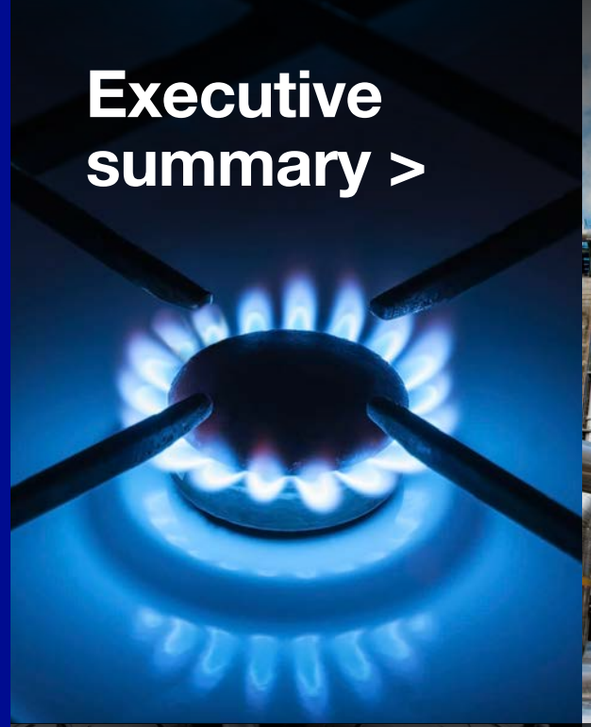
Gas
Transmission

Gas Winter Outlook
2021/22

nationalgrid

Gas Winter Outlook 2021/22
October 2021



Executive summary >

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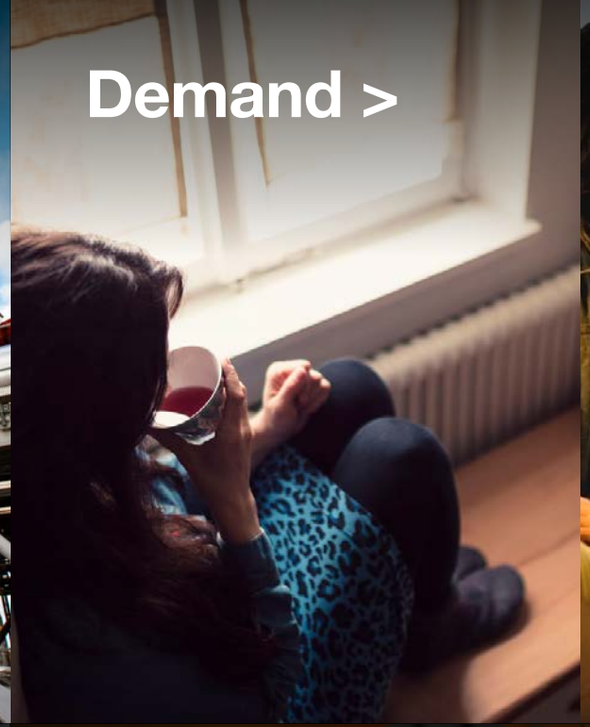

Demand >

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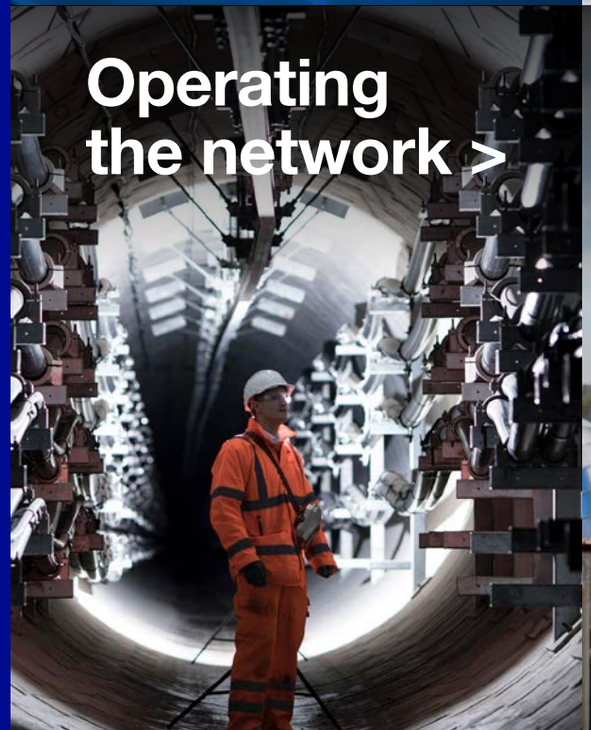

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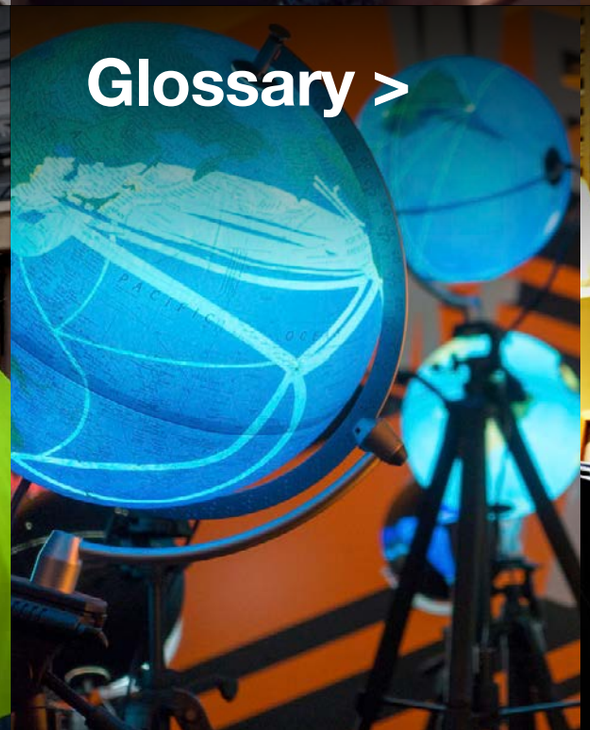

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Welcome

How to use this document

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Home

This will take you to the home page.

