types of generation. Figure 8 shows the output from 23 November 2023 until 3 December 2023.

At the start of the period, renewable generation and imports were quite high and this resulted in a quite low requirement for gas generation. But, as we approached the end of November, wind generation and imports fell as demand started to rise – this was caused by a period of quite still and cold weather.

This resulted in an increased need for gas generation. Between 29 November and 2 December gas was providing over 50% of electricity, this peaked at 61% on 30 November.

We expect to see these trends continue, with the potential to see very high gas demand for power at various stages throughout the winter. Given these can be preceded by periods of very low demands, this can lead to rapid increases in overall gas demand. These increases can be met due to the diverse and flexible supplies connected to the NTS, and the flexible way it can be operated.

The responsiveness of gas generation to support the electricity system and the flexibility of the NTS to support the changes in demand this causes are critical in the balancing of the electricity system, while enabling increased levels of renewables to meet our net zero goals.

Figure 7
Gas demand for power in winters 2022/23 and 2023/24

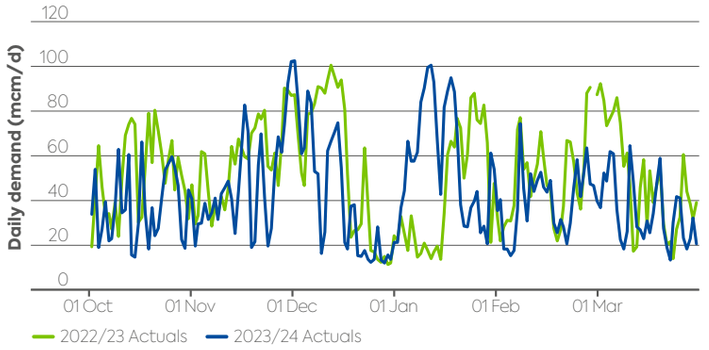
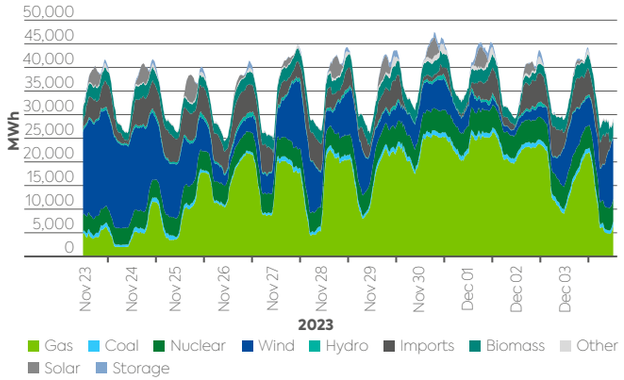


Figure 8
Electricity generation by source in MWh (23 November – 3 December)



Source: ESO Portal

A focus on liquefied natural gas

Spotlight

As expected, so far this year, LNG deliveries to GB have been low when compared to recent years. Interconnector exports to continental Europe have reduced since last winter, leading to a further reduction in LNG landing at GB terminals bound for onward export to the EU. This has been reflected in inter-basin price spreads, with premiums favouring Asia, drawing cargoes away from the Atlantic basin (figure 9).

For the coming winter we expect LNG imports to increase across UK terminals, as domestic demand for gas grows slightly versus last winter and UKCS supply continues to decline year on year. However, the onward export of this landed gas to continental Europe is expected to reduce (read more in our EU spotlight).

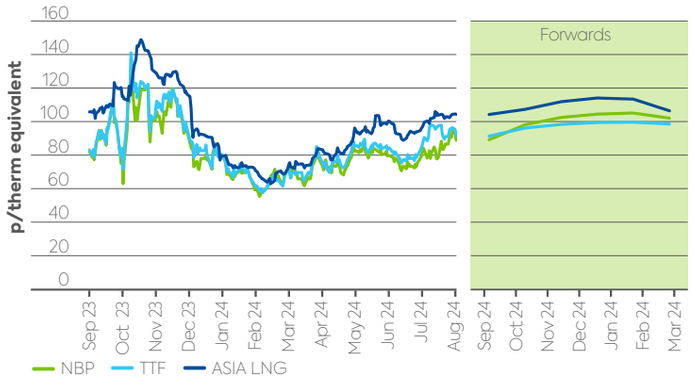
This is because:

- EU storage levels are above 90% full
- LNG import facilities in EU have increased
- Forward National Balancing Point (NBP) contracts hold a premium to TTF this winter (figure 9).

LNG market fundamentals remain balanced going into this winter. This being the case, there is the potential for unexpected weather, geopolitics or supply disruption events to result in a tightening of the market, leading to higher prices.

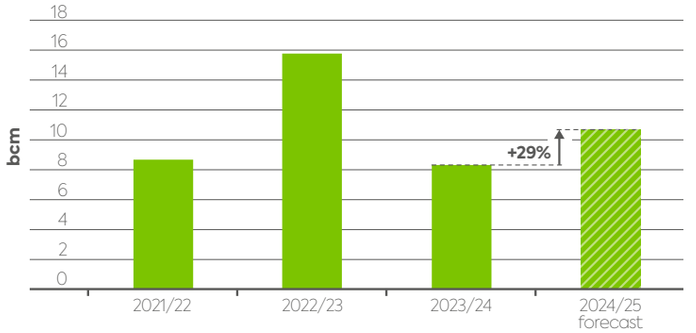
LNG remains the most flexible supply source into GB, with the peak daily LNG supply capability for this coming winter remaining at 150 mcm/d. During winter 2024/25 we expect the market will deliver LNG supplies to GB when needed, evidenced in previous years, as gas premiums shift to attract necessary cargoes, even in times of crisis.

Figure 9
Global gas prices



Source: Argus Direct

Figure 10
LNG imports to GB during winter months



Source: WoodMackenzie, National Gas

A focus on liquefied natural gas

Spotlight

GB LNG import sources

In order to understand the LNG source locations we have used tanker data from Argus Direct, which for a number of reasons will not perfectly align with LNG data from previous slides but does indicate general flow direction and broad volumetric trends. Some of the reasons for the differences include volumetric conversions, tanker capacity, and cargo size.

