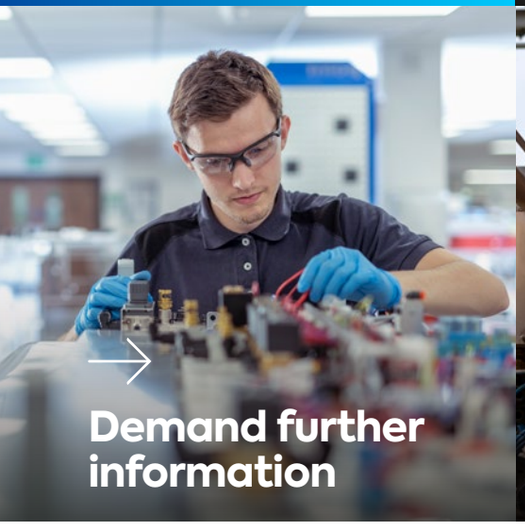
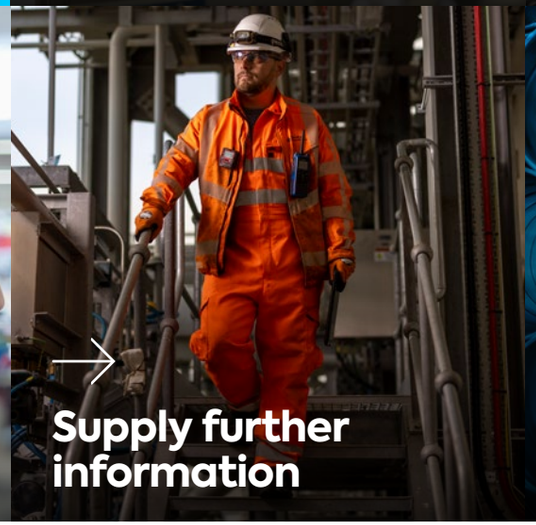
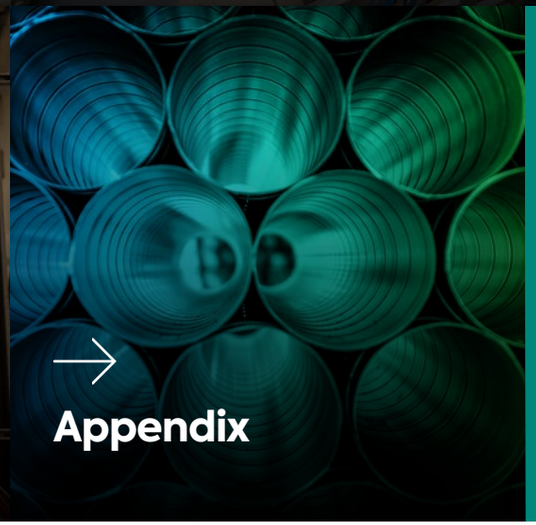
national gas transmission

Gas Transmission Winter Review and Consultation

June 2024







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Glossary

Getting more from our data

Additional information relating to the data shared in this publication is available within the Data Workbook which is available separately on our website.

Welcome

How to use this document

We have published the Gas Winter Review and Consultation 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 our 2024 Gas Winter Review and Consultation

Each year we publish the Winter Review and Consultation, which looks back at gas supply and demand for the previous winter (1 October 2023 to 31 March 2024) and reviews the various behaviours and patterns that we observed. Towards the end of the document we will also briefly outline our preparations for the coming winter, as well as our current thinking on the types of scenarios we intend to use in our forthcoming Winter Outlook publication. You'll have the opportunity to comment on this through the consultation element of this document, and I'd really encourage you to do so.

Looking back, last winter was generally milder than average and, although there were some cold spells, it was statistically the fifth-warmest winter in the United Kingdom since 1884 (Met Office). Ultimately, this meant that demand within Great Britain (GB) was frequently lower than the levels seen in previous winters, but the cold snap in early December was significant enough to uplift total GB demand to put Winter 2023/24 at a comparable level to the previous year.

Supplies in winter 2023/24 were diverse, with UKCS & Norway providing the steady supplies we would usually expect. Flexible supplies came predominantly from Liquified Natural Gas (LNG) and GB gas storage; imports from Continental Europe also provided some supply when it was needed.

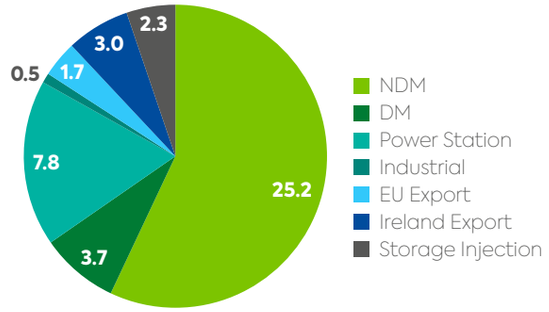
When looking at total National Transmission System (NTS) demand, we saw a significant reduction in winter 2023/24 when compared to the previous year. This was primarily due to lower gas exports to continental Europe, which are now approaching more normalised levels after a significant peak in 2022 when Russian gas supplies to Europe were curtailed.

I hope this publication provides you with useful insight into what we saw in winter 2023/24 and that you find our early thoughts about the forthcoming winter helpful. I look forward to continuing to engage with you through our various publications and industry forums.

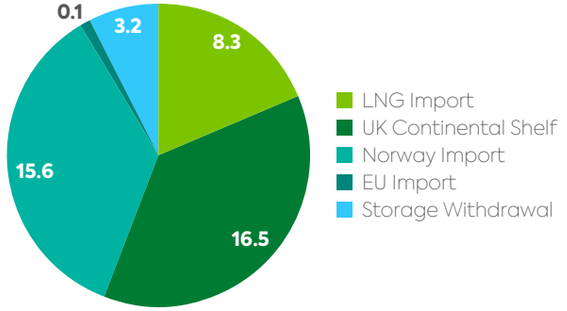
As with all of our publications, we really value your feedback – let us know what works, what doesn't, and how we could improve. If you'd like to get in touch, you can find contact details towards the end of the document..

Ian Radley
Director, System Operations

Demand breakdown – winter 2023/24 (bcm)



Supply breakdown – winter 2023/24 (bcm)



About US

Other publications in this suite:

- Gas Summer Outlook published annually in April.
- Annual Network Capability Assessment Report (ANCAR) published annually in June.
- Gas Winter Outlook, published annually in September.
- Gas Ten Year Statement (GTYS) published annually in November.

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 (GB). 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 they 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 system in the event of 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.

The operational configuration of the NTS infrastructure requires additional flexibility during the winter period...

Demand and Supply

Demand summary

GB demand* for Winter 2023/24 was lower than the previous winter (circa 1.9 bcm).

Some key observations on last winter's demand behaviour for GB are:

- Weather corrected NDM demand increased slightly from the previous year, by about 0.5 bcm or roughly 2%. This would suggest that many of the energy savings measures implemented by consumers in winter 2022/23 continued through last winter too.
- Total demand for power over the winter period continues to reduce year on year. This is due to a combination of increased wind generation and higher electricity imports into GB.
- **The peak daily gas demand for power generation in winter 2023/24 was 102.6 mcm/d,** the highest we have seen to date. This was due to lower availability of wind combined with high electricity demand and lower imports.
- Demand for DM & Industrial were comparable to the previous winter.

Total NTS demand reduced significantly in winter 2023/24 when compared to winter 2022/23.**

Some key observations on last winter's demand behaviour for GB are:

- The reduction was largely due to lower exports to continental Europe, which was influenced by a number of factors. More information on this is available in our Exports to continental Europe page.
- Demand for exports to Ireland & Storage were comparable to the previous winter.

The highest daily demand during winter 2023/24 was 388 mcm/d on 18th January. This was lower than the max of 419 mcm/d last winter, this was mostly due to lower NDM demand due to the weather along with reduced exports.

In the subsequent chapters, we'll show a deeper dive into all demand categories.

* GB demand is comprised of gas used in households, the commercial sector and for industry.

** Total gas demand is GB demand combined with exported gas demand (gas exported via interconnectors to mainland Europe and Ireland) and storage injection.

