Gas Winter Outlook 2020/21

October 2020

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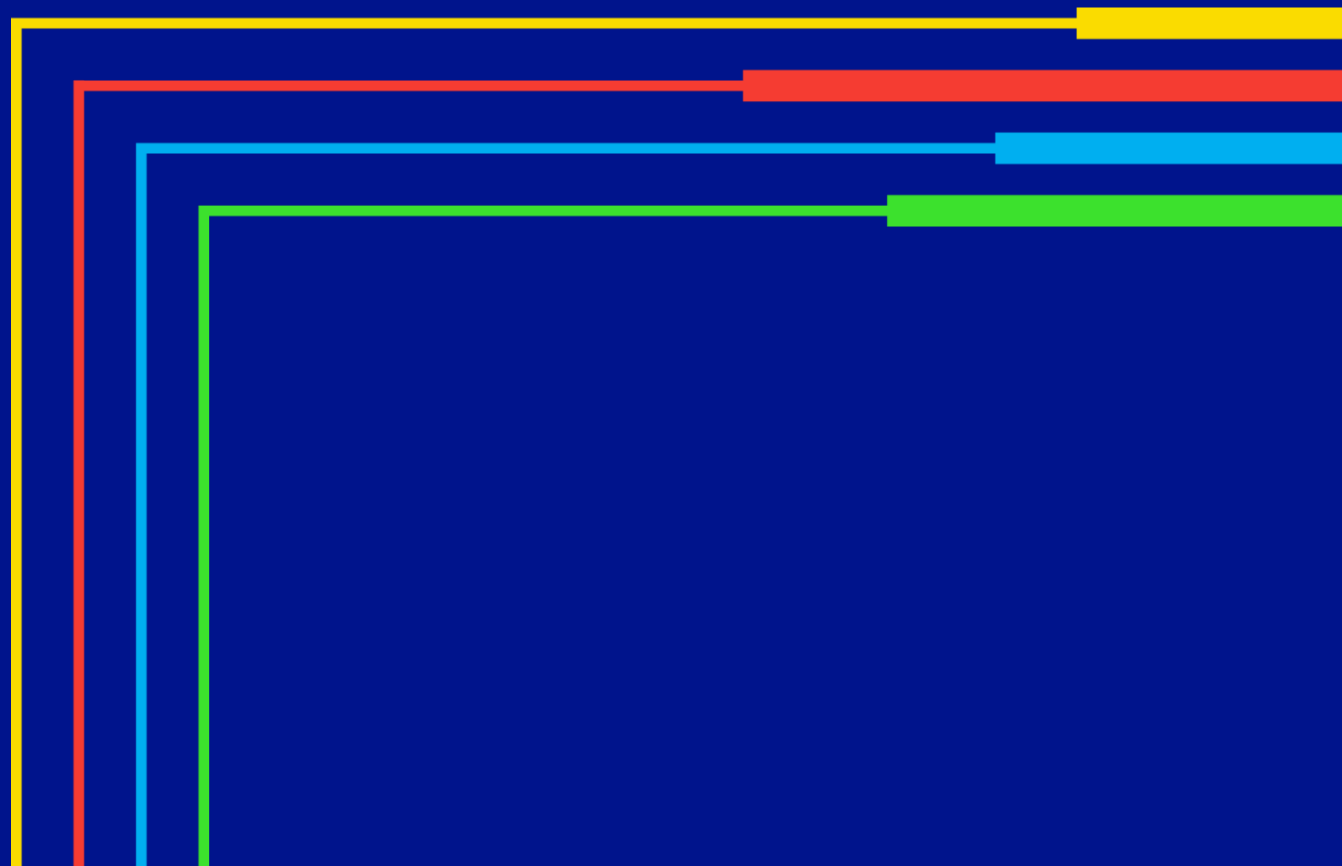
Welcome



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Welcome
to our *2020/21 Gas Winter Outlook*

This annual publication presents our view of the UK gas security of supply for the forthcoming winter, October 2020 to March 2021.

This is the first year where individual Winter and Summer Outlooks have been produced by both the Gas and Electricity System Operators. The Gas Summer and Winter Outlooks, and Winter Review will now be produced by National Grid Gas Transmission, and the equivalent Electricity Outlooks and Review by National Grid Electricity System Operator (ESO).

Other Gas System Operations publications in this suite include:

- **Summer Outlook**, published annually, with the next due in April 2021.
- **Gas Ten Year Statement (GTYS)**, with the next due on the 30 November 2020.
- **Gas Future Operability Planning (GFOP)**, with the next due in Autumn 2020.

The analysis within this Winter Outlook is underpinned by supply and demand forecasts developed for the **Future Energy Scenarios** (FES) publication produced by National Grid ESO, the most recent published in July 2020.

Alongside the forecast data provided by FES, additional analysis has assessed the likely impact the COVID-19 pandemic, and the end of the transition period of the UK leaving the EU, may have on gas security of supply for this winter.

I hope you find the Gas Winter Outlook both interesting and informative. 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*.