Story so far:

- Total winter LNG imports are down 7.49 bcm year on year, between winter 2022/23 and 2023/24.
- Cargoes re-directed as LNG vessels stop transiting through Suez Canal due to conflict (hindering connection between Atlantic and Middle Eastern basin).
- On the Atlantic side, the Panama Canal was also heavily restricted due to drought, exacerbated by the El Nino weather phenomenon, heavily reducing US cargo transit into the Pacific basin and onwards to Asia.
- LNG flows and market-adapted, changing LNG flow directions and inter-basin price spreads.
- Reducing Middle Eastern cargoes passage through Suez, opting to sell cargoes to Asia instead. Also, blocked US suppliers instead sold cargoes to GB and EU continent.

National Gas expects the US to continue playing a critical role in supplying GB with LNG, the volumes supplied to GB will depend upon the price differentials between GB and Asia or other European terminals. We believe that the GB price will rise if required to meet GB demand.

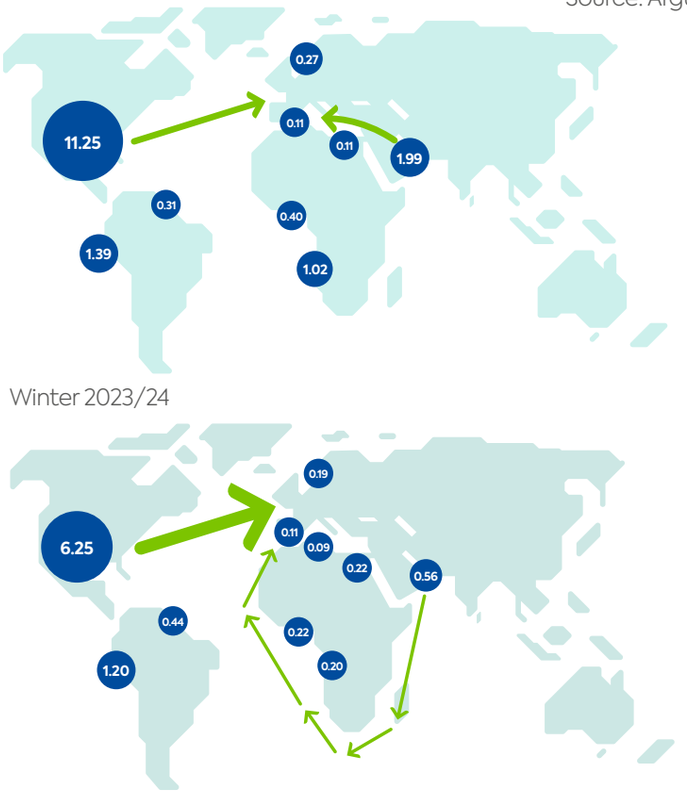
Expert view: Mike Fulwood
Senior Research Fellow, at The Oxford Institute For Energy Studies

"In the year to date (January to August), we have seen very little genuinely new LNG supply from liquefaction projects, with a few issues at existing plants, and the smallest growth in net global LNG supply since 2015. During this period, the decline in European LNG imports balanced import growth in Asia, MENA, and the Americas, with the resulting market tightness expressed in stronger European and Asian benchmark LNG prices since late February. That tightness is unlikely to ease in the coming months.

In this context, the outlook for winter 2024/25 is one of a finely balanced market. With limited new supply expected before mid-2025, any surge in demand or curtailment of existing supply could easily result in a further strengthening of prices, despite Europe being set to enter winter with storage stocks close to capacity."

Figure 11
GB LNG imports by source location

Source: Argus Direct



A focus on storage

Spotlight

Unlike European storage, which is used on a seasonal basis, GB storage behaviour is largely market driven, designed to be short-term and commercially focused.

Rough, which was brought back online by Centrica in 2022 and further expanded ahead of last winter, works slightly differently, filling during summer and emptying during winter. It now accounts for around 45% of the total GB storage space of 3.1 bcm. However, it only contributes to around 9% of the maximum daily deliverability rate of 121 mcm/d, as Rough tends to provide steady flows for longer durations rather than high flows for shorter periods. This helps to strengthen the security of supply position for GB, with an additional source of baseload supplies during the winter.

GB storage has significant potential withdrawal, with a maximum rate of 124 mcm/d.

Gas flows operate utilising pressure, and this is particularly evident with storage. Full storage can withdraw onto the NTS relatively quickly, but this deliverability reduces as storage depletes.

Figure 14 shows that when storage is full and withdrawing at maximum rates, GB storage can sustain a rate of over 80 mcm/d for 7 days.

If these withdrawals were restricted to a rate of 80 mcm/d, this level of withdrawal could be sustained for 16 days.

To help put into context the important role storage plays, if we were to assume a total NTS demand of 300 mcm/d, with storage delivering at 80 mcm/d, storage would be providing 27% of total supplies.

As we head into winter 2024/25, storage levels are higher than last year (Figure 12). Due to the nature of GB storage we do not expect to enter the winter period with storage at a set percentage. It is not uncommon to see withdrawals and injections during the early part of winter as operators look to optimise their portfolio. In the past, Norwegian maintenance continuing into October has been one factor which has driven this behaviour but the wider market could also influence behaviour.

Last winter, storage was used as expected (figure 13) – either injecting or withdrawing on most days. This helped maintain deliverability above 100 mcm/d for the whole winter, despite periods of high withdrawals during the cold snaps in December and January. You can read more about this in our Winter Review publication here.

We would expect to see similar behaviour for the coming winter, with storage remaining an important component of the supply mix and key in balancing supply and demand.

