

# Gas Summer Outlook 2023 →

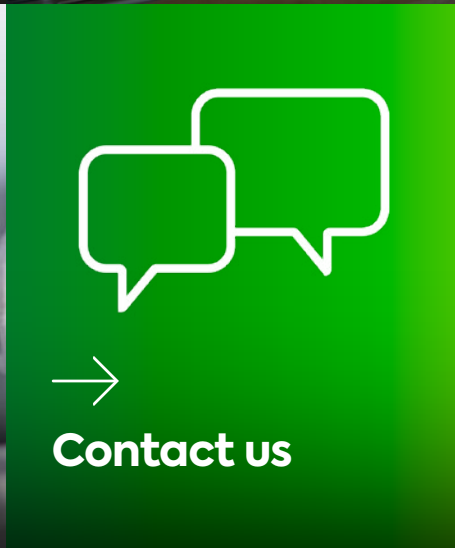
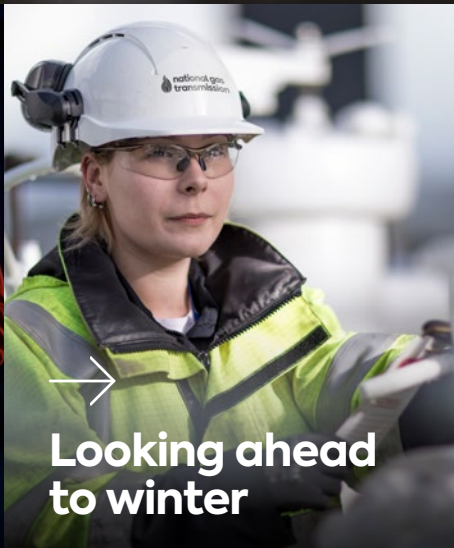
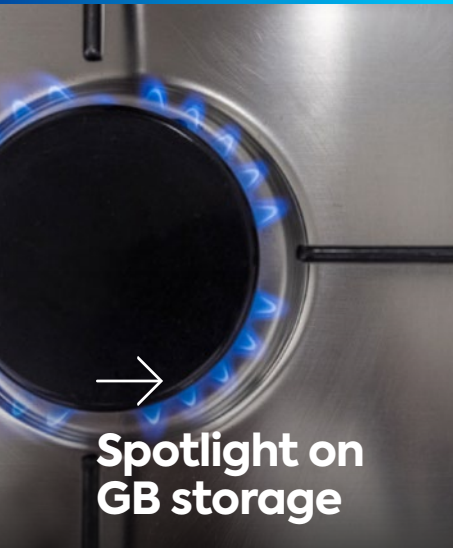
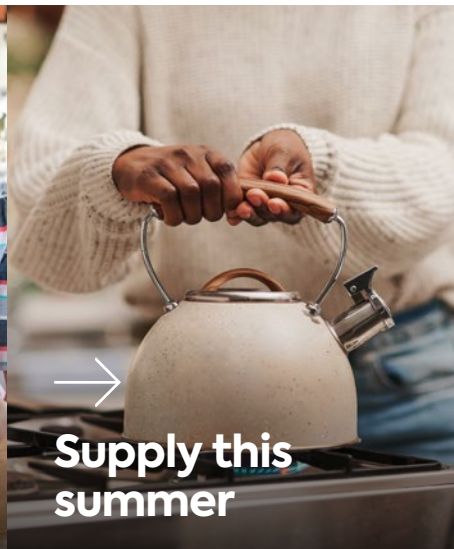
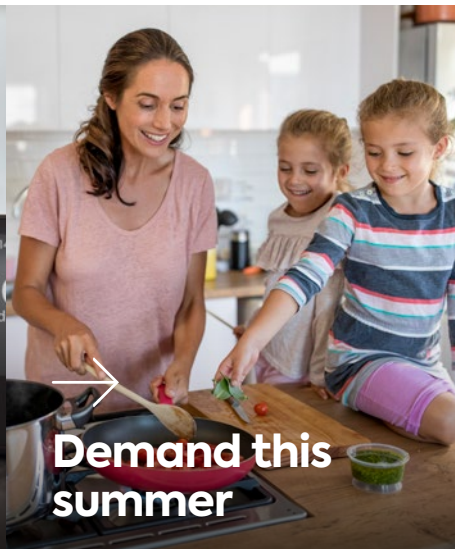




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## Welcome

### How to use this document

We have published the 2023 Gas Summer Outlook as an interactive document.



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This will take you to the home page.

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

# Welcome to our 2023 Gas Summer Outlook



**You might notice that things look a little different around here. That's because, earlier this year, we separated from National Grid to form National Gas Transmission.** We sit within the new National Gas company, which also owns National Gas Metering – find out more about us on our [website](#).

Whilst our name has changed, our role in transporting gas around Great Britain (GB) remains the same – it's business as usual. Gas remains an integral part of the GB energy system, underpinning GB energy security. Our network ensures millions of people can access the energy they need to heat their homes; powers British industry; and facilitates flexible electricity generation to supplement the intermittency of renewables.

Each year, as the gas summer period (April–September) begins, we publish this document to provide you with our forecast view for supply and demand, and to share any other important information that could help you to prepare for the coming six months.

As you'll know, summer tends to be a period where we see lower demands on the National Transmission System (NTS) due to warmer weather, as people require less gas to heat their homes. Last summer, however, we saw far greater demands on the NTS than we would usually expect during this

period as the impacts of Russia's invasion of Ukraine took effect and Europe lost a significant source of gas supply due to the curtailment of Russian gas exports.

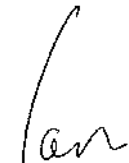
To give you a flavour of the significance of the change to demand patterns, the NTS enabled 12.16 billion cubic metres (bcm) of gas to the EU via the interconnectors over the summer period last year – this compares to a summer average of about 4bcm over the previous five years. Alongside a number of measures put in place by the EU, our ability to sustain high levels of exports last summer was pivotal in ensuring the EU had sufficient gas in storage as they entered winter 2022/23.

In last year's Gas Winter Outlook we introduced scenarios to help provide further insight into what we might see over winter given the uncertainties that were at play. Whilst the EU has made significant strides in improving its security of supply ahead of winter 2023/24, and our forecast for exports to Europe is therefore closer to historical averages, it is still not clear what level of exports we will see from GB to the EU via the interconnectors this summer. This is largely due to a number of factors that are outside of our control and/or difficult to reliably predict, such as market behaviour and the weather. To reflect this uncertainty, we have included some scenarios in this publication to help visualise the supply mix GB would need in the event of average vs high exports to the EU.

There are hints of greater stability in the energy market going forward as price differentials narrow and forward price curves reduce. Nevertheless, we know how quickly that can change, and we continue to closely monitor the market for any developments that may impact our activities. Given the current geopolitical climate, it's worth noting that the assumptions, information and analysis underpinning this document may change as we progress through the coming months.

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

I hope this Summer Outlook provides you with useful insight as we prepare for the summer period, and I look forward to continuing to engage with you through our various publications and industry forums.



**Ian Radley**  
Director System Operations

## Additional information about us

### Other National Gas Transmission publications in this suite:

- [Winter Consultation and Review](#), published annually in June.
- [Annual Network Capability Assessment Report \(ANCAR\)](#), published annually in June.
- [Gas Winter Outlook](#), published annually in October.
- [Gas Ten Year Statement \(GTYS\)](#), published annually in November.
- [Gas Future Operability Planning \(GFOP\)](#), published at the request of our stakeholders, with the most recent published in October 2021.

### Our role

In our role as the NTS Owner and Operator, we have three key responsibilities:

- infrastructure provider
- residual balancer
- market facilitator.