Figure 1
Demand – winter key stats

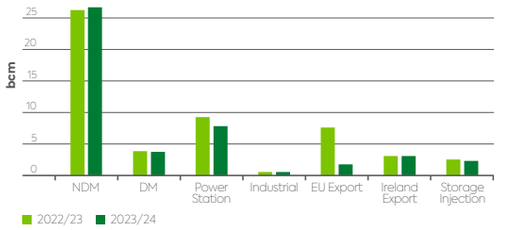


Table 1
Demand summary

	Winter 2021/22		Winter 2022/23		Winter 2023/24		
Demand in bcm	**2021/22 actual demand**	**2021/22 weather corrected demand**	**2022/23 actual demand**	**2022/23 weather corrected demand**	**2023/24 forecast**	**2023/24 actual demand**	**2023/24 weather corrected demand**
NDM	28.1	29.7	25.4	26.3	27.9	25.2 ↓	26.8 ↑
DM	4	4	3.8	3.8	3.5	3.7 ↓	3.7 ↓
NTS Industrial			0.5	0.5	0.7	0.5 ↔	0.5 ↔
NTS Power	10.1	10.1	9.3	9.3	7.8	7.8 ↓	7.8 ↓
GB total	42.2	43.8	39.0	39.9	39.9	37.1 ↓	38.8 ↓
Ireland	2.8	2.8	3	3	3.7	3.0 ↔	3.0 ↔
Interconnector export	3.7	3.7	7.6	7.6	3.2	1.7 ↓	1.7 ↓
Storage injection	1.3	1.3	2.5	2.5	N/A	2.3 ↓	2.3 ↓
Total demand	50.3	51.9	52.1	53.0	46.8	44.1 ↓	45.8 ↓

The totals may not match the components due to differences in rounding and the impact of shrinkage.

Demand summary

- When comparing actuals NDM demand fell slightly, by about 1% or 0.2 bcm from last year. This was due to the milder weather.
- Figure 2 shows NDM demand against our seasonal normal curve. For most of the winter the actual demand is below seasonal normal, indicating warmer than average temperatures.
- Figure 3 shows the CWV compared to the seasonal normal and historic range. It is clear the colder spells (below the line) at the end of November and in mid January align with the spikes in NDM demand in figure 2.
- On a CWV basis last winter was the second mildest in the last 50 years, with only 2006/07 milder.
- When we compare weather corrected NDM demand there was an increase of 2% or 0.5 bcm. This is still significantly below 2 years ago and would suggest that many of the energy savings measures implemented by consumers in winter 2022/23 continued through last winter.

Figure 2
LDZ NDM demand – actual v seasonal normal

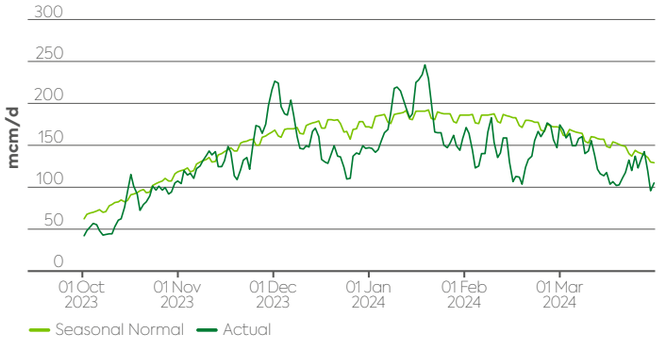
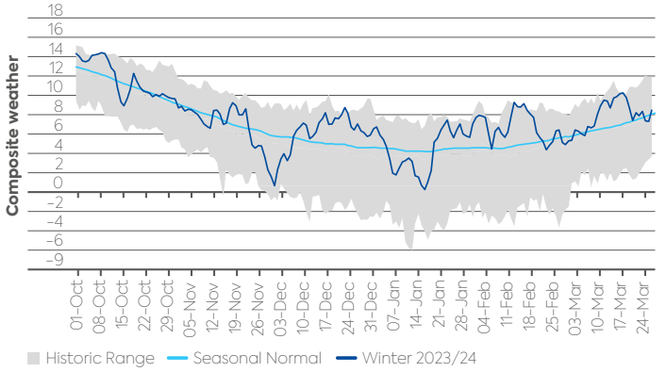


Figure 3
National composite weather winter 2023/24 and historic range



NTS demand for power generation Spotlight

NTS demand for power generation

Whilst total demand for gas for power generation is slowly reducing year on year as more renewable generation comes online, we expect the day-to-day variability to increase as a consequence. **During winter 2023/24 the peak gas demand for power generation was 102.6 mcm/d, which is the highest level of demand that we have seen to date (see table 2).**

If we took the maximum daily demand for each individual power station over the winter period and added them together, the total would be 119 mcm/d.

Electricity generation from gas

Table 3 shows that the total demand for gas for power generation has reduced when compared to the previous winter. This reduction can be attributed to an overall drop in electricity demand, an increase in renewable technology (especially wind), but is primarily driven by an increase in electricity interconnector flows from continental Europe.

A strong recovery in the French nuclear fleet, better hydro stocks in Norway and the addition of the Viking Link interconnector from January 2024 led to an increase in electricity imports into GB, which reduced the overall demand for gas to generate power.

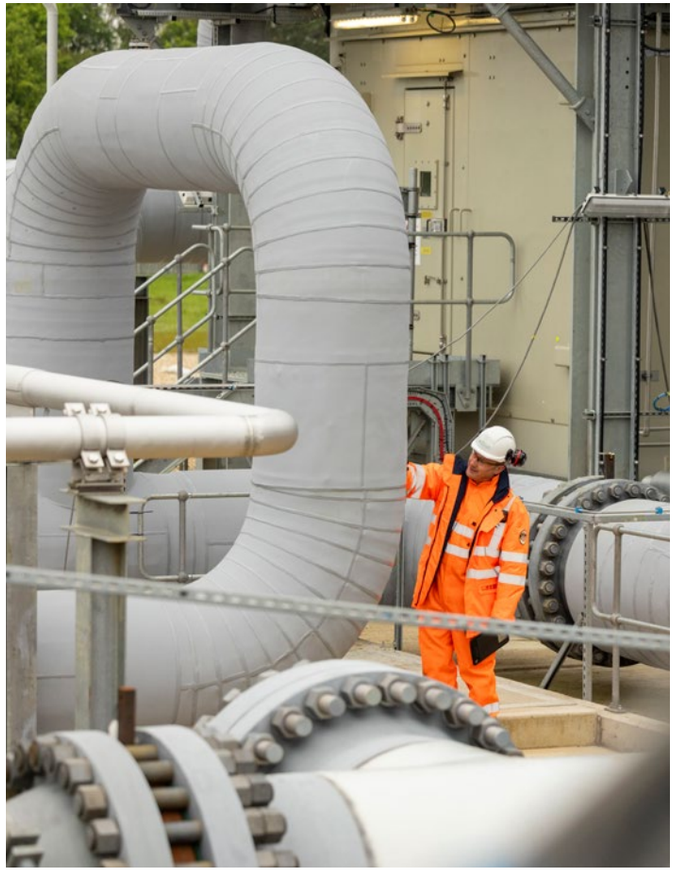


Table 2

Min, max and average daily Power Station Demand for the last 4 winters

Winter (mcm/d)	Min	Max	Average
2020/21	18.0	93.3	57.5
2021/22	15.2	92.2	51.8
2022/23	11.1	100.8	51.1
2023/24	11.6	102.6	42.8

Table 3

Electricity generation from gas – key stats

	2022/23	2023/24
Average electricity generated from gas in GB	33%	29%
Peak electricity generated from gas	58%	61%
Number of days where at least 40% of electricity was generated from gas	59	39
Number of days where at least 50% of electricity was generated from gas	21	9

Source: https://www.nationalgrideso.com/data-portal/historic-generation-mix/historic_gb_generation_mix

Supply summary

Supplies in winter 2023/24 were diverse, with UKCS & Norway providing steady supplies. Flexible supplies were predominantly from Liquified Natural Gas (LNG), along with GB storage.

Baseload supplies from the UK Continental Shelf (UKCS) and the Norwegian Continental Shelf (NCS) were broadly in line with our expectations.

- UKCS supplies were slightly lower than previous years. We believe this is a result of declining outputs from mature fields, which outweighed the production growth from more recent discoveries.
- In contrast, NCS supplies were higher than expected during the early part of winter due to higher levels of NCS production. This resulted in greater volumes available to be imported to GB.

Flexible supplies predominantly came from LNG and GB storage. A very small volume of imports came to GB from continental Europe.

- LNG supplies were lower than the previous year, which is a result of significantly reduced export flows to continental Europe.
- GB storage behaved as expected, filling during periods of low demand and emptying during periods of high demand.
- Imports from continental Europe remained low, as anticipated. Typically, the behaviour of the interconnectors is extremely price sensitive and therefore highly flexible.

