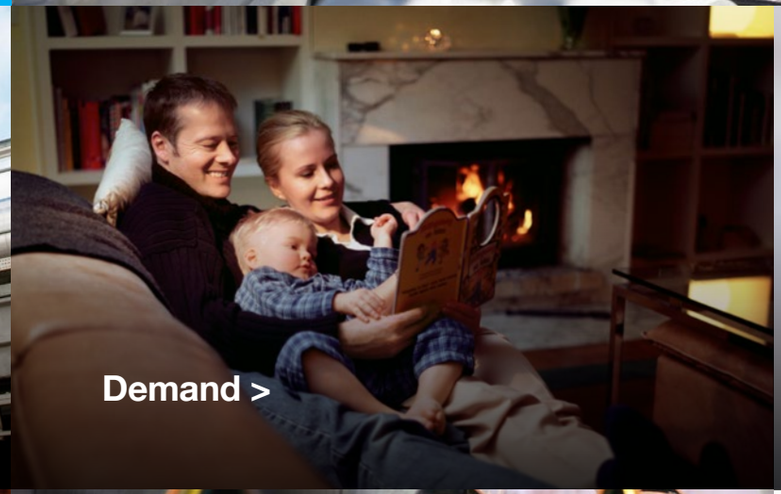
Gas
Transmission

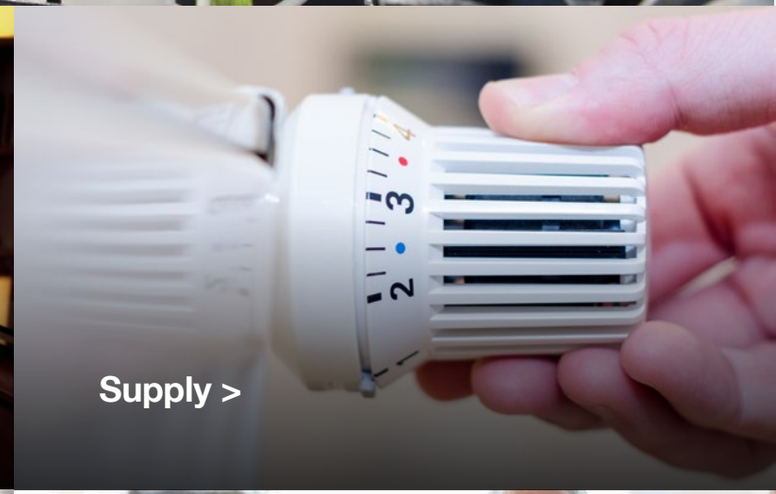
Gas Summer Outlook

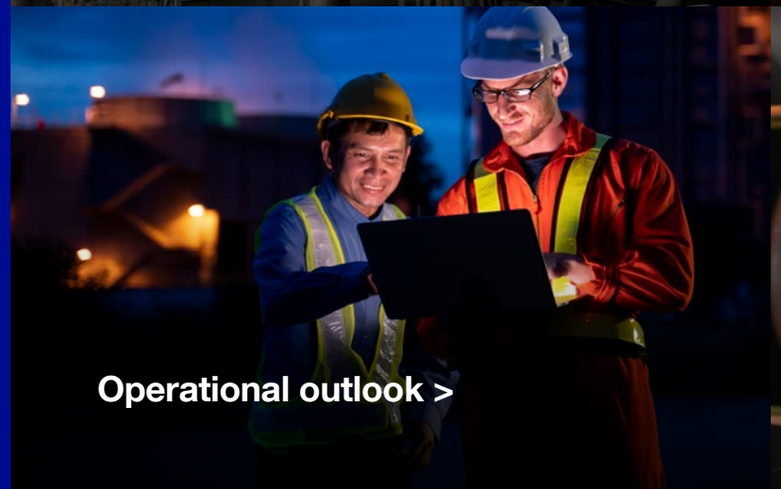
April 2022

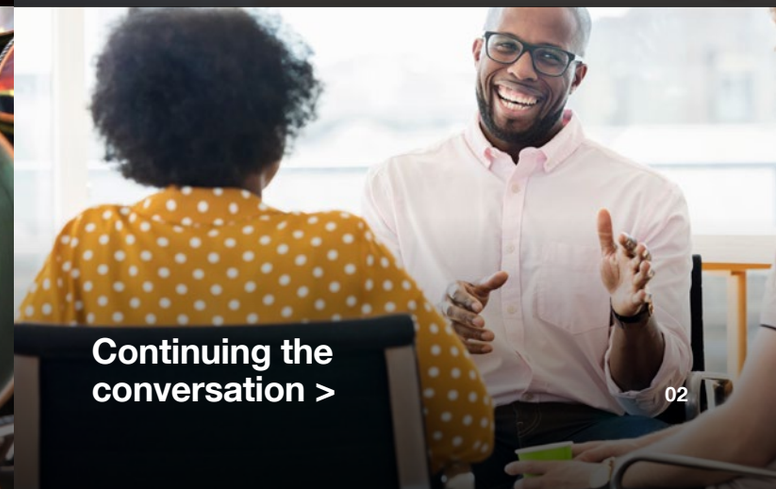
nationalgrid

Welcome









Welcome

How to use this document

We have published the 2022 *Gas Summer Outlook* as an interactive document.

Home

This will take you to the home page.

Glossary

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

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.

‘Linked’ content

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

Welcome
to our 2022 *Gas Summer Outlook*

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 18.

The *Summer Outlook* report is an annual publication delivered each spring. It presents our view of the gas system for the summer ahead (April to September 2022).

This year we have been shocked and saddened by events in Ukraine. Alongside the terrible human toll, the conflict has had economic impacts, particularly on wholesale gas prices. We are also conscious of the effects this has on consumer bills closer to home.

We have no direct influence on global commodity prices, but we continue to operate the transmission system as efficiently as we can – and remain committed to delivering our critical role of getting gas to where it's needed safely, securely and reliably.

The report is designed to inform the energy industry and support their preparations for this summer and beyond. It will, therefore, not cover geo-political and global economic issues, unless they have resulted in a material change to available sources of supply.

The analysis within this *Summer 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 2021.

I hope you find the *Summer Outlook* both interesting and informative. Please share your views with us to help shape future reports. You can find details of how to do this at the end of this document in Continuing the conversation.

We look forward to hearing from you. We can also be contacted via .box. OperationalLiaison@nationalgrid.com

Paul Sullivan
Head of System Capability & Risk
Gas Transmission

Other Gas System Operations publications in this suite include:

- ***Winter Review***, published annually, with the next one due in June 2022.
- ***Winter Outlook***, published annually, with the next due in October 2022.
