Gas Summer Outlook 2020

April 2020

nationalgrid

Contents

Welcome
to our 2020 Gas Summer Outlook

The Gas Summer Outlook is one of a suite of documents produced by the Gas System Operator within National Grid Gas Transmission, exploring the future of the UK gas market in the current year and out to 2050. The Gas Summer Outlook presents our view of the UK gas system for the summer ahead (April to September).

The forecasts within this publication were compiled before the coronavirus outbreak and therefore do not take into account the impact of the measures put in place by the UK Government, nor the actions taken by wider society such as working from home. These will undoubtedly have an impact on the level of gas demand, which we expect to be lower given the reduction in demand from industrial facilities and business premises. Low demand conditions on the gas network are beneficial in terms of network resilience, requiring us to run fewer assets to meet our customers' required pressures.

There is currently insufficient information on which to compile a new forecast but we have provided a qualitative assessment of the potential impact throughout. We will continue to monitor the situation closely and updates will be made through our standard channels of communication, and a regular webinar of the impacts of COVID-19 on the gas network.

This year individual 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 Reviews by National Grid ESO.

To support the analysis carried out for the Summer Outlook, we use supply and demand forecasts developed for the **Future Energy Scenarios** (FES) publication, produced by National Grid ESO and released each July.

Other Gas System Operations publications in this suite are:

- **Winter Outlook and Review, both published annually, with the next due in October 2020 and June 2020 respectively.**
- **Gas Ten Year Statement (GTYS), published annually every November.**
- **Gas Future Operability Planning (GFOP), published periodically when required.**

I hope you find the Gas Summer Outlook and all the documents mentioned useful.

Please share your views with us to help shape future Outlook reports. You can do this by contacting us via .box.OperationalLiaison@nationalgrid.com

Ian Radley
Head of Gas System Operations

Executive summary
Key Messages

1. **We expect there will be sufficient gas supply available to meet energy demands for the coming summer.** We expect similar geographical patterns of supply and demand to last summer. Short or long term supply disruptions, should they occur, will not impact on security of supply. During periods of low demand, supply availability is significantly in excess of demand and is available from multiple diverse sources. Any reduction in a specific supply point would result in an increase in supply at an alternative location.

2. **We expect demand to be lower than seasonal normal levels** due to reductions in business and industrial activity. COVID-19 controls, with more people working from home could lead to an increase in domestic demand in the early part of the summer, but as temperatures rise this effect could diminish. Any growth in domestic demand would be far outweighed by the expected reduction in demand from businesses and industry.

3. **We have the right tools and services available to manage operability.** Low demand conditions on the NTS increase network resilience. We expect to have the assets and the commercial market tools available that are necessary to operate the network as normal.

4. **We anticipate no additional operability challenges this summer resulting from the UK leaving the EU.** We left the EU at the end of January 2020 and have entered the transition period. To-date there has been no impact on gas markets. The next major milestone is the end of the transition period currently on 31st December 2020. We are working towards this but don't expect any operability issues.

Executive summary
Supply, Demand, and Operational Outlook

- **We are confident that there will be sufficient gas supply available to meet energy demands for the coming summer.**

- **All forecasts and commentary were produced before measures were introduced in the UK to control the spread of COVID-19.**

- **Supply -** Supply availability is high and from a diverse range of sources. Should the coronavirus begin to impact on natural gas production we expect there to be sufficient availability to continue to meet the UK's demand. We anticipate a continuing high level of liquified natural gas (LNG) deliveries, which could lead to other supplies being displaced.

- **Demand -** during the summer, gas fired electricity generation becomes a more significant component of GB demand*, unlike for winter when domestic heating dominates. This drives summer generation patterns to become more variable in line with renewable generation. The measures taken to restrict the spread of COVID-19 are likely to result in a reduction in industrial demand from the figures presented. This combined with market conditions between the UK and the continent, could lead to greater levels of transit gas compared to last summer, or gas available for storage.

- **Operational Outlook** - We are actively planning and prioritising our maintenance programme, to ensure any impact of the coronavirus does not result in significant customer disruption or negatively affect network operability.