Our licence is established under the Gas Act 1986. It requires us to develop, maintain, and operate an economic, efficient network and to facilitate competition in the supply of gas in Great Britain. We have a responsibility to keep the NTS within safe operating limits.

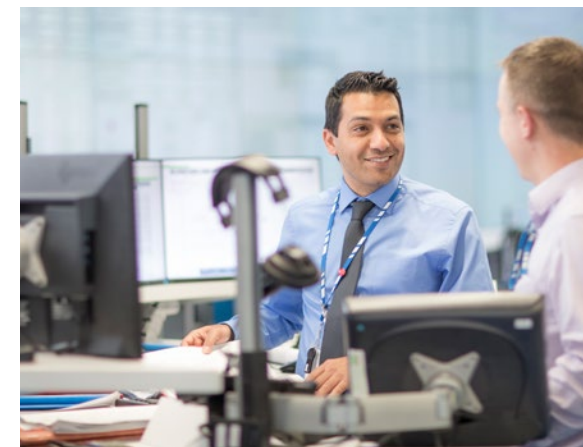
The underlying market arrangements in GB are predicated on the basis that the market will provide the gas itself, and that the market will balance supply and demand. We don't assess or communicate gas

margins during the summer period due to the significant reductions in demand but, throughout the winter period, we will continue to conduct daily assessments of gas margins and communicate this to the industry via our market information portal.

When there is an imbalance between supply and demand, we act as residual balancer by taking energy balancing actions via the On The Day Commodity Market (OCM). These actions are designed to encourage shippers who are out of balance to take action themselves and, if required, we can buy or sell volumes of gas to balance the system. Read more about the tools available to us in the event of a supply and demand imbalance on our [balancing website](#).



**We have a responsibility to keep the National Transmission System (NTS) within safe operating limits.**





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## Executive summary



\* 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). Please note the totals include NTS shrinkage and therefore the numbers will not tally.

### Key messages

**1**  
**There is sufficient supply to meet GB demand this summer.**  
 We expect GB gas demand will be primarily met by supplies from UKCS and Norway (noting the proposed offshore works by Gassco, impacting flows from Norway), with the balance being secured from LNG.

**2**  
**We expect to see sustained flows of gas into Europe this summer.**  
 We are anticipating that the NTS could again be used as a transit for gas flows going into Europe, however, we don't expect demand for exports from GB will be as high as it was last year.

**3**  
**The asset maintenance programme in summer 2023 is one of the most extensive we have undertaken.**  
 As you would expect, we are carefully phasing our maintenance works to ensure that we minimise the 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 summer demand conditions on the NTS generally increase network resilience. Whilst we will do everything we can to avoid constraints on the network, we have the assets and the commercial market tools available to manage any constraints should they occur.

### Key statistics – historical 2022 and forecast 2023

bcm	2022	2023
GB gas demand *	24.73	22.13
Export gas demand	12.16	5.50
Total gas demand **	42.08	33.25

Weather corrected historical and forecast gas demands for the 2022 and 2023 summers respectively.



## Factors that could influence the outlook for summer

We are closely monitoring the risk of constraints at Milford Haven

It is not clear what level of exports we will see going to the EU over summer







## We are closely monitoring the risk of constraints at Milford Haven



**The capability available at Milford Haven changes on a seasonal basis – with lower capability during the summer due to lower local and national demands.**

**During the summer, it's not uncommon to see supply outages, as operators take advantage of lower periods of demand to carry out routine maintenance, much like we do.**

This year, we're aware of two planned Gassco outages that we anticipate will impact supplies of Norwegian gas to GB (see figure 1). This isn't a cause for concern – the GB market benefits from a range of diverse supply sources, and we therefore expect other supplies such as LNG and storage withdrawals to make up any supply shortfall that occurs. The level of supply we see from Norway during these outages will be partially driven by the market – if the price differential favours GB, we could expect to see up to 30mcm/d of gas. However, if it favours the EU, we may not receive any gas from Norway during these periods.

If we are still exporting large amounts of gas to the EU via the interconnectors during these outages we could see more LNG than we would usually expect landing at Milford Haven. This has the potential to result in constraints on the NTS, particularly because the capability available at Milford Haven changes on a seasonal basis with lower capability

during the summer due to lower local and national demands.

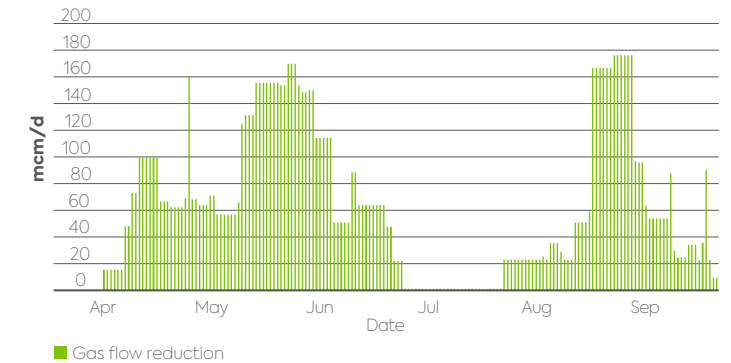
To manage the elevated risk last summer, we implemented Milford Haven entry capacity reductions (approved by Ofgem) to mitigate additional consumer costs that might have arisen if entry constraints did occur as an outcome of high LNG flows. Whilst we took this action to protect end consumers, it understandably caused some issues for our stakeholders, with a number reporting that 2022's capacity reductions resulted in LNG cargo deliveries being cancelled or re-routed away from GB.

### What are we doing about it?

We're conscious of the continued risk of constraints if we see higher summer flows due to the current geopolitical climate. We've been consulting closely with our stakeholders and have submitted a proposal to Ofgem to approve the reduction of entry capacity made available this summer at Milford Haven, but only for the days where the Norwegian outages have the greatest potential impact to GB. With this planned modified approach, we can continue to protect end consumers from constraint costs, whilst ensuring more certainty and less disruption to our stakeholders.

**Figure 1**

A visual of Norwegian Continental Shelf (NCS) outages over the summer period



Source: Gassco

## It is not clear what level of exports we will see going to the EU over summer



**The EU currently estimates that gas consumption has decreased by 19%.**

### Last summer saw record levels of gas exports to the EU via the interconnectors due to low EU storage stocks and concerns around supply due to the reduction of gas flows from Russia.

Considerable uncertainty remains around the question of whether we will continue to see sustained high exports of gas to the EU this summer. Russian gas flows have not recovered – leaving the EU without, what was until recently, a significant supply source.

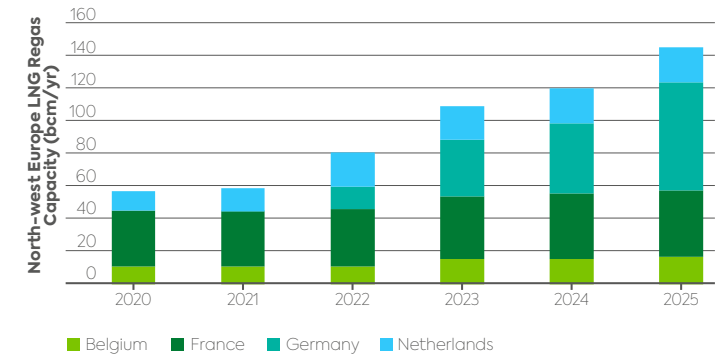
We therefore expect the market will continue to drive gas exports to the EU (e.g. we anticipate the interconnectors to be set ready to export from GB at the beginning of the summer period). Despite this, there are a number of factors that could reduce the level of exports we see in reality:

- EU storage is in a positive position as we come out of the winter period, currently 56% full at the time of writing (see [page 19](#) for more detail). It's therefore reasonable to expect that meeting the mandated target for 90% storage fullness in the EU by 1 November may be easier than last year, reducing the dependency on high exports from GB.