Figure 12
Storage stock levels including Rough

Figure 13
Storage stock and deliverability

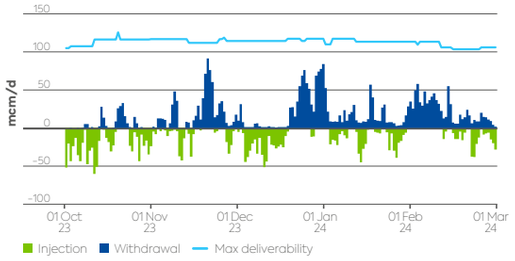
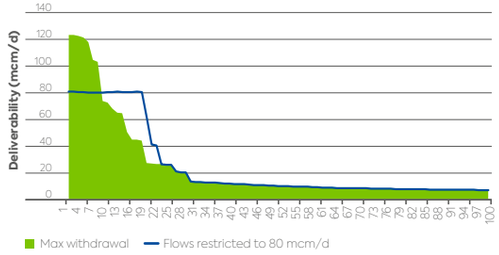


Figure 14
Storage deliverability



The European context (supply & risks)

Spotlight

European energy supply diversification and mild weather has helped loosen the regional gas market, as energy prices reduce closer to pre-2022 crisis levels, heading into winter 2024/25.

The EU has had continued growth of LNG regasification capacity (figure 15), increasing by a further 11% (22 bcm/year) in 2024. This has also allowed the continent to grow its longer-term LNG import agreements, as well as greater capacity to access the LNG spot market, providing additional security of supply.

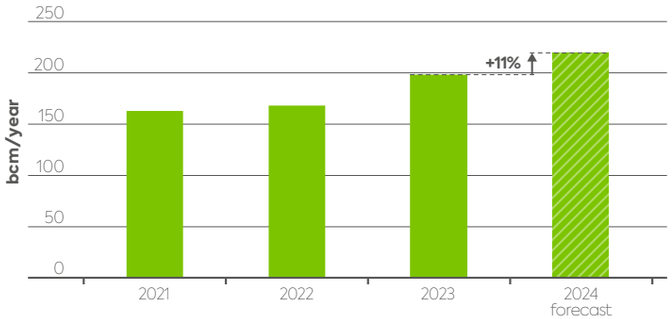
It is important to note that the Ukraine transit agreement between Russia and Ukraine will expire by the start of 2025, with Ukrainian authorities emphasising that there will be no renewal of terms. For this outlook, it has been assumed that flows from Russia through Ukraine will end by the start of 2025. A reduction in East-West gas flows will potentially be replaced by West-East flows as Central and Eastern European (CEE) countries seek to replace the loss of Russian gas through Ukraine.

Figure 16 shows how the European supply balance has changed over the last four winters. Though Russia's proportion of the supply mix across the EU is now smaller (7.7% in winter 2023/24, excluding LNG). The most recent round of Russian sanctions (14th), has banned Russian LNG transhipments at EU ports. This ban comes into effect in March 2025, and therefore shouldn't impact supply for the coming winter. The ban could be bearish for European fundamentals as more Russian LNG may elect to land directly at EU ports, with the northern sea route to Asian markets blocked by ice, making direct EU offload the potentially easier option.

A reduction in overall gas consumption has also been key, with demand still subdued relative to 2022 levels, supplemented by an increase in renewable generation capability, mild weather reducing residential and commercial heating demand, low industrial growth and structural behavioural changes throughout the population.

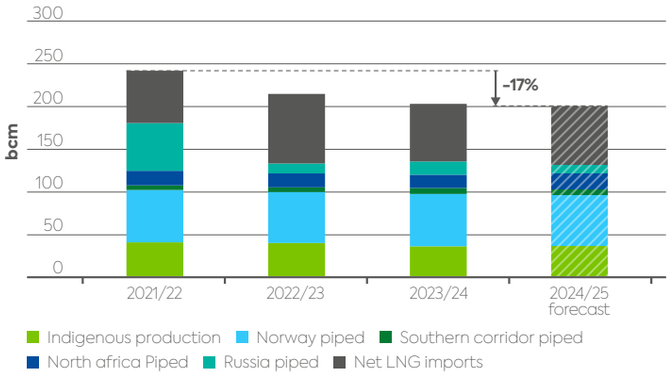
Despite the risks, the current EU position has been assessed as strong, with the ability to support the GB's domestic gas supply if needed, supplemented by robust storage levels.

Figure 15
Operational EU LNG regasification capacity (excluding UK and Turkey)



Source: WoodMackenzie

Figure 16
EU (excluding Turkey) winter gas supply stack



Source: WoodMackenzie

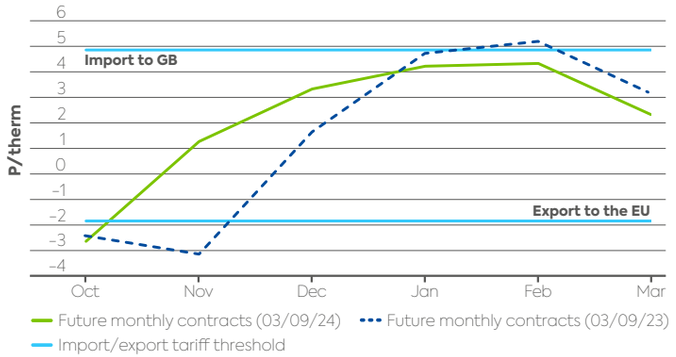
The European context (export & prices)

Spotlight

Continental Europe has, over the last few winters, increased imports from Norway and North Africa; it has also, most notably, bolstered its LNG regasification capacity (figure 16, previous page). This has reduced the need for GB gas exports to the European continent (figure 18). Future monthly NBP-TTF price spreads for winter 2024/25 are broadly in line with spreads seen at the same time last year (figure 17), indicating that flows could also be comparable, as both imports to GB and exports to the EU are expected to remain very low this winter. Monthly price spreads are at their widest point between January and February, which could point to a greater chance of flow during these months.