Key statistics – historical (2019) and forecast (2020)		
	2019 (bcm)	**2020 (bcm)**
GB gas demand	25.2	25.5
Total gas demand	36.1	34.9

Forecast summer gas demands are weather corrected

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

Demand

Key messages

- We expect similar geographical patterns of supply and demand to last summer, with a small increase in interconnector flows to Europe, balanced by a reduction in demand from electricity generation.
- The measures taken to restrict the spread of COVID-19 are likely to result in a reduction in industrial demand from the figures presented.

Table 1

Forecast total gas demand for summer 2020 and history for previous summers (2015-2019)[1]

[1] All totals include NTS shrinkage and will therefore not tally. Following feedback on the 2019 Winter Review publication, a version of Table 1 with values in TWh can be found in the Appendix.

	2015 (bcm)	2016 (bcm)	2017 (bcm)	2018 (bcm)	2019 actual (bcm)	2019 weather corrected (bcm)	2020 forecast (bcm)
Non-daily metered demand (NDM)	11.3	11.1	10.4	10.6	11.4	11.6	11.7
Daily Metered (DM) and Industrial demand	4.2	4.1	4.4	4.1	4.2	4.2	4.0
Electricity generation	8.3	11.6	10.5	10.3	10.6	10.6	9.8
GB gas demand	23.8	26.8	25.3	24.9	26.2	26.3	25.5
Ireland	2.8	1.7	1.6	1.6	2.0	2.0	2.1
Export to mainland Europe	5.0	5.2	7.0	4.5	4.3	4.3	4.9
Storage Injection	3.4	2.6	2.5	2.3	2.2	2.2	2.1
Total gas demand	35.2	36.4	36.6	33.3	34.8	34.9	34.9

Our demand forecasts for 2020 summer are provided in Table 1 and Figure 1 on the next page, with total GB volumes looking similar to 2019. Our projection for 2020, in comparison to last summer, is for a small increase in exports to Europe via the interconnectors, similar to 2015 volumes.

Gas demand for electricity generation has reduced compared to volumes for the previous four summers balanced by an increase in interconnector flows. As we progress into the summer with warmer temperatures, the domestic component of demand will continue to fall.

The anticipated impact of COVID-19 on the UK Gas Network was for demand to drop significantly below seasonal normal levels, due to reductions in business and industrial activity. This has been initially observed following strengthening of the COVID-19 controls implemented by UK Government.

Although COVID-19 controls could lead to an increase in domestic demand in the early part of the summer, it is anticipated that as temperatures rise this effect will diminish, and be further outweighed by the reduction in the demand from industry.

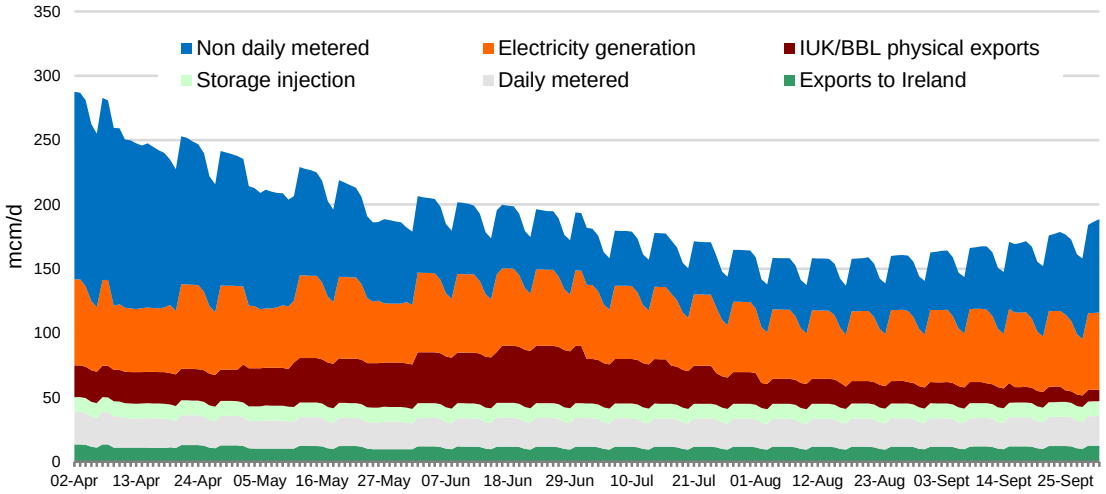
Low demand conditions on the NTS increase network resilience, particularly given the expected reduced maintenance programme outages, and do not compare to the challenges low demand scenarios present to the electricity network. We have the commercial market tools we need to operate the network in the event that nominated entry flows exceed the capability of the network.