- ***Gas Ten Year Statement (GTYS)***, published annually, with the next due in November 2022.
- ***Gas Future Operability Planning (GFOP)***, published periodically based on stakeholder/National Grid requirements.
- ***Annual Network Capability Assessment Report (ANCAR)***, with the next due in June 2022.

Executive summary

Key messages

Executive summary

Key messages

1

There is expected to be sufficient supply to meet GB demand this summer. We expect GB gas demand will be largely met by supplies from UKCS and Norway.

2

We could see much higher flows into Europe this summer given the low European storage stocks and the uncertainty of supplies into Europe. We are anticipating that the NTS could be used as a transit for gas going into Europe. We will continue to monitor the levels of GB Medium-range storage (MRS) storage as we head towards winter 2022/23.

3

Our asset maintenance programme in summer 2022 is the most significant we have undertaken with around three times as many activities than previous years. These interventions are required to enable continued safe and reliable operation of our system. We are carefully phasing our maintenance works to ensure that we minimise effects of asset unavailability on network resilience while maintaining our operational flexibility.

4

We have the right tools and services available to manage operability safely and efficiently. Low demand conditions on the NTS increase network resilience. We have a selection of operational and commercial tools that we can use in the event of a supply and demand imbalance. This may include issuing margin notices to encourage market participants to take action.

Key statistics – historical 2021 and forecast 2022		
(bcm)	2021	2022
GB gas demand *	27.8	26.1
Export gas demand	3.1	7.6
Total gas demand **	31.9	34.0

A version of this table with values in TWh can be found in the Appendix.

Weather corrected historical- and forecast-gas demands for the 2021 and 2022 summers respectively.

Please note the difference in GB gas demand and total gas demand will not be equal in value to export gas demand due to shrinkage.

* GB demand is comprised of gas used domestically, and for industry, power generation, and storage injection.
** Total gas demand is GB demand combined with export gas demand (gas exported via interconnectors to mainland Europe and Ireland).

