

Gas Transmission capacity guidelines

A customer's guide



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Introduction

This guide outlines the gas transmission network's access capacity purchasing processes that National Grid Transmission applies from November 2015. We hope this guide is concise and easy to follow while giving an overview of gas transmission network capacity purchasing in Great Britain. We want this information to be accessible for new customers wishing to connect to the network and for customers who are more familiar with the capacity market. If anything in this guide is unclear, please look first in the appendices.

If you still have questions, please email us at:

box.transmissioncapacityandcharging@nationalgrid.com

All references to 'National Grid' in this document refer to National Grid Gas plc in its role as holder of the gas transporter licence in respect of the gas National Transmission System (the 'Licence').

Background

Beach to meter

National Grid owns and operates the gas National Transmission System (NTS) in Great Britain. This is the network of pipelines that transport gas at high pressure around the country. The network is controlled by staff at the Gas National Control Centre (GNCC).

Gas enters the GB NTS network through coastal gas delivery 'terminals', also known as NTS entry points (see Figure 1). These terminals receive gas from different sources including shipments of Liquid Natural Gas (LNG), production platforms in the North Sea, and pipelines (also known as interconnectors) connecting Great Britain to other European countries. These coastal terminals monitor the gas pressure, meter the gas and amend (process) the gas quality so that the gas meets contractual and legislative requirements and can be safely burned in the home.

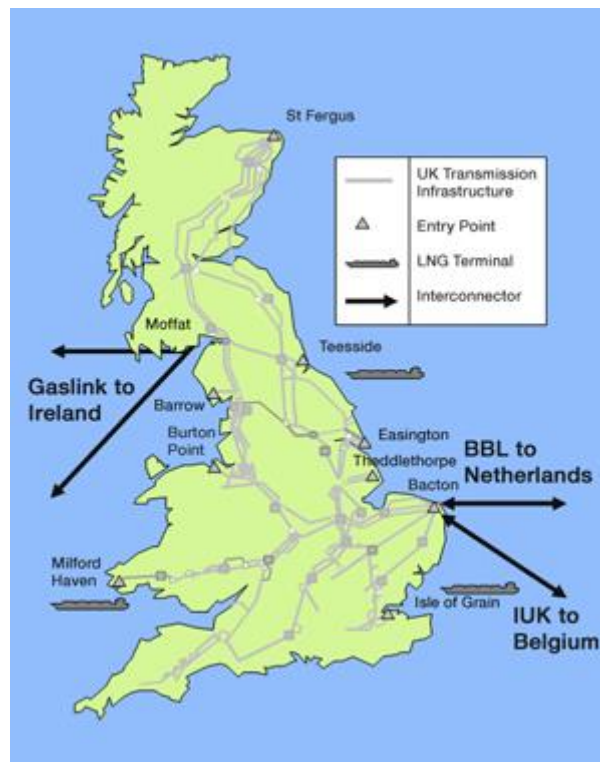


Figure 1

Compressor stations on the NTS help keep large quantities of gas moving through the system, particularly when demand is high.

Gas can also be pumped into storage sites connected to the NTS then injected back into the system when it's needed later.

Gas leaves the NTS via network offtakes, also known as exit points. These are mainly connections to the network of pipes owned and operated by the distribution network operators (DNOs). Most of these networks are comprised of local distribution zones (LDZs). Other exit points include very large gas consumers (such as power stations and industrial works) or storage sites. There are also direct connections to other gas transmission systems, such as interconnectors to other countries.

Further information on the journey of gas from 'beach to meter' can be found on our website at the following link: <http://www2.nationalgrid.com/uk/our-company/gas/>

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Regulatory structure

The main government and regulatory bodies for the British gas industry are:

- ◆ the Health and Safety Executive (HSE)¹
- ◆ the Department of Energy and Climate Change (DECC)² – a Government ministry responsible for government policy
- ◆ the Office of the Gas and Electricity Markets (Ofgem)³ – an independent energy regulator responsible for National Grid Gas price controls. It is the primary decision-making body on industry codes.

Ofgem protects energy consumers by promoting competition in the industry. It also regulates monopoly energy companies, such as National Grid.

There are five types of gas industry licence granted by Ofgem under the Gas Act 1986. This is the legal framework for gas companies⁴.

The five types of gas licence are:

- ◆ supplier licence
 - allows for supply to domestic and non-domestic premises, or to non-domestic premises only
- ◆ transporter licence
 - allows the licensee to transport gas through pipes to premises in the area specified in the licence, and another pipeline system operated by another gas transporter
- ◆ shipper licence
 - allows the licensee to arrange with a gas transporter for gas to be introduced into, transported, or taken out of the transporter's pipeline system
- ◆ smart meter communication licence

¹ <http://www.hse.gov.uk/>

² <https://www.gov.uk/government/organisations/department-of-energy-climate-change>

³ <https://www.ofgem.gov.uk/>

⁴ <http://www.legislation.gov.uk/ukpga/1986/44>

- allows the licensee to provide a smart meter communication service for domestic suppliers. This sends relevant information to and from smart meters through which gas is supplied to domestic premises.
- ◆ interconnector licence
 - allows the licensee to operate a gas interconnector. This is defined as:
 - co-ordinating and directing the conveyance of gas into or through a gas interconnector
 - making such an interconnector available to convey gas.

Under the Gas Act, no company can hold a gas transporter licence and a gas supplier or shipper licence at the same time⁵.

Un-licensed entities

'Trader User' means an entity bound by the Shippers Framework Agreement (a signatory to the uniform network code) only for the submission of trade nominations, not for the purpose of arranging for gas to be introduced into, conveying by means of, or taken out of the total system.

UNC processes

Another important legal document for the gas industry is the Uniform Network Code (UNC). It forms the basis of the commercial contract arrangements between gas transporters and shippers and a few other clearly defined parties. It defines the commercial rights and responsibilities of all providers and users of the gas transportation system. It also gives all parties equal access to available transportation services.

The UNC is subdivided into four main sections:

- ◆ general
- ◆ the Transportation Principle Document (TPD)
- ◆ the Offtake Arrangements Document (OAD)
- ◆ the European Interconnection Document (EID).