Arrows

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

Enlarge/reduce

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

Glossary

Defined words and additional information (indicated by) can be viewed by clicking the yellow book symbol in the left-hand navigation bar.

‘Linked’ content

Words in light blue and underlined have links to other pages in this document, or are URLs.

Pop-ups

Hover the cursor over the symbol (indicated by) to reveal more information.

% hover

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Executive summary

In our role as the National Transmission System Owner and Operator, we have two key responsibilities:

- Infrastructure provider
- Residual balancer

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.

The underlying market arrangements in the UK are predicated on the basis that the market will provide, and that the market will balance itself. We act as residual balancer by taking energy balancing trades from the On The Day Commodity Market (OCM) when the market doesn't balance itself.

This means we trade gas to encourage shippers to put more or less gas on the network when there is mismatch between supply and demand. To read more about the tools available to us, see slide 16.

This annual publication presents our view of the UK gas security of supply for the forthcoming winter, October 2021 to March 2022.

The gas supply and demand forecasts presented here, are produced by National Grid ESO as part of their annual *Future Energy Scenarios publication* and associated industry engagement.

Please share your views with us to help shape future Outlook reports. You can find details of how to do this at the end of this document in Continuing the conversation.

Breakdown of gas demand – a version in GWh can be found in the appendix

Forecast (mcm/d)	2020/21	2021/22
1-in-20[1] peak demand	531	505
1-in-20 non-storage supply	482	492
1-in-20 storage supply	128	117
Total 1-in-20 supply	**610**	**609**
1-in-20 margin	79	104
Cold day[2] demand	426	420
Cold day non-storage supply	394	397
Cold day storage supply	103	94
Total Cold day supply	**497**	**491**
Cold day margin	71	71

[1] 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 twenty winters

[2] The supply or demand for the coldest day in an average (or seasonal normal) winter. The cold day is taken as day 1 of the Average Load Duration Curve, with calculations using weather history over the period 1960–2012.

Key messages

1

Supply continues to be available from a diverse number of sources. The gas supply margin is expected to be sufficient in all of our supply and demand scenarios.

2

The maximum supply capability across all supply sources into GB is comparable to last winter.

3

As in previous winters, a positive market price differential to both Global and European markets will be required for a number of sources of flexible supply to direct flow into GB.

4

We have a range of tools available to manage any operational requirements throughout the winter period. This may include issuing margin notices to encourage market participants to take action should there be a forecast supply/demand imbalance for the coming gas day.

Supply margin

Peak day margin

Figure 1 Figure 1

The margin between forecast peak supply capacity and 1-in-20 demand for winter 2021/22 has increased by 25 mcm/d to **104 mcm/d**, compared to a margin of **79 mcm/d** last winter (Figure 1, Table 1).

Total forecast peak gas demand has reduced from **531 mcm/d** to **505 mcm/d**[3].

This reduction is due to a change in the forecast gas-fired electricity generation demand we expect to experience when the 1-in-20 gas demand occurs for other sectors, such as domestic heating, reducing the forecast.

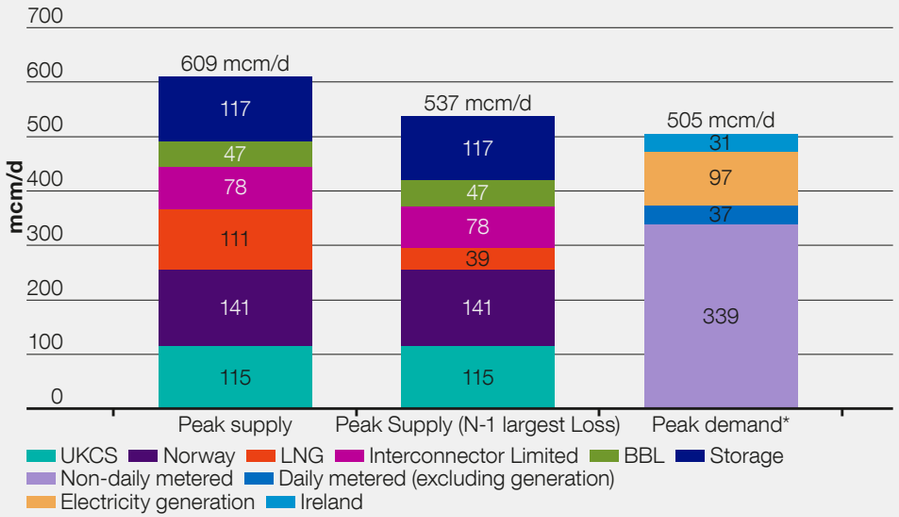
Under N-1 conditions (an event resulting in the loss of the single largest piece of NTS infrastructure) the supply margin at peak 1-in-20 demand is **32 mcm/d**, and has increased from **9 mcm/d** in winter 2020/21.

Table 1

Forecast (mcm/d)	2020/21	2021/22
1-in-20[3] peak demand	**531**	**505**
1-in-20 non-storage supply	482	492
1-in-20 storage supply	128	117
Total 1-in-20 supply	**610**	**609**
1-in-20 margin	**79**	**104**
N-1 largest loss	-70	-72
N-1 supply margin	**9**	**32**

[3] The 1-in-20 peak day demand is a level of daily demand that in a long series of winters, with connected load held at the levels appropriate to the winter in question, would be exceeded in 1 out of 20 winters, with each winter counted only once.

Figure 1
Peak day, N-1 largest loss supply and demand totals and margins, for the 2021/22 winter.



Note: * Peak day total demand contains shrinkage and therefore will not tally

Cold day margin

Figure 2 Figure 2

The Cold day supply margin is **71 mcm/d**, the same as last winter (Figure 2, Table 2).