Figure 4
Gas supply key stats

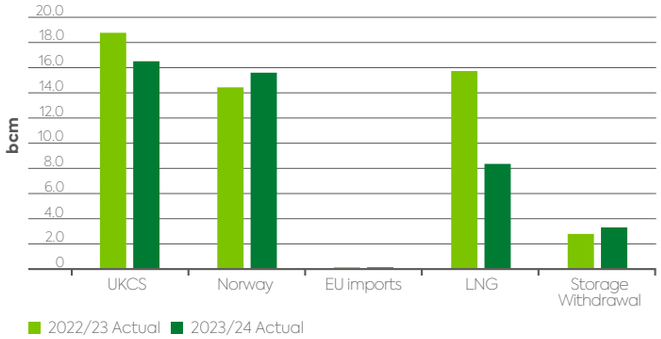


Table 4
Breakdown of Gas supply – A version in TWh can be found in the appendix

Winter supply (bcm)				
Winter	2020/21 Actual	2021/22 Actual	2022/2023 Actual	2023/2024 Actual
UKCS	17	16.9	18.8	16.5
Norway	18.7	18.9	14.4	15.6
EU imports	4.8	0.5	0.1	0.1
LNG	8.9	11.4	15.7	8.3
Storage Withdrawal	2.1	1.9	2.7	3.2
Grand Total	51.5	49.6	51.7	43.7

LNG supply

As expected LNG supplies were significantly lower than winter 2022/23, largely as a result of reduced export flows to continental Europe. There was a lower requirement for exports from GB into continental Europe, due to lower demand and increased supply (see Exports to Continental Europe). This was reflected in the narrower price spreads between NBP and TTF (figure 5) during winter 2023/24.

LNG supplies for winter 2023/24 were at the lowest we have seen over the past five years (see figure 6).

LNG supplies remains the most flexible supply source into GB. Over the last year, GB has demonstrated the ability to attract LNG shipments in a price sensitive global market.

GB continues to receive LNG from a diverse range of global suppliers (see figure 7), with North America being the primary suppliers last winter.

Figure 5
NBP–TTF day ahead price spreads (weekly average)

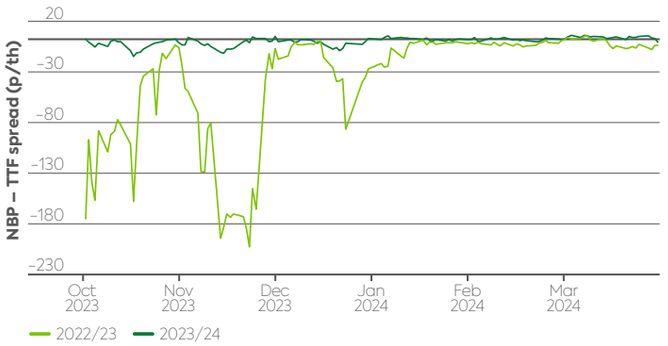


Figure 6
LNG supplies for the last 5 years

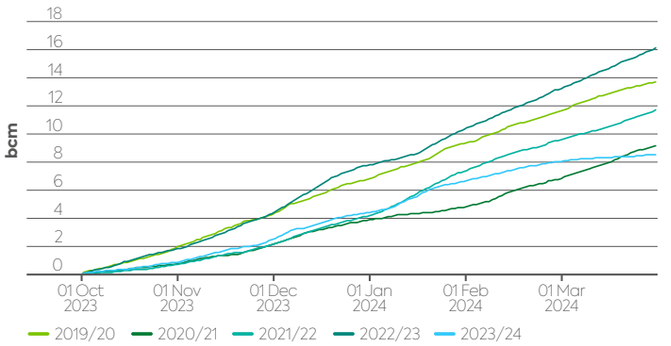
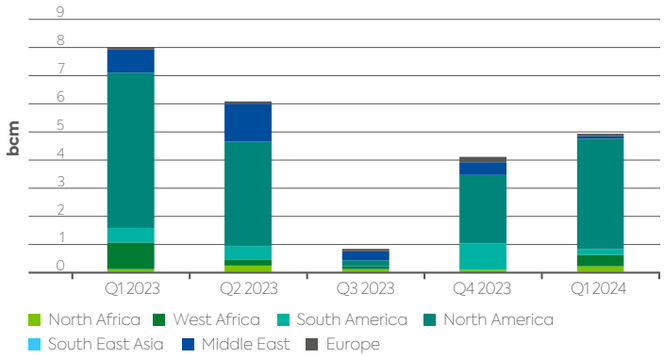


Figure 7
LNG supply source



Storage

GB Storage facilities behaved as expected, providing flexible supplies on to the NTS when needed. This was particularly evident during the cold snaps in December and January (figure 8).

On gas day 30 November 2023, we saw a total of 91.7 mcm of gas enter the NTS from storage withdrawal, the highest volume observed in over 2 years.

GB storage played a crucial role over winter, providing supply flexibility (driven by market signals) during periods of high demand and then re-filling during lower demand periods. The level of storage supply available during the cold snaps this winter meant that EU imports were largely not required.

Storage stocks at the end of Winter 2023/24 are comparable to the previous winter both including and excluding Rough (figure 8).

Rough started winter 2023/24 with circa 500 mcm more in storage when compared to the previous winter. Figure 9 shows that Rough ended the winter at a similar level to the previous winter meaning that Rough supplied significantly more gas during the recent winter.

The level of % storage fullness was similar over the past 2 winters on both 1 November and 1 March (see figure 9).

Figure 8
Total NTS Storage withdrawal

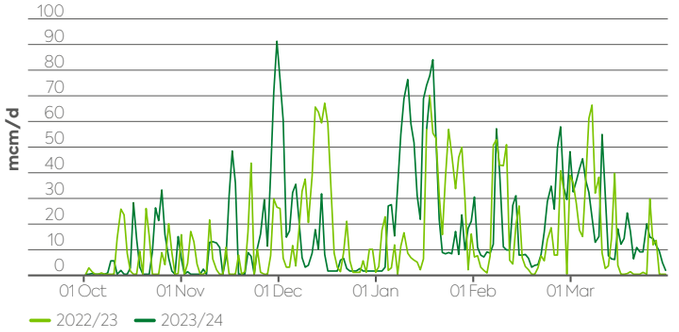
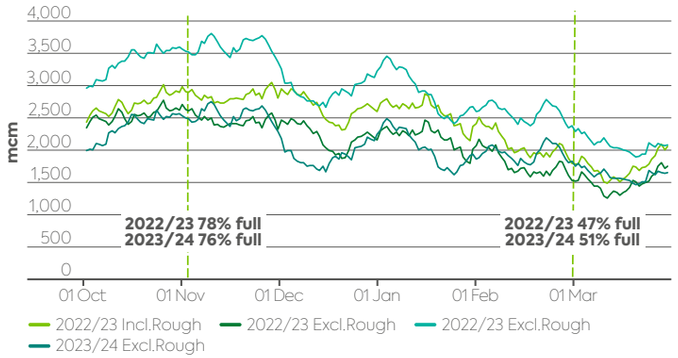


Figure 9
Storage Stocks 2022/23 and 2023/24



Network Operability

Compressor utilisation & operating the network

Linepack

Compressor utilisation & operating the network

Key observations

The use of our assets is continually changing due the variation in supply and demand patterns that we see.

Total compressor running hours in winter 2023/24 were 9,000 hours lower than the previous winter. This was largely due to demand being lower, along with significantly less supply entering the NTS at Milford Haven.

Figure 10 shows the total supply volumes into each terminal on the NTS (bcm, blue circles), and the compressor utilisation (hours, green circles) over the past two winters (2022/23 and 2023/24). The size of the circles indicates the amount of supply/ compressor run hours.

This helps to visualise how different supply and demand patterns can change how we operate the network, with different combinations of compressors utilised to move gas from an entry point to meet demand.

Some key examples of this are:

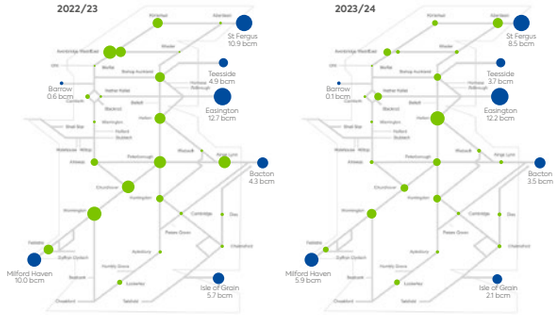
– LNG supplies at Milford Haven were significantly lower than the previous winter, meaning that a number of compressors were used less during winter 2023/24 (Felindre, Wormington & Churchover)

– In winter 2022/23 the Aberdeen compressor was on outage and therefore other compressors (Avonbridge & Kirriiemuir) were utilised more heavily. This year we can see that with Aberdeen back online, this was utilised instead.