The TPD sets out transportation arrangements between transporters and 'users'. In the UNC, a user may be a shipper, a distribution network operator or a trader. The OAD explains the services between the gas transporters, connecting and operating their respective pipeline networks. The EID sets out the rules applying to the gas interconnection points (IPs) between EU member countries where the rules are different from those in the TPD.

⁵ <https://www.ofgem.gov.uk/licences-codes-and-standards>

Capacity processes

What is capacity?

Shippers can buy rights to flow gas into (or offtake gas from) the NTS by buying NTS pipeline 'capacity'. Entry capacity delivers gas and NTS exit capacity offtakes gas. A shipper needs to hold one unit of capacity in order to flow one unit of energy onto (or off) the system. This is known as the 'ticket to ride' principle.

Capacity for standard GB entry points and exit points is sold in units of kWh/day. For EU interconnection Points capacity can be sold in kWh/day or kWh/hour. Capacity over our current licence-obligated levels is called incremental capacity. This is important to National Grid because when enough of it is reserved by shippers via a PARCA⁶ it can be an investment signal that allows us to plan network developments economically and efficiently. Please note that incremental capacity is not available at IPs because the necessary EU CAM code is being amended.

Shippers don't need to acquire capacity to flow gas into (or offtake gas from) the system. However, if a shipper doesn't have capacity rights to cover the gas they have flowed, they may be charged extra. This is called a capacity over-run charge. It's usually more efficient to know how much gas will be needed before a pipeline is built and operated. Shippers should acquire capacity before they need it. The capacity over-run charge encourages this by being set at a multiple of the bid or application prices already accepted for acquiring capacity.

Acquiring capacity

Capacity can be acquired at an entry or exit point on the NTS only if the point is included in the gas transporter's licence. The customer requesting the capacity must also be a shipper (or a distribution network for exit) and a party to the UNC contract. They must obtain a shipper licence from Ofgem and then apply for NTS entry and exit. This is done by making bids or applications via the Gemini system⁷, and, in the case of IPs, via the PRISMA system, through capacity auctions and application processes. There's more information about these auctions and application processes in the 'NTS entry capacity auctions' and 'NTS exit capacity processes' sections of this guide. The Planning and Reservation of Capacity (PARCA) process explains when applicants who are not shippers or transporters can reserve NTS entry or exit capacity.

NTS entry capacity

NTS entry capacity is made available to the market at aggregated system entry points (ASEPs). At these points customers can book either 'firm' or 'interruptible' entry capacity.

Firm and interruptible

As the name suggests, firm entry capacity is financially and contractually guaranteed to be available, but interruptible entry capacity can be withdrawn (interrupted) by National Grid if the system can't provide it on the day in question.

⁶ <http://www2.nationalgrid.com/UK/Services/Gas-transmission-connections/Capacity-and-connections/Processes/PARCA-Framework/>

⁷ <http://www.xoserve.com/index.php/our-systems/gemini/>

Although firm capacity is guaranteed, events like plant or equipment failure may mean we can't honour our commitment.

If we can't meet firm capacity commitments – known as a system 'constraint' – we will buy the capacity back. Because this type of capacity is contractually guaranteed via the UNC, we will pay the customer a market-driven price.

If we have to reduce interruptible capacity, customers will not be compensated. Interruptible capacity will always be reduced ('scaled back') before we buy back firm capacity.

The volume of firm entry capacity available at each aggregated system entry point (ASEP) is made up of:

- ◆ *baseline NTS entry capacity (obligated)* – the minimum amount of capacity that we must make available at this point. This includes any capacity substituted (moved) from other entry points
- ◆ *incremental NTS entry capacity (obligated)* – firm capacity made available above the baseline amount. This helps us decide where to invest the system's capacity. This increase in capacity is permanent
- ◆ *incremental NTS entry capacity (non-obligated)* – at our discretion, we can release temporary extra firm capacity.

Interruptible entry capacity is designed to prevent hoarding, and is available by daily auction. Hoarding is where a party holds onto capacity but doesn't use it. This stops others from entering the market and it's anti-competitive.

The volume of interruptible entry capacity available at an ASEP and an IP is made up of:

- ◆ *use it or lose it (UIOLI)* – this is based on a rolling quantity of unused firm capacity over the preceding 30 days.
- ◆ *discretionary* – we can offer extra interruptible entry capacity to the market. To encourage us to release more of this capacity, we are allowed to keep some of the money paid for it.

NTS exit capacity

NTS exit capacity – either 'firm' or 'off-peak' – is available to the market at NTS exit points.

Firm and off-peak

Firm and off-peak exit capacity can be compared to the terms 'firm' and 'interruptible' used to describe NTS entry capacity. As with firm entry capacity, firm exit capacity is contractually guaranteed to be available and we pay compensation if we can't meet the booked amount on any day.

Off-peak exit capacity is comparable to interruptible entry capacity. There is no compensation if we scale back off-peak capacity, which is why this type of capacity is cheaper.

The volume of firm capacity at each offtake point consists of the following amounts:

- ◆ *baseline NTS exit capacity (obligated)* – the minimum amount of capacity that Ofgem requires us to make available at this point
- ◆ *incremental NTS exit capacity (obligated)* – firm capacity made available over the baseline amount. This helps us decide if and where to invest in the system. This increase in capacity is permanent and needs to be held for four years
- ◆ *incremental NTS exit capacity (non-obligated)* – at our discretion, we can release temporary extra firm capacity at an offtake point above obligated levels.

Off-peak capacity is made available via a daily auction. The volume of off-peak capacity available at an offtake consists of three parts:

- ◆ *use it or lose it (UIOLI)* – the quantity of interruptible capacity released as a result of this methodology is based on unused firm exit capacity and is calculated on a rolling 30-day basis
- ◆ *unutilised maximum NTS exit point offtake rate (MNEPOR)* – the NTS demand forecast is published on the day before the Gas Day (D-1) at 1:30pm. Where this demand forecast is less than 80 per cent of the annual peak 1-in-20 demand forecast, we have to release any remaining capacity up to the MNEPOR level⁸ as off-peak capacity
- ◆ *discretionary* – we can offer additional off-peak capacity to the market at our discretion.