- Many EU countries have been investing in LNG regasification capability, meaning they can land LNG directly on their shores, reducing their dependence on GB exports. [Regasification terminals are currently under construction in seven EU countries](#), and it is expected that this investment could add approximately 30bcm of LNG capability in Europe by the beginning of summer 2023 (see figure 2).
- The price differential between GB and the EU has narrowed significantly (see [page 15](#)), which indicates the continent is more confident in security of supply. The narrowing of the price differential also means that there is less of a financial incentive to export gas from GB to the EU.
- GB may struggle to export high levels of gas over the interconnectors during the planned outages from Norway, as detailed in our scenarios, due to having less surplus gas available.
- Similar to the UK, EU countries are also seeing some demand suppression due to high energy prices. The EU currently estimates that gas consumption has decreased by 19% – more than the voluntary 15% reduction agreed by member states.

**Figure 2**

North-west Europe LNG regasification capacity increases, 2020-2025



Source: Wood Mackenzie



## It is not clear what level of exports we will see going to the EU over summer

– France’s nuclear power fleet, having suffered from an unusually high number of outages in 2022, is expected to rebound this year as maintenance concludes, reducing the need for gas to generate power. Equally, hydro power availability in the EU was limited last summer due to it being so dry – this may also improve this year, however these supply sources are heavily weather dependent and may be less effective in the case of a hot summer.

It is important to note that EU countries were still receiving significantly more Russian gas than they are now well into July last year, so there may still be some level of supply shortfall on the continent. It’s yet to be seen whether the factors above, such as the EU’s newly created supply capability, will make up the difference in terms of the reduced gas supply from Russia.

### What are we doing about it?

As detailed on [page 9](#), we are putting steps in place to manage any risk of constraints associated with high LNG flows due to high levels of exports. We are also carrying out analysis looking at scenarios around high vs low exports to the EU and what the supply mix might look like in each scenario – take a look at our [‘Spotlight on Europe’](#) section for more information.



**Hydro power availability in the EU was limited last summer due to it being so dry.**

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## Demand this summer





## Demand

### Key messages

**1** Overall forecast summer demand for 2023 is down from the previous year, primarily due to the forecast reduction in interconnector exports to Europe.

Total NTS demand for summer 2023 is forecast to be lower than for the same period in 2022, largely driven by the anticipated reduction in interconnector exports to mainland Europe. However, the reality of what we will see is dependent on a number of factors outside of our control.

Over the winter period, due to high prices, we observed an approximate reduction in NDM demand of 15% as consumers turned their thermostats down or their heating on less to save money. We expect demand suppression to be less visible during the summer, as demands are already low. NDM demand is therefore forecast to be broadly in line with the average level of demand we typically see in the summer.

Gas demand for electricity generation is also forecast to reduce, and this is largely due to an increased use

**2** Over winter, we have observed up to a 15% reduction in domestic demand (weather corrected) due to high prices as consumers use heating less. As domestic gas demand tends to be low during the summer due to a reduced requirement for heating, we don't expect demand suppression to be as evident over the summer.

of renewables (e.g. wind generated power) but also reflects the ESO's anticipation of reduced electricity exports to the EU (see their Summer Outlook for more detail). This forecast is again changeable depending on the weather patterns we see over the summer period, for instance, if we see very low winds over summer. Peak demand for power generation (on individual days where there is little/no wind) will remain the same, as GB will rely on gas to produce electricity in the absence of renewables. It is also important to note that if there is a need for GB to export more electricity to Europe (as we did last year), gas demand for electricity generation is likely to increase.

A small increase in exports to Ireland is expected as production from the Corrib field continues to decline, in addition to an expected four week outage between July and August.

**Table 1**

Forecast total gas demand (bcm) for summer 2023, and historical actual gas demand (2016–2022)

(bcm)	2016	2017	2018	2019	2020	2021	2022 actual	2022 weather corrected	2023 forecast
Non-daily metered demand (NDM)	11.1	10.4	10.6	11.4	10.4	12.5	9.67	10.41	10.15
Daily metered (DM) and industrial demand	4.1	4.4	4.1	4.2	3.9	4.0	3.58	3.60	3.40
Electricity generation	11.6	10.5	10.3	10.6	9.3	10.1	11.48	11.48	8.58
GB gas demand	26.8	25.3	24.9	26.2	23.7	26.6	24.73	25.50	22.13
Ireland	1.7	1.6	1.6	2.0	2.2	2.4	2.6	2.63	3.0
Export to mainland Europe	5.2	7.0	4.5	4.3	5.3	0.7	12.16	12.16	5.50
Storage injection	2.6	2.5	2.3	2.2	2.1	2.1	2.25	2.25	2.38
Total gas demand	36.4	36.6	33.3	34.8	33.5	31.9	42.08	42.87	33.25

NB: All totals include NTS shrinkage and will therefore not tally.

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## Supply this summer

Supply

Liquefied natural gas







## Supply

### Key messages

**1** The supply forecast for Norway is lower in comparison to recent years due to planned maintenance outages. The GB market benefits from a range of diverse supply sources, and we therefore expect other supplies such as LNG and storage withdrawals to make up any supply shortfall that occurs.

Last summer saw a 33% increase in terms of the amount of supply required to meet demands, reflected in the difference between forecasted and actual numbers for 2022 (see table 2). This was mostly driven by the high levels of exports through the interconnectors to Europe, and the associated need for an uplift in LNG and UKCS supply. This summer our forecast is more in line with what we have seen in previous years, reflecting the expected reduction in exports to Europe and therefore the lower overall gas demand.

The forecast for Norway is lower this year as there are a number of maintenance outages planned. In line with this, the forecast for LNG is slightly higher

**2** The price differential between the GB and EU markets has narrowed significantly, suggesting that there may be less activity over the interconnectors in terms of imports/exports between GB and the EU.

than we would have otherwise forecast, as we expect diverse supply sources such as LNG to make up any shortfall from Norway as needed.

As is consistent with previous years, supplies from the continent are not expected as we do not tend to require additional supply over summer. Adding to this, we're also unlikely to see supplies from Europe as they focus on filling and maintaining storage stocks ahead of winter 2023/24. It is important to note, however, that the price differential between GB/EU markets has narrowed significantly, which means it should be easier to attract imported gas from Europe with the right price signals in the very unlikely event it's needed.

<sup>1</sup> Data provided from Gas Summer Outlook 2022

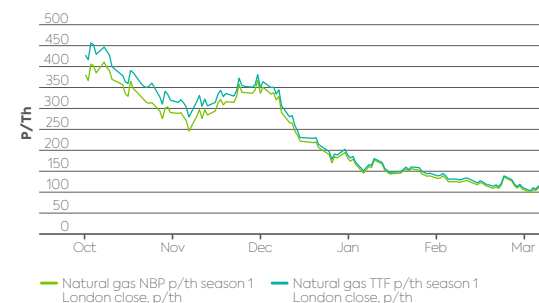
**Table 2**

Summer gas supply volumes (bcm) by source – historical (2016–2022), and forecast (2022 and 2023)

(bcm)	2016	2017	2018	2019	2020	2021	2022 forecast <sup>1</sup>	2022	2023 forecast
UKCS	16.2	17.4	16.8	16.9	15.9	12.2	15.5	17.2	16.7
Norway	12.4	13.1	13.3	9.8	8.8	12.7	10.7	13.2	8.2
Continent	0.5	0.1	0.1	0.0	0.0	0.1	0.0	0.0	0.0
LNG	5.3	3.2	1.4	6.0	7.1	5.1	6.4	9.8	7.1
Storage	1.2	1.9	1.3	1.4	1.3	1.3	1.4	2.1	1.3
<b>Total</b>	<b>35.6</b>	<b>35.7</b>	<b>32.8</b>	<b>34.1</b>	<b>33.1</b>	<b>31.5</b>	<b>34.0</b>	<b>42.2</b>	<b>33.25</b>

**Figure 3**

Historical price difference (spread) between the Dutch energy market TTF and GB market NBP (October 2022 to date)





## Liquefied natural gas

### Key messages

**1** LNG supplies have been much higher (circa 40% higher than the maximum seen since 2016) over the last year due to GB being used as a transit for gas into Europe. We don't expect to see this behaviour to the same extent in summer 2023.