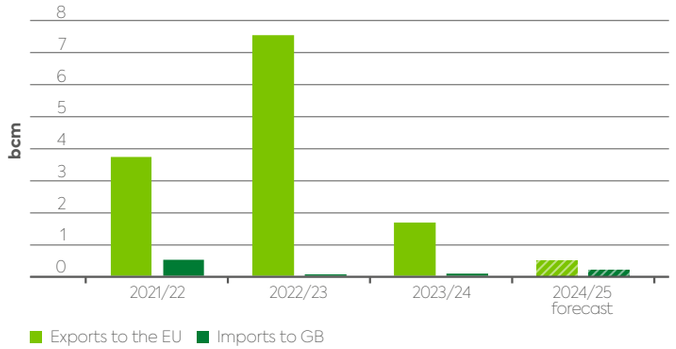
Future contract price spreads do not directly indicate that gas will flow, as other factors involving interconnector capacity, entry/exit tariffs and the role of gas spot prices will vary the profitability of imports and exports for shippers. However, future contract price dynamics do provide a good indication that GB imports and exports will remain low this winter, as current monthly price spreads are not elevated enough to breach interconnector tariff charges (figure 17). For the bulk of the winter, we expect to see the interconnector in float with little flows in either direction, but responding to short-term market signals with imports to GB/exports to the EU when required – either due to cold weather or covering for short-term changes to other supplies.

Figure 17
NBP-TTF monthly future contract spreads, with interconnector tariff thresholds



Source: Argus Direct

Figure 18
GB winter gas exports and imports to and from continental Europe



The European context (storage)

Spotlight

European storage levels and mandated targets

Under a cold winter scenario, GB would require imports from Europe to balance supply and demand. While under our current supply assumptions the overall import volumes are low, these supplies are an important component to meet GB demand in cold conditions. Further details on the volumes required can be seen in our winter scenarios, which model the market under different conditions.

To test how reliable these European supplies would be, we have analysed several scenarios for the winter ahead. We have based this assessment on the entire European market, since in recent years we have seen the importance of a coordinated response across the continent to ensure security of supply. The analysis is based on data from Wood Mackenzie's Q2 Europe Gas and Power Market Short-term Outlook and ENTSOG's Summer Supply Outlook 2024 with Winter 2024/25 Overview.

Following a previously mild winter for 2023/24, EU storage emerged from the winter period at record high levels (59% full on 1 April), reducing the amount of gas injection required to reach the EU target of 90% fullness by 1 November. We anticipate that the EU will reach close to or achieve 100% storage fullness ahead of winter 2024/25, considering its strong winter start position and continued refill trajectory. As such, modelling has assumed an EU storage level start for the winter 2024/25 season at 100%.

To test the impact of cold conditions, we increased the average winter demand by 10% across the "cold scenarios", equating to an additional 26 bcm of gas demand. All scenarios also include the loss of Russian gas transiting through Ukraine by 1 Jan 2025 as a base case, following the expected end of the Russia-Ukraine transit agreement. This equates to an approximate supply loss of 1 bcm per month over the winter period. For cold and supply loss scenarios, we flexed our modelled LNG capacity usage to average 81% per month, with table 7 highlighting the additional spare LNG capacity at EU disposal if required.

This modelling does not take into consideration the additional 10 bcm of storage offered by Ukrtransgaz (Ukrainian System Operator) to EU shippers. Storage of gas in Ukraine would further ease supply fundamentals, providing an additional ~10% to EU storage inventories if filled before winter. However, recent analysis has shown that EU traders are reluctant to utilise this additional storage as risks associated with conflict remain substantial.

Increased LNG import capacity across the EU should reduce the risk of major storage depletion this winter as storage levels sit comfortably within the 5-year range, even during our stressed winter supply and demand scenarios. Highlighting that the market should have spare flexibility for EU-GB gas interconnector send out if required.

Figure 19

European storage under average, winter and supply loss conditions vs winter 2023/24 monthly average actuals

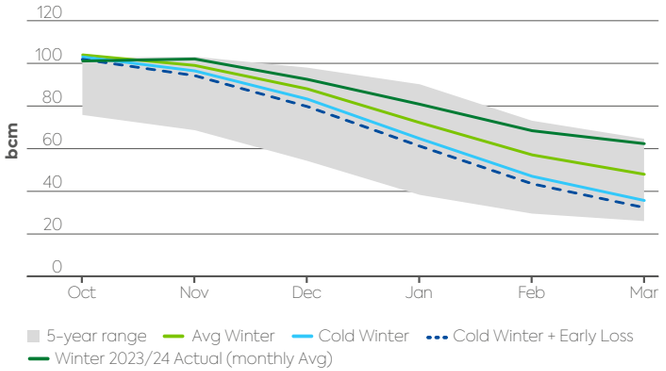


Table 7

European demand and flexible supply under average, cold and supply loss conditions

bcm	Demand	Remaining LNG capacity	Remaining storage stocks
Average winter	259.9	34.1 (31%)	47.8 (46%)
Cold winter	285.9	20.4 (19%)	35.6 (32%)
Cold winter + early termination of Russian flows through Ukraine	285.9	20.4 (19%)	32.1 (29%)

Winter preparations

Preparing for the coming winter

Preparing for the coming winter

As a prudent system operator, we are working closely with the Department for Energy Security and Net Zero (DESNZ), Ofgem and NESO to assess the potential scenarios and associated risks that may arise during the coming winter.

We have already taken several steps to ensure we are well prepared to maintain safe and secure operation of the gas transmission system, and we continue to look for opportunities to implement further improvements in light of the current geo-political context surrounding the energy landscape. Areas with particular focus include:

- On the 10, 11 and 16 of October NGT will facilitate the annual Network Emergency Coordinator (NEC) industry assurance exercise. Key to this year's event will be: the testing of a modernised public appeals process; the introduction of the direction for Category C priority customers to minimise their gas use before ceasing to take gas; and the pre-determination of a Stage 3 emergency declaration will assure a detailed test of the isolation of domestic consumers. As in previous years the exercise will continue its whole energy system focus.
- Our latest reform package to the Gas Demand Side Response (DSR) was implemented earlier in the year following approval of UNC Modification 0866. This introduced a number of enhancements to the rules by which NGT pre-contracts for DSR volumes ahead of winter - the enhancements were, in most cases, based on feedback from industrial consumers and their associations. Our third tender for DSR options concluded on 30 August 2024; we are now assessing the bids which can deliver a demand reduction for the forthcoming winter period(s).
- We have undertaken significant work to maintain our assets over the summer period, so we are heading into winter with good asset availability.