⁸ See UNC TPD Section B3.6.2

New and expanding connections

When considering a new connection or the expansion of an existing connection, there are three processes⁹ to complete before gas can flow into (or out of) the NTS:

1. the physical connection to the NTS must be completed and commissioned, and the gas measurement equipment (the gas meter) must be validated
2. the operational agreement (NEA, NExA or SCA¹⁰) detailing the operational terms and conditions for gas to flow must be signed by National Grid and the shipper¹¹
3. before gas starts flowing, shippers should check that they have enough NTS entry or exit capacity (using the relevant capacity mechanisms) and the contractual rights to use that capacity¹².

You can complete a connection without previously obtaining capacity, but if you take this approach, you run the risk that no capacity will be available when you need it. In other words, the NTS may not have been reinforced enough in that area, so the necessary infrastructure won't be in place to allow the required quantities of gas to flow.

To avoid this, if you want to make a new connection (or expand an existing connection), contact National Grid at as soon as possible.

We recommend that you get in touch with us at least **seven years before you need the connection to be completed**. This might seem like a long time, but it's necessary because if there are any major reinforcement works involved, up to seven years may be needed (within the timescales of the Planning Act¹³) to make sure that the public has been properly consulted on the works required and that planning permission has been received.

Planning and Advanced Reservation of Capacity Agreement (PARCA)

The PARCA is a bi-lateral commercial contract that allows a customer to request NTS entry and/or exit capacity well ahead of when the capacity will be needed.

When we receive a request for a new connection – or the expansion of an existing connection – to the NTS, the first thing we'll look into is how the capacity requested can be delivered.

Next, we'll offer to reserve that capacity on behalf of the customer through the PARCA contract, which gives the customer (a shipper, DNO or any other third party) a right to buy the new capacity later. Once reserved, subject to the terms in the PARCA contract, this capacity remains exclusive to the customer – unless the PARCA is terminated and the capacity is no longer reserved.

The PARCA arrangements were developed with industry and approved by Ofgem. They have been in place since February 2015¹⁴.

⁹ <http://www2.nationalgrid.com/uk/services/gas-transmission-connections/connect/>

¹⁰ Network entry agreement (NEA), network exit agreement (NExA) and storage connection agreement (SCA).

¹¹ <http://www2.nationalgrid.com/UK/Services/Gas-transmission-connections/>

¹² The new connection point will also be need to be added to the licence before any capacity can be booked at this point and a shipper must then be registered to the supply point or CSEP before they can flow gas.

¹³ <http://www2.nationalgrid.com/WorkArea/DownloadAsset.aspx?id=13788>

¹⁴ <http://www2.nationalgrid.com/UK/Services/Gas-transmission-connections/Capacity-and-connections/Processes/PARCA-Framework/>

NTS entry capacity auctions

NTS entry capacity is sold through various open electronic auctions. Figure 2 shows when it is made available throughout the year at non-interconnection points (the NTS entry capacity processes for IPs are detailed in the section titled 'Capacity Processes at EU Interconnection Points from 1 November 2015'). The basic capacity product is the same in every auction: the right to flow one unit of capacity (kilo Watt hour – kWh) on a particular Gas Day (d). So units sold are kWh/d.

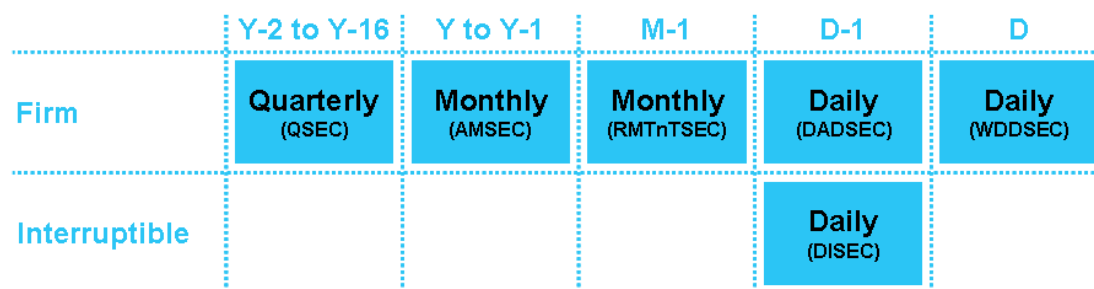


Figure 2

QSEC – Quarterly system entry capacity

We hold QSEC auctions annually in March and they can be open for up to 10 working days. We notify ('allocate') successful bidders in May. An ad hoc auction can be triggered at any time by a PARCA.

Firm NTS entry capacity is made available in calendar quarterly strips from October Y+2 through to September Y+16 (where Y is the current gas year – a gas year begins on 1 October and ends on 30 September). The capacity bid for is for use on every day throughout the calendar quarter (in other words, a bid for 100,000kWh/d will buy 100,000kWh of capacity for every day in that calendar quarter).

Historically, the QSEC auction also allowed shippers to bid for additional capacity above the baseline. Known as incremental NTS entry capacity, this allows shippers to signal that they'd like National Grid to make more capacity available than we're obligated to provide (based on the shipper's original bid, where a quantity of capacity was matched against individual descending price steps).

The release of incremental NTS entry capacity can now be guaranteed only through the PARCA process. Price steps for release of incremental capacity are calculated using the methodology set out in our entry capacity release (ECR) methodology statement¹⁵.

The ECR details how to calculate what the long-run marginal costs (LRMCs) would be for various amounts of capacity, over and above the obligated baseline amount¹⁶.

¹⁵ <http://www2.nationalgrid.com/uk/industry-information/gas-capacity-methodologies/entry-capacity-release-methodology-statement/>

¹⁶ The charging model can be found at: <http://www.gasgovernance.co.uk/DNcharges>

AMSEC – annual monthly system entry capacity

Held annually (February), firm NTS entry capacity is made available in monthly calendar strips from April Y+1 through to September Y+2. The AMSEC is a 'pay as bid' auction and is subject to a minimum reserve price. The auction is open for four days from 8am to 5pm.