Demand

Demand

Key messages

- **Total forecast GB demand for summer 2022 is higher than the forecast for summer 2021.**
- **Due to the low European storage levels and the uncertainty of gas supplies into Europe, we could see significantly increased exports to mainland Europe (see EU storage spotlight).**

Total NTS demand for summer 2022 (34.0 bcm) is forecast to be higher than the demand for the same period in 2021 (April to September, 31.9 bcm, Table 1).

Exports to mainland Europe last summer were the lowest we have seen over the last 5 years, this was largely due to the UK receiving less LNG and the early summer cold spell in GB observed last year.

Exports to Europe during summer 2022 could be in the range of 0 to 12.4 bcm (average forecast of 5.1 bcm as shown in Table 1). However a number of factors could influence the accuracy of our forecast:

- Levels of LNG imports, which are driven by world markets
- European storage stocks are lower than observed this time last year, which may lead to increased demand for gas in Europe (EU storage spotlight).

Electricity generation demand is forecast to reduce to 8.5 bcm this summer, this is largely due to increased renewables (wind generation), however the peak requirement on any given day is unlikely to reduce.

We witnessed a higher NDM demand in 2021 compared to the previous year, this was largely due to the early summer cold spell. We forecast that NDM demand in 2022 will be more in line with previous years at 11.3 bcm.

A small increase in exports to Ireland is expected this summer (2.5 bcm compared to 2.4 bcm in 2021) as production from the Corrib field continues to decline.

Table 1
Forecast total gas demand (bcm) for summer 2021 and 2022, and historical (2016-2021)[1]

(bcm)	2016	2017	2018	2019	2020	2021 forecast[2]	2021 weather corrected	2021 actual	2022 forecast
Non-daily metered demand (NDM)	11.1	10.4	10.6	11.4	10.4	11.3	11.6	12.5	11.3
Daily metered (DM) and industrial demand	4.1	4.4	4.1	4.2	3.9	4.0	4.0	4.0	4.1
Electricity generation	11.6	10.5	10.3	10.6	9.3	7.9	10.1	10.1	8.5
GB gas demand	**26.8**	**25.3**	**24.9**	**26.2**	**23.7**	**23.2**	**25.7**	**26.6**	**24.0**
Ireland	1.7	1.6	1.6	2.0	2.2	2.5	2.4	2.4	2.5
Export to mainland Europe	5.2	7.0	4.5	4.3	5.3	4.4	0.7	0.7	5.1[3]
Storage injection	2.6	2.5	2.3	2.2	2.1	2.1	2.1	2.1	2.1
Total gas demand	**36.4**	**36.6**	**33.3**	**34.8**	**33.5**	**32.4**	**31.0**	**31.9**	**34.0**

A version of Table 1 with values in TWh can be found in the Appendix.

1. All totals include NTS shrinkage and will therefore not tally.
2. Data provided from *Gas Summer Outlook 2021*.
3. Average forecast based on historic trends.

European storage

Spotlight

Key messages

- **European storage levels were low going into the 2021/2022 winter and ended the period below the 5-year average (26.5 bcm) (See Figure 1).**
- **There is a high uncertainty around Russian gas supplies going into the summer and Europe may have to rely on LNG, including via GB market and interconnector flows, to refill its storage stocks.**

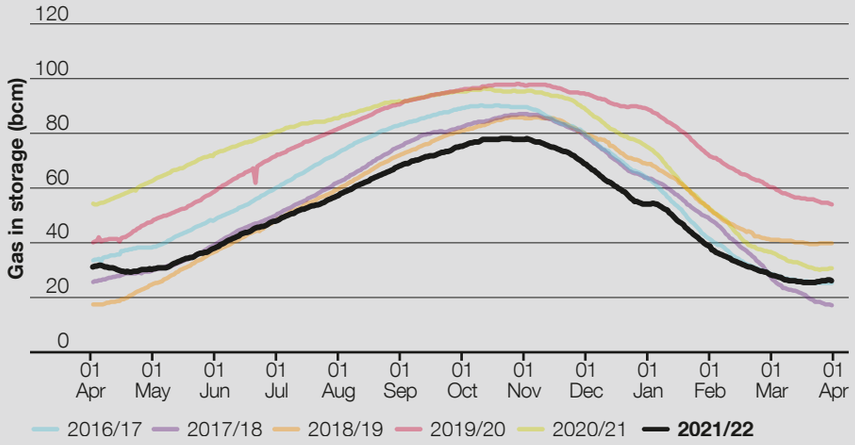
We could see the UK terminals and the NTS being used as a transit for gas going into Europe via the interconnectors this summer due to:

- The EU being highly dependent on Russian gas (about 40 per cent of total requirement) and Nord Stream 2, a major step in Russia's plan to increase its export to Europe, also being suspended.
- The growing concern around security of gas supplies into Europe. This uncertainty, coupled with high gas prices and low EU storage (27 per cent full compared to 30 per cent last year), means that higher volumes of gas from alternative sources may be required to refill EU storage to minimum levels in preparation for winter 2022/2023.

In the last decade, LNG in the EU energy mix has grown considerably, rising from 13 per cent in 2012 to about 20 per cent of total EU gas requirement in 2021. In light of the uncertainty of supplies into Europe, LNG may become more important than ever throughout the summer, in both meeting demand and replenishing storage stock levels ahead of winter; some of which we may see coming via GB into Europe.

Higher prices in Asia and South America last summer made them more favourable markets for LNG traders (See LNG). The possibility of reduced flow from Russia, coupled with the low storage levels in Europe could cause gas prices in the region to increase above other relevant markets in an attempt to secure LNG cargoes.

Figure 1
Total gas in European storage, from April 2015 to date.



Demand
Export to mainland Europe

Key messages

- **European storage stocks are lower than observed this time last year, which may lead to increased demand for gas in Europe.**
- **LNG supplied to the GB NTS could be exported to mainland EU to assist in replenishing storage stocks. (See European Storage spotlight).**

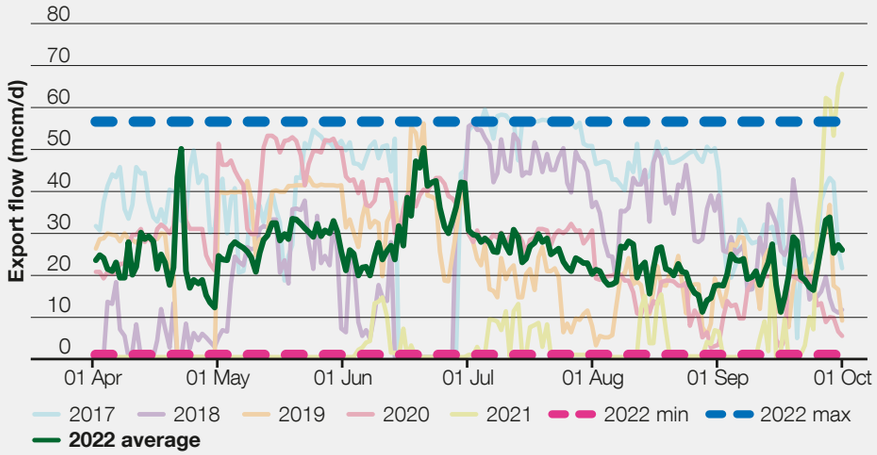
Historic (2017 to 2021) interconnector exports to mainland Europe are presented in Figure 2, along with a 2022 flow range between 0 and 56.7 mcm/d that we could export each day. The chart also shows an average forecast for summer 2022 based on historic trends.

The 56.7mcm/d (623.58 GWh/d) represents the baseline level of capacity we are obligated to release, however we will continue to work towards releasing capacity above this level to support additional flows into Europe where this is possible.

During summer 2022, we could see much higher exports to Europe than observed in previous years due to European strategic storage levels being low (see EU storage spotlight).

This would effectively mean that the GB NTS would be used to transit gas into Europe. If GB were to see additional export flows, we would expect to see additional supply from other sources, such as UKCS, Norway and LNG, to balance supply and demand.