Demand

Typically over the summer, the demand driven by need to heat homes is reduced, however supplies to the NTS may drop by up to only 25%. This means more gas is available to restock storage sites ahead of the winter, or be transported via the interconnectors to Europe based on the price differentials between the UK and continental Europe.

The following pages give more details of our forecasts for these two forms of demand.

Figure 1
Forecast gas demand profiles for summer 2020 - seasonal normal weather conditions



Supply

Key messages

- The outbreak of COVID-19 is not predicted to affect the security of supply of gas to the UK.
- We expect that there will be sufficient gas to meet demand in summer 2020.
- Supplies from the UK continental shelf (UKCS) and Norway continue to be dominant, but with LNG supplying similarly high volumes to 2019.

Forecast supplies across the five sources of Entry flow to the NTS, are provided in Table 2.

	2014 (bcm)	2015 (bcm)	2016 (bcm)	2017 (bcm)	2018 (bcm)	2019 (bcm)	2020 (bcm)
UKCS	15.1	15.9	16.2	17.4	16.8	16.9	15.8
Norway	7.4	11.3	12.4	13.1	13.3	9.8	10.5
Continent	2.2	0.3	0.5	0.1	0.1	0.0	0.1
LNG	7.5	6.2	5.3	3.2	1.4	6.0	6.7
Storage	1.3	1.1	1.2	1.9	1.3	1.4	1.4
Total	33.4	34.8	35.6	35.7	32.8	36.1	34.4

Table 2
*Summer gas supply volumes by source – historical (2014-2019) and forecast for 2020. **Note** – these forecasts were generated prior to the outbreak of COVID-19 in the UK in early March 2020. Following feedback on the 2019 Winter Review publication, a version of Table 2 with values in TWh can be found in the Appendix.*

- Due to the COVID-19 pandemic, we understand that upstream organisations are reviewing their maintenance plans for the summer. It is not expected that this will affect supplies to the UK from UKCS, Norwegian and LNG sources. Should disruptions be realised there is sufficient availability from other diverse sources to maintain security of supply.
- The expected availability of supply is significantly in excess of that required for the demand in a 'normal' summer, and therefore even more so in the current environment, with the measures in place to control COVID-19.
- UK continental shelf (UKCS) and Norway continue to be the UK's main sources of supply over the summer, although slightly lower than 2019's volumes (down to levels seen in 2014 and 2015) due to the stronger LNG market. This is expected to continue into the summer 2020.
- Forecasts for LNG predict that supplies could be higher for 2020 compared to 2019 (6.7 bcm compared to 6.0 bcm). Combined with high UKCS and Norway flows, this would result in plentiful supplies to meet demand. The annual summer uptake in LNG demand from Asia is expected to be less than 2019, resulting in continued higher flows to the UK.
- Compared to previous years, we are expecting a similar level of gas cycling into and out of MRS sites this summer.

Liquefied natural gas

Key messages

- We expect that LNG deliveries this summer will be similarly high during April to September, as we saw in 2019.
- Unless there are further COVID-19 restrictions put on producers, the diversity of LNG sources will remain high, further increasing our security of supply and minimising the impact on gas coming to the UK.

Over the past decade liquified natural gas (LNG) supplies have become a significant proportion of the gas supplied to the NTS, increasing diversification alongside traditional sources such as from UKCS, Norway, storage, and the interconnectors to Europe.