Each AMSEC auction window is open for four days in two bidding rounds separated by two business days, as detailed in the UNC. The processing and allocation are completed after 5pm on each day and information on the outcome of the auction is then published.

Rolling Monthly NTS entry Capacity Auctions (RMTnTSEC – rolling monthly trade and transfer of system entry capacity)

These auctions are held monthly at the month-ahead stage. Any unsold quantities of firm NTS entry capacity from the AMSEC auctions are made available as a monthly strip for M+1 (where M = current month). The RMTnTSEC auction is a 'pay as bid' auction and it's subject to the same minimum reserve price as the AMSEC.

Shippers can surrender any of their excess NTS entry capacity in this auction as part of the rolling monthly trade initiation surrender (RMTISSEC) stage. But it will only be allocated if there's demand from a shipper for NTS entry capacity at the relevant ASEP.

We allocate the lowest-priced capacity first. Where the surrendered capacity has a minimum surrender price that's below the reserve price, we'll allocate it ahead of the unsold baseline obligated capacity – this is the 'trade' part of the auction.

If there's not enough unsold obligated NTS entry capacity at an ASEP to meet demand, we may transfer unsold and surrendered NTS entry capacity from a nearby ASEP.

This is similar to capacity substitution¹⁷, which is the process of assigning unsold non-incremental capacity to meet the requirement for incremental capacity elsewhere. However, in this case the transfer is not enduring, because it applies only to the relevant month (hence the 'transfer' part of the auction name). It's a very complex process – for more information, read the trade and transfer methodology statement on our website¹⁸.

DADSEC – day ahead daily system entry capacity

Any unsold obligated quantities from previously held longer-term NTS entry capacity auctions are made available in the DADSEC auction.

Unsold obligated NTS entry capacity is made available as a daily product, allocated at the day-ahead stage at 2pm, 5pm and 1am. Shippers can enter bids up to seven days before they need the capacity. Bids can be modified or withdrawn and new bids can be added up to the allocation times (to be considered in that auction).

¹⁷ The relevant entry capacity substitution (ECS) and exit capacity substitution (ExCS) methodology can be found at: <http://www2.nationalgrid.com/uk/industry-information/gas-capacity-methodologies/>

¹⁸ <http://www2.nationalgrid.com/uk/industry-information/gas-capacity-methodologies/entry-capacity-transfer-and-trade-methodology-statement/>

The daily NTS entry capacity reserve price has a 33 per cent discount to the MSEC reserve price. DADSEC is a 'pay as bid' auction where further non-obligated capacity can also be made available at the discretion of the NTS. We send invitation letters to shippers for long-term auctions (month-ahead or longer), but we don't do this for shorter-term auctions (day-ahead or within-day), which are run at standard times every day¹⁹.

WDDSEC –within-day daily system entry capacity

All unsold obligated quantities can be made available at different times of the day in the WDDSEC auction. NTS entry capacity is still sold in quantities of kWh/d, although the available capacity rate increases by 1/x (where x is the number of hours remaining in the day from the bid 'effective from' time) rather than 1/24.

Bids are allocated hourly, and there is a zero reserve price for within-day allocations. The last allocation takes place at 2am. Shippers can enter bids up to seven days before the Gas Day the user wants to hold the capacity for. These bids can be modified or withdrawn and new bids can be added up to the allocation times (to be considered in that auction).

Bids may be evergreen or reducing. An evergreen bid remains fixed throughout the day. A reducing bid reduces by 1/x with each hour that passes where it remains unallocated (where x is the number of hours remaining in the Gas Day at the time the bid was placed). Bidders don't need an invitation letter.

DISEC – daily interruptible system entry capacity

Interruptible NTS entry capacity is available in the DISEC auction. NTS entry capacity is available on a daily basis for each ASEP, and bids are allocated at the day-ahead stage by 2pm. Shippers can enter bids up to seven days in advance of the Gas Day which the user wants to hold the capacity for. Bids can be modified or withdrawn and new bids can be added up to 1pm. There is a zero reserve price for interruptible NTS entry capacity. DISEC is a pay-as-bid auction and bidders don't need an invitation letter.

Auction name	Product period	Auction allocation times	Price info
QSEC – quarterly system entry capacity	Quarters Oct Y+2 to Sept Y+16	May	Demand driven
AMSEC – annual monthly system entry capacity	Months Apr Y+1 to Sep Y+2	Four tranches – allocation completed on the evening of each tranche	Pay as bid – no lower than reserve price
RMTnTSEC – rolling monthly trade and transfer system entry	First day of month to last day of month	By no later than three business days before the last business day of the	Same as MSEC

¹⁹ Further information on auctions can be found at: <http://www2.nationalgrid.com/uk/industry-information/gas-transmission-system-operations/capacity>

capacity		calendar month preceding the transaction period month	
DADSEC – day-ahead daily system entry capacity	Single Gas Day (D)	2pm, 5pm and 1am	Pay as bid – 33 per cent discount to MSEC reserve price
WDDSEC – within-day daily system entry capacity	Single Gas Day (D)	Allocated hourly, between 7am and the last allocation takes place at 2am	Zero reserve price
DISEC – daily interruptible system entry capacity	Single Gas Day (D)	Any time between 1:01am D-1 and 3pm D-1	Zero reserve price

Figure 3

Constraint, scale-back and restoration (applicable to ASEPs and IPs)

Sometimes our capability to accept gas tendered for delivery at an ASEP may be less than the capacity entitlements held by shippers. If shippers flow above the ASEP capability level, we could have a transportation constraint on the network. If this is the case, we'll need to act to avoid putting too much pressure on the constrained parts of the network.

Transportation constraints are due to factors including maintenance, compressor reliability and supply/demand scenarios.

We're required to operate the system in accordance with the System Management Principles Statement²⁰ (SMPS). So our first step will be to optimise the operation of the system, in order to avoid constraints. We're incentivised to find the most economic way of resolving system constraints and have a range of commercial tools we can use for this purpose, including:

- ◆ scaling back interruptible NTS entry capacity
- ◆ buying back firm NTS entry capacity
- ◆ buying or selling gas at specific geographical locations using the 'locational' gas market.