We can also be contacted via .box.OperationalLiaison@nationalgrid.com

Ian Radley
Head of Gas System Operations

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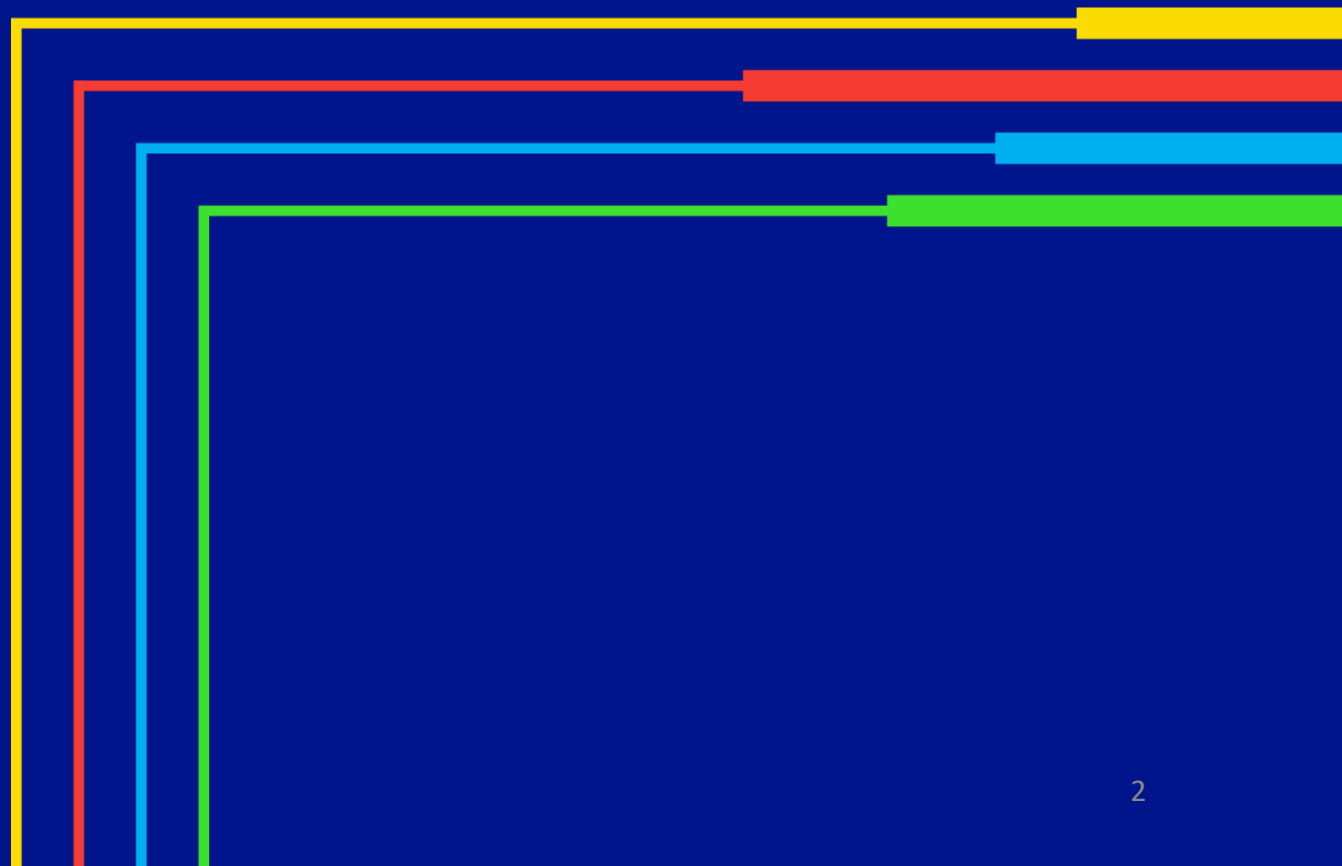
Executive summary

Key messages



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Executive summary
Key Messages

1. The gas supply margin is expected to be sufficient in all of our supply and demand scenarios.

2. We have considered a range of scenarios to estimate the impact that COVID-19 might have on gas demand this winter. We do not expect COVID-19 to increase our calculated 1-in-20 peak demand.

3. We do not anticipate any disruption to gas supplies resulting from the end of the transition period of the UK's exit from the EU. We have a wide range of supply sources, and we expect the established commercial arrangements across the interconnectors to be maintained, or alternative supply sources to respond.

4. We have the appropriate tools available to manage any operational challenges throughout the winter period.

Forecast	mcm/d
1-in-20[1] peak demand	531
1-in-20 non-storage supply	482
1-in-20 storage supply	128
Cold day[2] demand	426
Cold day non-storage supply	395
Cold day storage supply	103

Key statistics.

Note The 2020/21 peak 1-in-20 demand has increased by 30 mcm/d compared to last year due to both a change in methodology which now does not use a climate adjuster, alongside an increase in power generation demand.

[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 terms

Highlighted text throughout the publication refers to key terms, with further information provided in the glossary.

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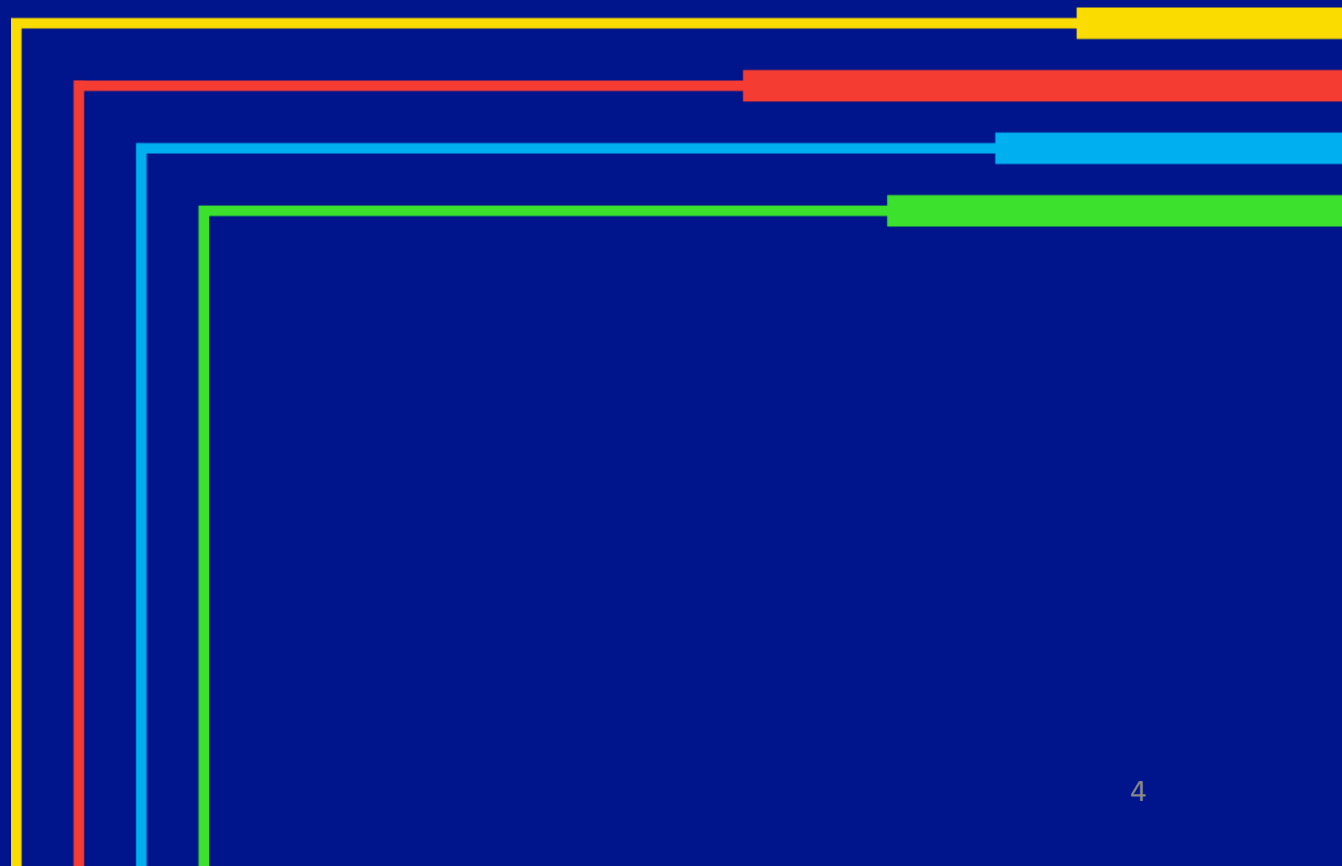
Supply Margin