Figure 2
Total interconnector export flows for Bacton IUK and BBL – historical (2017–2021) and prediction for 2022



Supply

Supply

Key messages

- **The total supply volume over the summer period (April to September) is forecast to be higher in 2022 (34.0 bcm) compared to 2021 (31.5 bcm actual, Table 2) to meet forecast demand.**
- **The volume of LNG deliveries to GB are forecast to be higher than last summer, but lower than 2020 summer, as competition for LNG across different markets continues. Further information can be found in liquefied natural gas.**

Last summer, greater volumes of gas were supplied from Norway as UKCS flows were reduced due to maintenance on the Forties Pipeline system, a major pipeline in the North Sea. This summer we are expecting flows similar to that experienced during the same period in 2020. Lower LNG flows forecast for summer 2022, over 2020, could also allow for higher flows from Norway (Table 2).

In 2021 LNG supplies reduced from the 5-year high (7.1 bcm), experienced in 2020, to 5.1 bcm. LNG forecast for this summer is expected to be higher (6.4 bcm) but this is a mid-point average with a potential maximum of 8.3 bcm. For more information – see liquefied natural gas.

Similar to recent summers, supplies from the continent are again not expected, due to higher prices on the Dutch and Belgium energy markets (Figure 3 demonstrating this for TTF), and the expected export flows to support the refilling of EU storage, making flows to the UK via the NBP commercially unfavourable.

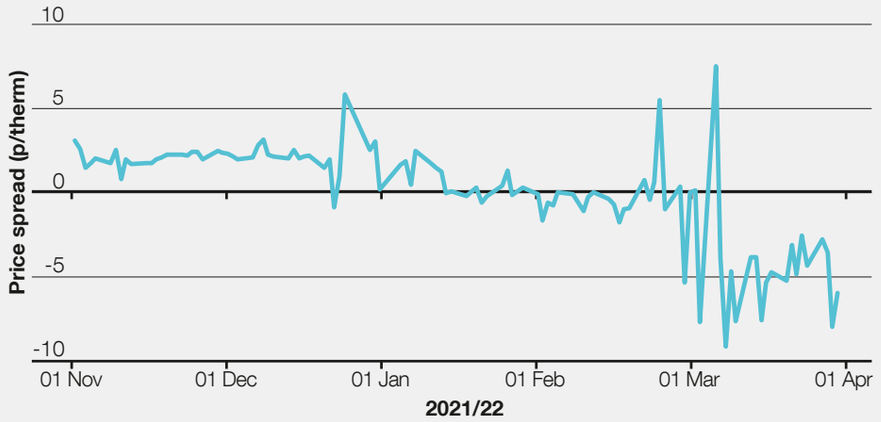
Table 2 Figure 3

Table 2
Summer gas supply volumes (bcm) by source – historical (2016–2021), and forecast (2021 and 2022)

(bcm)	2016	2017	2018	2019	2020	2021 forecast[3]	2021	2022 forecast
UKCS	16.2	17.4	16.8	16.9	15.9	15.6	12.2	15.5
Norway	12.4	13.1	13.3	9.8	8.8	9.8	12.7	10.7
Continent	0.5	0.1	0.1	0.0	0.0	0.0	0.1	0.0
LNG	5.3	3.2	1.4	6.0	7.1	5.7	5.1	6.4
Storage	1.2	1.9	1.3	1.4	1.3	1.4	1.3	1.4
Total	**35.6**	**35.7**	**32.8**	**34.1**	**33.1**	**32.4**	**31.5**	**34.0**

A version of Table 2 with values in TWh can be found in the Appendix.

Figure 3
Historical price difference (spread) between the Dutch energy market TFF and GB market NBP (November 2021 – to date)



3. Data provided from *Gas Summer Outlook 2021*.

Supply
Liquefied Natural Gas

Key messages

- **Liquefied natural gas (LNG) supplies were lower in summer 2021 due to increased demand in competing markets in Asia and South America.**
- **There is a possibility that LNG supplies could significantly increase this summer with GB serving as a transit for gas into Europe.**

GB continues to receive LNG from a diverse range of global suppliers and this is expected to remain the case throughout 2022 (Figure 4).

Summer 2021 saw a reduction in the volume of LNG supplied due to lower prices in the GB gas market making the NTS less attractive to deliver LNG. It thus became more commercially favourable to transport gas to competing markets in Asia and South America.

LNG supplied over the summer was from USA, Algeria, Russia, Trinidad, Nigeria and Qatar. Towards the end of the summer, Peru began supplies to the NTS adding to the diversity of supplies.

The US have indicated that they will increase LNG supplies into Europe by 15 bcm and Qatar have also stated that they won't redirect cargoes away from Europe.