Scaling back interruptible NTS entry capacity means that all (or a proportion of) the interruptible NTS entry capacity rights are reduced or removed from shippers. There's no cost and scale-backs will always take place before firm capacity buy-backs or other gas market based actions.

²⁰ <http://www2.nationalgrid.com/UK/Industry-information/Business-compliance/Procurement-and-System-Management-Documents/>

Before we can buy back a shipper's firm NTS entry capacity entitlements, the shipper must offer to surrender it. We can accept buy-back offers, and in some cases we'll also have pre-arranged agreements, such as forward contracts or options.

Locational energy actions are intended to reduce a shipper's flow at an entry point without affecting their NTS entry capacity rights. If none of the above actions alleviate the constraint, we may issue a transportation flow advice (TFA) to the relevant ASEP parties, to prevent the network from over-pressurising. TFAs may be used specifically to resolve pressure and gas-quality issues, to reduce flows for a short period of time which can then be made up through the rest of the day.

When interruptible capacity has been scaled back, if changing NTS conditions have resolved the forecast NTS entry constraint, we may partially or fully restore the interruptible capacity.

Constraint management incentive

We're incentivised to minimise the cost of constraint management through the constraint management incentive²¹.

It exposes us to an element of the costs of constraint. Sales of non-obligated capacity, daily firm capacity, interruptible capacity and shipper overruns all feed into the incentive as a revenue.

In short, we're incentivised to maximise the sales of capacity, but in doing so we may be exposed to the costs of capacity buy-backs if we sell too much.

Overrun charges

If, for any reason, a shipper's flow exceeds its entry capacity entitlements at an ASEP on any given day, they'll have to pay a system entry overrun charge, as detailed in the UNC²².

Discretionary release of system entry capacity (DRSEC)

Users may request and/or we may invite applications for non-obligated NTS entry capacity.

We have sole discretion when it comes to decisions regarding DRSEC, which is available for up to a year. The MSEC reserve price will be applied and the user will have to sign up to the terms and conditions of the auction before taking part in it.

²¹ <http://www2.nationalgrid.com/UK/Industry-information/Electricity-system-operator-incentives/BSIS/>

²² Defined in UNC TPD section B2.12.

NTS exit capacity processes

Firm exit capacity is sold through a combination of application windows and auction points. For more information about the NTS exit capacity processes for IPs, read the 'Capacity Processes at EU Interconnection Points from 1 November 2015' section in this guide.

Figure 4 shows when exit capacity is available throughout the year. Y refers to the year of use. For instance, if you wanted to use the capacity from the 1 October 2016 you could book EAFLEC either four, five or six years in advance. Daily capacity is booked on the day of use or the day before.

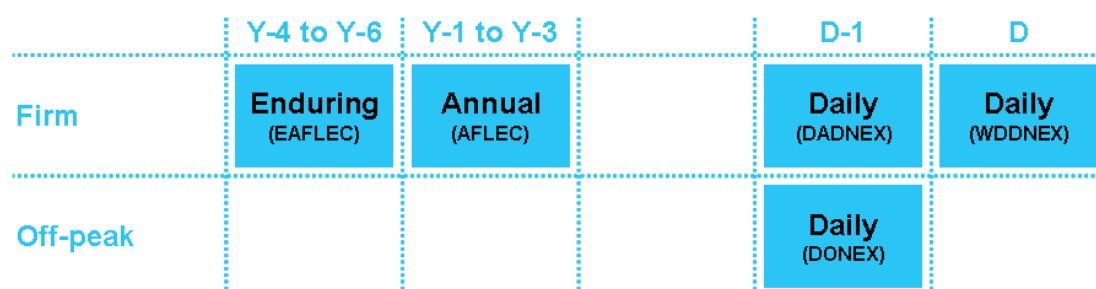


Figure 4

Application windows

The application windows only apply to NTS exit (flat) capacity and are open between 1 July and 31 July each year. There are three different types of window.

1. EAFLEC (enduring annual flat exit capacity application) increase

This window is for shippers to request capacity with a start date between Y+4 to Y+6 as the point at which the capacity is booked. Once purchased, this capacity is 'enduring', which means you have it forever or until you tell us otherwise. Please note that this is subject to user commitment rules, which say that if a user requests an EAFLEC increase they have to agree to hold the capacity for a set period of time.

This enduring capacity can then be increased or decreased in a later application window. Please note that this is also subject to user commitment rules, which state that if the user commitment value hasn't been met, the capacity can't be reduced.

Application period: between 8am and 5pm on business days from 1 to 31 July.

Allocation: if your application is successful it will be allocated on or before 30 September.

2. EAFLEC decrease (also known as the reduction window)

This allows shippers to decrease their enduring capacity holdings from 1 October year Y+1 after the July window or the first of any subsequent calendar month (subject to the user commitment rules). You can request further decreases and increases in subsequent application windows.

Application period: between 8am and 5pm on business days from 1 to 15 July.

Allocation: if your application is successful it will be allocated on or before 30 September.

3. AFLEC (annual flat exit capacity application)

This is for firm capacity within the period Y+1 to Y+3. Firm capacity can't be increased on an enduring basis or decreased in this application window; however, you can get additional capacity in subsequent windows. If you request capacity in this window for Y+2, in the following year's application window any unsold capacity will show as Y+1. Any further capacity you request for that year will be in addition to the original Y+2 capacity.

Application period: between 8am to 5pm on business days from 1 to 31 July.

Allocation: if your application is successful it will be allocated within 10 business days of the application window closing.

Ad-hoc application windows

As well as applying through the standard windows, users can submit ad-hoc applications to request an increase in the enduring annual NTS exit (flat) capacity and ask National Grid NTS to initiate a reduction window.

AIEFLEC (ad-hoc increase enduring flat exit capacity application)

Under this ad-hoc application process you can apply for EAFLEC to be made available at any time between 1 October and 30 June. The request must be made at least six months before the requested date and we are obligated to provide the capacity for the date requested. If we can't meet the requested date we will provide the capacity at the earliest possible date, or no later than 1 October Y+4.