The varying nature of supply and demand patterns and the consequential need to use our assets differently highlights the need to have healthy and resilient assets to ensure we can continue to meet the needs of our customers.

Figure 10

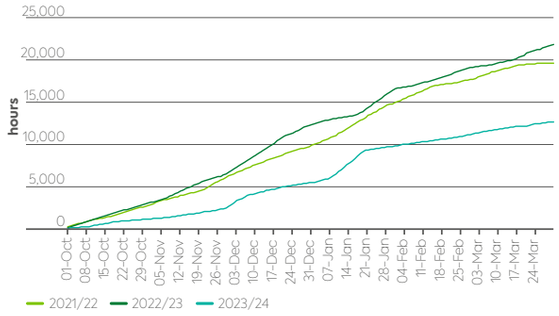
Variation in supply profiles and compressor running hours for winter 2022/23 and 2023/24



A different range of supply and demand patterns, eg significantly lower supplies from Milford Haven meant the use of compression across the network was very different between the 2 winters.

Figure 11

Winter Compressor use



Compressor usage in 2023/24 was 42% lower than the previous winter.

Linepack

Key observations

- The level of maximum and average linepack utilisation was comparable to previous winters.
- Our customers continue to tell us that they value the ability to supply gas and/or take demand flexibly through the day.

Linepack (the total volume of gas 'in the pipes' at any given time) is a critical tool in helping us manage within-day mismatches between supply and demand – the stock of gas in the system allows the network to operate when the volume of supply is different to the volume of demand.

During daily periods of peak demand (typically in the morning and early evening), demand often significantly outstrips supply, with the shortfall being supplied by the system linepack, which is then able to replenish during lower demand periods (such as overnight).

The linepack within the system is regularly utilised by our customers to flex their supply and demand profiles during the day. On the days where there is a high level of linepack swing additional use of our compressors is needed to maintain gas pressures across the system.

Reliable and resilient assets are therefore crucial in ensuring we can manage linepack variability throughout the day and continue to move gas to where it is needed, all whilst ensuring system pressures are managed within safe operating limits.

Figure 12
Range and average linepack swing

Maximum and average (the dots) linepack swing is comparable to previous years.

Preparing for winter

How we prepared for winter 2023/24

Ahead of winter 2023/24, we worked closely with DESNZ, Ofgem, National Grid ESO and our customers to develop improvements that would help to ensure we were well prepared to maintain safe and secure operation of the gas transmission system. Some particular focus areas were:

- **Data Portal –** We worked with our stakeholders to understand how the data portal could be improved and then undertook a full system refresh to make the system easier to navigate, as well as updating the interfaces to make them more user friendly.
- **The annual Network Emergency Coordinator (NEC) Assurance exercise** was held over three days in early October. 400 individuals across more than 50 organisations took part, which meant we could test many processes and interactions across the energy sector. You can read the full report on our website.
- **DSR –** Following the deployment of reforms to the voluntary Demand Side Response (DSR) regime in 2022 which delivered a tendering process for option and exercise contracts, we continued this programme of reform during 2023. This enabled large industrial consumers to contract directly with NGT for DSR as well as the option to contract through their shipper, delivered a new D-5 product to enable participation by consumers that need a longer lead time to reduce demand, expand the potential range of sites that could provide this service, plus a number of other process enhancements. These were delivered via UNC Modification (0844 and 0845) changes to our DSR methodology and the creation of standard conditions of contract for DSR consumer options.

Scenarios for the coming winter

We have included scenarios in our Winter Outlook publication for the past couple of years to help show how the NTS would balance under different supply and demand conditions. We are planning to continue to use them in our 2024/25 Winter Outlook publication, as we believe they have been a useful addition for our customers and stakeholders.

We intend to use the same base scenarios for this winter (table 5), refining them based on what we have learnt from winter 2023/24. We'll also consider any other intelligence we gather ahead of publishing the Outlook in full.

If there are any specific sensitivities you'd like to see reflected in our scenarios, please do get in touch.

Let us know here if there are any specific sensitivities you'd like us to consider in our scenarios.

Table 5
Scenarios

Scenario	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 also included the coldest CWV day in the last 20 years.

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 ESO 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 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:

- Refining the scope of the annual NEC Assurance Exercise (titled Fahrenheit for 2024) and testing the new Public Appeals Policy issued by the NEC in January. The policy sees the modernisation of this process, which asks the public to use less gas in the face of an emergency.
- We have raised a Demand Side Response (DSR) modification (Mod 866), which covers a number of improvements to the existing DSR process based on feedback from industry stakeholders.

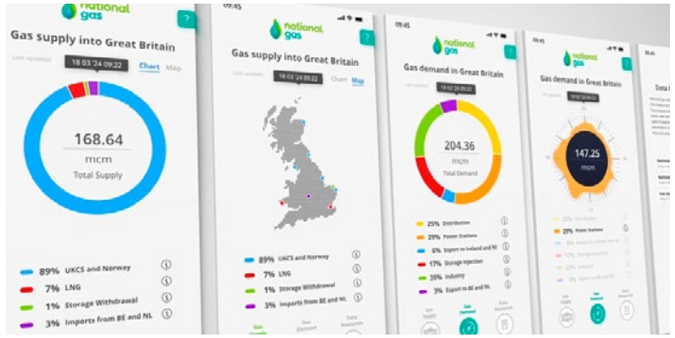
We'll share more information on our winter preparedness activities in the upcoming Winter Outlook publication in September.

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 of 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 wars in Ukraine and Gaza
- Global LNG availability
- Currently unforeseen global events.

Did you know you can get real-time gas supply and demand data on our new app? Available on iOS and Android.



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 (GSSA). The GSSA aims to assess gas supply security over a 5-10 year horizon.

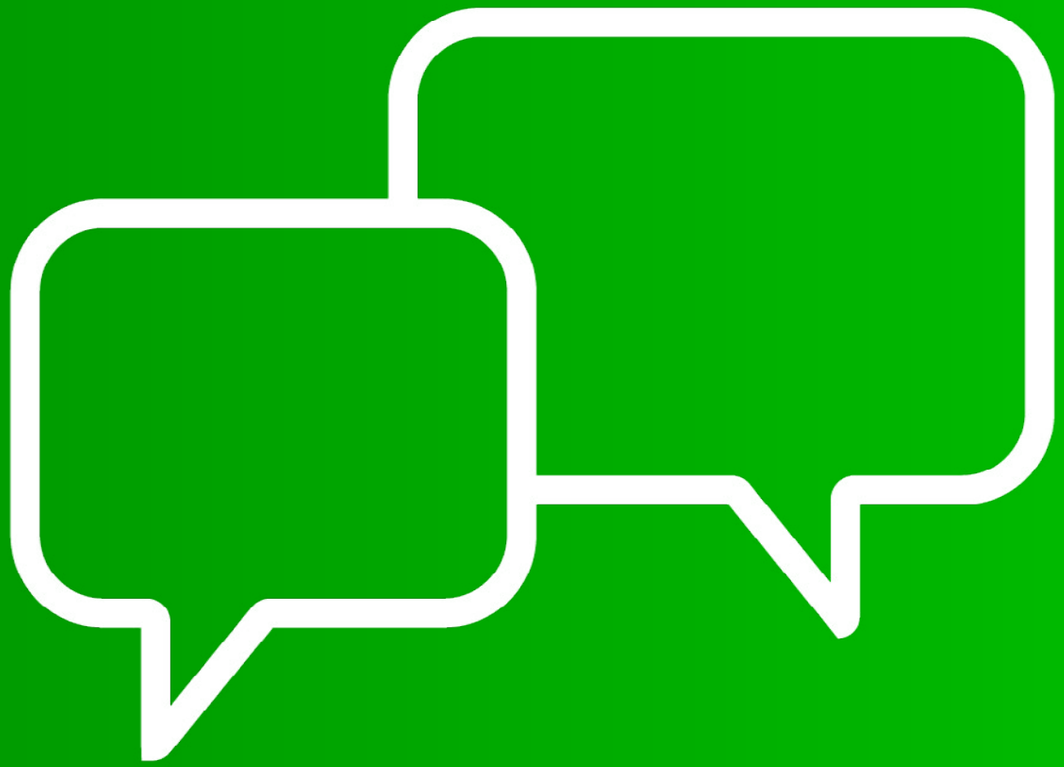
We've been working alongside DESNZ and the forthcoming National Energy System Operator (NESO), formerly referred to as the Future System Operator, to support the development of the methodology for this assessment, which has now been published by DESNZ and can be accessed online.