Global LNG export capacity is forecast to increase over the summer, facilitated by increased liquefaction in the USA. There is the potential for increased LNG supplies towards maximum forecast (see Supply) if the price differentials make it more favourable and GB is used as a transit for gas into Europe (see Exports to mainland Europe).

Figure 4 Figure 5

Figure 4
LNG delivery cargoes by global source – historical, 2021–2022 (to date)[4]

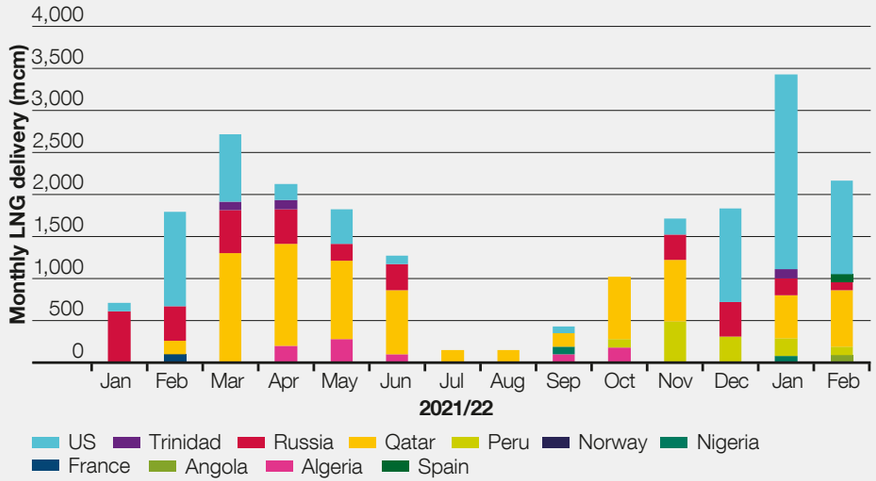
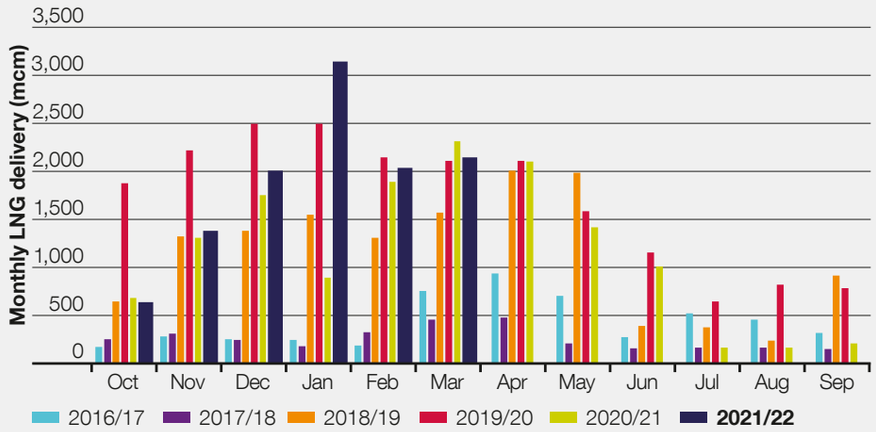


Figure 5
Monthly LNG delivery – historical, 2016–2022 (to date)



4. This chart has been developed by National Grid using confidential proprietary data from the Argus Media Group under licence. Argus shall not be liable for any loss or damage arising from any party's reliance on this data.

Supply
Storage

Key messages

- **Medium-range storage (MRS) stock levels as at the end of winter 2021/2022 are comparable to previous years.**
- **Storage stocks at the end of this summer will be influenced by the volatility in market prices.**

MRS stock levels over the previous gas years (October to the following September) are presented in Figure 6.

MRS stock levels over the previous summer were initially slower to fill than typically observed over this period of the year.