ADEFLEC (ad hoc decrease enduring flat exit capacity application)

At any time we may ask if shippers want to reduce their enduring annual NTS exit (flat) capacity. We do this in case we can satisfy an incremental signal using existing capacity, rather than by releasing incremental capacity, which is more efficient and economical.

Daily firm NTS exit capacity auctions

Shippers can use two types of daily auction to bid for and buy firm exit capacity:

DADNEX (day-ahead daily NTS exit capacity)

You can submit requests for unsold obligated firm exit capacity in the DADNEX auction from D-7 6am. This means users can submit bids up to seven days before the Gas Day that they want to hold the capacity for. Requests can be made until D-1 2pm and will be allocated at D-1 3pm.

WDDNEX (within-day daily NTS exit capacity)

Any remaining unsold capacity after the allocation of the DADNEX auction will roll over and be made available in the WDDNEX auction. You can submit requests for the WDDNEX auction in the Gemini system from D-1 2pm until midnight on the Gas Day. Multiple allocations will always take place on the Gas Day at 8am, 2pm, 6pm, 10pm and 1am and, if required, allocations can be held at any time during the Gas Day with an hour's notice. Users can submit requests up to seven days before the Gas Day that they want to hold the capacity

for. These requests can be modified or withdrawn and new requests can be added up to the allocation times.

Charges

The daily firm auctions are both 'blind', which means they're pay-as-bid auctions with no discount on the annual reserve price (in other words, the reserve price is the same as for the longer-term capacity application processes). The reserve prices for all NTS exit points are published in the statement of gas transportation charges, which you'll find in the charging section of our website²³.

Auction bids for daily firm exit capacity will be allocated based on price (highest first) until all unsold capacity has been allocated. Where there are bids for more capacity than is available, we can make more capacity available to allocate those bids. We do this after assessing the network's capability and any risk.

Daily off-peak NTS exit capacity auction - DONEX

In addition to firm NTS exit (flat) capacity users may also bid for and purchase daily off-peak exit capacity. Off-peak capacity isn't a firm product and is sold via the DONEX auction²⁴. The quantity of off-peak NTS exit (flat) capacity release comprises:

- combined unused firm NTS exit (flat) capacity over the preceding 30 days maximum NTS exit point offtake rate (MNEPOR) value multiplied by 24, minus any firm capacity held by users
- any discretionary amount we decide to release.

This depends on the prevailing forecast total system demand for the Gas Day being less than 80 per cent of the 1-in-20 peak day demand.

DONEX (daily off-peak NTS exit capacity)

You can submit requests for the DONEX from D-7 6am of the Gas Day that the user wishes to hold the capacity for, until D-1 2pm. It is allocated on D-1 at 3pm.

The daily off-peak capacity auction is a blind, pay-as-bid auction with a zero reserve price.

Auction bids for DONEX capacity will be allocated based on price (highest first) until all unsold capacity has been allocated. Where bids exceed the available unsold quantity, we will allocate these at our discretion.

²³ <http://www2.nationalgrid.com/UK/Industry-information/System-charges/Gas-transmission/Charging-Statements/>

²⁴ See pg10 for the different types of off-peak exit capacity available.

Auction name	Product period	Allocation times	Price info
EAFLEC (enduring annual flat exit capacity application increase or decrease)	Enduring increase starting: Y+4, Y+5 & Y+6 Enduring decrease starting: first of any month from October Y+2 (potentially earlier)	Application window is July, allocated by 30 September Y	Fixed price
AFLEC (annual flat exit capacity application)	Covers one year Y+1, Y+2 and Y+3	Application window is July, allocated by allocation and publish completed by 10 th business day following the end of the auction	Fixed price
AIEFLEC (ad-hoc increase enduring flat exit capacity application)	Enduring increase starting: M+6 to October Y+4	Ad-hoc application window open October to June	Fixed price
ADEFLEC (ad-hoc decrease enduring flat exit capacity application)	Reduce from the first day of any month as requested by National Grid	Ad-hoc application window initiated and allocated by National Grid	N/A (reduction only)
DADNEX (day-ahead daily NTS exit capacity)	Single Gas Day (D)	D-1 at 3pm	Pay-as-bid reserve price = firm price
WDDNEX (within-day daily NTS exit capacity)	Single Gas Day (D)	D at 8am, 2pm, 6pm, 10pm and 1am	Pay-as-bid reserve price = firm price
DONEX – Daily Off-Peak NTS Exit Capacity	Single Gas Day (D)	D-1 at 3pm	Pay-as-bid zero reserve price

Figure 5

Constraints – scale-back and restoration

When dealing with a forecast NTS exit constraint, we may scale back off-peak exit capacity at exit points in NTS areas that are impacted by the NTS exit constraint. We'll initiate this by notifying all capacity holders that an off-peak curtailment factor (OCF) has been applied, including the OCF value. The OCF can take any value between 0 and 1 where:

- OCF = 1 – no scale-back (i.e. 100 per cent of off-peak NTS exit (flat) capacity available)
- OCF = 0 – total scale-back (i.e. 0 per cent of off-peak NTS exit (flat) capacity available)

Where an NTS exit constraint has been forecast, an OCF can be applied at any time, both before and throughout the Gas Day following the allocation of any off-peak capacity at

3pm D-1. We will issue an active notification system (ANS)²⁵ message to all NTS users indicating a revised OCF at applicable NTS exit points, giving at least four hours' notice before the constraint is effective.

So they can avoid any potential overrun charges, NTS exit shippers and distribution network operators are encouraged to revise any nominations (and therefore flows) accordingly if there is any change in their net scaled off-peak exit capacity entitlements for the Gas Day and NTS exit point that the constraint action was initiated for.

After the off-peak capacity scale-back, if a change in pipeline network conditions resolves the NTS exit constraint, previously scaled back off-peak capacity may be partially or fully restored. In this situation we'll issue another ANS message detailing the OCF change²⁶.