The majority of LNG send-outs have been from South Hook over recent years (Figure 2), however the Dragon and Isle of Grain LNG terminals have seen an increase in deliveries, resulting in a jump in flows from these locations. With LNG supply to the UK expected to continue, we could see this trend continue over the summer period.

Figure 2
LNG monthly send-out by GB terminal – historical, 2016-2020 (to-date)

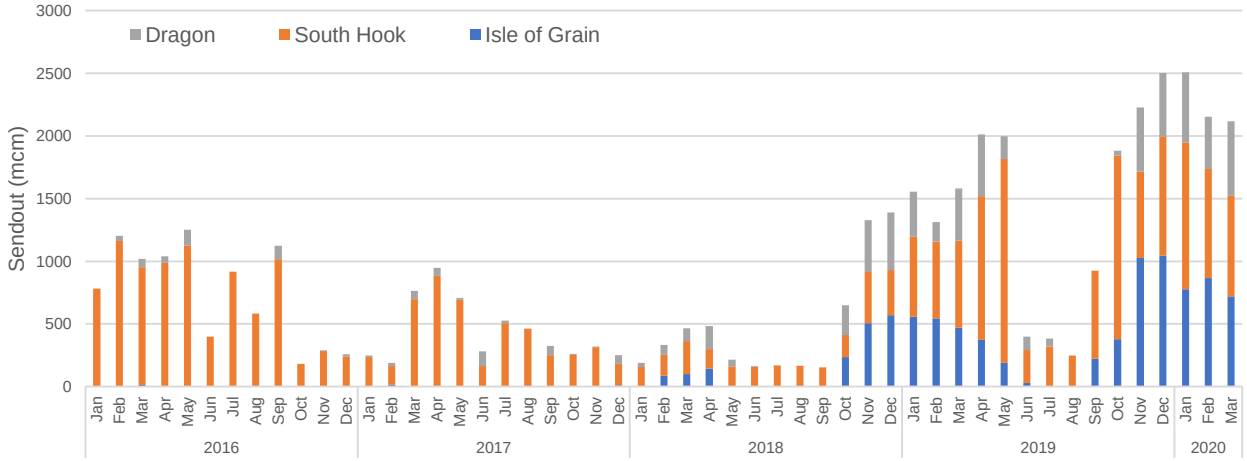
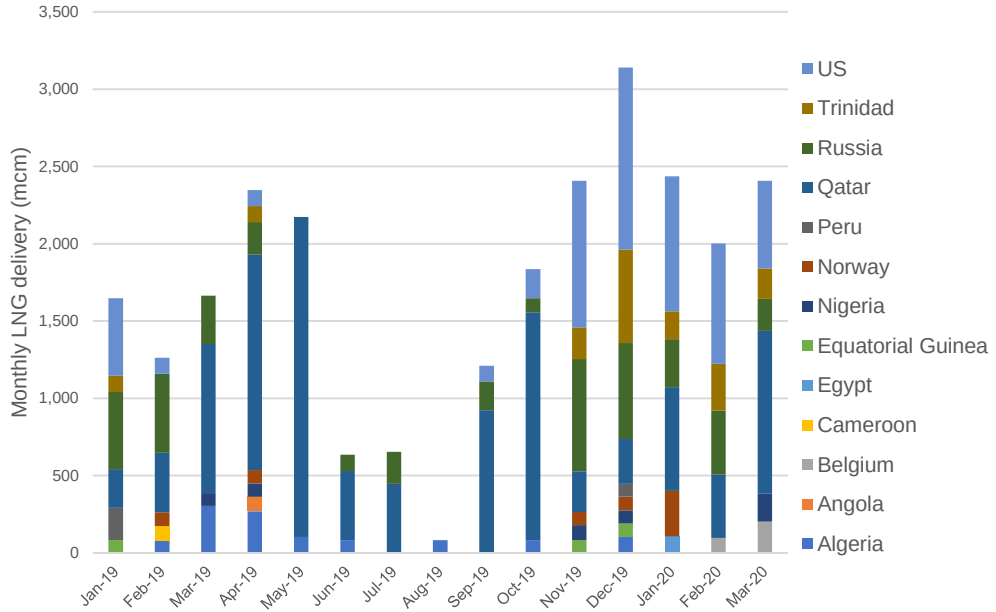


Figure 3
LNG delivery cargoes by global source – historical, 2019-2020 (to-date)[2]

[2] 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.