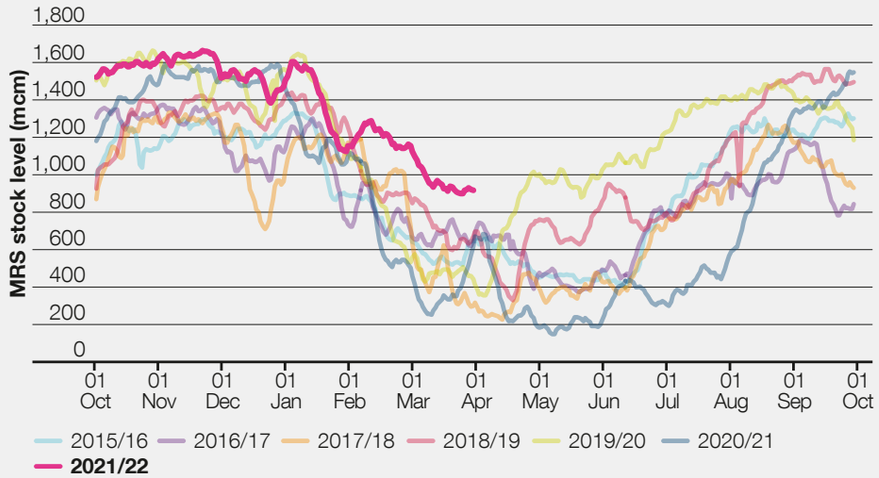
There is a level of uncertainty around the level of MRS stocks through this summer and into next winter due to the extraordinary volatility we are seeing in the market. Figure 6 shows the storage position as at the time of writing (March 2022).

We will continue to monitor storage levels over the summer period in preparation for winter.

Storage facilities connected to the NTS are 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.

There is ongoing industry engagement on whether there is a need for the UK to invest in strategic long term storage and to assess whether this could provide additional security of supply.

Figure 6
MRS stock levels – historical from October 2015 to March 2022, and projection for summer 2022 (April to September)[5]



5. This chart has been developed by National Grid using confidential proprietary data from the Argus Media Group under licence. Argus shall not be liable for any loss or damage arising from any party's reliance on this data.

Operational outlook

Operational outlook

Key messages

- **The asset maintenance programme for summer 2022 is the most significant we have undertaken with around three times as many interventions than previous years.**
- **We are installing new IED compliant compressor units at 3 of our compressor stations over the summer to ensure that we remain emissions compliant and continue to meet our customers' requirements.**
- **We will continue to work closely with our customers to minimise the risk of interruptions in their ability to deliver and offtake gas during the summer maintenance period.**

Demand reduces significantly in the summer. The summer therefore represents the best time of the year to carry out maintenance and invest in our assets. This ensures that we have the flexibility that allows us to continue to meet our customers' requirements and to rapidly respond to the diverse supply and demand patterns observed throughout the year.

Typically, during the summer, excess supply is met through an increase in interconnector exports to Europe and domestic storage injection. This summer, we are anticipating increased exports to Europe in response to the changing supply dynamics across the region which may result in increased LNG supplies.

Compared to previous summers, there is a significant increase in the maintenance and capital works programme in 2022; the most we have embarked on in a long time.

Improving access to data

In response to a number of recent industry engagements, National Grid has mobilised a programme of work to identify and deliver enhancements to the operational data currently provided to the industry through its website. For more information please refer to our Operational Data User Guide.

Operational outlook

We are carefully phasing our maintenance works to ensure that we minimise effects of asset unavailability on network resilience while maintaining our operational flexibility.

This will allow us to bring online compression at short notice to both maintain locational pressures, and to respond to changes n gas supply patterns expected over the summer period.

We are progressing works at our Huntingdon, Peterborough and Hatton compressor stations over the summer to install new units that will allow us to remain emissions compliant.

Preparatory works for the Western Gas network upgrade, which will increase our capacity to export gas from the Milford Haven LNG Terminal, will also continue.

Further details of our maintenance plans can be found here.

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 supply and demand. 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.