GB continues to receive LNG from a diverse range of global suppliers and this is expected to remain the case throughout 2023 (see figure 4).

In summer 2022, GB saw a constant flow of LNG cargoes as high prices and crowded European terminals meant that only GB and Spain had spare regasification capacity, with Spain's ability to send on gas to northern Europe limited by grid capacity. GB was therefore used as the main transit point for gas into north-west Europe.

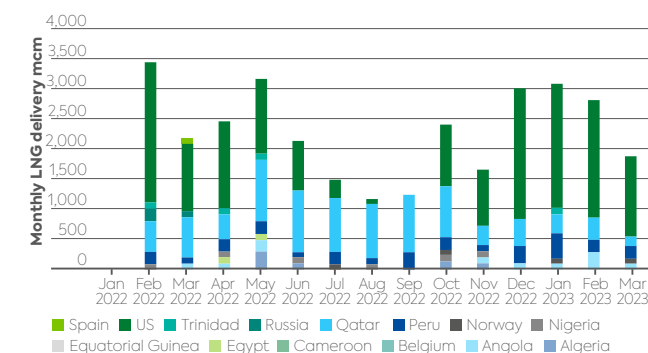
**2** LNG supplies are flexible and price sensitive. Over the last year, GB has demonstrated the ability to attract LNG shipments in a competitive global market.

LNG supplies to GB are expected to be lower than seen in 2022 due to a narrowing of the NBP/TTF price differential (see [page 15](#)) for the summer, reflecting greater confidence around gas supply in Europe – largely driven by a strong gas storage position.

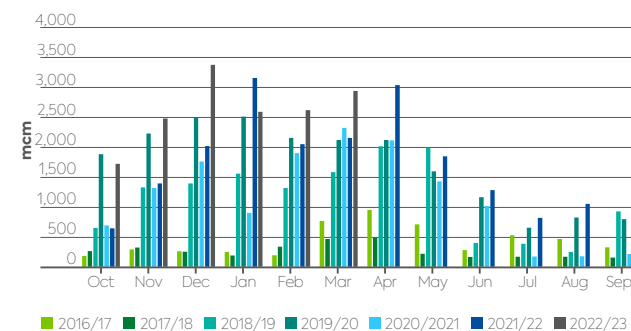
We therefore expect lower export demand to Europe, with less LNG required to meet this export demand. The increased LNG capability in Europe could again see less export demand, as LNG could head directly to Europe rather than transiting through GB.

<sup>2</sup> This chart has been developed by National Gas Transmission 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.

**Figure 4**  
LNG delivery cargoes by global source – historical, 2022–2023 (to date)<sup>2</sup>



**Figure 5**  
Monthly LNG delivery – historical, 2016–2023 (to date)





## Liquefied natural gas

There is the potential to see increased competition for LNG in the event of a hot summer. Globally, high summer temperatures can cause an increase in energy demand to power air conditioning and other cooling technology. A hot, dry summer could also reduce the power output from nuclear reactors and make hydro power less available (due to high river temperatures and less water being available).

In these circumstances, we would expect to see increased gas demand for power generation globally. For Asia particularly, the picture remains unclear as China recovers from a long series of Covid restrictions – the International Monetary Fund (IMF) currently predicts that Chinese economic growth will rise to over 5%, which could see an associated uplift in energy demand. This could include a rebound in LNG imports, which fell by 20% in 2022 (Source: Wood Mackenzie).

Under these circumstances, some price impact can be expected – countries will have to pay more to attract LNG shipments on the spot market that could otherwise go elsewhere. Whilst this final point has the potential to paint a bleak picture, it's important to note that GB has, over the last year, demonstrated that we can successfully attract LNG shipments as required.



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## Spotlight on Europe

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# European storage Spotlight

## Key messages

**1** European storage is currently sitting at about 56% fullness. At the same time last year, EU storage was only 27% full.

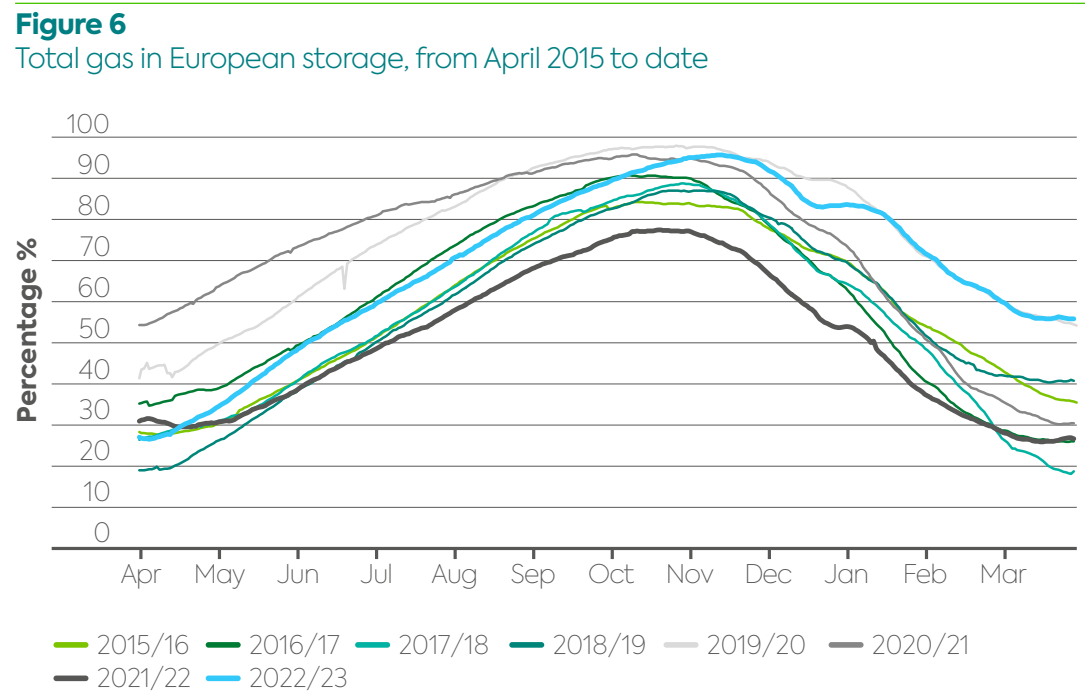
In light of the security of supply uncertainties that came about due to reduced gas flows from Russia to the EU, European leaders set ambitious targets for storage fullness ahead of the winter.

- The current mandated targets are:
- Minimum 45% storage fullness in December 2022 and January 2023, whilst avoiding storage depletion in February and March 2023 **Achieved**
  - If the winter period is not colder than average, a collective target of 55% storage fullness at the end of the winter period **Achieved**
  - 90% storage fullness by 1 November 2023.

**2** Due to this positive storage position ahead of next winter, we anticipate lower demand for gas exports from GB to the EU this summer.