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.

Contact us

Consultation questions

Continuing the conversation



Consultation questions

We've set out some questions below that we'd really like to hear your thoughts on.

- Do you find this publication useful?
- Do you have any insights from winter 2023/24 you can share with us?
- Is there anything specific that you would like to see included in our scenarios?
- Is there anything that you are concerned about for this coming winter?
- What else would you like to see in our future publications?

Please get in touch here if you would like to share your thoughts on any of these points, or anything else.

We'd be delighted to hear from you.

Continuing the conversation

We look forward to continuing the conversation with you at our upcoming engagement forums. We regularly attend the Gas Operational Forum to share information and insight around actual supply and demand and how this compares to our forecast and scenarios.

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:

– 20 June 2024 (hybrid forum)
– 19 September 2024 (online only)
– 17 October 2024 (hybrid forum).

If you'd like to attend our Gas Operational Forums, you can sign up here.

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 our Corporate Affairs team:

Jake Tudge

Contact Jake Tudge for any enquiries for our leadership team

Pauline O'Brien

Contact Pauline O'Brien for any media enquiries

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Demand further information

- LDZ Non Daily Metered demand
- Industrial and LDZ Daily Metered demand
- NTS Demand for power generation
- Exports to Ireland
- Exports to Continental Europe

LDZ Non Daily Metered demand

What did we expect?

– Higher levels of demand than the previous winter, as some level of rebound was anticipated as prices began to reduce.

What did we see?

– Weather corrected NDM demand increased slightly from the previous year, by about 0.5 bcm or roughly 2%.

– Prices were marginally lower, compared to 2022/23, so this may have led to some small changes in consumer behaviour.

– These changes were very minor. When we assess the relationship between temperature and demand over the last two winters it shows very similar behaviour, as seen in figure 13.

– This indicates that many of the energy savings measures adopted by consumers in winter 2022/23 were retained last winter.

Figure 13
LDZ Non Daily Metered Demand Scatter Graph

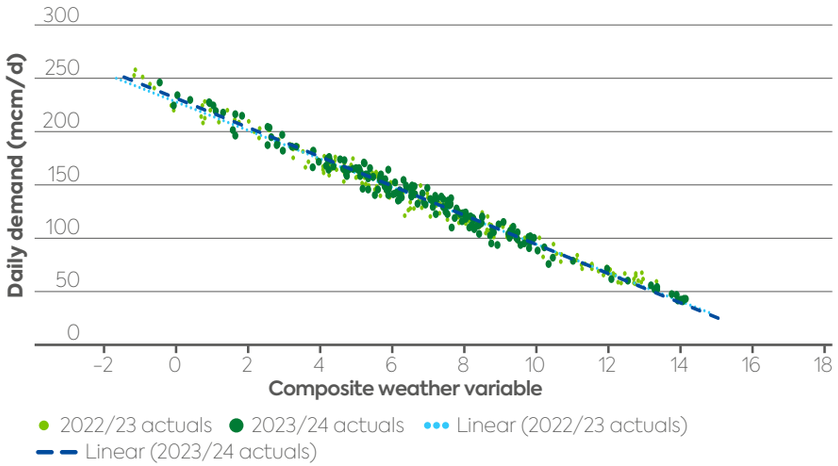
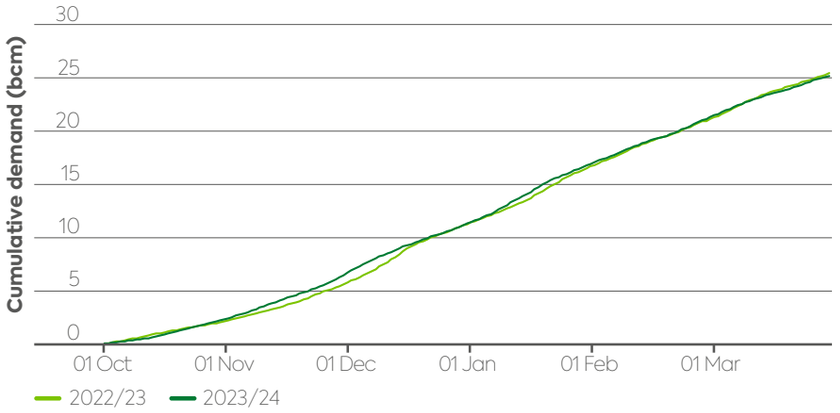


Figure 14
Non Daily Metered Demand YTD
(actuals – not weather corrected)



Non-daily metered demand calculated as the difference between LDZ offtake demand and LDZ Daily Metered demand

Industrial and LDZ Daily Metered demand

What did we expect?
– Similar flows to previous years.

What did we see?
– Demand for both Industrial and DM was very similar to the pervious winter. Demand for these categories tends to be fairly consistent.

Figure 15
Industrial and Daily Metered Daily Demand

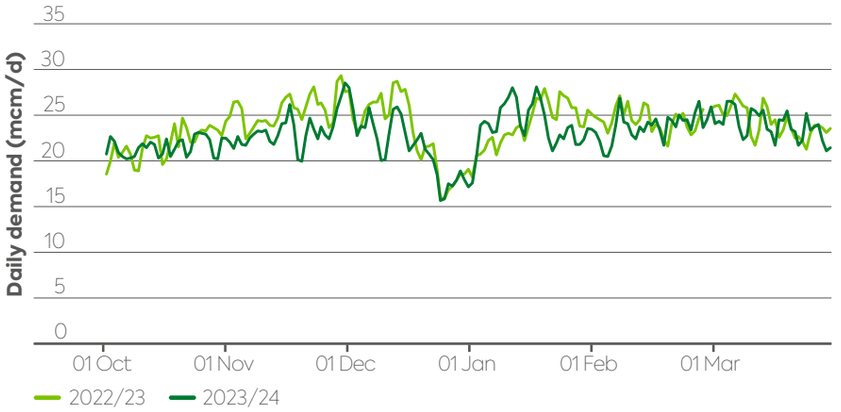
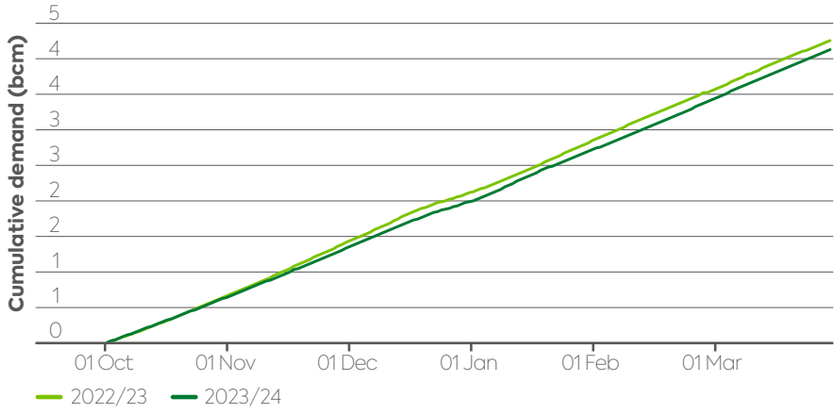


Figure 16
Industrial and Daily Metered YTD



Separate charts for Industrial and DM demands can be found in the data workbook published alongside this document

NTS Demand for power generation

What did we expect?

– Reduced levels of demand compared with winter 2022/23 given the expected reduction in electricity exports and an increase in renewable generation.

What did we see?

– Actual demand for 2023/24 was lower than in 2022/23 but higher than our forecast in the winter outlook.

– Whilst total demand is reducing, gas provides significant flexibility to support power generation and in winter 2023/24 there were 8 days where demand for power was over 90 mcm/d.