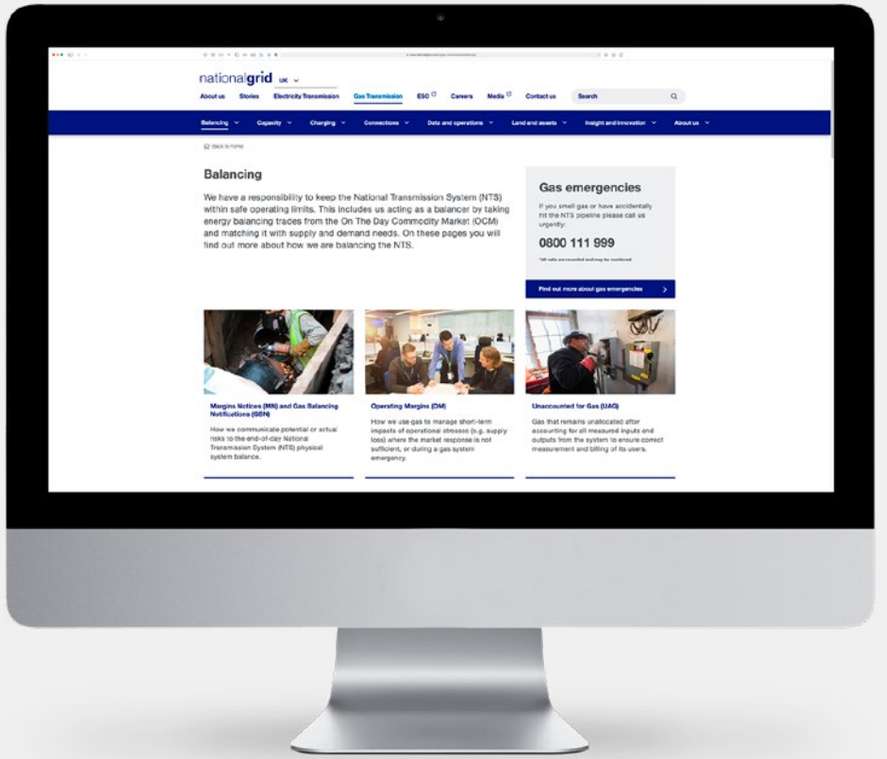
Once an MN notice has been issued, it cannot be withdrawn and will stay in place until the end of the gas day to which it applies, unless it is superseded by a Gas Balancing Notification.

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 per cent 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
Data tables in TWh

Key statistics – historical 2021 and forecast 2022		
(bcm)	2021	2022
GB gas demand *	305.8	287.1
Export gas demand	34.1	83.6
Total gas demand **	341	374

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.

* GB demand is comprised of gas used domestically, and for industry, power generation, and storage injection.
** Total gas demand is GB demand combined with export gas demand (gas exported via interconnectors to mainland Europe and Ireland).
1. All totals include NTS shrinkage and will therefore not tally.
2. Data provided from *Gas Summer Outlook 2021*.

Table 1 Table 2

Table 1
Forecast total gas demand (bcm) for summer 2021 and 2022, and historical (2016–2021)[1]

(bcm)	2016	2017	2018	2019	2020	2021 forecast[2]	2021 weather corrected	2021 actual	2022 forecast
Non-daily metered demand (NDM)	122.1	114.4	116.6	125.4	114.4	124.3	127.6	137.5	124.3
Daily metered (DM) and industrial demand	45.1	48.4	45.1	46.2	42.9	44.0	44.0	44.0	45.1
Electricity generation	127.6	115.5	113.3	116.6	102.3	86.9	111.1	111.1	93.5
GB gas demand	**294.8**	**278.3**	**273.9**	**288.2**	**260.7**	**255.2**	**282.7**	**292.6**	**247.5**
Ireland	18.7	17.6	17.6	22.0	24.2	27.5	26.4	26.4	27.5
Export to mainland Europe	57.2	77.0	49.5	47.3	58.3	48.4	7.7	7.7	56.1
Storage injection	28.6	27.5	25.3	24.2	23.1	23.1	23.1	23.1	23.1
Total gas demand	**400.4**	**402.6**	**366.3**	**382.8**	**368.5**	**356.4**	**341.0**	**350.9**	**374**

Table 2
Summer gas supply volumes (bcm) by source – historical (2016–2021), and forecast (2021 and 2022)

(bcm)	2016	2017	2018	2019	2020	2021 forecast[2]	2021	2022 forecast
UKCS	178.2	191.4	184.8	185.9	174.9	171.6	134.2	170.5
Norway	136.4	144.1	146.3	107.8	96.8	107.8	139.7	117.7
Continent	5.5	1.1	1.1	0.0	0.0	0.0	1.1	0.0
LNG	58.3	35.2	15.4	66	78.1	62.7	56.1	70.4
Storage	13.2	20.9	14.3	15.4	14.3	15.4	14.3	15.4
Total	**391.6**	**392.7**	**360.8**	**375.1**	**364.1**	**356.4**	**346.5**	**374.0**

Continuing the conversation

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

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