Offtake flow reductions

If there's a forecast NTS exit constraint, we may ask offtake shippers and DNOs to reduce demand for a set period of time. We'll do this by requesting offers for offtake flow reduction at the affected NTS exit points in the NTS exit zones.

We'll start by issuing an active notification system (ANS) message. This will notify shippers and DNOs that we need NTS exit users in specific NTS exit zone(s) to reduce offtake flows for a period of time in a Gas Day.

If they want to, exit shippers and DNOs in the affected NTS exit zones can make us an offer to reduce their flows.

We'll assess offtake flow reduction offers and allocate them in relation to the NTS exit constraint risk that's being managed. We'll accept offers in line with the system management principles statement²⁷. Before accepting any offer(s), we'll assess all the offers based on cost and the geographic location of the NTS exit point.

Once an offtake flow reduction offer has been accepted and allocated, the accepted party must send a revised offtake profile nomination that reflects the quantity we've accepted. This must be sent at least 30 minutes before the start of the reduction period.

Overrun charges

If shippers' collective flows exceed their aggregate exit capacity booking at an offtake point on any given day, the overrunning shippers must pay an NTS exit overrun charge (read the UNC²⁸ for more details).

²⁵ The ANS user guide is available at: <http://www2.nationalgrid.com/uk/industry-information/gas-transmission-operational-data/supporting-information/>

²⁶ Further information on exit capacity constraint management is available at: <http://www2.nationalgrid.com/UK/Industry-information/Gas-transmission-system-operations/Capacity/Constraint-management/>

²⁷ <http://www2.nationalgrid.com/UK/Industry-information/Business-compliance/Procurement-and-System-Management-Documents/>

²⁸ Defined in UNC TPD Section B3.13.

Capacity processes at EU IPs from 1 November 2015

The EU code on capacity allocation mechanisms (CAM) came into force on 1 November 2015. Capacity processes used at EU IPs are standardised for entry and exit capacity.

Relevant IPs for GB

The relevant entry and exit points where the EU rules are applied are listed below. At each point capacity can be bundled with the adjacent Transmission System Operator (TSO).

Entry / Exit	Location	Notes	Name on PRISMA	Adjacent TSO(s)	Capacity Units
Entry	Bacton IP	Created following Bacton ASEP split	BactonUKEn	BBL, IUK	kWh/h
Entry	Moffat	Virtual entry point	MoffatUKEn	GNI, PTL	kWh/d
Exit	Bacton BBL	Virtual exit point	BactonUKExBBL	BBL	kWh/h
Exit	Bacton IUK	-	BactonUKExIUK	IUK	kWh/h
Exit	Moffat	-	MoffatUKEx	GNI, PTL	kWh/d

Note²⁹

Units

The capacity units will be matched with the adjacent TSO in order to sell bundled capacity. The table above shows the units applied at each point (for example, at Bacton IUK capacity will be converted to kWh/h and prices will be converted to p/kWh/h*runtime³⁰). Where capacity is sold in kWh/h on PRISMA, it will be converted back to kWh/d to store on Gemini. The following common reference conditions³¹ will also apply at each IP:

- Moffat – reference conditions will remain on a 15/15 basis
- Bacton IPs, Bacton IUK and Bacton BBL – reference conditions will remain on a 15/15 basis on the UK side³² until 30 April 2016³³
- Bacton IPs – reference conditions will change to a 0/25 basis as from 1 May 2016.

²⁹ The current Bacton ASEP has been split into Bacton IP and Bacton UKCS from 1 Nov 15. The Bacton UKCS ASEP will not be subject to the new EU rules. Where a user specifies the current Bacton ASEP as a nominated point for UK ‘short haul’ (the optional NTS commodity charge), it is required to specify either Bacton UKCS or Bacton IP as the new nominated point.

³⁰ Runtime is the Prisma equivalent of “subtransaction period” i.e. for an auction capacity is made available in quarterly, annual or daily strips each of these would be a runtime

³¹ Reference conditions are with respect to temperature ref. for volume, and temperature ref. for wobbe.

³² On the BBL side only then reference conditions will be on a 0/25 basis.

³³ Subject to approval of UNC Modification Proposal 0562.

Bundled capacity and unbundled capacity

The CAM code states that all firm capacity shall be offered as bundled capacity, provided that there is available firm capacity on both sides of the IP. The capacity offered will be expressed in energy units per unit of time. Capacity at each side of an IP (for example, exit capacity for one TSO and entry capacity for the adjacent TSO) will be offered as a single 'bundled' product that's allocated to a single shipper in a single transaction.

Please note that the shippers still hold two separate debts and two separate terms and conditions with the two relevant TSOs.

Shippers may also volunteer to bundle capacity where they already hold unbundled capacity on both sides of the IP.

PRISMA will ensure that the maximum amount of bundled capacity is offered, based on the amount of available capacity notified separately by the TSOs. Any unmatched capacity on either side of the IP will be offered as unbundled capacity in accordance with the auction calendar and the following rules:

- where there is an existing unbundled transport contract at the other side of the IP, capacity may be offered on an unbundled basis not exceeding the amount and duration of the existing transport contract at the other side
- if the point made above doesn't apply, extra capacity may be offered for a maximum of a year on a rolling basis.

Transition arrangements

Any legacy enduring exit (flat) capacity at IPs will be end-dated from 1 October 2020. It can continue to be reduced or assigned to other users up to this date.

Available capacity

We're obliged to offer the technical capacity to the market at each point. The technical capacity for us is the stated baseline for that point in the NTS licence. As well as unsold technical capacity, we may make further firm capacity available in each auction in accordance with the CMP. We'll release interruptible capacity in line with the existing UNC rules for entry and exit.

CAM capacity auctions

Capacity at IPs is sold through an auction process, with auctions at each IP taking place simultaneously across Europe in accordance with a harmonised auction calendar.

All auctions of primary capacity for IPs will take place on PRISMA, where auction information (available capacity, prices, bundling info and so on) will also be published.

To access PRISMA you must complete the PRISMA registration process – and for that, you'll need an energy identification code (EIC), which you can get from Xoserve.