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Supply margin

- The margin between peak supply and demand for winter 2020/21 is 79 mcm/d, virtually unchanged from winter 2019/20. The 2020/21 peak 1-in-20 demand has increased by 30 mcm/d compared to last year, due to both a change in methodology which now does not use a climate adjuster, alongside an increase in power generation demand. Each change has increased the demand by approximately 15 mcm/d.

- Under N-1 conditions, by which we mean an event resulting in the loss of the single largest piece of NTS infrastructure, the daily 1-in-20 peak supply volume is reduced from 610 mcm/d to 540 mcm/d; and the supply margin reduced from 79 mcm/d to 9 mcm/d. This supply margin under N-1 is similar to the margin for last winter (8 mcm/d).

- The Cold day margin between supply and demand is 71 mcm/d.

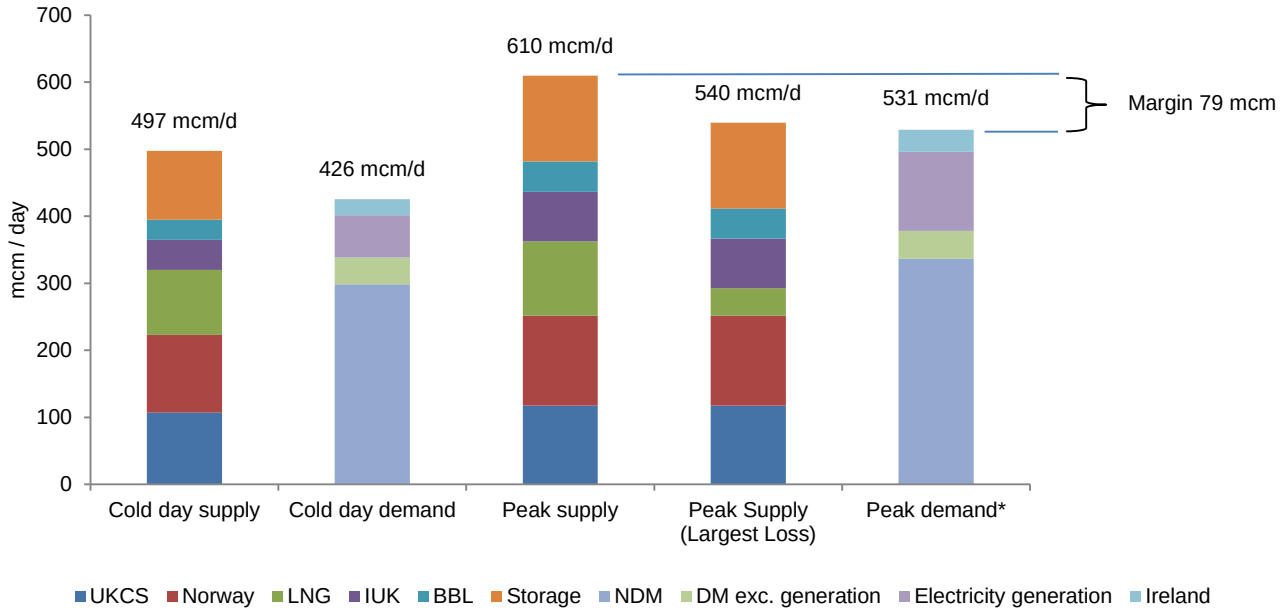

Figure 1
Peak and Cold day supply and demand totals for the 2020/21 winter

Forecast	mcm/d
1-in-20[3] peak demand	531
1-in-20 non-storage supply	482
1-in-20 storage supply	128
Supply margin under 1-in-20 conditions	79
N-1 largest loss	-70
N-1 supply margin	9
Cold day[4] demand	426
Cold day non-storage supply	395
Cold day storage supply	103
Cold day supply margin	71

Table 1

[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.

[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, with calculations using weather history over the period 1960 – 2012.

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Demand

Key messages
COVID-19 spotlight

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Demand

Key messages

- Gas demand for winter 2020/21 is expected to be comparable to 2019/20, before the effects of COVID-19 are taken into account.
- Domestic non-daily metered demand has reduced to 2016/17 levels, but this is balanced by an increase in export demand to Ireland via the Moffat interconnector.
- Demand for electricity generation continues to show a decline compared to pre-2017/18 levels as expected, due to an increase in renewable generation.
- We have assessed the impact on demand for a range of COVID-19 scenarios: more detail can be found in the COVID-19 spotlight.

Winter demand (bcm)	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21
	weather corrected					forecast
Non-daily metered (NDM)	29.6	29.7	30.6	30.0	30.9	29.7
Daily Metered (DM, excluding Generation)	4.7	5.0	4.8	4.5	4.5	4.5
Electricity generation	10.4	13.8	12.8	12.3	10.6	11.0
Ireland	2.6	1.6	1.8	2.1	2.6	3.2
IUK and BBL export	2.7	0.8	0.7	0.0	0.5	0.5
Storage injection	1.2	1.8	2.3	1.5	1.4	1.7
Total[5]	51.4	52.9	53.3	50.7	50.8	50.9

Table 2

Forecast total gas demand for winter 2020/21, and weather corrected historical data for 2015/16 to 2019/20.

[5] All totals include NTS shrinkage and will therefore not tally.

- Peak and Cold day demands for this winter are forecast to be 531 mcm/d and 426 mcm/d respectively (see Executive Summary).
- Total forecast demand for winter 2020/21 is comparable to that observed for the previous two winters (Tables 2 and 3).
- The 1-in-20 peak demand presented earlier in the Executive Summary, differs from previous years due to a change in the use of the climate adjuster within the calculations, and an increase in demand from power generation.