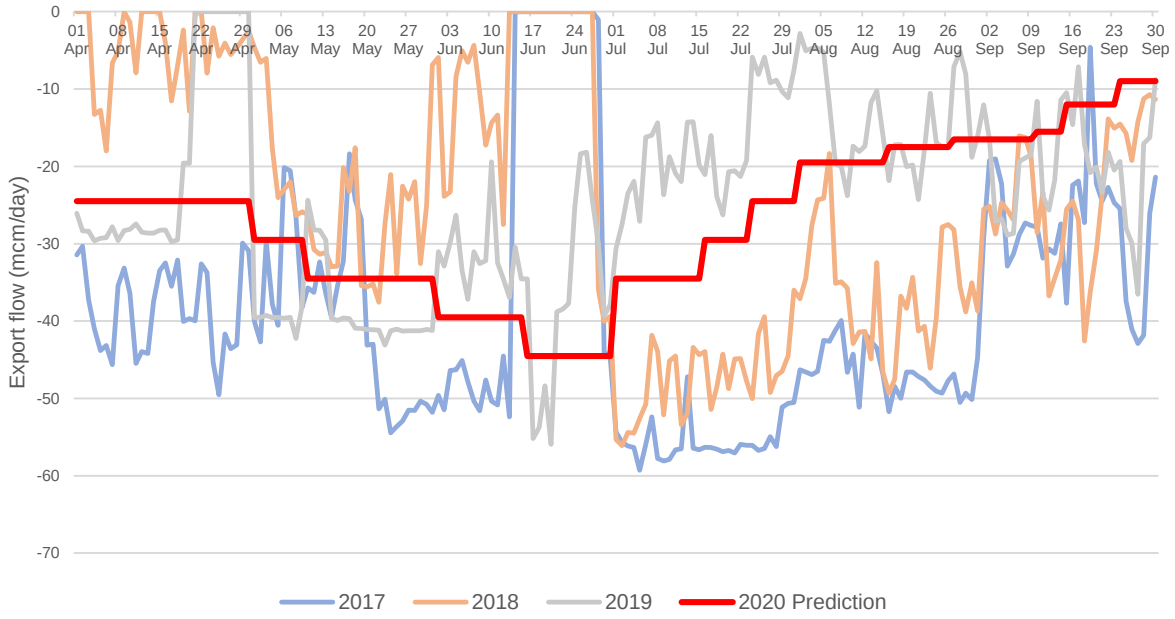
The sources of LNG to the UK are diverse. Qatar remained the main source of LNG supply during summer 2019 (Figure 3), and we have seen an increase in supply from the US and Russia over the start of 2020, with deliveries from Algeria, Trinidad, Norway, Peru, Nigeria, and Equatorial Guinea adding to a more diversified supply mix.
This trend could continue throughout 2020 and we expect supplies to remain high.

Export to mainland Europe

Key messages

- Our projection for summer 2020 is for exports to Belgium and the Netherlands via the IUK and BBL interconnectors to be slightly higher in comparison to the same period in 2019.
- The annual maintenance outage of the IUK interconnector has been moved to November 2020, which increases the potential for summer exports if conditions are favourable.
- A reduction in UK demand associated with measures taken to restrict the spread of COVID-19 could increase the volume of gas available for export.

Figure 4
Total interconnector export flows for Bacton IUK and BBL – historical (2017-2019) and forecast for 2020



The UK gas market is connected to Belgium by the IUK interconnector, and to the Netherlands via the BBL interconnector. In 2019, the BBL pipeline between Bacton in the UK and Balgzand in the Netherlands, was for the first time able to transport gas in both directions.