Figure 17
Daily NTS Demand for Power Generation

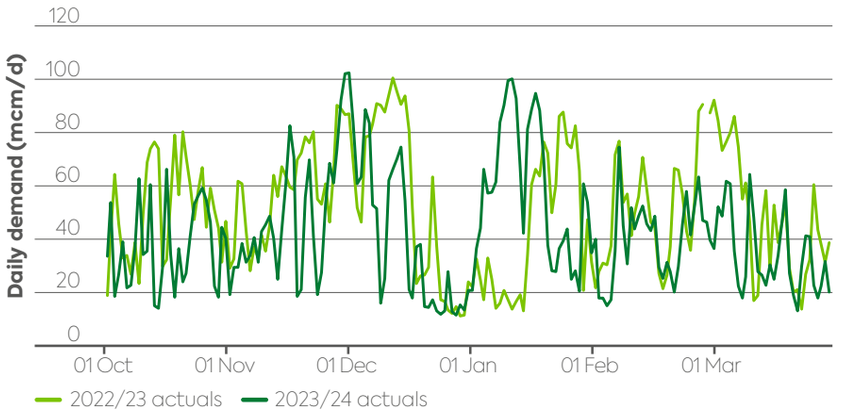
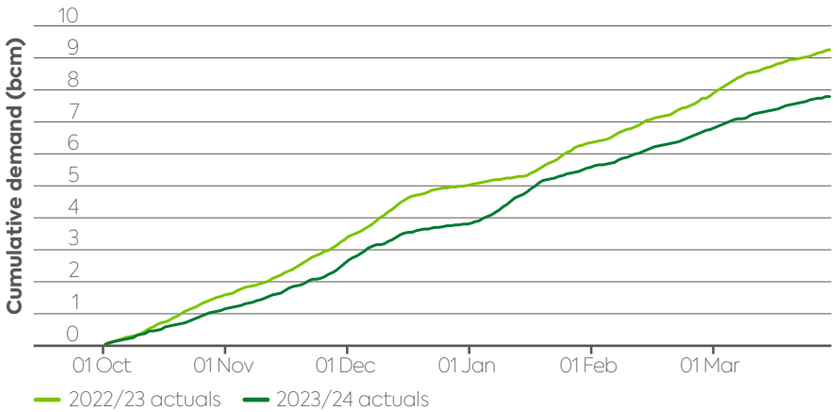


Figure 18
NTS Demand Power Generation YTD



Exports to Ireland

What did we expect?

– A demand increase of circa 20%, predominantly due to an anticipated increase in gas demand for power.

What did we see?

– Actual demand was comparable to winter 2022/23 and therefore lower that our forecast.

Figure 19
Daily Exports to Ireland

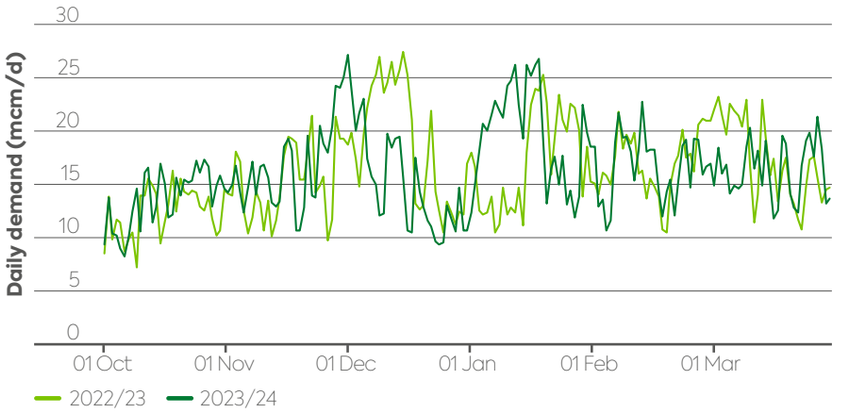
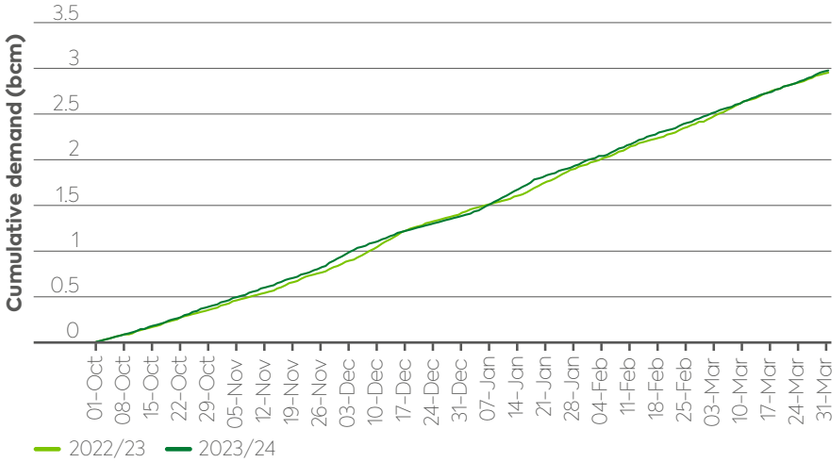


Figure 20
Exports to Ireland YTD



Exports to Continental Europe

What did we expect?

– We forecast a significant reduction as EU storage stock levels were strong heading into winter, alongside additional LNG re-gasification capability coming online in Europe.

What did we see?

Exports to continental Europe were lower when compared to the previous winter for a number of reasons:

– The EU's LNG regasification capacity has increased by circa 18% (22 mmtpa)

– An increase in renewable generation capacity across the continent (installed wind & solar capacity increased by +73 GW in 2023)

– The return of strong output from Nuclear and Hydropower on the continent offsetting the need for gas to generate power

– An overall reduction in demand (2023 Total EU demand, Jan-Dec, down 8% vs 2022)

– A strong EU storage position; record storage year for winter 2023/24 at 58.3% full by the 31 March (previous record was winter 2022/23 at 55.8%).

Figure 21
Daily Exports to Continental Europe

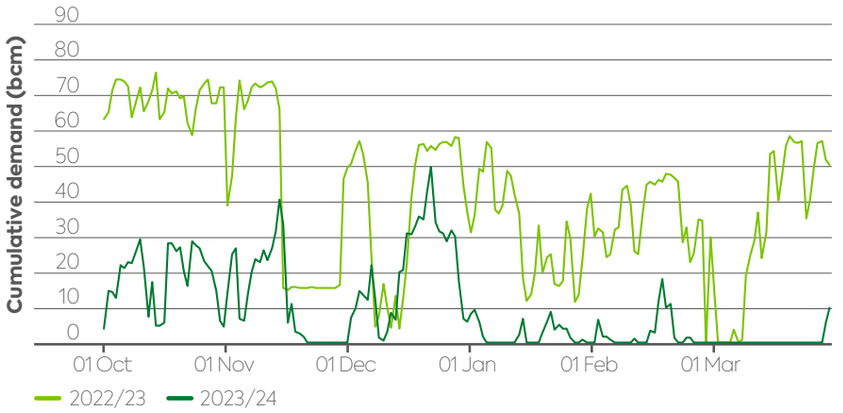
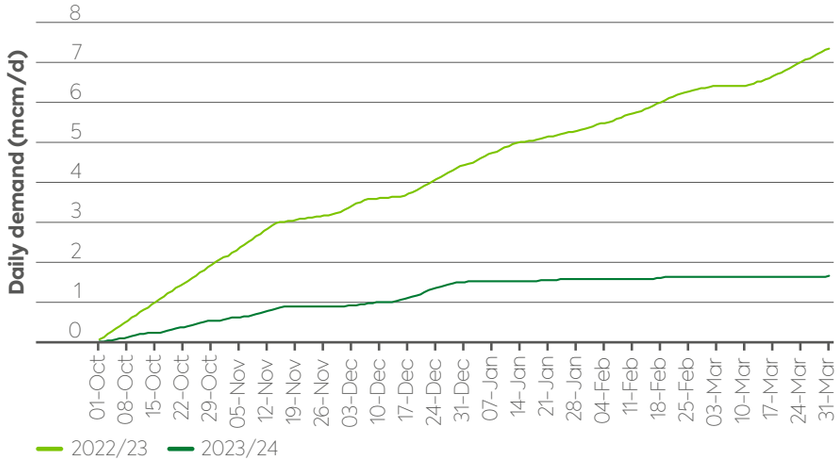


Figure 22
Exports to Continental Europe YTD



Supply further information

- UKCS supply
- NCS supply
- LNG supply
- Imports from continental Europe

UKCS supply

What did we expect?

– Average daily flows similar to winter 2022/23 which were 103 mcm/d.

What did we see?

– Steady baseload supplies of circa 90 mcm/d.

– This is lower than the previous winter. We believe this is a result of declining outputs from mature fields, which outweighed the production growth from more recent discoveries.