Demand

- Forecast power generation demand under seasonal normal conditions this winter (11 bcm) continues to be lower than for 2016/17 levels (13.8 bcm). This is due to the growth in installed renewable generation. The potential for significant within-day volatility remains, due to inherent variability in solar and wind conditions.
- The forecast demand from Ireland has again increased, from 2.6 bcm last winter to 3.2 bcm in 2020//21. This is due to economic expansion and the reduction in gas supplied from the Corrib gas field off the Irish coast.
- Although storage sites are expected to be a net provider to the NTS over this period, there could be up to 1.7 bcm injected into storage sites across the network.

	2019/20 (observed, bcm)	2020/21 (forecast, bcm)
GB gas demand (excludes IUK and BBL interconnector exportation and storage injection flows)	48.9	48.7
Total gas demand (includes IUK and BBL interconnector exportation and storage injection flows)	50.8	50.9

Table 3
Forecast and observed winter gas demands for 2020/21 and 2019/20 respectively. Forecast demands are weather corrected, and these values have been come from the analysis completed for FES20, which did not include the effect of the pandemic

COVID-19 spotlight

- Our network is built to deliver the highest level of demand as forecast in the 1-in-20 peak conditions calculation (531 mcm/d, Table 1 on page 5).

- In the initial phase of lockdown (March to mid-May), NTS demand was reduced significantly when compared to weather corrected seasonal normal levels. Demand reductions varied between 6-11% over this period. As the lockdown was eased, and industry, businesses and homes returned to more normal behaviours from mid-May to August, this reduction decreased to 2%.

- Dependent on the severity of controls and restrictions imposed throughout winter, our analysis indicates peak gas demand could range between 531 mcm/d (the maximum 1-in-20 demand) and 499 mcm/d (Table 4).

- Robust contingency measures are designed to protect the safe operation of the NTS, in the event of further lockdowns similar in scale to those seen in the spring of 2020.

- We have modelled three COVID-19 scenarios based on varying levels of national restrictions.

- For all three scenarios we expect that residential heat demand on a 1-in-20 peak day will be largely unaffected by infection rates or control measures. This is because our base 1-in-20 scenario already assumes the majority of consumers would be at home and maximising their heating use;
    - **High demand** – Infection rates decline steadily through winter, business and industry remain open.
    - **Central demand** – Infection rates are similar to the levels seen in September 2020, demand is reduced, driven by lower industrial consumption as a result of the ending of the Coronavirus Job Retention Scheme.
    - **Low demand** – Infection rates increase through winter to the extent of a second wave. Most, if not all, areas of the UK are in lockdown. Demand is reduced further, driven by lower industrial consumption due to greater control measures being in place.

	1-in-20 peak demand (mcm/d)	% difference from 5 year 1-in-20 projection
High demand	531	0
Central demand	514	-3.1%
Low demand	499	-6.0%

Table 4
Change (%) in peak 1-in-20 total NTS demand across three possible pandemic scenarios during the 2020/21 winter

- All three scenarios demonstrate there would not be an increase to the original 1-in-20 peak demand of 531 mcm/d and the Central and Low scenarios show reductions of 3.1% and 6.0% respectively.

- During seasonal normal weather, and in a scenario where business/industry largely remains open, we would expect to see a slight increase in demand compared to pre COVID-19 estimates due to more people remaining at home. However this demand would remain well below peak 1-in-20 capability.

- Such an increase would be well within the capabilities of the network and below the 1-in-20 level.

- Over the 2020 summer the offshore production and supply of gas to the UK was unaffected by the global pandemic, and we expect this to continue throughout the 2020/21 winter. The diversity of supply sources to the UK provides a level of resilience should this position change.

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Supply

Key messages
Liquified natural gas
Connections to Europe
Storage

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Supply

Key messages

- Gas supply sources are diverse and flexible and we expect there to be sufficient supplies to meet demand this winter.
- UK continental shelf (UKCS) and Norway are the main sources of supply to GB, but sources of LNG (liquified natural gas) have the capability to supply higher volumes if required.
- The high volume of LNG flows observed over the previous winter are expected to continue into this winter.
- An increase in storage deliverability compared to last winter, and strong domestic stock levels at the end of summer 2020, strengthen the security of supply position.

Winter supply (mcm/d)	2019/20 Observed range	2019/20 Cold day	2019/20 350 + range	2020/21 Forecast range	2020/21 Cold day
UKCS	71 – 123	109	96 – 110	71 – 123	107
Norway	34 – 111	120	80 – 109	34 – 116	116
BBL	0 – 24	30	0 – 4	0 – 47	30
IUK	0 – 10	45	0 – 6	0 – 78	45
LNG	36 – 138	58	99 - 137	5 - 145	97
Total Non-storage supply (NSS)		362			395
Storage	0 - 57		13 - 57	0 - 103	

Table 5
Observed and forecast ranges on a Cold day and any days where total supply exceeds 350 mcm/d

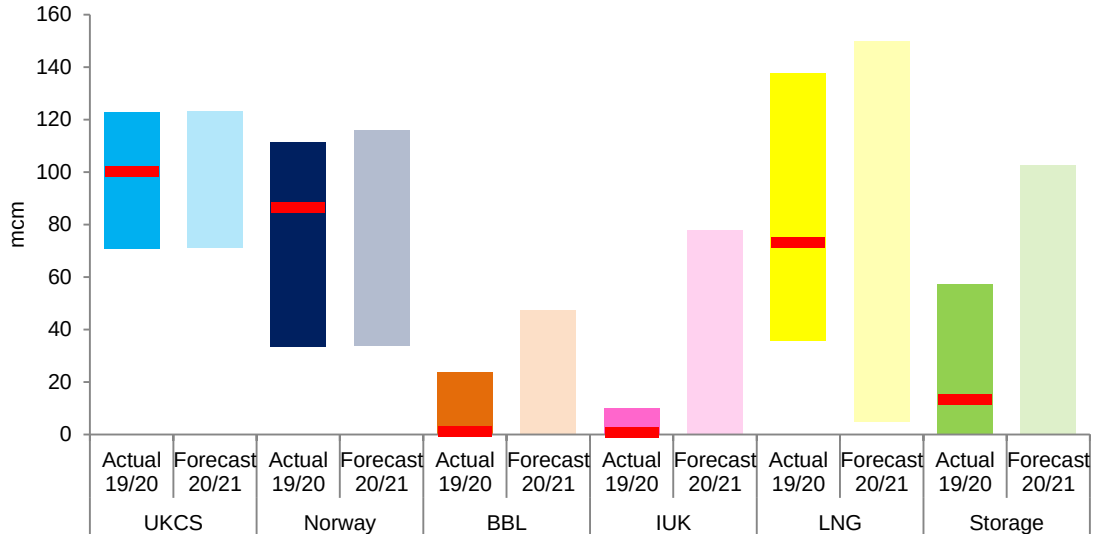


Figure 2
Comparison of observed ranges of flow (and mean – red bars) from last winter against forecast supply ranges for winter 2020/21

- Forecast supplies for winter 2020/21 and observed values from the past winter, across the six categorised sources of entry flow, are provided in Figure 2 and Table 5.
- High flows observed last winter have increased the LNG Cold day forecast from 58 mcm/d to 97 mcm/d for this coming winter.
- Further details on the Cold day forecast methodology can be found in the 2019/20 Winter Outlook report.