Factors that may influence the outlook for winter

Whilst we are, and will be, taking every appropriate step possible to prepare for the coming winter, there are a number of factors outside our control that could affect the outlook for winter 2024/25, including:

- the weather – a very cold winter will mean higher demands on the NTS
- the cost of energy and how this may affect demand
- EU storage position and re-gasification capability
- further disruption to gas supplies or shipping routes due to the ongoing conflicts in Ukraine and Gaza
- global LNG availability
- currently unforeseen global events
- maintenance activities over-running/unplanned asset outages.

Looking to the future: Gas Supply Security Assessment

In 2023, the UK Government published the Powering up Britain: Energy Security Plan, which committed to strengthen energy security through a new medium-range Gas Supply Security Assessment. This agreement aims to assess gas supply security over a 5-10 year horizon.

We've been working alongside DESNZ and the National Energy System Operator (NESO) to support the development of the methodology for this assessment, which has now been published by DESNZ and can be accessed online.

The Gas Supply Security Assessment will be implemented through an Ofgem License Condition and will be delivered by NESO on an annual basis once it is launched. We will continue to input into the development of the methodology ahead of the first publication.

Supply & demand scenarios

Our demand scenarios

The Winter Outlook presents three scenarios that illustrate how the NTS could be balanced under a range of credible demand profiles.

It is important to note that none of our scenarios are intended to illustrate a best or worst case for the forthcoming winter. The aim is to provide a range of scenarios that highlight the extent to which flexible sources of supply are available to GB to meet different demand levels.

The demand is based on our expectations for the coming winter as detailed in the demand chapter earlier in the document. In these scenarios we have applied historic weather conditions to understand what demand could look like this winter if we see challenging weather patterns. These weather scenarios are set out in table 8.

To model supply we have defined a merit order to simulate how the market may balance supply and demand. It should be noted there is significant flexibility in the GB gas market so there are a number of different ways to balance supply and demand. This will depend on a number of factors such as global gas markets, weather conditions in Europe and commercial contracts.

Table 8
Scenarios

Scenarios	Rationale
Scenario 1: Typical winter (2019/20)	We simulated demand based on the weather experienced in winter 2019/20 as being representative of the daily demand we would expect in a typical winter.
Scenario 2: Cold winter (2010/11)	We have simulated demands from winter 2010/11 as representative of a cold winter, as this period contains the highest-ever daily gas demand level seen on the NTS, with sustained high demands throughout the majority of the winter.
Scenario 3: Cold snap (2017/18)	We have simulated demands from winter 2017/18 as representative of demand levels during an extreme cold snap as this period contains the 'Beast from the East' which resulted in some of the highest daily demand levels seen in the last five years, and this period is the most recent example of market tightness.

The merit order applied looks to utilise UKCS, some Norway imports, and limited levels of LNG as a baseload supply. We then look to balance supply and demand using the rules to the right.

Supply deficit

In the event the NTS is under-supplied, it is presumed there will be an increase in storage withdrawal, Norwegian imports and LNG deliveries, whilst reducing any continental Europe exports, prior to requiring continental Europe imports and maximising storage withdrawal.

Supply surplus

In the event the NTS is over-supplied, gas is presumed to be injected into GB storage and/or gas exports to continental Europe will increase, before LNG supplies are reduced.

Scenario 1: typical winter, European imports minimised

Key observations:

- Continental imports are not required to balance demand in this typical winter scenario.
- Overall demands are comparable to our central Winter Outlook forecast.
- GB storage is utilised throughout the winter to meet higher demands. Periods of lower demand provide the opportunity for GB storage to refill.

This scenario is based on the weather conditions experienced in the 2019/20 winter.

While this is close to an average winter this is not exactly the same as the seasonal normal winter our forecasts are based on. So, while overall supplies and demands are similar to our central forecast, there are some minor differences.

Conditions are mild for most of the winter which limits the depletion of storage, therefore a high deliverability level is maintained throughout the winter. There are a few colder spells in the second half of the winter and these see storage operators take advantage of the opportunity to utilise their stocks. Withdrawals on the two highest demand days are 83 mcm/d and 73 mcm/d respectively.

Under these conditions there is huge flexibility, so in real world conditions the way supply balances demand could be very different.

Figure 20
Scenario 1 supply

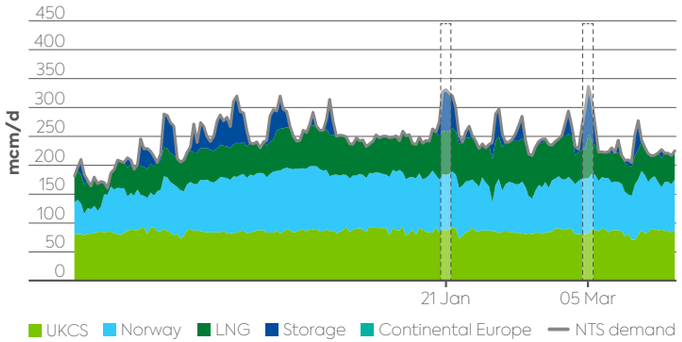


Table 9
Compare scenario demand with central forecast (bcm)

Demand breakdown	Scenario	Winter Outlook forecast
NDM	27.3	27.4
DM + Ind	3.8	3.8
Power	7.8	7.8
Ireland	3.5	3.5
Continental exports	0.8	0.5
Total	43.2	43.2

Table 10
Compare scenario supply with central forecast (bcm)

Supply breakdown	Scenario	Winter Outlook forecast
UKCS	15.6	15.5
Norway	15.8	15.7
LNG	10.7	10.7
Continental imports	0.0	0.2
Net storage withdrawal	1.1	0.8
Total	43.2	42.8

Table 11
Interesting days breakdown (Peak day 5 Mar/2nd highest demand 21 Jan)

Supply breakdown	Peak	Supply breakdown	Cold
UKCS	82	UKCS	87
Norway	96	Norway	96
LNG	75	LNG	75
IUK/BBL	0	IUK/BBL	0
Storage	83	Storage	73
Demand	337	Demand	331

Scenario 2: cold winter, increased gas for power, European imports minimised

Key observations:

- Continental imports are required to balance demand in this cold winter scenario.
- Overall demands are higher than our central Winter Outlook forecast.
- GB storage is utilised throughout the winter to meet higher demands. A persistent cold spell in December limits refill opportunities and deliverability is reduced.