Figure 23
Daily UKCS supply

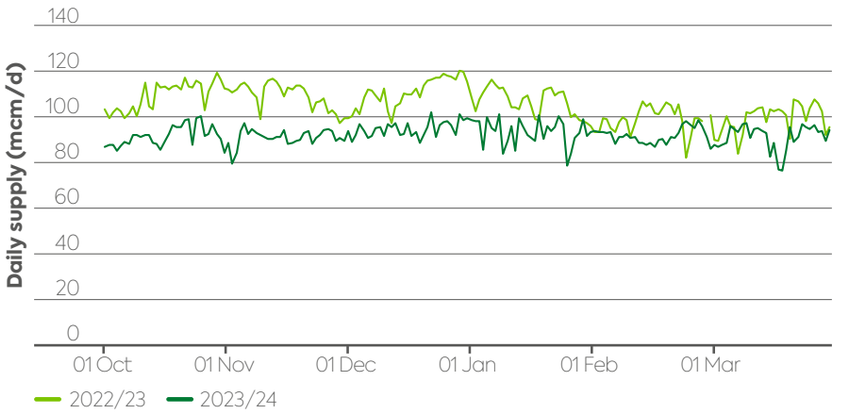
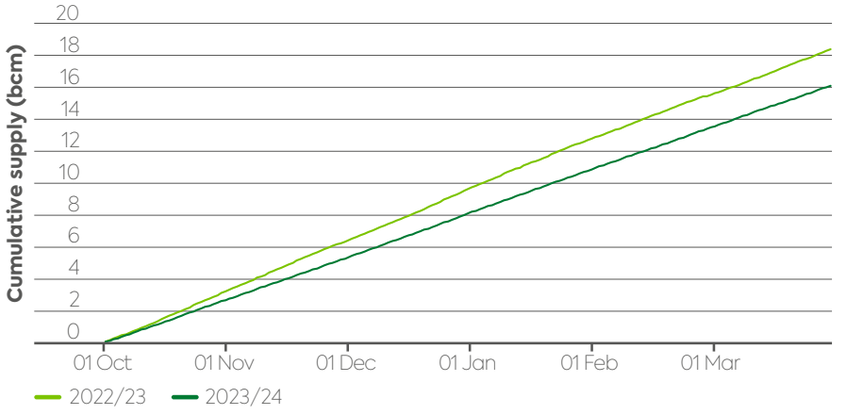


Figure 24
UKCS supply YTD



NCS supply

What did we expect?

– Steady flows of circa 80–100 mcm/d on most days.

– Higher flows to GB when the price differential favours GB over Europe.

What did we see?

– Average daily flows of 85 mcm/d.

– Higher flows in the early part of winter when compared with winter 2022/23, which was as a result of higher levels of Norwegian production.

Figure 25
Daily NCS supply

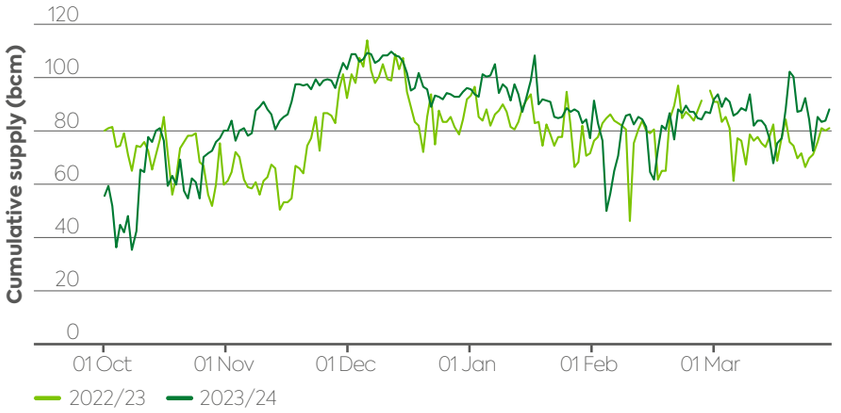
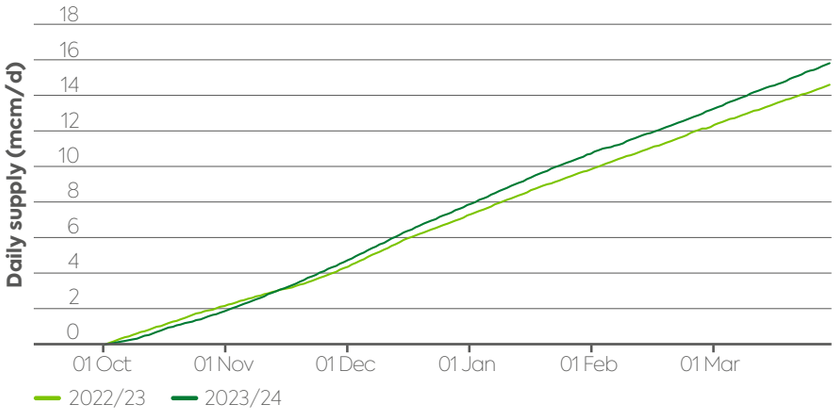


Figure 26
UKCS supply YTD



LNG supply

What did we expect?

– We expected LNG supplies to be circa 50% lower this winter when compared with winter 2022/23.

What did we see?

– LNG supplies were significantly lower than the previous year (47%). This was mostly as a result of reduced export flows to continental Europe, along with a reduction in UK domestic gas demand given the above-average temperatures observed.

Figure 27
Daily LNG supply

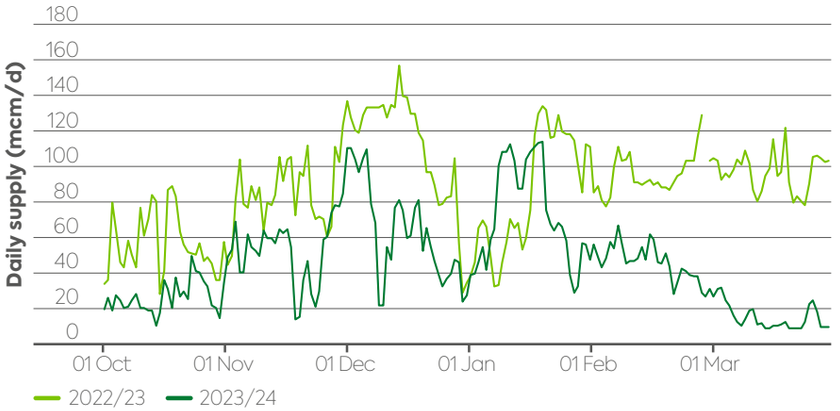
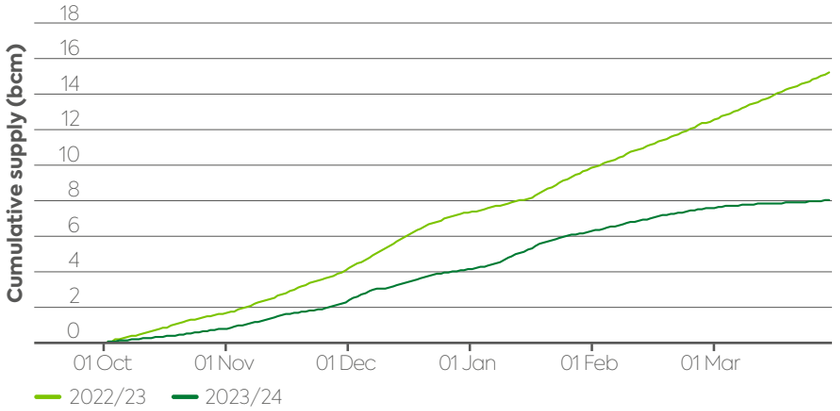


Figure 28
LNG supply YTD



Imports from continental Europe

What did we expect?

– For the bulk of winter we expected the interconnectors to be in float, with little flows in either direction, but responding to short-term market signals with imports to GB when required, either due to cold weather or making up for short-term changes to other supplies.

What did we see?

– A very small level of imports

– Imports did seem to respond to market signals. However lower demands combined with high availability of LNG, Norwegian imports and storage meant there was little requirement for EU imports to meet demand.