Liquified natural gas

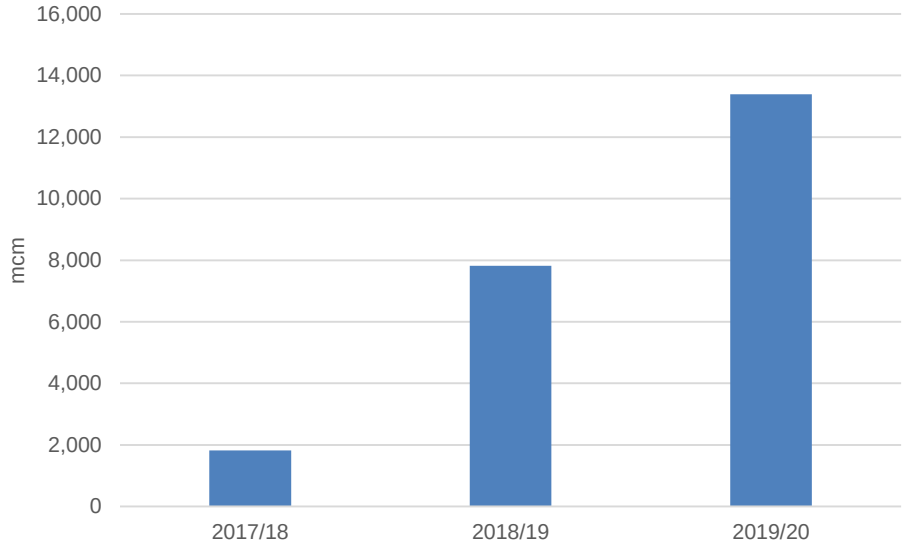


Figure 3
Historical total LNG monthly send-out for the past three winters (2017/18, 2018/19, 2019/2020)

- The total volume of LNG entering the NTS over the past three winters, has increased from approximately 2000 mcm in 2017/18, to 14000 mcm in 2019/20 (Figure 3). With unconstrained maximum daily delivery flows greater for LNG (145 mcm/d) than for either UKCS (123 mcm/d) or Norway (116 mcm/d).
- We anticipate volumes to be as high this winter as 2019/20, as global LNG supply capability continues to exceed global demand.
- As with fast cycle storage sites, the capability of LNG facilities to quickly change export rates makes them an ideal source of gas to provide a fast response to changing demand conditions, particularly when due to the residential and power generation sectors where changing weather patterns, including the levels of renewable electricity generation, can significantly influence demand.

Connections to Europe

- Figure 4 shows the capacity level booked for IUK and BBL interconnectors for the forthcoming winter compared with actual flow and booked capacity for last winter.
- Booking capacity gives Shippers the rights to flow gas onto the NTS (Entry Capacity) or take gas from the NTS (Exit Capacity).
- The longer term capacity booked on the interconnectors for this winter is lower than last winter (Figure 4), this is consistent with the trend of a reduction in long term capacity bookings across the whole of the NTS.
- Actual flows however will be highly dependent on the level of demand and market prices, and additional capacity can be bought in the short term markets.
- New charging arrangements (UNC0678A) came into effect on 1 October 2020, which introduced two key changes to the capacity regime;
  - uniform reserve prices across the whole NTS (one for Entry and one for Exit,)
  - uniform capacity reserve prices for bookings across all time horizons (i.e. the same price for long term bookings and daily bookings)
  - a 10% discount for interruptible capacity bookings.
- We anticipate the new charging arrangements to lead to further reductions in the level of long term capacity being booked, and an increase to the level of short term capacity (day ahead) bookings.
- We also expect there may be a reduction in the level of capacity booked within day. Previously, within day bookings were free of charge and overbooking was common.

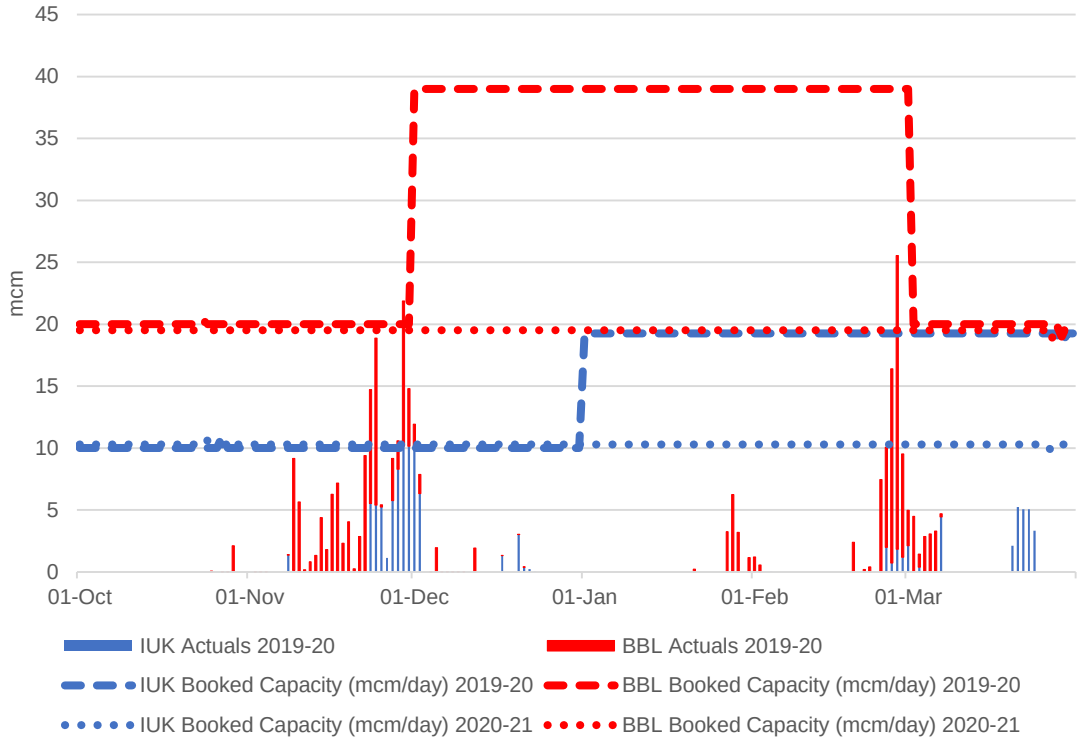


Figure 4
Booked capacity for winter 2020/21, and historic flows and booked capacity for winter 2019/20 for the BBL and IUK interconnectors

- We do not anticipate operability challenges this winter when the transition period of the UK leaving the EU ends. Since entering the transition period at the end of January 2020, there has been no significant impact on gas markets and we expect this to continue this winter, including in a 'no-deal scenario.
- We expect the established commercial arrangements across the interconnectors to remain.
- We have a diversity of supply sources to GB which provides a level of resilience should this position change.