In recent years gas has tended to flow from the UK to Belgium and the Netherlands for most of the summer, and from Belgium to the UK during the winter months through IUK. This trend is largely driven by price differentials between the UK and European markets, so occasional days of import to UK might be expected during the summer if prices dictate. Interconnector flows are increasingly influenced by the availability of liquified natural gas (LNG) being delivered to UK terminals.

Figure 4 shows export flows in the last three summers. Our projection for 2020 is an increase in export to Belgium and the Netherlands in the middle of the summer, and a reduction in export flows is expected from July to September, similar to that observed in 2019, due to the reduction in forecasted LNG flows to the UK.

We do not currently believe that the development of export capacity at BBL will materially affect the volumes of gas exported to Belgium and the Netherlands, as it does not in itself create additional surplus demand. No firm capacity for the interconnectors has been purchased for this summer, with more flexible interruptible capacity anticipated to be used.

We have seen no impact on interconnector flows resulting from UK's exit from the EU in January 2020.

Storage

Key messages

- Overall storage injection over summer 2020 is likely to be similar to 2018, based on the starting level of medium-range storage (MRS) stock at the end of the 2019/2020 winter.
- Starting stock levels at the end of this winter are lower than for 2019, based on the increased level of storage gas used to compensate for lower LNG send-outs during the storms in February and March 2020.
- This summer we expect continued day-to-day cycling into and out of MRS.
- A reduction in UK demand associated with measures taken to restrict the spread of COVID-19 could increase the gas available to inject into storage.

Total injection over the summer typically has a dependency on the level of MRS at the end of winter.

Compared to stock levels at the end of the 2019 winter, current levels are 38% lower (534 mcm in 2020, 871mcm in 2019). This is a result of more MRS gas being used to help meet demand during the recent storms in the early part of 2020. The weather conditions meant LNG boats were unable to dock at the UK LNG terminal at Milford Haven, which resulted in lower LNG send-outs and a greater use of the gas held in storage.

Historically it has been observed that MRS starts to fill when IUK shuts down for maintenance, with the absence of an export route of gas supplied to the UK. However, due to IUK remaining operational this summer, although MRS refilling will take place, stock levels at the end of the summer will be lower than for summer 2019 (Figure 5).

Current high stock levels in Europe (Figure 6) at the end of the 2019/2020 winter could reduce the opportunity for export flows, with the preferential restocking of UK storage sites.

Figure 5
MRS stock levels – historical from October 2015 - March 2020, and projection for summer 2020 (April – September)