Last summer, where we saw continued high exports of gas from GB to EU, EU storage was roughly 27% full at the beginning of the summer period, whereas it is currently sitting at 56% (see figure 6 for a comparison of EU storage levels vs previous years).

The EU is therefore in a much better security of supply position as we head into summer, when storage stocks are typically lower. This, combined with the narrowing of the price differential between GB/EU, means we don't expect to see a continuation of sustained high exports to Europe this summer, although as we have outlined already, the level of exports we will see via the interconnectors remains uncertain.



# Exports to mainland Europe



## Key messages

**1** European storage stocks are higher than they were this time last year, which we expect will reduce the need for GB supplied gas into Europe, although uncertainties remain.

In the last year, we have observed record high export levels to mainland Europe – regularly hitting maximum capability for the first time in recent history (see figure 7).

As we discussed on [page 10](#), the EU has made significant progress in improving their security of supply position since Russia reduced the flow of gas into Europe, and we therefore expect to see reduced demand for gas from GB in Europe over the summer – this expectation is reflected in the narrowing of the price differential between GB and EU markets (see [page 15](#)), which is why we have forecasted far lower export demand for this summer compared to summer 2022.

It is important to note that the improvements mentioned such as newly created LNG terminals and Floating Storage Re-gasification Units (FSRUs) are, in some instances, still underway and the full

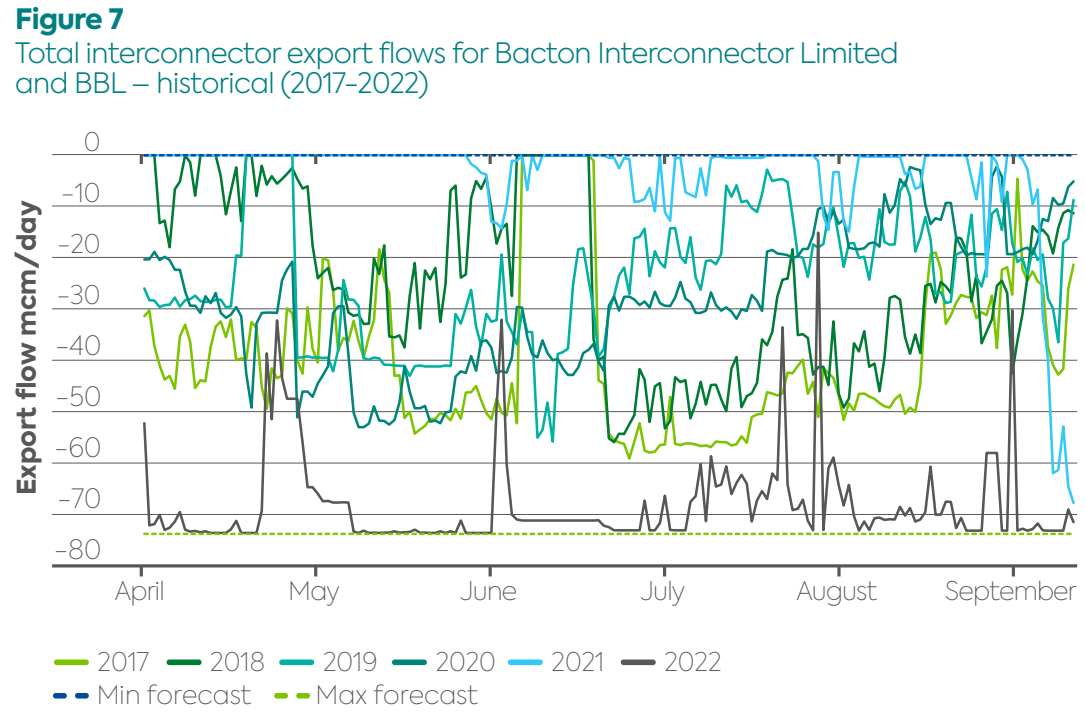
**2** Due to the uncertainty around our forecast for this particular aspect of demand, we are using scenarios to outline what we could see over the summer.

benefit is yet to be seen. Others, such as the return of nuclear and hydro power, may be impacted by external factors such as the weather. Market volatility (although currently unexpected during the summer) could also play a role in incentivising the flow of gas from GB to Europe, for example, should the price differential widen.

It is therefore challenging to forecast the level of exports to Europe that we expect to see this summer. To account for this uncertainty, we have put together some scenarios to show the necessary supply mix and behaviour that would be needed to facilitate the following situations:

1. We see lower exports to Europe.
2. We see a continuation of higher exports to Europe.

Over the next couple of pages, we explore these scenarios in more detail.







## Scenario One

### Lower exports to Europe

#### How we've built our scenarios

- This scenario is based on a typical summer demand profile, with historical demands having been used and then adjusted to better fit with our forecast for the coming summer.
- Norway and UKCS supplies have been modelled based on our forecast for this summer. For the more significant Norwegian supply outages, we have assumed there will be no flow of gas to GB. In reality, there is likely to be some supply available that we may receive should the market send the right signals.
- LNG supplies and gas exports to Europe are set at a lower level in this scenario reflecting the possibility that lower European demand, higher European storage stocks and the additional LNG importation capacity in north-west Europe all combine to reduce the volume of LNG coming to GB to be exported to Europe.

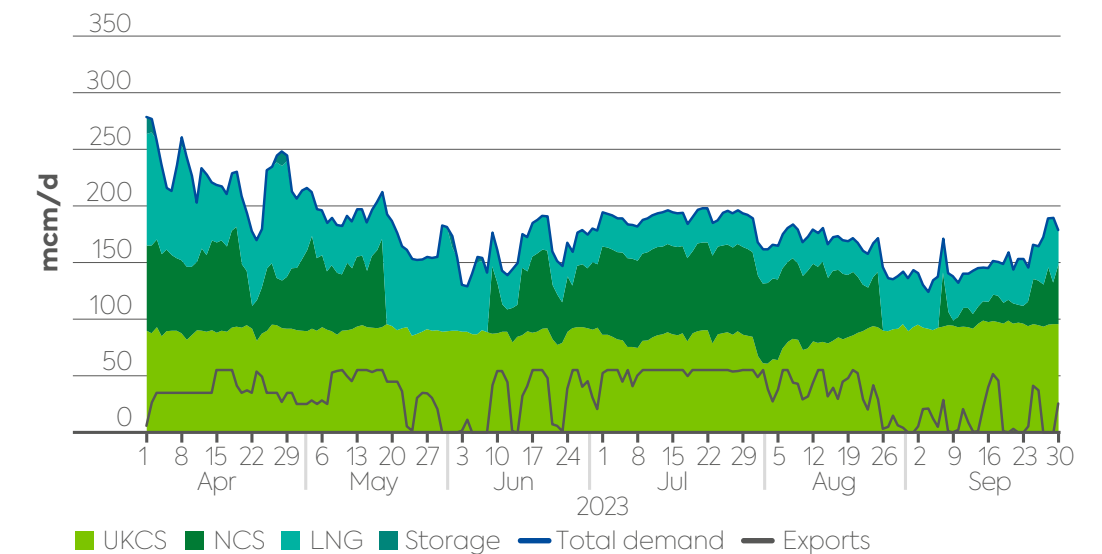
#### Key observations

LNG is required on a continual basis in this scenario, and is crucial in meeting demand in response to Norway supply outages, as well as supplementing supply during the higher demand periods at the beginning of summer.

Storage is utilised minimally in this scenario, and only at the beginning of summer. Storage is therefore able to rapidly fill over the summer period. It is worth noting that further storage utilisation could be required in this scenario in the unlikely event of constraints in LNG supply.