This scenario is based on the weather conditions experienced in the 2010/11 winter.

The colder weather increases demand, mostly NDM, by almost 3 bcm over the winter. To reflect the potential for reduced imports of electricity, we have increased NTS power demand by 10%.

To match the increased demand, there are small increases to both UKCS and Norwegian supplies, with LNG increasing by over 4 bcm compared to our central forecast. Overall storage use is lower with the high demands limiting the chance to recycle storage during the winter.

On the peak demand day (1 Dec), storage levels are very high so there is no need for continental imports to balance demand. The cold weather persists for much of December and this significantly depletes storage levels, with limited opportunities to refill. On 20 December demand is 408 mcm, just below the peak day. With storage restricted, there is a requirement of around 18 mcm/d of continental imports to meet demand.

Figure 21
Scenario 1 supply

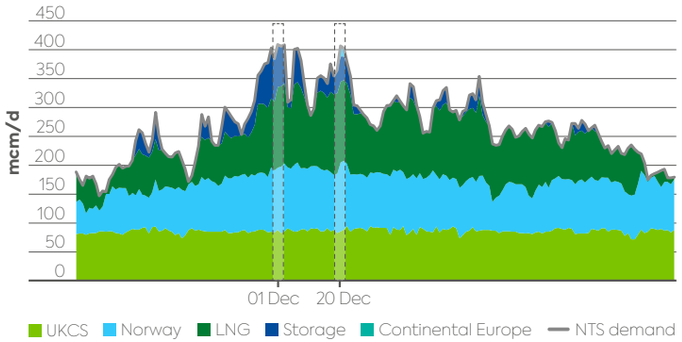


Table 12
Compare scenario demand with central forecast(bcm)

Demand breakdown	Scenario	Winter Outlook forecast
NDM	30.1	27.4
DM + Ind	3.9	3.8
Power	8.5	7.8
Ireland	3.6	3.5
Continental exports	0.8	0.5
Total	47.0	43.2

Table 13
Compare scenario supply with central forecast (bcm)

Supply breakdown	Scenario	Winter Outlook forecast
UKCS	15.6	15.5
Norway	15.8	15.7
LNG	15.2	10.7
Continental imports	0.0	0.2
Storage withdrawal	0.4	0.8
Total	47.0	42.8

Table 14
Interesting days breakdown (Peak day 1 Dec/max continental imports 20 Dec)

Supply breakdown	Peak	Supply breakdown	Imports
UKCS	87	UKCS	85
Norway	109	Norway	120
LNG	140	LNG	140
IUK/BBL	0	IUK/BBL	18
Storage	74	Storage	44
Demand	410	Demand	408

Scenario 3: 15 day cold snap

This scenario is based on the 'Beast from the East' cold snap experienced in February and March 2018, which included the coldest CWV day in the last 20 years.

This cold snap period was the most recent example of market tightness in Great Britain. This far in advance, we cannot accurately predict if or when a cold snap may occur this winter or at what level GB storage stocks may be at that point. Therefore these illustrations highlight the deliverability difference of GB MRS storage at stock levels of 75% and 25% full and how that impacts the need for alternative sources of supply.

Figures 21 and 22 are focussed on the flexible sources of supply LNG, GB storage, and imports from continental Europe. UKCS and Norway supplies are consistent with our other scenarios.

Maximum storage deliverability is shown on the charts as a percentage. This is the maximum percentage of total storage deliverability that could be provided at the current stock level.

Table 15
Storage stock levels for scenario 3

MRS storage % full	Total MRS storage stock on first day of cold snap (mcm)	Total MRS storage volume used during cold snap (mcm)
75	1,157	527
25	379	163

Key observations:

- **GB storage historically acts as a short-term balancing source of supply during periods of higher demand as shown in this scenario.**
- **Additional flexible supplies are required when storage levels are low to supplement LNG, which reaches maximum capability during the cold snap.**
- **Continental imports are required to balance supply and demand in the low stocks scenario. A total of 141 mcm is needed between 26 February and 1 March, with a maximum of 62 mcm needed on 1 March.**
- **In the high stocks scenario, imports from continental Europe are not required.**
- **Storage continues to deliver during the cold snap but as stocks deplete the max deliverability falls.**

Figure 22
Cold snap supplies with 75% full MRS storage

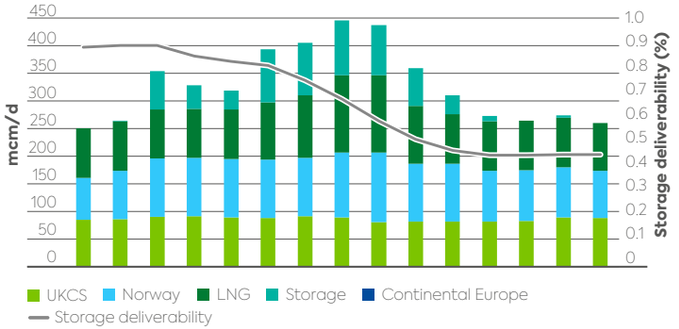
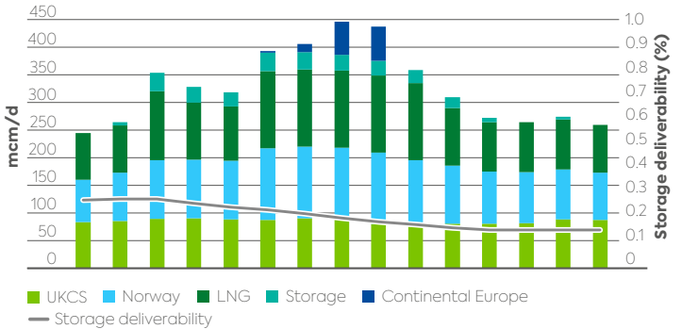


Figure 23
Cold snap supplies with 25% full MRS storage



Sensitivities

To understand the impact of disruptions to the market we have included some sensitivities to our scenarios. These were applied to the cold winter scenario and the cold snap.