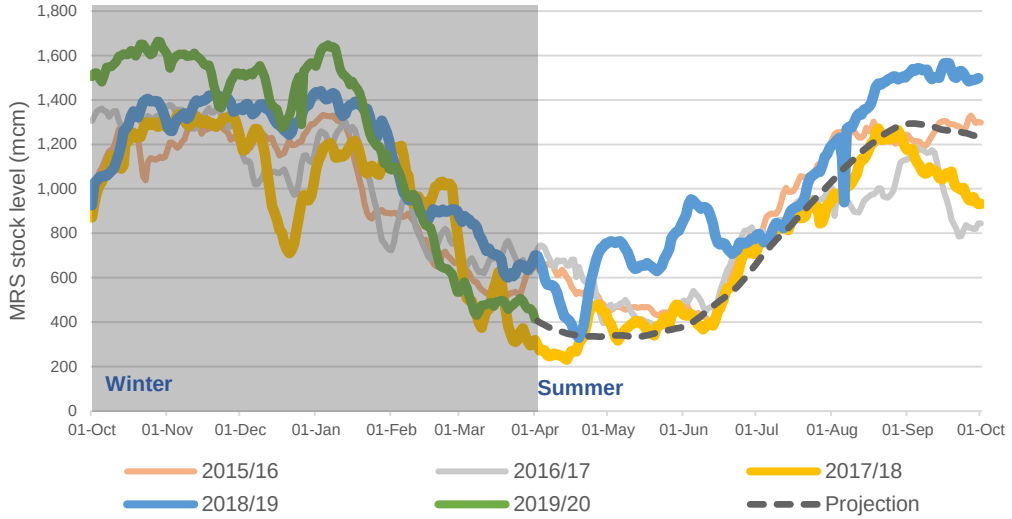
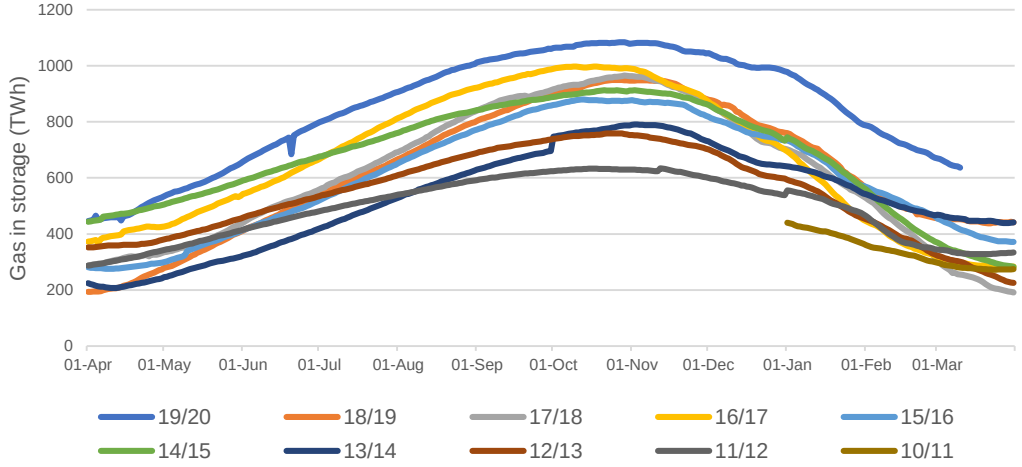


Figure 6
European storage stock levels – historical and forecast[3]
[3]This chart has been developed by National Grid using data provided by GIE https://agsi.gie.eu/#/



Spotlight: Greener Gas

National Grid Gas Transmission is committed to driving a decarbonised future. We fully support the UK Government's decision to achieve net zero carbon emissions by 2050. An example of how we are doing this, is by facilitating projects which both help customers reduce emissions, and meet EU legislation.

The following spotlight provides details of a recent project which has shown how greener connections can help advance this ambition.

Biocow Biomethane Connection

Completed in October 2018, Project CLoCC (Customer Low Cost Connections) has simplified how customers can connect to the NTS, allowing new customers, in particular those which reduce environmental emissions, to connect to the NTS.

One of the first to utilise the new technology is the Biocow Ltd connection at Somerset Farm in Murrow, which is due to go live in 2020, and captures biomethane from the process of anaerobic digestion to then supply gas – the first to do this on the NTS.

The learning experiences from this project will be carried over to future connections of this type from 2020.

Operational outlook

Key messages

- The outlook for demand and supply in the UK is uncertain and may lead to short-term variations in flows on the network.
- We have implemented plans to enable us to continue to operate and maintain the NTS safely and securely during the COVID-19 outbreak, and we keep these under continual review.
- We will continue to work closely with our customers to minimise the risk of interruptions in their ability to deliver and offtake gas.
- The outbreak of COVID-19 is not expected to affect the security of supply of gas to the UK.

During the winter months, the most dominant driver for gas demand is the need to provide heat. This changes in the summer months as temperatures increase, when the most significant driver for gas becomes gas fired electricity generation.

Gas for electricity generation is also sensitive to weather, as it responds to the varying levels of generation from renewables. When clusters of Combined Cycle Gas Turbine (CCGT) generators exist in a particular region of Great Britain, this variability can have an increasing impact on zonal pressure management.

Having timely and accurate physical notifications helps us to manage these risks.

Increasing levels of LNG supply will impact patterns of gas flow across Great Britain, potentially reducing the traditional north to south flow, and resulting in non-standard configuration of the network.