Storage

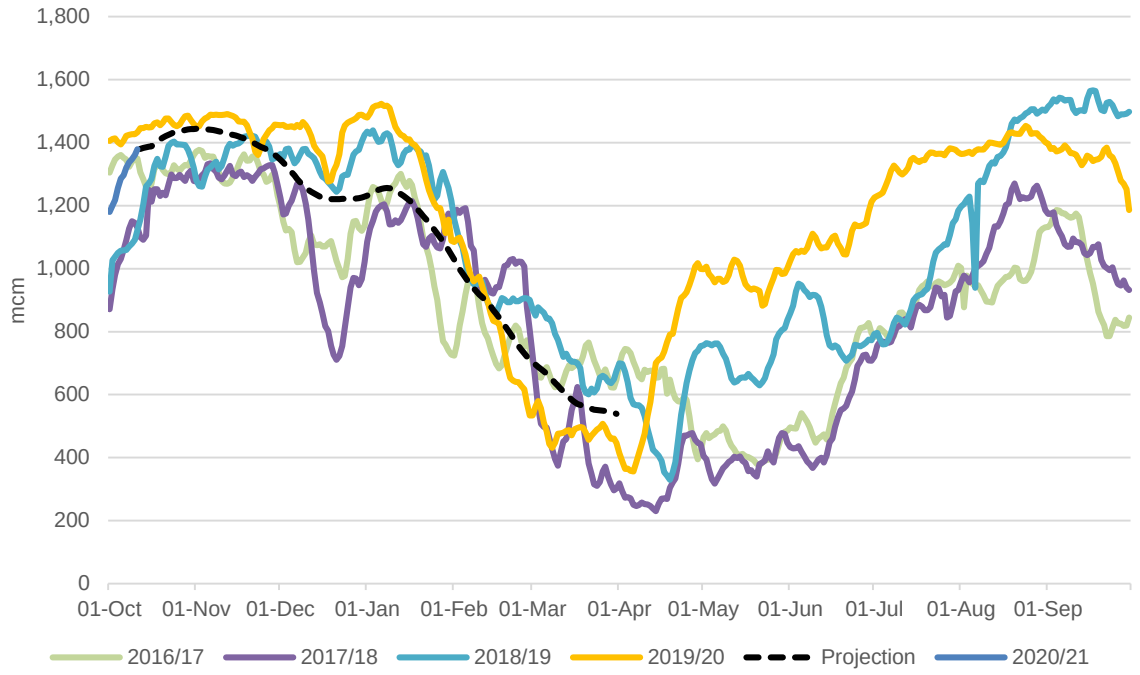
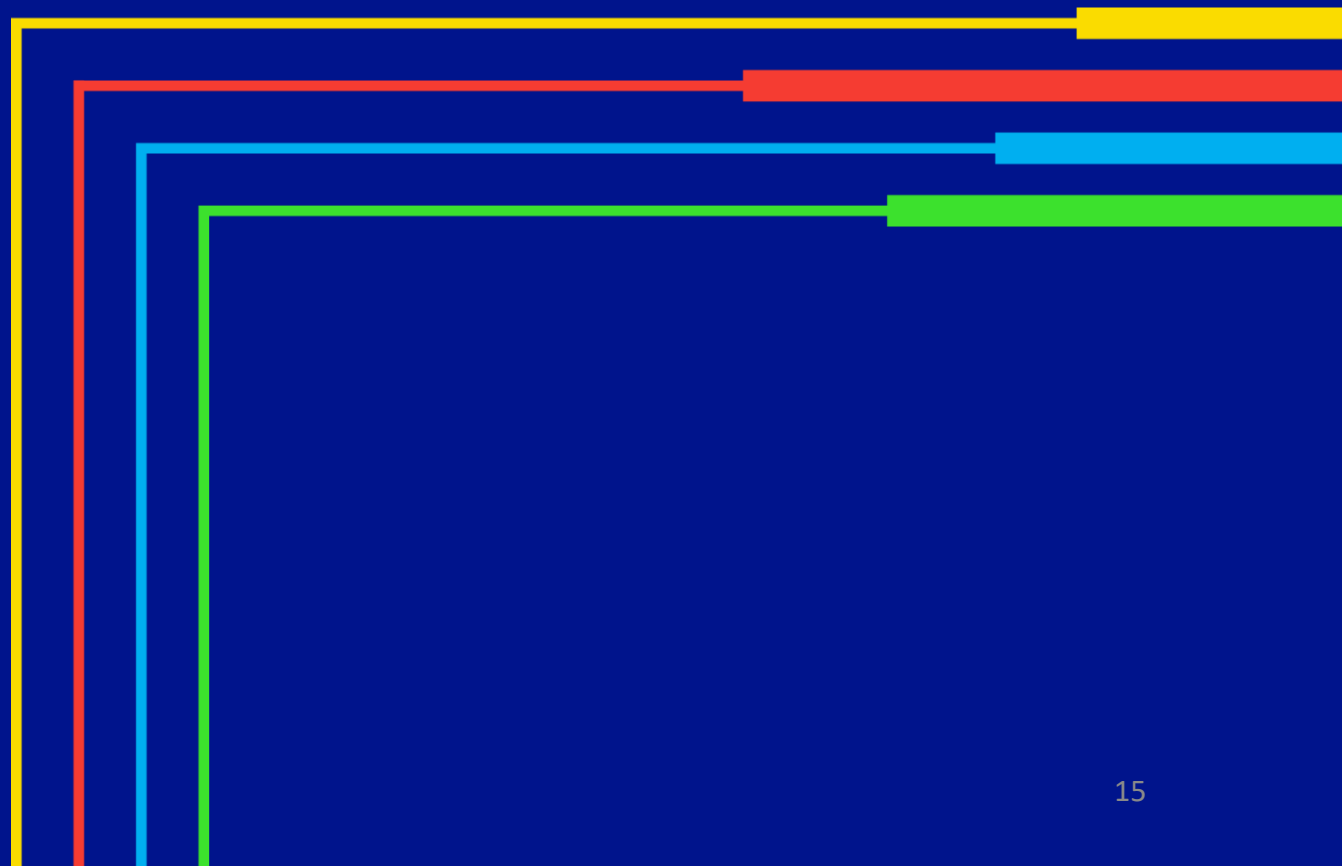