The Cold day demand **(420 mcm/d)** is more representative of a potential winter day than the peak 1-in-20 demand (505 mcm/d).

The Cold day supply flows (Table 3) are an indication of what we may see from each supply source on a Cold day based on actual historical data.

Table 2

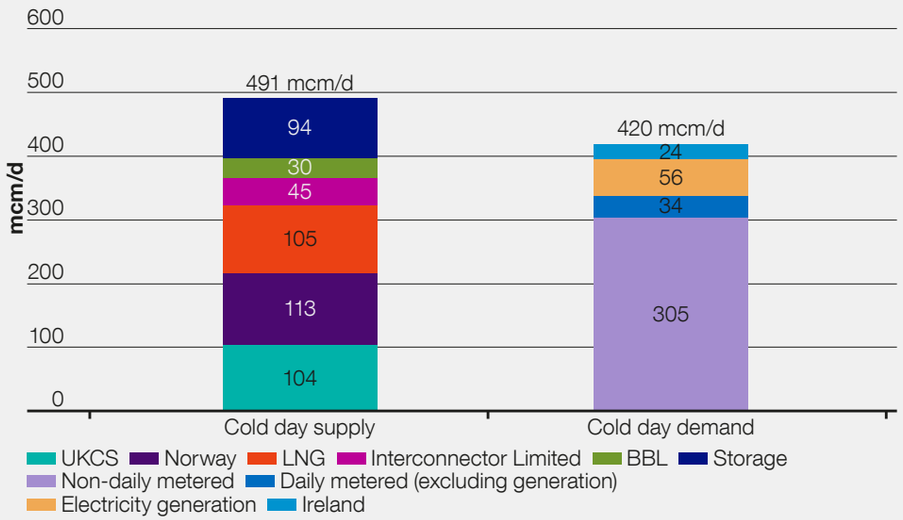
Forecast (mcm/d)	2020/21	2021/22
Cold day [4] demand	**426**	**420**
Cold day non-storage supply	394	397
Cold day storage supply	103	94
Total Cold day supply	**497**	**491**
Cold day supply margin	**71**	**71**

[4] The supply or demand for the coldest day in an average (or seasonal normal) winter. The Cold day is taken as day 1 of the Average Load Duration Curve, This is not a forecast based upon current conditions. It is based on historic data over the period 1960 – 2012

Table 3

Winter supply (mcm/d)	2020/21	2021/22	2021/22
	forecast Cold day	forecast Cold day	available supply above forecast Cold day
UKCS	107	104	11
Norway	116	113	28
BBL	30	30	17
Interconnector Limited	45	45	33
LNG	97	105	40
Storage	103	94	8

Figure 2
Cold day supply and demand totals and margin for the 2021/22 winter



Note: Cold day total demand contains shrinkage and therefore will not tally

Demand

Demand

Demand

Key messages

- Total gas demand for winter 2021/22 (49.4 bcm) is forecast to be marginally lower compared to the last five winters (50.7 bcm to 53.3 bcm).
- Due to the continued increase in renewable generation capacity, forecast demand for electricity generation is 1.6 bcm lower than for winter 2020/21 (9.4 bcm compared to 11.0 bcm in 2020/21)
- Interconnector demand to Ireland is forecast to continue rising, reaching a high of 3.3 bcm relative to the past five winters (1.6 bcm to 3.0 bcm).

- Total forecast demand for winter 2021/22 **(49.4 bcm)** is 1.3 bcm lower than last winter, with the largest component of that reduction being electricity generation where forecast demand has decreased due to the growth in renewables capacity (Table 4).
- The potential for significant within-day volatility in electricity generation related demand remains, due to inherent variability in solar and wind conditions.
- Continuing declines in production from the Corrib gas field off the Irish coast, combined with increases in gas demand for electricity (e.g. largely due to a number of new data centres recently coming online), has increased exports to Ireland by an additional 0.3 bcm compared to last winter's observed demand.
- Based on our experiences of operating the network under a variety of UK COVID-19 lockdown scenarios since spring 2020, we do not expect any significant operational challenges due to the ongoing effects of the COVID-19 pandemic.

Table 4
Forecast total gas demand for winter 2021/22, and weather corrected historical data for 2016/17 to 2020/21

Winter demand (bcm)	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22
	weather corrected					forecast
Non-daily metered (NDM)	29.7	30.6	30.0	30.9	30.3	29.7
Daily metered (DM, excluding Generation)	5.0	4.8	4.5	4.5	4.4	4.6
Electricity generation	13.8	12.8	12.3	10.6	11.0	9.4
Total GB demand[5]	48.5	48.2	46.8	46.0	45.7	43.7
Ireland	1.6	1.8	2.1	2.6	3.0	3.3
Interconnector Limited and BBL export	0.8	0.7	0.0	0.5	0.0	0.5
Storage injection	1.8	2.3	1.5	1.4	1.6	1.7
Total gas demand[6]	**52.9**	**53.3**	**50.7**	**50.8**	**50.7**	**49.4**

[5] Excludes Interconnector Limited, BBL, exportation and storage injection flows. Total gas demand includes NTS Shrinkage and will therefore not tally

[6] Includes Interconnector Limited, BBL, exportation and storage injection flows. Total gas demand includes NTS shrinkage and will therefore not tally

Supply

Supply

Key messages

- Supply sources to GB continue to be diverse and flexible, and supply capability is sufficient to meet demand this winter (Table 5).
- Last winter a mean daily total LNG flow of 49 mcm/d was observed and the maximum daily total we saw was 128 mcm/d. The possible peak daily LNG supply for this coming winter remains at 145 mcm/d, however 2021/22 flows and flexibility will again be determined by global gas market prices.
- Storage stocks at the start of this coming winter are projected to be within the range of past years – **see Spotlight: Storage** for further details.