**Figure 8**

Scenario 1 – visualisation of typical summer demands, with lower levels of gas export to the EU



It's important to note that our scenarios are illustrations of the supply profiles that could support a credible range of demand profiles – they're not a forecast and are therefore not intended to match our forecast for this summer. The scenarios have been created to provide a visualisation of average flows over the summer period and are not designed to reflect daily flows.

## Scenario Two

### Higher exports to Europe

#### How we've built our scenarios

- This scenario is based on a typical summer demand profile, with historical demands having been used and then adjusted to better fit with our forecast for the coming summer.
- Demand for electricity generation (for exports) has also been increased to better reflect the export behaviour that increased gas demand last summer.
- Norway and UKCS supplies have been modelled based on our forecast for this summer. For the more significant Norwegian supply outages, we have assumed there will be no flow of gas to GB. In reality, there is likely to be some supply available that we may receive should the market send the right signals.
- LNG supplies are set at a similar level to last summer reflecting the possibility that European demand for gas remains high to deliver storage targets as early as possible, meaning that GB remains as an important contributor to Europe's security of supply. Exports would still be lower than last summer, given the reduced Norwegian supply combined with LNG flows based on the very high flows observed last summer – we don't believe it would be credible to raise LNG further in this scenario to allow for extremely high exports to the EU.

#### Key observations

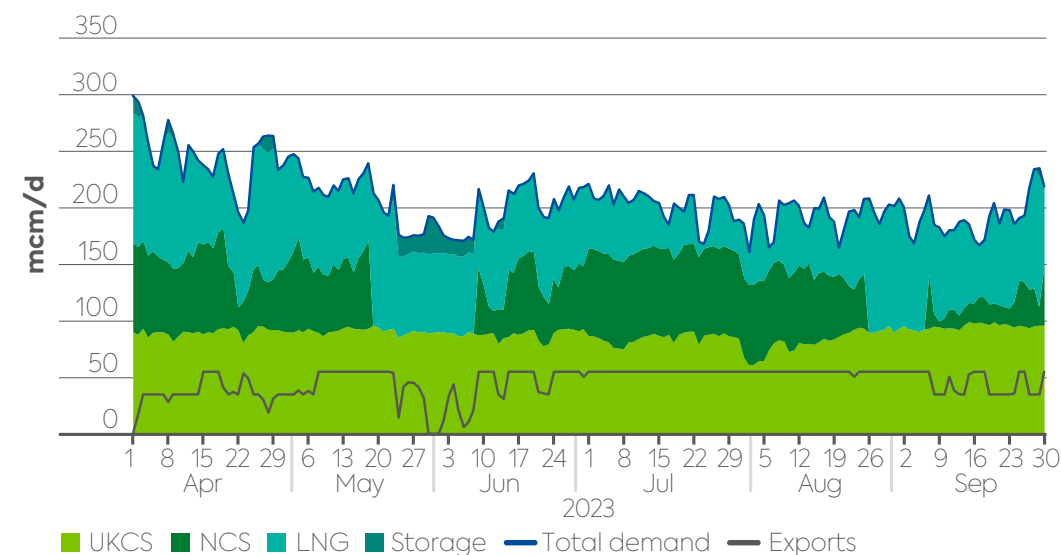
You'll notice that our second scenario doesn't look drastically different to our first. This is because GB demand is so much lower during the warmer months of the year – there is less scope to increase demand due to the effects of cold weather.

In this scenario, GB would require much more LNG on a continual basis to meet summer demands, whilst enabling higher exports to Europe. Higher exports can be maintained during the majority of the summer, noting the requirement for exports to reduce in response to the outages from Norway supply sources. It's worth noting again here that the export line on figure 9 represents average flows over the summer period – in reality daily flows could at times hit maximum export capability and also drop elsewhere in response to supply availability or market signals.

Storage stocks are sometimes utilised in this scenario, supplementing LNG as it hits maximum capability during the first Norwegian supply outage. Our modelling shows that even with this heavier utilisation, storage is still able to rapidly refill when no longer in use and therefore the impact to storage stocks at the beginning of winter is minimal. It is worth noting that further storage utilisation could be required in this scenario in the unlikely event of constraints in LNG supply.

**Figure 9**

Scenario 2 – visualisation of typical summer demands, with higher levels of gas export to EU, along with increased demand for electricity exports



It's important to note that our scenarios are illustrations of the supply profiles that could support a credible range of demand profiles – they're not a forecast and are therefore not intended to match our forecast for this summer. The scenarios have been created to provide a visualisation of average flows over the summer period and are not designed to reflect daily flows.





## Spotlight on GB storage

Domestic storage



# Domestic storage Spotlight

## Key messages

**1** Storage stock levels as at the end of winter are higher in comparison to previous years.

Medium range storage (MRS) stock levels over the previous gas years (October to the following September) are presented in figure 10.

Unlike European storage, which is used strategically on a seasonal basis, GB storage behaviour is largely market driven, designed to be short term and commercially focused. GB also has no mandated storage targets set by the government, so there has not been the same focus on maintaining/filling storage stock over the last year as there has been in the EU. At the time of writing, GB storage sits at about 60% fullness, placing us in a positive storage position as we exit the winter period in comparison to previous years. We will continue to monitor storage levels over the summer period in preparation for winter.

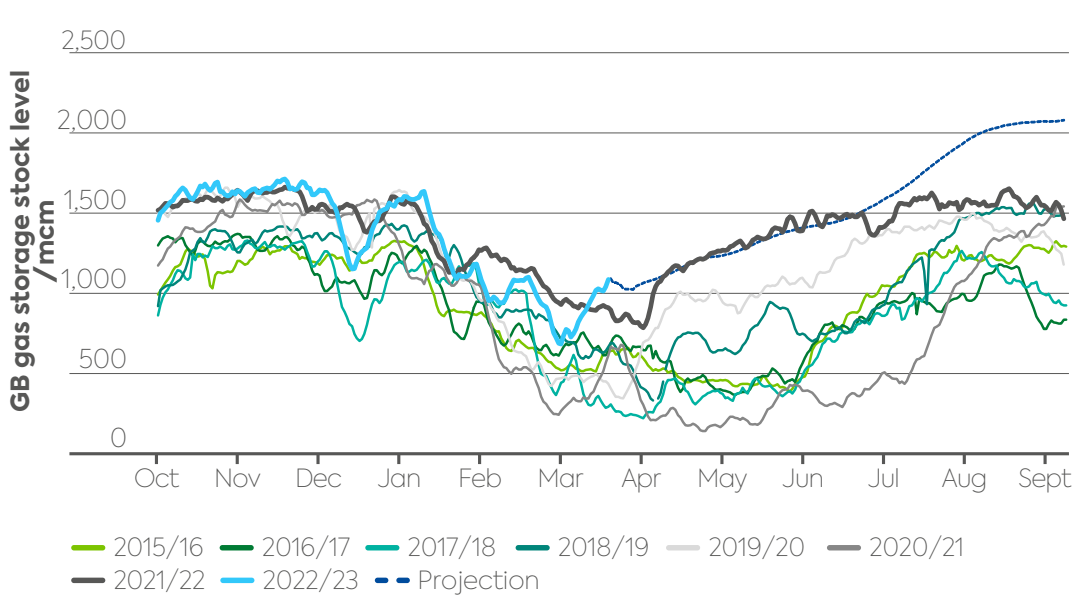
**2** Storage stock levels at the end of this summer will be influenced by market prices and volatility, as this dictates whether it is financially viable for suppliers to store gas vs sell gas from storage. We expect GB storage to behave as it has in previous years – quickly filling over summer, and well stocked ahead of next 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 a short time period.

There is ongoing industry engagement on the future role gas storage could play, and to assess whether this could provide additional security of supply.