Figure 5
MRS stock levels. Historical from October 2015 - September 2020, and Projection for winter 2020/21 (October - March)

- NTS storage deliverability has increased by a total of 15 mcm/d since last winter due to an expansion in capability. For the first time since the closure of the Rough storage facility in 2018, the upper range of entry flows from storage are forecast to be in excess of 100 mcm/d for winter 2020/21.
- Storage stocks on the NTS have replenished following last winter and are at the level of 1400 mcm (Figure 5).
- European storage stocks at the end of summer 2020 are close to maximum and comparable to winter 2019/20.
- The combination of strong domestic and European storage stock levels (increasing the likelihood of flows onto the NTS via the Bacton IUK and BBL interconnectors) strengthens the UK security of supply position in the event of high demands in the 2020/21 winter.

6

Operational toolbox



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Operational Toolbox

In our role as System Operator of the high pressure gas network, we act as Residual Balancer. This means that we must ensure the overall balance of gas on the NTS is within safe physical operating limits at all times. 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.

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, and is published on our website.

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.

Last year, 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 https://www.gasgovernance.co.uk/0698 https://www.gasgovernance.co.uk/0703.

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. A GBN was previously known as a Gas Deficit Warning (GDW) and only one such notification has ever been issued, on 1 March 2018.

Both the MN and the GBN processes are described in more detail on our website at https://www.nationalgrid.com/uk/gas-transmission/balancing/margins-notices-and-gas-balancing-notifications

Operational Toolbox

Operating Margins (OM)
OM is an amount of gas that we purchase each year. OM gas can be used in the immediate period following operational stresses to maintain system pressures in the period before other balancing measures become effective. It can also be used to ensure the safe rundown of the gas system in the event of a Network Gas Supply Emergency. The full criteria for the use of OM are set out in the System Management Principles Statement. We have obligations under the UNC and the Safety Case to maintain OM at various levels and at various locations throughout the year. Further information about operating margins can be found on our website

Safety Monitor
The safety monitor describes an amount and deliverability of gas that needs to remain in storage over the winter period to supply customers that cannot be safely or immediately isolated from the gas network. The safety monitor calculates how much gas is required to supply these customers across the whole of a severe 1-in-50 winter. The safety monitor exists to maintain the safe operation of the gas system by maintaining adequate pressures on the network, rather than to support security of supply. The space requirement of the safety monitor is made up of the 'protected by monitor' and 'protected by isolation' elements:

- Protected by monitor applies to sites that cannot be safely isolated from the gas network; for example, domestic properties. Where there is not enough non-storage supply across the winter to meet this demand, this is the volume of gas that needs to be available in storage to ensure these properties are never isolated from the network.
- Protected by isolation applies to sites that could be safely isolated from the gas network, but not immediately. As a result, there is an additional gas demand associated with the time it would take to safely isolate them from the gas network. The total space requirement from these two elements is then divided across storage facilities. There has not been not been a breach of the safety monitor level since it was introduced in 2004.

We set a preliminary safety monitor well ahead of the winter period, with a further update in Autumn. This is then kept under review for the whole winter. You can find more information about the safety monitor on our website. The preliminary safety monitor storage space requirement for winter 2020/21 has been set at zero, with deliverability of zero.

What this means, is that in the event of a severely cold winter occurring where customer demand would exceed supply, and certain offtakes would be required to isolate as a result, then there would be enough non-storage supply to ensure that we could do this safely and efficiently.

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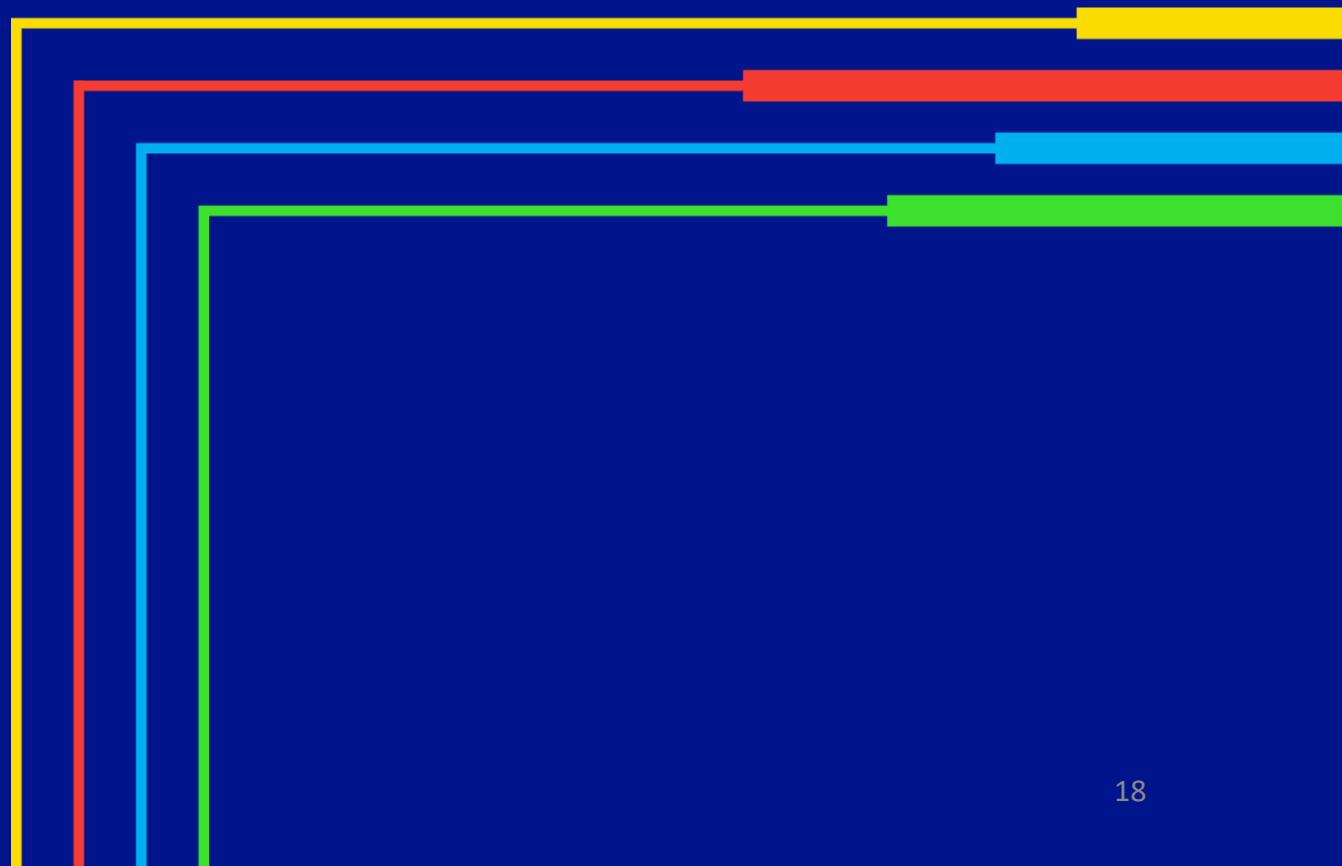
Appendix