Table 5
Actual and projected ranges for winter 2020/21 and 2021/22*.

Winter supply (mcm/d)	2020/21			2021/22
	actual range	mean	actual 350+ demand range	projected range
UKCS	68–115	93	71–115	68–115
Norway	57–119	103	100–119	57–141
BBL	0–45	15	12–45	0– 47
Interconnector Limited	0–53	11	10–53	0–78
LNG	9–128	49	14–128	5–145
Storage	0–79	12	11–79	0–102

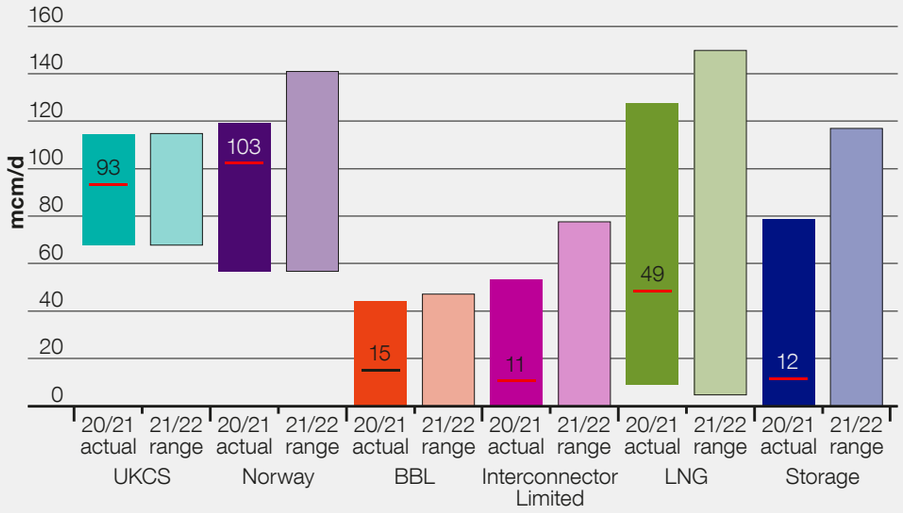
* This chart shows the maximum range for each individual supply source. On a 1-in-20 peak demand day when all supplies are flowing at maximum, peak supply from LNG reduces to 111mcm/d.

Supply

Figure 3

- The observed range of supply for winter 2020/21, and the range of supply that we could see at each of the supply sources for the coming winter is shown in Figure 3 and Table 5.
- The market determines where gas flows into GB, given that a number of supply sources are heavily influenced by market conditions.
- Interconnector (Interconnector Ltd and BBL) and LNG supplies into GB, are heavily influenced by European and world market conditions.
- If low volumes of LNG are delivered to the UK this winter, then we would expect the shortfall against demand to be made up from imports through the European interconnectors and domestic storage, as was observed last winter.
- Domestic NBP prices are usually higher than the TTF market during the winter period. In order to attract supply from Europe this winter, the NBP price would need to be higher than the European markets.
- There is also potential to import greater volumes of gas from Norway compared to the past two winters.
- Storage supply is driven by price spreads, i.e. the difference in price when gas is injected into storage (demand from the NTS) and when gas is withdrawn from storage (supplied to the NTS) – **see Spotlight: Storage**.
- It remains essential for us to have sufficient capacity and flexibility to operate the NTS network under different supply and demand scenarios, in order to meet where the market supplies gas into GB.
- We will continue to review what asset capability is required as part of the *Annual Network Capability Assessment Report* (ANCAR).

Figure 3
Comparison of actual ranges of supply flow (mean flow indicated by labelled red bars, and Table 5) from last winter, against projected ranges over winter 2021/22



Spotlight

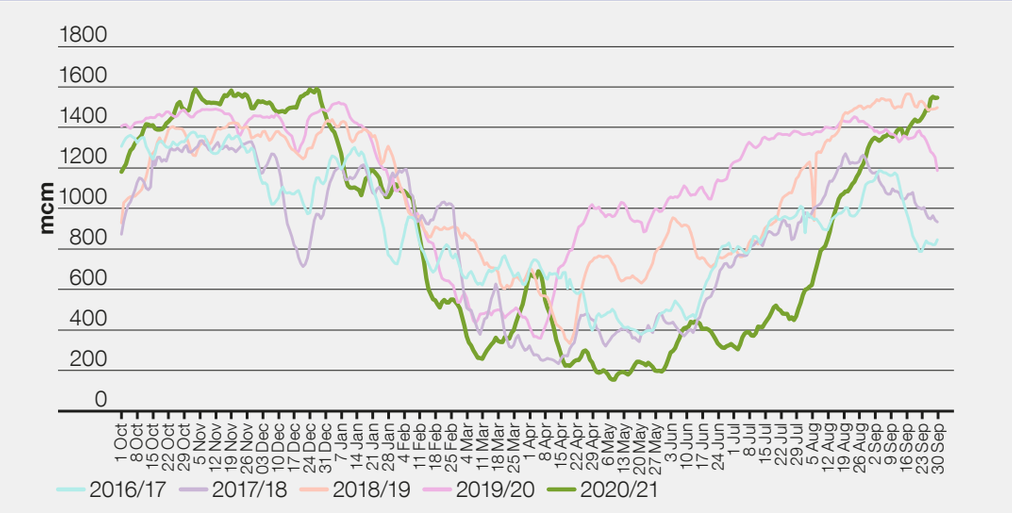
Figure 4

Storage

Spotlight

- Storage facilities connected to the NTS continue to be predominantly fast cycle, with the potential to both increase to maximum stock levels in a small number of days, and export large volumes of gas onto the NTS within short time periods.
- The projected starting level of gas in GB storage at the start of the 2021/22 winter is within the range of the previous four winters (Figure 4), recovering quickly from the low stock level in August 2021. This low stock level was a result of:

Figure 4
MRS stock levels. Historical from October 2016 – September 2021, ahead of the forthcoming winter in October 2021

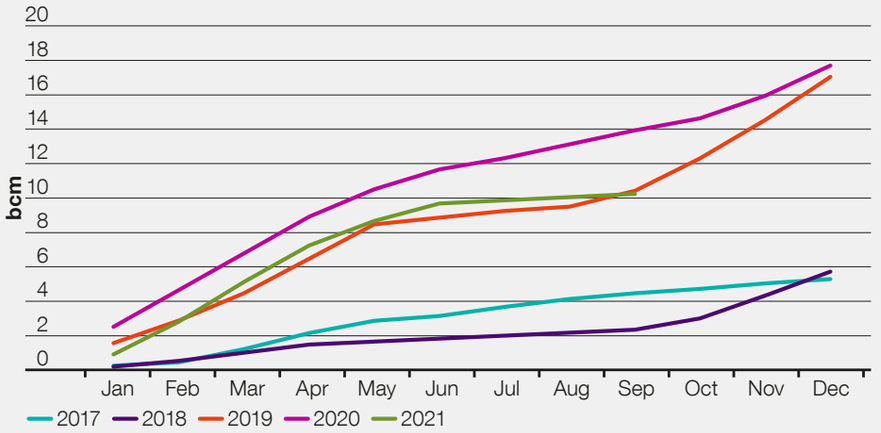


- **The cold weather in early summer 2021 (highlighted in chart), combined, combined with the 2020/21 winter, left** GB gas storage stocks more depleted.
- **The increasing NBP price and unfavourable NBP market prices spreads across future time periods** did not incentivise storage sites to refill until August 2021.
- **Storage stocks across Europe** have also not been refilling as quickly as the past two summers. High gas prices and lower levels of LNG have meant there was less surplus gas across the Continent that could be injected into storage.
- Higher carbon tax prices in Europe have made gas relatively more attractive than coal, increasing its demand to be used to generate electricity.
- Alongside a number of global LNG supply outages over 2021, the demand for LNG in both Latin America and Asia has increased from its early 2020 levels. This contributed to there being less LNG being sent to GB and Europe.
- Throughout the winter period, daily assessments of gas margins are made and communicated to the industry via our market information portal.

Liquified natural gas

- LNG is a global market with supplies into GB market affected by international prices.
- The total LNG supply to GB last winter (8.9 bcm in winter 2020/21) was lower than for winter 2019/20 (13.4 bcm) due to the strong demand from Asia and Latin America.
- LNG supply flows at the start of 2021 were lower than over the past two years, however these began to increase in March 2021, and the cumulative annual total over 2021 is similar to 2019 (Figure 5).
- The possible peak daily LNG supply for this coming winter remains at 145 mcm/d, however 2021/22 flows will be influenced by global gas market prices.
- If low volumes of LNG are delivered to the UK this winter, then we would expect the shortfall in demand to be made up from imports through the European interconnectors and domestic storage, as was observed last winter.
- In winter 2020/21 we experienced lower levels of LNG than previous years, but demand was met by higher imports from a combination of imports from Belgium, the Netherlands, and storage withdrawals.

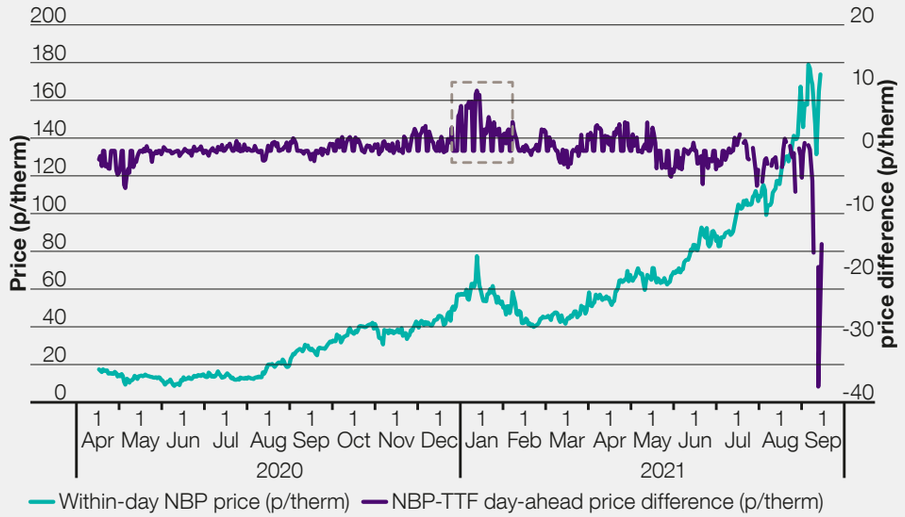
Figure 5
Historical cumulative annual LNG supply flows for the past four calendar years and 2021



Connections to Europe

- The total volume of gas imported from the interconnectors last winter was 4.8 bcm[7], a significant increase when compared with 0.3 bcm during winter 2019/20. This is considered to be because the EU-UK price differential was positive, in favour of the UK.
- The day-ahead price differential between the NBP and TTF markets is still considered to be the dominant factor in the daily volume of imports to GB from Europe via the Interconnector Limited and BBL interconnectors this coming winter.
- The low LNG flows into GB in January 2021 (see *2021 Winter Review and Consultation*), combined with high gas demand during this period, increased domestic gas prices (Figure 6). This resulted in the interconnectors reacting with greater flows into GB, further demonstrating the flexibility in UK gas market and supplies.
- Interconnector flows peaked between January and February 2021 when cold weather was experienced in the UK (highlighted, Figure 6), with total maximum daily flows close to 100 mcm observed, coincident with a peak market difference between NBP and TTF greater than 9 p/therm (Figure 6).
- Low storage stocks in Europe (**see Spotlight: Storage**) continue to keep the NBP-TTF price difference in favour of the continent (Figure 6) going into the winter, which could affect interconnector import flows into GB.
- We do not anticipate any disruption to gas supplies as a consequence of Brexit.