Cold snap with infrastructure loss

This tests the impact of a loss of North Sea infrastructure due to cold weather. To simulate this we have reduced both UKCS and Norwegian imports by a combined 50 mcm/d for seven days starting 26 February, the period with the highest demands.

There remains sufficient flexibility to balance the market. LNG flows increase up to their maximum levels which covers for part of the loss. There is limited scope for storage response, with some additional supply possible over the peak days but this results in reduced flows for the remainder of the period. The bulk of the response was a significant increase in imports via Interconnector and BBL.

Figure 24

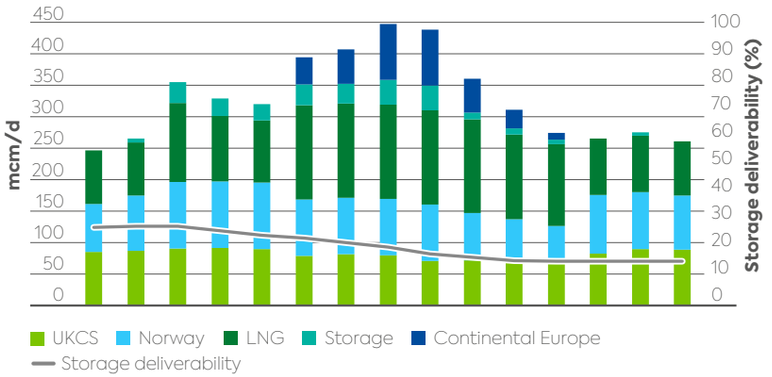


Table 16
Compare peak day (1 March) with and without supply loss

Supply breakdown	Without loss	With loss
UKCS	89	79
Norway	130	90
LNG	140	150
Storage withdrawal	29	40
Continental imports	60	89
Total	447	447

Contact us

Continuing the conversation

Continuing the conversation

We look forward to continuing the conversation with you at our upcoming engagement forums. The dates for our next Gas Operational Forums are available in the box to the left.

You can find details about the forums, and how to sign up to attend them on our website.

Your feedback is so important to us

Letting us know what you think of the information we share with you, and how we're sharing it, helps us shape our future communications to ensure we're communicating what matters most, in a way that suits you. Send us an email to share your views and feedback on our publications.

Upcoming Gas Operational Forum dates:
– 17 October 2024 (hybrid forum)
– 21 November 2024 (online only)

For any press enquiries, or if you have any comments or questions about the content contained within this publication specifically, please get in touch with:

Jake Tudge

Contact Jake Tudge for any enquiries for our leadership team.

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Appendix

Data tables in TWh and GWh/d

Appendix – Data tables in TWh and GWh/d

Table A
Forecast total gas demand for winter 2024/25, and weather corrected actual demand for 2023/24

TWh (including shrinkage)	2023/24 actual demand	2023/24 weather corrected demand	2024/25 forecast
NDM	275.7	295.1	301.4
DM + Industrial	42.1	42.8	41.9
NTS power	90.3	90.7	85.4
Total GB demand	408.1	428.5	428.7
Ireland	32.6	32.8	38.7
Exports to continental Europe	18.5	18.7	5.2
Total NTS demand	462.4	481.9	475.0

Table B
Historic and forecast supplies

Winter TWh/(average GWh/d)	2022/2023 actual	2023/2024 actual	2024/2025 forecast
UKCS	206.9 TWh (1,137 GWh/d)	181.4 TWh (991 GWh/d)	170.1 TWh (935 GWh/d)
Norway	158.7 TWh (872 GWh/d)	171.8 TWh (939 GWh/d)	172.2 TWh (946 GWh/d)
EU imports	0.6 TWh (3 GWh/d)	0.8 TWh (4 GWh/d)	2.3 TWh (13 GWh/d)
LNG	172.7 TWh (949 GWh/d)	91.1 TWh (498 GWh/d)	117.9 TWh (648 GWh/d)
Net storage withdrawal	2.0 TWh (11 GWh/d)	14.2 TWh (78 GWh/d)	8.5 TWh (47 GWh/d)
Grand total	541.2 TWh (2,974 GWh/d)	459.3 TWh (2,510 GWh/d)	471.0 TWh (2,588 GWh/d)

Table C
Observed daily maximum, minimum and average daily supplies

	Observed daily volumes in winter 2023/24 (GWh/d)			
	Maximum	Minimum	Average	Max capability
UKCS*	1,095	818	991	1,100
Norway*	1,206	392	939	1,551
LNG	1,225	100	498	1,650
EU imports	79	0	4	1,232
GB storage	1,008	0	194	1,331

*Due to the offshore configuration at St Fergus we are unable to measure UKCS and Norwegian supplies separately as they enter our system at the same point. Therefore the individual contribution of these supplies is partially based on our estimates of the split at St Fergus.

Notes:

Actual demand is just that and does not include an adjustment for weather.

Weather corrected demand applies to NDM and DM only.

The forecast demand is based on a 'seasonal normal' view and is therefore weather corrected for NDM and DM.

Total demand also includes shrinkage.