**An update on Rough**  
 Following its closure in 2017, Centrica are now bringing the Rough storage facility back online. Rough currently has a capacity of approximately 0.8bcm. This summer, we expect gas to be injected at Rough, with a view to this being utilised over the winter as needed.

**Figure 10** MRS stock levels from October 2015 to March 2023, and projection for summer 2023 (April to September)







## Operational outlook

Asset maintenance programme



## Operational outlook

### Key messages

**1** The asset maintenance programme in summer 2023 is one of the most significant we have undertaken, with an expected 12% uplift in the level of investment we're making compared to last year, which was 50% higher than the previous year.

Demand is traditionally lower during the summer as the most significant driver, the need for heating, reduces due to the increase in temperature. For most of our assets, 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.

Compared to previous summers, there is a significant increase in the maintenance and capital works programme in 2023. We are carefully phasing our maintenance works

**2** We are stepping up the number of In-line Inspection (ILI) digs by a further 50% this year.

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 the changes in supply that can occur over the summer period.

To set us on the pathway towards emissions compliance under RIIO-2, we are also progressing works at 3 of our main compressor stations (Huntingdon, Peterborough and Hatton) to install Industrial Emissions Directive (IED) compliant units that will ensure that we continue to meet our customers' and stakeholders' needs.

**3** 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.

Preparatory works for the Western Gas Network Upgrade, which will increase our capacity and capability to accept gas flows from the Milford Haven LNG Terminal, will also continue this summer.

Further details of our maintenance plans can be found on our [website](#).



## Operational outlook

### Asset maintenance programme

Asset maintenance remains a key aspect of our asset management strategy aimed at ensuring that we maintain a safe, reliable and resilient network.

A significant proportion of the assets are reaching, or have reached the end of their design life. The extensive use and age of our critical infrastructure means our assets now require greater care, increased monitoring, refurbishment and replacement to maintain a safe, reliable transmission system.

Our asset maintenance strategy considers the likely failure modes of each asset type and the consequences should we lose functionality. This consideration leads to decisions on the type of intervention and triggers for maintenance activity.

As part of our RIIO-2 plans, we are committed to investing significantly in the maintenance of our assets and that has influenced the significant increase in our asset maintenance programme this summer.

Our key maintenance works this summer involve:

- ILL runs, ILL digs; risk based inspections driven by considering pipeline condition, criticality, safety and performance of corrosion prevention.
- Hatton station outage for the summer to build a new unit.
- Continuation of the commissioning of new units at Huntingdon to be completed this summer.
- Compressor station works which involve condition monitoring, functional checks, scheduled inspections, usage based inspections and installation of new units. This will involve some compressor unit outages, but we have ensured there are no works planned that could impact capability at Milford Haven.

Our asset management maturity is underpinned by our routine maintenance activities, which proactively identify asset health issues. The information we collect enables us to manage our Network Development Process by prioritising investment decisions.





# Summer Outlook 2023



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## Looking ahead to winter

Preparing for the coming winter



## Preparing for the coming winter

### For more information

If you're interested in our outlook for winter, more information will be available in the following upcoming publications:

- 1. Gas Winter Review & early Winter Outlook** – planned for June
- 2. Gas Winter Outlook** – planned for September/October

Is there something you'd really like to see in our Winter Outlook analysis? Let us know what matters to you by getting in touch with [Andrew Marsh](#).

**As a prudent system operator, we are working closely with the Department for Energy Security and Net Zero (formerly BEIS), Ofgem, and National Grid ESO to assess the potential scenarios and associated risks that may arise during the coming winter.**

We have already taken several steps to ensure we are well prepared to maintain safe and secure operation of the gas transmission system, and continue to look for opportunities to implement further improvements in light of the current geopolitical context surrounding the energy landscape.

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

### Energy Security Plan

We've been working alongside the UK Government to support the development of their Energy Security Plan, detailing focus areas for enhancing energy security whilst GB transitions to net zero.

"Gas will continue to play a declining but still significant role in our energy system for decades to come and it is essential we take action to strengthen the security of our gas supplies. Drawing from the lessons we have learnt since Putin's invasion of Ukraine, the Government will put in place measures to ensure we have the supplies we need for the long term and increased resilience in the gas system to withstand supply shocks, if they do occur. We will do this by:

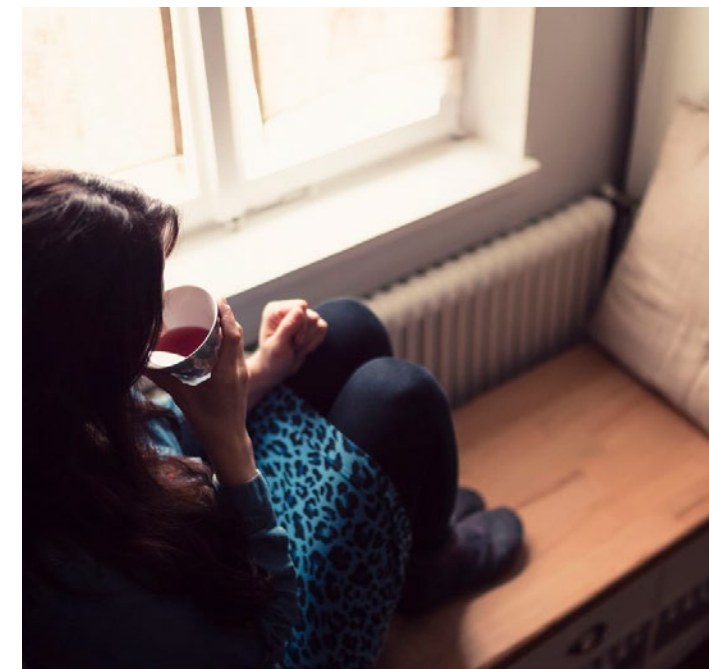
- maximising supply of UK gas
- maintaining and securing our gas import and export capacity
- increasing system resilience
- ensuring long term investment in gas networks."

Read the Energy Security Plan in full [here](#).

### Factors that may influence the outlook for winter

Whilst we are, and will be, taking every appropriate step possible to prepare for the coming winter, there are a number of factors outside of our control that could affect the outlook for winter 2023/24, including:

- the weather: a very cold winter will mean higher demands on the NTS

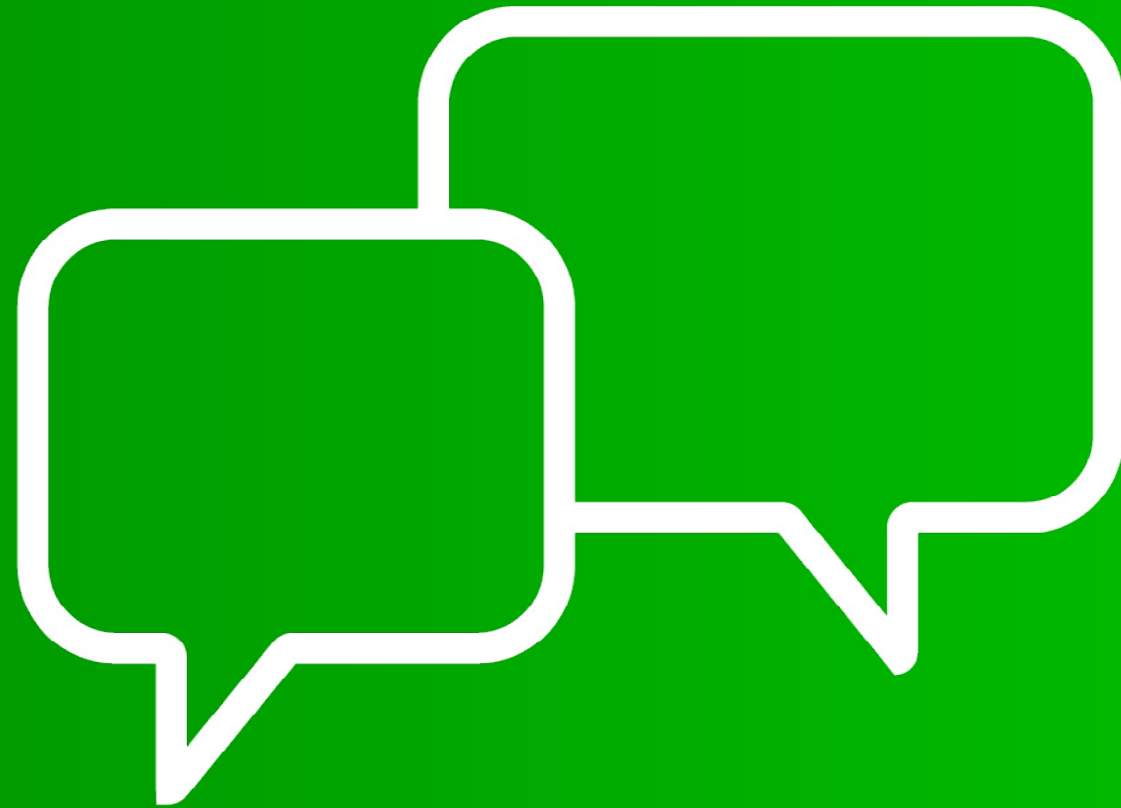


- the cost of energy and how this may affect demand
- EU storage position: if low going into winter, we may see greater export demand
- continued disruption to gas supplies due to the war in Ukraine
- global LNG availability
- currently unforeseen global events.



## Contact us

Continuing the conversation







## Continuing the conversation

**We look forward to continuing the conversation with you at our upcoming engagement forums. The dates for our next Gas Operational Forums are available in the box to the left.**

You can find details about the forums, and how to sign up to attend them, on our [website](#).

### Your feedback is so important to us

Letting us know what you think of the information we share with you, and how we're sharing it, helps us shape our future communications to ensure we're communicating what matters most, in a way that suits you.

Let us know your views and feedback by getting in touch with [Andrew Marsh](#).

For any press enquiries, or if you have any comments or questions about the content contained within this publication specifically, please get in touch with our Corporate Affairs team:



**Jake Tudge**

Contact [Jake Tudge](#) for any enquiries for our leadership team



**Ntobeko Chidavaenzi**

Contact [Ntobeko Chidavaenzi](#) for any media enquiries



**Andrew Marsh**

Contact [Andrew Marsh](#) for any general enquiries and feedback

### Upcoming Gas Operational Forum dates:

- 18 May 2023
- 22 June 2023
- 21 September 2023

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## Appendix

Data tables in TWh





## Data tables in TWh

**Table A**  
Key statistics – historical 2022 and forecast 2023

TWh	2022	2023
GB gas demand *	272.0	243.4
Export gas demand	133.7	60.5
Total gas demand **	462.8	365.7

[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:** 1TWh = 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).

**Table B**  
Forecast total gas demand TWh for summer 2023, and historical (2016–2022)

TWh	2016	2017	2018	2019	2020	2021	2022 actual	2022 weather corrected	2023 forecast
<b>Non-daily metered demand (NDM)</b>	122.1	114.4	116.6	125.4	114.4	137.5	106.3	114.5	111.6
<b>Daily metered (DM) and industrial demand</b>	45.1	48.4	45.1	46.2	42.9	44.0	39.3	39.6	37.4
<b>Electricity generation</b>	127.6	115.5	113.3	116.6	102.3	111.1	126.2	126.2	94.3
<b>GB gas demand</b>	294.8	278.3	273.9	288.2	260.7	292.6	272.0	280.5	243.4
<b>Ireland</b>	18.7	17.6	17.6	22.0	24.2	26.4	28.6	28.9	33.0
<b>Export to mainland Europe</b>	57.2	77.0	49.5	47.3	58.3	7.7	133.7	133.7	60.5
<b>Storage injection</b>	28.6	27.5	25.3	24.2	23.1	23.1	24.7	24.7	26.18
<b>Total gas demand</b>	400.4	402.6	366.3	382.8	368.5	350.9	462.8	471.5	365.7

NB: All totals include NTS shrinkage and will therefore not tally.





## Data tables in TWh

**Table C**

Summer gas supply by source historical (2016–2022) and forecast for 2022 and 2023

TWh	2016	2017	2018	2019	2020	2021	2022 forecast	2023	2023 forecast
UKCS	178.2	191.4	184.8	185.9	174.9	134.2	170.5	189.2	183.7
Norway	136.4	144.1	146.3	107.8	96.8	139.7	117.7	145.2	90.2
Continent	5.5	1.1	1.1	0	0	1.1	0	0	0
LNG	58.3	35.2	15.4	66.0	78.1	56.1	70.4	107.8	78.1
Storage	13.2	20.9	14.3	15.4	14.3	14.3	15.4	23.1	14.3
<b>Total</b>	<b>391.6</b>	<b>392.7</b>	<b>360.8</b>	<b>375.1</b>	<b>364.1</b>	<b>346.5</b>	<b>374</b>	<b>464.2</b>	<b>365.7</b>



## Glossary



## Glossary

**bcm:**

Billions of cubic metres.

**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.

**Composite Weather Variable (CWV):**

The combination of temperature and other weather variables, intended to define a linear relationship between the weather and non-daily metered gas demand.

**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.

**Forward price curve:**

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

**In-line Inspection (ILI):**

In-line Inspection (ILI) involves the evaluation of pipes and pipelines using "smart pigs" (both tethered and non-tethered) that utilise non-destructive examination techniques to detect and size internal damage. ILI measures and records irregularities in pipelines including corrosion, cracks, deformations, or other defects.

**Interconnector:**

Two pipelines connecting GB and the EU. The Interconnector (UK) Limited is a bi-directional gas pipeline connecting Bacton in the UK and Zeebrugge in Belgium. BBL is a bi-directional gas pipeline connecting Bacton in the UK and Balgzand in the Netherlands.

**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  $-161^{\circ}\text{C}$  so that it occupies 600 times less space than in its gaseous form.

**FSRU:**

FSRU vessels can be classified either as ships or offshore installations depending upon the design they incorporate. FSRUs can be equipped in two ways: either they can be installed as a separate unit aboard the LNG carrier itself or an old gas carrier can be converted into an independent unit and placed in a particular destination as an offshore installation.

**mcm:**

Million cubic metres.

**Medium range storage (MRS)/GB storage:**

Gas storage facilities designed to switch rapidly between injection and withdrawal to maximise the value from changes in gas price.

**National Balancing Point (NBP):**

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

**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.

**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.

**Norway/Norwegian supplies:**

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) is gas that is used in the running of the system e.g. compressor fuel. And calorific value shrinkage (CVS) is where gas of a particularly low or high CV enters the distribution network which differs with the flow weighted average CV of gas entering that network.

**Price differential:**

The difference in price between markets e.g. GB and continental Europe. Energy supplies tend to flow to whichever market has the highest price.





## Glossary

### **Title Transfer Facility (TTF):**

TTF is the virtual trading point of the Title Transfer Facility or the Netherlands Securities Transfer Fund, which is used as a reference gas market at European level.

### **UK Continental Shelf (UKCS):**

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

### **Weather corrected (demand):**

The demand expected with the impact of weather removed. Actual demand is converted to demand at seasonally normal weather conditions, by multiplying the difference between actual CWV and expected CWV by a value that represents demand sensitivity to weather.



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