Figure 6
Within-day NBP market price and price difference between day-ahead NBP and TFF markets, from the start of last summer to the beginning of winter 2021/22



[7] Obtained from *2021 Gas Winter Review and Consultation publication*

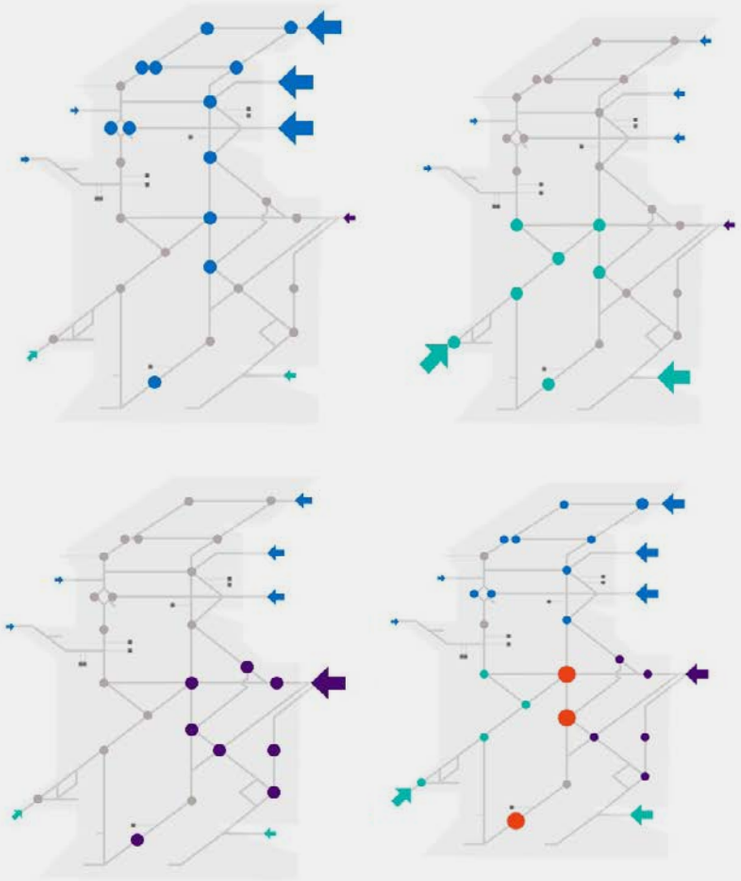
Operating the network

Operating the network

Figure 7

- The operational configuration of the network through a winter period is highly dependant on the sources of gas into the UK gas network
- Gas demand during the winter is largely driven by the requirement for domestic heat, and is therefore related to population density. Demand therefore tends to be highest in the south of GB, particularly around the Greater London area.
- Sources of gas entering the network at large geographical distances from the demand centres typically require more compression to aid in transmission.
- Where we have large volumes of gas delivered in a local region, compression is also required to move gas away from the entry terminal.
- For example, a high UKCS scenario typically requires the majority of the compression available online, compared to a high LNG or high interconnector scenario where different a different configuration of compressors is required (Figure 7).
- Figure 7 (bottom right) shows all three scenarios together, with compressors required for all scenarios highlighted in orange (●). This also demonstrates that across these three credible scenarios, a large amount of compression are required.
- The network, and particularly the compression available therefore, must be available and flexible to react to changing market conditions and subsequent supply patterns.
- With gas deliveries becoming increasingly driven by market dynamics and global prices, forecasting gas supplies prior to the winter period has become increasingly challenging.

Figure 7
Schematics of the NTS highlighting the range of compressor sites (●) used with high volumes of gas (⬅) from different sources into the NTS: UKCS (top left), LNG (top right), Interconnector (bottom left) and all supply sources (bottom right)



Operational Toolkit

In our role as System Operator of the high pressure gas network, we act as Residual Balancer. This means we trade gas to encourage more or less gas on the network when there is a mismatch between supplies and demands. A selection of operational tools can be used to achieve this, including some that are mainly used when conditions on the network are more challenging. Some examples of these tools are below, to read more about all the tools available to us please visit our balancing website.

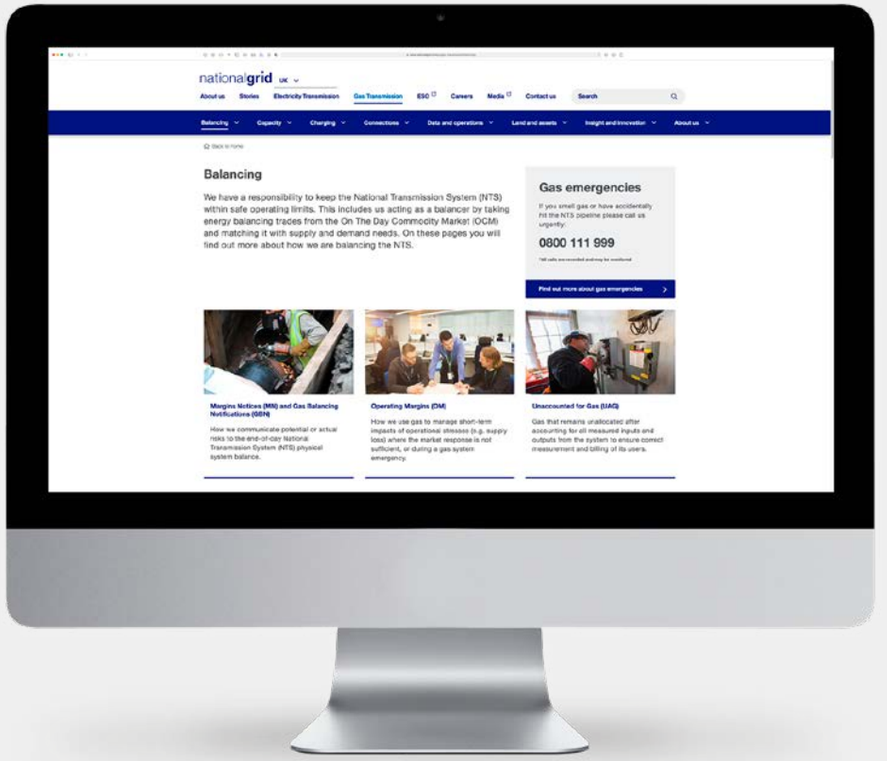
Gas Margins Notice (MN)
A Margins Notice is a day-ahead announcement to the market indicating there is a potential gas supply and demand deficit for the next gas day. The MN is designed to encourage NTS users to reassess their balancing position against the forecasts in the rolling Daily Margins Notice Report. This report gives all energy industry participants a rolling five-day view of forecast gas supply and demand, as well as data relating to the storage safety monitors