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Appendix – mcm to GWh conversion

Forecast	GWh/d
1-in-20[1] peak demand	5188
1-in-20 non-storage supply	4709
1-in-20 storage supply	1250
Cold day[2] demand	4162
Cold day non-storage supply	3859
Cold day storage supply	1006

Key statistics.

Note The 2020/21 peak 1-in-20 demand has increased by 293 GWh compared to last year due to both a change in methodology which now does not use a climate adjuster, alongside an increase in power generation demand.

[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

Forecast	GWh/d
1-in-20[3] peak demand	5188
1-in-20 non-storage supply	4709
1-in-20 storage supply	1250
Supply margin under 1-in-20 conditions	772
Largest loss	684
N-1 supply margin	88
Cold day[4] demand	4162
Cold day non-storage supply	3859
Cold day storage supply	1006
Cold day supply margin	694

Table 1

[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.

[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, with calculations using weather history over the period 1960 - 2012

Conversions were made using the following resource https://unit-converter.gasunie.nl/

Appendix - mcm to GWh conversion

Winter Demand	20/15/16	2016/17	2017/18	2018/19	2019/20	2020/21
GWh	weather corrected					forecast
Non-daily metered (NDM)	289	290	299	293	302	290
Daily Metered (DM, excluding Generation)	46	49	47	44	44	44
Electricity generation	102	135	125	120	104	107
Ireland	25	16	18	21	25	31
IUK and BBL export	26	8	7	0	5	5
Storage injection	12	18	22	15	14	17
Total[5]	502	517	521	495	496	497

Table 2
Forecast total gas demand for winter 2020/21, and weather corrected historical data for 2015/16 to 2019/20.
[5] All totals include NTS shrinkage and will therefore not tally

	2019/20 (observed, GWh)	2020/21 (forecast, GWh)
GB gas demand (excludes IUK and BBL interconnector exportation and storage injection flows)	477726	475772
Total gas demand (includes IUK and BBL interconnector exportation and storage injection flows)	496288	497265

Table 3
Forecast and observed winter gas demands for 2020/21 and 2019/20 respectively. Forecast demands are weather corrected, and these values have been come from the analysis completed for FES20, which did not include the effect of the pandemic

	1-in-20 peak demand (GWh/d)
High case	5188
Central case	5021
Low case	4875

Table 4
Change (%) in peak 1-in-20 total NTS demand across three possible pandemic scenarios during the 2020/21 winter

Conversions were made using the following resource https://unit-converter.gasunie.nl/

Appendix - mcm to GWh conversion

Winter supply (GWh/d)	2019/20 Observed range	2019/20 Cold day	2020/21 350+ mcm range	2020/21 Forecast range	2020/21 Cold day
UKCS	694 – 1202	1065	938 – 1075	694 – 1201	1045
Norway	332 – 1084	1,172	782 – 1065	332 – 1133	1133
BBL	0 - 234	293	0 – 39	0 - 459	293
IUK	0 - 98	440	0 – 59	0 - 762	440
LNG	352 – 1348	567	967 – 1338	49 - 1417	948
Total Non-storage supply (NSS)		3535			3859
Storage	0 - 557		127 - 557	0 - 1006	

Table 5
Observed and forecast ranges on a cold day and any days where total supply exceeds 350 mcm/d.
Cold day demand values are the average for gas days where demand >350 mcm/d

Conversions were made using the following resource https://unit-converter.gasunie.nl/

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Glossary

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Glossary

Term	Description
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[6], 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.
IUK Interconnector/ IUK	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

[6] https://ngrid.com/2GRTCKL

Glossary

Term	Description
Margin	The difference between gas supply and demand. A positive margin indicates supply is greater than demand. A negative margin when demand is greater than supply.
Mcm	Million cubic metres.
MRS (Medium-range storage)	Gas storage facilities designed to switch rapidly between injection and withdrawal to maximise the value from changes in gas price.
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.
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 redundancy 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.

Glossary

Term	Description
Renewable	Forms of energy generation from renewable resources, which are naturally replenished, such as sunlight and wind.
Safety Monitor	The safety monitor describes an amount and deliverability of gas that needs to remain in storage over the winter period in order to supply customers that cannot be safely or immediately isolated from the gas network. The safety monitor calculates how much gas is required to supply these customers across the whole of a severe 1-in-50 winter. The safety monitor exists to maintain the safe operation of the gas system by maintaining adequate pressures on the network, rather than to support security of supply. The space requirement of the safety monitor is made up of the 'protected by monitor' and 'protected by isolation' elements: • **Protected by monitor** applies to sites that cannot be safely isolate from the gas network; for example, domestic properties. Where there is not enough non-storage supply across the winter to meet this demand, this is the volume of gas that needs to be available in storage to ensure these properties are never isolated from the network. • **Protected by isolation** applies to sites that could be safely isolated rom the gas network, but not immediately. As a result, there is an additional gas demand associated with the time it would take to safely isolate them from the gas network. The total space requirement from these two elements is then divided across storage facilities. There has not been a breach of the safety monitor level since it was introduced in 2004. We set a preliminary safety monitor well ahead of the winter period, with a further update in the autumn. This is then kept under review for the whole winter. You can find more information about the safety monitor on our website. The preliminary safety monitor storage space requirement for winter 2020/21 has been set at 0GWh of space, with deliverability of 0 GWh/day.
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

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