Figure 29
Continental supply YTD

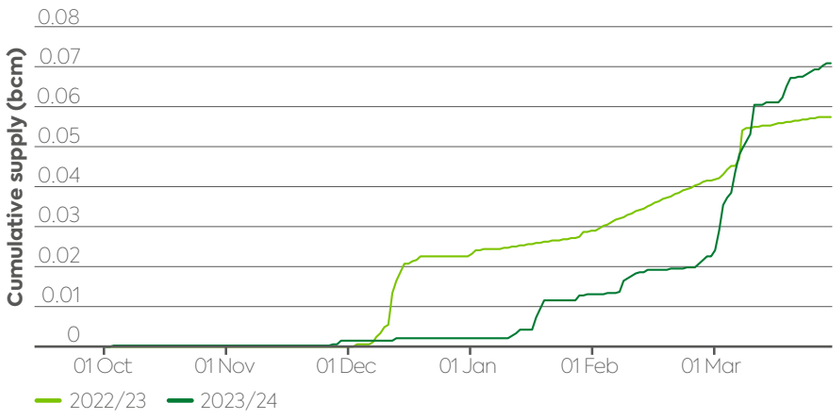
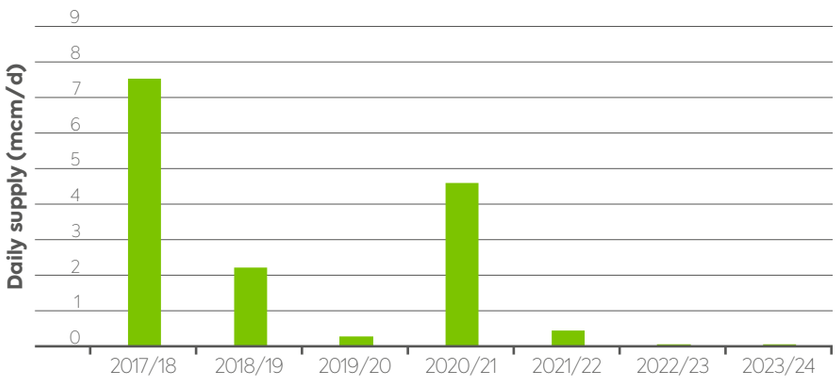
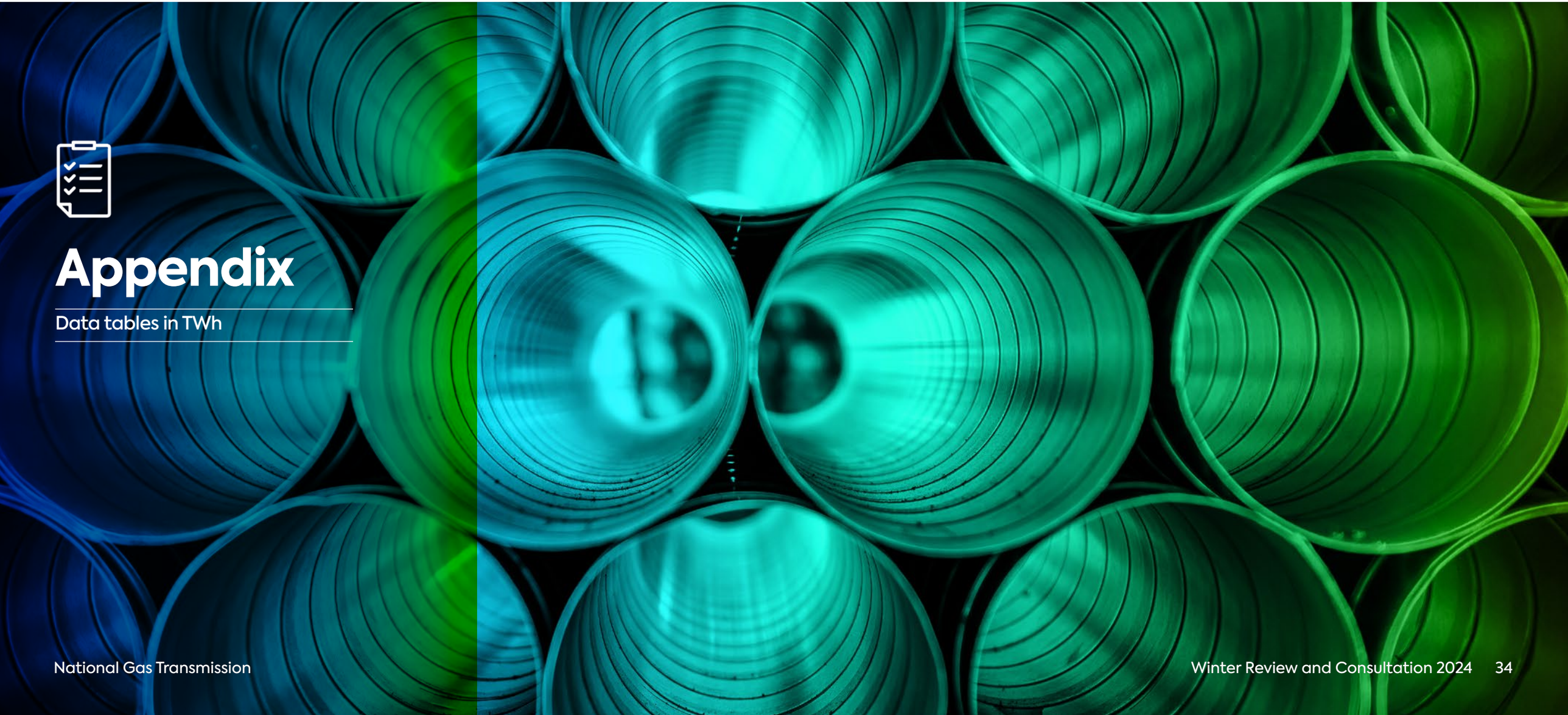


Figure 30
Continental supply winter history





Appendix

Data tables in TWh

Data tables in TWh and GWh/d

Table A
Breakdown of gas demand in TWh

	Winter 2021/22		Winter 2022/23		Winter 2023/24		
Demand in bcm	**2021/22 actual demand**	**2021/22 weather corrected demand**	**2022/23 actual demand**	**2022/23 weather corrected demand**	**2023/24 forecast**	**2023/24 actual demand**	**2023/24 weather corrected demand**
NDM	309	327	279	289	307	277	295
DM	44	44	42	42	39	41	41
NTS Industrial			6	6	8	6	6
Power	111	111	102	102	86	86	86
GB total	464	482	429	439	439	408	427
Ireland	31	31	33	33	41	33	33
Interconnector export	41	41	84	84	35	19	19
Storage injection	14	14	28	28	N/A	25	25
Total demand	**553**	**571**	**573**	**583**	**515**	**485**	**504**

A good guide for converting to energy in watt hours from gas volume in cubic metres is to multiply by 11.

So, for example, 4 mcm approximates to 44 GWh, and 80 bcm approximates to 880 TWh.

Note: 1 TWh = 1,000 GWh, and 1 bcm = 1,000 mcm

Table B
Min, max and average daily Power Station Demand for the last 4 winters

Winter (GWh/d)	Min	Max	Average
2020/21	198	1026	632
2021/22	168	1014	570
2022/23	122	1109	563
2023/24	128	1128	471

TableC
Breakdown of supply in TWh

Winter Supply (TWh)				
Winter	**2020/21 actual**	**2021/22 actual**	**2022/23 actual**	**2023/24 actual**
UKCS	187	186	207	181
Norway	206	208	159	172
EU imports	53	6	1	1
LNG	98	125	173	91
Storage Withdrawal	23	21	30	36
Grand Total	**567**	**546**	**569**	**481**

Glossary

List of glossary terms

Glossary

bcm:
Billion cubic metres.

Composite Weather Variable (CWV):
The Composite Weather Variable (CWV) is a single measure of daily weather in each LDZ and is a function of actual temperature, wind speed, effective temperature and seasonal normal effective temperature.

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.

Dispatachable:
Dispatchable Generation refers to sources of power that can be turned up or down on demand to fulfil market requirements at the request of grid operators.

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

Export:
Gas demand on the NTS from interconnectors to continental Europe or the island of Ireland.

Forward price curve:
Forward curves represent the market's best estimate for what the eventual spot market price will be for a particular month at a particular location.

GB demand:
GB demand is comprised of gas used in households, the commercial sector and for industry.

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.

Local Distribution Zone (LDZ):
This refers to the total amount of gas used by gas consumers connected to the gas distribution networks. This includes residential demand, and most commercial and industrial demand.

Liquefied Natural Gas (LNG):
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.

mcm:
Million cubic metres.

Medium range storage (MRS)/GB storage:
Gas storage facilities designed to switch rapidly between injection and withdrawal to maximise the value from changes in gas price.

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

National Transmission System (NTS):
A high pressure gas transportation system consisting of compressor stations, pipelines, multijunction sites and offtakes. Pipelines transport gas from terminals to offtakes. The system is designed to operate at pressures up to 94 barg.

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.

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

Glossary

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.

On-the-day commodity market (OCM):
The OCM is the market we use in our role as residual balancer. The balancing market is operated by the ICE Endex exchange, as appointed by National Gas.

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.

Renewable:
Forms of energy generation from renewable resources, which are naturally replenished, such as sunlight and wind.

Total demand:
Demand is GB demand combined with exported gas demand (gas exported via interconnectors to mainland Europe and Ireland) and storage injection.

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 (demand):
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.

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