Once an MN notice has been issued, it cannot be withdrawn and will stay in place until the end of the gas day to which it applies, unless it is superseded by a Gas Balancing Notification.

In 2019, together with industry, we reviewed our processes and calculation methodology in relation to Margins Notices and implemented a package of reforms via UNC Modification Proposals 0698S and 0703S.

The proposals include a new methodology to determine the contribution from LNG to the expected level of supply capability and an additional early notification to shippers when 95% of the MN trigger level is reached.

Gas Balancing Notification (GBN)
The purpose of a GBN is to provide a within-day message to GB market participants to provide more gas or reduce demand. We will issue a GBN if there is a shortfall in gas supply compared to gas demand that presents a material risk to the end of day system balance.



Appendix

Appendix – mcm to GWh conversion

Forecast (GWh/d)	2020/21	2021/22
1-in-20[1] peak demand	5188	4934
1-in-20 non-storage supply	4709	4807
1-in-20 storage supply	1250	1143
Total 1-in-20 supply	**5959**	**5950**
1-in-20 margin	772	1016

Table 2

Cold day[2] demand	4162	4103
Cold day non-storage supply	3849	3878
Cold day storage supply	1006	918
Total Cold day supply	**4855**	**4797**
Cold day margin	694	694

[1] 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 twenty winters.

[2] The supply or demand for the coldest day in an average (or seasonal normal) winter. The cold day is taken as day 1 of the Average Load Duration Curve, with calculations using weather history over the period 1960–2012.

Table 1

Forecast (GWh/d)	2020/21	2021/22
1-in-20[3] peak demand	**5188**	**4934**
1-in-20 non-storage supply	4709	4807
1-in-20 storage supply	1250	1143
Total 1-in-20 supply	**5959**	**5950**
1-in-20 margin	**772**	**1016**
N-1 largest loss	-684	-703
N-1 supply margin	**88**	**313**

[3] The 1-in-20 peak day demand is a level of daily demand that in a long series of winters, with connected load held at the levels appropriate to the winter in question, would be exceeded in 1 out of 20 winters, with each winter counted only once.

Conversions from mcm to GWh have been made with a CV of 35.17 MJm[3]

Appendix – mcm to GWh conversion

Table 3
Forecast Cold day supply flows for winter 2020/21 and 2021/22

Winter supply (GWh/day)	2020/21 forecast Cold day	2020/21 forecast Cold day	2020/21 available supply above forecast Cold day
UKCS	1045	1016	107
Norway	1133	1104	274
BBL	293	293	166
Interconnector Limited	440	440	322
LNG	948	1026	391
Storage	1006	918	78

Table 4
Forecast total gas demand for winter 2021/22, and weather corrected historical data for 2016/17 – 2020/21

Winter demand (GWh)	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22
	weather corrected					forecast
Non-daily metered (NDM)	290,152	298,945	293,083	301,876	296,014	290,152
Daily metered (DM, excluding Generation)	48,847	46,893	43,962	43,962	42,986	44,939
Electricity generation	134,818	125,049	120,164	103,556	107,464	91,833
Total GB demand[5]	473,818	470,887	457,210	449,394	446,463	426,925
Ireland	15,631	17,585	20,516	25,401	29,308	32,239
Interconnector Limited and BBL export	7,816	6,839	0	4,885	0	4,885
Storage injection	17,585	22,470	14,654	13,677	15,631	16,608
Total gas demand[6]	516,803	520,711	495,311	496,288	495,311	482,610

[5] Excludes Interconnector Limited, BBL, exportation and storage injection flows. Total gas demand includes NTS Shrinkage and will therefore not tally

[6] Includes Interconnector Limited, BBL, exportation and storage injection flows. Total gas demand includes NTS shrinkage and will therefore not tally

Conversions from mcm to GWh have been made with a CV of 35.17 MJm^3

Appendix – mcm to GWh conversion

Table 5
Actual and projected ranges

Winter supply (GWh/d)	2020/21		2021/22	
	actual range	mean	actual 350+ demand range	projected range
UKCS	664–1123	909	694–1123	664–1123
Norway	557–1163	1006	977–1163	557–1377
BBL	0–440	147	117–440	0–459
Interconnector Limited	0–518	107	98–518	0–762
LNG	88–1250	479	137–1250	49–1417
Storage	0–772	117	107–772	0–1138

Conversions from mcm to GWh have been made with a CV of 35.17 MJm^3

Glossary

Glossary

BCM
Billions of cubic metres.

BBL (interconnector)
A bi-directional gas pipeline running from Balgzand in the Netherlands to Bacton in the UK.

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.

Cold Day
The supply or demand for the coldest day in an average (or seasonal normal) winter. The cold day is taken as day 1 of the Average Load Duration Curve[9], with calculations using weather history over the period 1960 – 2012.