With LNG supplies being relatively closer to areas of demand, we could continue to see reduced compressor usage for bulk gas transmission, but we must be prepared for the possibility that LNG supply falls away, which can happen in summer due to price sensitivity.

This rapidly changing dynamic of the network means that we must be prepared to use compression at relatively short notice to maintain system locational pressures.

Work on the Feeder 9 pipeline under the River Humber in the North East of the network will continue this summer, with operational flows planned for October 2020. Preparations for commissioning of new compressor units in line with the Medium Combustion Plant (MPC) directive, will also begin this summer.

Further details of our maintenance plans can be found via the following link.
https://www.nationalgridgas.com/data-and-operations/maintenance

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

Glossary

Term	Description
BCM	Billions of cubic metres.
BBL	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 predominately gas driven turbines that are in the process of being replaced with electric units.
Combined Cycle Gas Turbine (CCGT)	A combined-cycle power plant uses both a gas and a steam turbine together to produce up to 50 percent more electricity from the same fuel than a traditional simple-cycle plant.
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.
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.
Liquefied natural gas (LNG)	Natural gas that has been converted to liquid form for ease of storage or transport. It is formed by chilling gas to -161°C so that it occupies 600 times less space than in its gaseous form
Medium-range storage (MRS)	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
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.

Glossary

Term	Description
NTS shrinkage	NTS shrinkage: NTS shrinkage is made up of 3 components. Unaccounted for gas (UAG) is unallocated gas or gas that is lost or stolen from the system. Own use gas (OUG), is gas that is used in the running of the system e.g. compressor fuel, and calorific value shrinkage (CVS) where gas of a particularly low or high CV enters the distribution network which differs with the flow weighted average CV entering that network.
Renewables	Forms of energy generation from renewable resources, which are naturally replenished, such as sunlight, wind
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.
Transit gas	Gas that enters and exits the national transmission system without being consumed in GB and Ireland.
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.
Withdrawal	Gas for storage withdrawal This is gas which is taken from (‘withdrawn’) from a gas storage facility.

Appendix - Data Tables in TWh

Table A

Forecast total gas demand for summer 2020 and history for previous summers (2015-2019)[1]

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

(TWh)	2015	2016	2017	2018	2019 actual	2019 weather corrected	2020 forecast
Non-daily metered demand (NDM)	124.3	122.1	114.7	116.2	125.3	127.3	128.6
Daily Metered (DM) and Industrial demand	46.2	45.1	48.9	44.8	46.0	46.1	44.1
Electricity generation	91.3	127.6	115.1	112.8	116.5	116.5	107.8
GB gas demand	261.8	294.8	278.7	273.9	287.8	289.8	280.5
Ireland	30.8	18.7	17.5	17.5	22.0	22.0	22.8
Export to mainland Europe	55.0	57.2	77.5	49.3	47.4	47.4	54.3
Storage Injection	37.4	28.6	27.3	24.8	23.8	23.8	23.1
Total gas demand	387.2	400.4	402.4	366.4	382.3	384.4	383.6

Table B

Summer gas supply by source – historical (2014-2019) and forecast for 2020.

***Note** – these forecasts were generated prior to the outbreak of COVID-19 in the UK in early March 2020*

(TWh)	2014	2015	2016	2017	2018	2019	2020
UKCS	174.4	177.8	191.5	184.7	185.8	173.3	174.4
Norway	124.3	136.4	144.1	146.1	108.3	115.3	124.3
Continent	3.3	5.5	0.8	1.6	0.5	1.1	3.3
LNG	68.2	58.3	34.7	14.9	65.6	73.6	68.2
Storage	12.1	13.2	21.1	13.8	15.3	15.4	12.1
Total	382.3	391.2	392.2	361.0	396.6	378.8	382.3

Key statistics – historical (2019) and forecast (2020)		
	2019 (TWh)	2020 (TWh)
GB gas demand	277.2	280.5
Total gas demand	397.1	383.9

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 = 1000 GWh, and 1 bcm = 1000 mcm

Continuing the conversation

Email us with your views on the Gas Summer Outlook at:
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