Appendix – mcm to GWh conversion

Table D
Peak 1-in-20 demand for 2023/24 and 2024/25

GWh/d	2023/24	2024/25
NDM	3,485	3,586
DM and Industrial	343	330
Power	899	968
Ireland	333	330
Total demand	5,060	5,214

Note: excludes shrinkage

Table E
Supply capability 2023/24 and 2024/25 and operational maximum

GWh/d	2023/24	2024/25	Operational maximum
UKCS	1,287	1,100	1,100
Norway	1,551	1,551	1,551
LNG	1,650	1,650	1,650
EU imports	1,375	1,232	979
Storage	1,364	1,331	1,331
Total	7,227	6,864	6,611

Table F
Peak day supply margin for winters 2023/24 and 2024/25

Forecast GWh/d	2023/24	2024/25
1-in-20 peak demand	5,060	5,214
1-in-20 non storage supply	5,467	5,280
1-in-20 storage supply	1,364	1,331
1-in-20 total supply	6,831	6,611
1-in-20 margin	1,771	1,397

Note: excludes shrinkage

Glossary

List of glossary terms

Glossary

1-in-20 obligation
This is the highest level of gas demand that we should expect to experience only once in every 20 years. We are obliged to plan and develop the network to meet the 1-in-20 level.

bcm
Billion cubic metres.

Compressor
Compressors are used to move gas around the transmission network through high pressure pipelines. There are currently 71 compressors at 24 sites across the country. These compressors move the gas from entry points to exit points on the gas network. They are predominantly gas driven turbines that are in the process of being replaced with electric units.

Daily metered (DM) demand
A classification of customers where gas meters are read daily. These are typically large-scale consumers.

Demand Side Response (DSR)
Demand Side Response is a service that was developed by gas industry representatives to encourage daily metered (DM) consumers to offer to reduce their gas demand during times of system stress.

Electricity (power) generation
Electricity generated by the burning of gas.

Export to continental Europe
Gas exported to continental Europe via interconnectors.

GB demand
Demand excluding interconnectors, storage injection and exports to Ireland.

GWh
Gigawatt hours.

Household enery prices
The price end consumers pay for their gas.

Import/export tariff threshold
Break-even costs associated with the utilisation of cross-border interconnector pipelines, flowing gas between the UK and European continent.

Injection
Gas for storage injection. This is gas which is put ('injected') into a gas storage facility.

Interconnector
Two pipelines connecting GB and the EU. The Interconnector (UK) Limited is a bi-directional gas pipeline connecting Bacton in the UK and Zeebrugge in Belgium. BBL is a bi-directional gas pipeline connecting Bacton in the UK and Balgzand in the Netherlands.

LNG
Liquified natural gas that has been converted to liquid form for ease of storage or transport. It is formed by chilling gas to -161°C so that it occupies 600 times less space than in its gaseous form.

Margin
The difference between gas supply and demand. A positive margin indicates supply is greater than demand. A negative margin indicates when demand is greater than supply.

mcm
Million cubic metres.

N-1 largest loss / Under N-1 conditions
The N-1 assessment means that we, as the Gas System Operator, have to ensure that:

- the NTS is designed and built to meet a 1-in-20 peak day demand as required under the Gas Transporters Licence. This is defined as the amount of infrastructure (pipes and compressors etc.) needed to transport the gas that would be required by our customers in the coldest day of winter, in the coldest winter we could expect in a 20 year period.
- the high pressure gas network has sufficient redundancy to meet a 1-in-20 peak day demand, even with the failure of the single biggest piece of infrastructure.

National Gas Supply Emergency (NGSE)
A network gas supply emergency (NGSE) occurs when we are unable to maintain a supply/demand balance on the NTS using our normal system balancing tools. As a consequence of the imbalance between supply and demand, pressures in the system fall and it may not be possible to safely maintain gas supplies to industrial and domestic gas consumers who are supplied with gas either directly or indirectly from the NTS. An NGSE may be caused by unforeseen circumstances, such as pipeline or equipment failure, or where system demand exceeds either total supply or planned system capacity.

Glossary

NBP
The National Balancing Point (NBP) is a virtual trading location for the sale, purchase and exchange of UK natural gas.

Non-daily metered (NDM) demand
A classification of customers where gas meters are read monthly or at longer intervals. These are typically residential, commercial or smaller industrial consumers.

Non-storage supply
Gas that comes from sources other than gas storage. This includes supply from the UK Continental Shelf (UKCS), Norwegian imports, European imports and imports of liquefied natural gas (LNG).

Norway/Norwegian Continental Shelf (NCS)
Gas supplied to the NTS via pipelines from Norway.

Power
Gas demand for power stations connected to the electricity transmission system. This includes all power stations connected to the NTS along with some connected to the Gas Distribution Network.

NTS shrinkage
NTS shrinkage is made up of 3 components. Unaccounted for gas (UAG) is unallocated gas or gas that is lost or stolen from the system. Own use gas (OUG) is gas that is used in the running of the system e.g. compressor fuel. And calorific value shrinkage (CVS) is where gas of a particularly low or high CV enters the distribution network which differs with the flow weighted average CV of gas entering that network.

Peak day capability
This refers to the maximum level of supply capability of the NTS.

Peak demand
This is a 1-in-20 demand which means that statistically, in a long series of winters, it would be exceeded in one out of 20 winters. The 1-in-20 peak day is calculated from a statistical distribution of simulated historical peak days. It is not the highest demand in the last 20 years, nor is it the demand that would be expected in the cold weather experienced in the last 20 years.

Peak supply
This refers to the maximum supply that can be achieved on any given day.

Price differential
The difference in price between markets e.g. GB and continental Europe. Energy supplies tend to flow to whichever market has the highest price.

Seasonal normal demand (SND)
The level of gas demand that would be expected on each day of the year. It is calculated using historically observed values that have been weighted to account for climate change.

Total demand
All NTS demand, including interconnectors, storage injection and exports to Ireland.

TTF
TTF is the virtual trading point of the Title Transfer Facility or the Netherlands Securities Transfer Fund, which is used as a reference gas market at European level.

UK Continental Shelf (UKCS)
UKCS is made up of the areas of the sea bed and subsoil beyond the territorial sea over which the UK exercises sovereign rights of exploration and exploitation of natural resources.

Weather corrected
The demand expected with the impact of weather removed. Actual demand is converted to demand at seasonally normal weather conditions, by multiplying the difference between actual CWV and expected CWV by a value that represents demand sensitivity to weather.

Withdrawal
Gas which enters the NTS from a storage facility.

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