Combined 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.

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

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

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

GWh
Gigawatt hours.

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

Interconnector Limited
The Interconnector (UK) Limited is a bi-directional gas pipeline connecting Bacton in the UK and Zeebrugge in Belgium.

LNG (Liquified natural gas)
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 potential supply capability and demand. A positive margin indicates supply is greater than demand. A negative margin when demand is greater than supply.

Glossary

Moffat interconnector
The interconnector pipeline that connects the British system at Moffat, in Scotland to the Republic of Ireland, Northern Ireland and the Isle of Man. Physical gas flows are currently only possible in the direction of exit from GB.

Medium-range storage (MRS)
These commercially operated sites have relatively short injection/withdrawal times. This means they can react quickly to demand, injecting when demand or prices are lower and withdrawing when they are higher.

N-1 largest loss
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 resilience to meet a 1-in-20 peak day demand, even with the failure of the single biggest piece of infrastructure.

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.

Non-storage supply (NSS)
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 Liquified natural gas (LNG).

Norway
Gas supplied to the NTS via pipelines from Norway.

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), gas that is used in the running of the system e.g. compressor fuel. And calorific value shrinkage (CVS) 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 demand (1-in-20)
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 peaks 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.

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

Glossary

Seasonal normal conditions
A set of conditions representing the average weather that we could reasonably expect to occur. We use industry-agreed seasonal normal weather conditions. These reflect recent changes in climate conditions, rather than being a simple average of historic weather.

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.

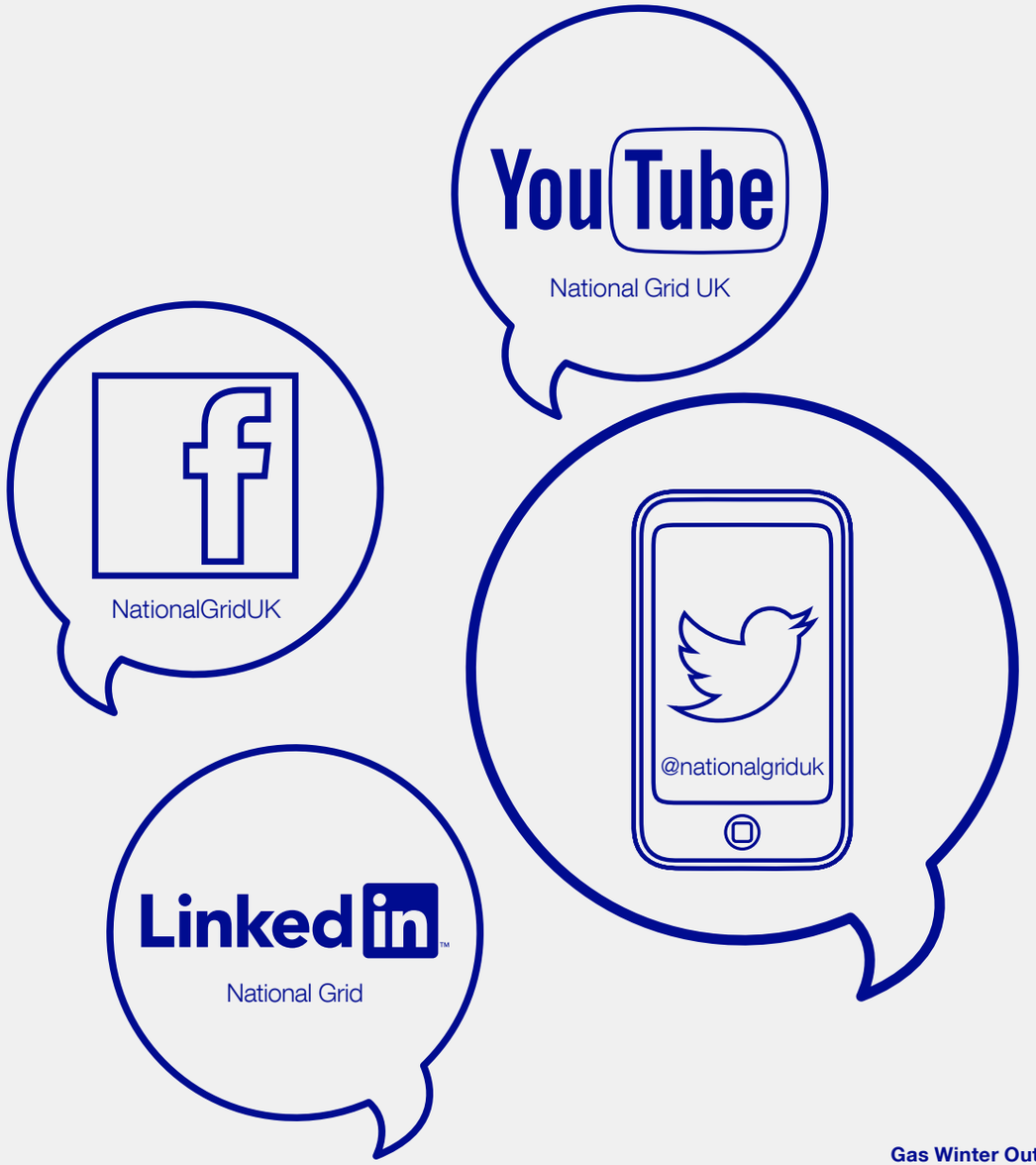
UK Continental Shelf (UKCS)
UKCS is made up of the areas of the sea bed and subsoil beyond the territorial sea over which the UK exercises sovereign rights of exploration and exploitation of natural resources.

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.

Continuing the conversation

Continuing the conversation

Email us with your views on the *Gas Winter Outlook* at: .Box.OperationalLiaison@nationalgrid.com



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National Grid plc
National Grid House,
Warwick Technology Park,
Gallows Hill, Warwick.
CV34 6DA United Kingdom

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