Reverse/virtual flow

Some interconnectors will physically flow in only one direction. However, commercial flow is possible in the reverse direction, provided that the 'reverse' nominations don't exceed the 'forward' nominations.

Auction products and calendar

Auctions will take place on PRISMA in line with the CAM auction calendar, which may change and is published annually by ENTSOG (<http://www.entsog.eu/publications/capacity-allocation-cam>).

Frequency	Product	Number of products per auction	Algorithm	When
Annual	Year	15	Ascending clock	First Monday of March
Annual	Quarter	4	Ascending clock	First Monday of June
Monthly	Month	1	Ascending clock	Second Monday of the month
Daily	Day-ahead*	1	Uniform price	3:30pm (firm) 4:30pm (interruptible)
Hourly	Within-day	1 (balance daily)	Uniform price	From 6pm D-1

* Firm and interruptible capacity will be available in the day-ahead auctions

Ascending clock auctions

The ascending clock auction is the auction mechanism for yearly, quarterly and monthly products. The capacity product is published on PRISMA with a reserve price corresponding to the sum of each TSO's reserve price on each side of the IP.

The price of each bidding round is determined by the price of the previous round, increased by a series of large or small price steps. The price steps are defined at the IP and are set so that an accurate market price can be determined within a reasonable timeframe.

For every round, shippers may bid for the given price. A shipper who's not bidding in one round is excluded from the following rounds.

Clearing price determination

At the end of each round, the bids are evaluated according to the available capacity:

- if demand is higher than the available capacity, a new bidding round is opened with an increased price
- if demand is equal to the available capacity, the auction ends
- if demand is lower than the available capacity and it's the first round, the auction ends (if it follows a round where a large price step has been taken but no small price step, a new bidding round is opened with a small price-step increase and these

continue until the bids are fully allocated).

After the auction

The bids placed in the last bidding round are allocated to the corresponding successful shippers. The price for all shippers taking part in the auction is the same, namely the clearing price corresponding to the price of the final bidding round.

Uniform price auctions

The uniform price auction is the auction mechanism for rolling day-ahead and within-day products.

Here's how it works. There's a single bidding round in which users bid a price as well as a quantity (they can submit up to 10 bids and multiple bids from the same user are treated independently). The total volume of bids from the same user must be less than or equal to the capacity offered in the auction. The bids can be modified or withdrawn up to the close of the relevant bid window. Once the bidding round has closed, no more changes can be made.

Future changes

European impacts

Third energy package

The European Commission's 'third package' of energy market legislative proposals has a significant impact on the GB gas market. The package introduces a new energy framework to better enable progress towards liberalised and open European energy markets.

Two significant new EU bodies were created as a result: the Agency for the Cooperation of Energy Regulators (ACER) and the European Network of Transmission System Operators for Gas (ENTSOG). Ofgem is a member of ACER and National Grid Gas is a member of ENTSOG.

The new framework impacts upon the GB gas market in the following ways.

European network codes

The European gas and electricity network codes are driven and overseen by the European Commission and ACER.

Three European network codes related to the gas market have been developed and integrated into EU law and implemented into the GB gas market: congestion management procedure (CMP), capacity allocation mechanism (CAM) and the balancing (BAL) code.

The main objectives (framework guidelines) of each network code are decided by these bodies, and then ENTSOG leads the workgroups that write the detail of the code.

The next significant changes under development relate to the tariff (TAR) code, an amendment to the CAM code covering the release of incremental capacity and the interoperability code (INT):

- ◆ interoperability code
 - new allocation processes and data exchange protocols (implementation expected Q1 2016)
- ◆ tariffs
 - still under development and full impacts unknown (implementation expected 2019)
- ◆ incremental capacity mechanism
 - expected to have a relatively low impact in GB (implementation expected in 2017).

Links to more information

Gas capacity methodologies

Further information about the release of NTS capacity.

<http://www2.nationalgrid.com/uk/industry-information/gas-capacity-methodologies/>

National Grid Gas Plc – NTS gas transporter licence

National Grid's licence requirements, detailed by Ofgem.

<https://epr.ofgem.gov.uk/Content/Documents/National%20Grid%20Gas%20Plc%20-%20Special%20Conditions%20Consolidated%20-%20Current%20Version.pdf>

New connections to the gas NTS

Information to customers who would like to connect (or are in the process of connecting) to the gas NTS

<http://www2.nationalgrid.com/UK/Services/Gas-transmission-connections/>

NTS transportation charging statements

Information on our charging statements.

<http://www2.nationalgrid.com/UK/Industry-information/System-charges/Gas-transmission/Charging-Statements/>

Ofgem

The Office of Gas and Electricity Markets (Ofgem) regulates the companies that run the gas and electricity networks.

<https://www.ofgem.gov.uk/>

<https://www.ofgem.gov.uk/licences-codes-and-standards>

PARCA

The Planning and Advanced Reservation of Capacity Agreement (PARCA).

<http://www2.nationalgrid.com/UK/Services/Gas-transmission-connections/Capacity-and-connections/Processes/PARCA-Framework/>

Quarterly charge setting reports

The quarterly charge setting reports explain how we recover our system operator and transmission owner commodity charges during each formula year.

<http://www2.nationalgrid.com/UK/Industry-information/System-charges/Gas-transmission/Tools-and-Models/>

RIIO

This is our price control, which is set for an eight-year period from 1 April 2013 to 31 March 2021.

<http://www2.nationalgrid.com/UK/Our-company/RIIO/>

The Gas Act 1986

The Gas Act 1986 underpins all contracts and licence obligations in the UK gas industry (apart from EU legislation).

<http://www.legislation.gov.uk/ukpga/1986/44>

The Gemini System

Gemini is one of an integrated suite of systems developed and operated by Xoserve. It's used to manage UK gas transportation systems in accordance with network codes.

Shippers, transporters and other network users access Gemini in order to monitor and manage the commercial balance of the gas transmission system on a daily basis and to obtain the capacity rights needed to flow gas into and out of the NTS.

<http://www.xoserve.com/index.php/our-systems/gemini/>

The Planning Act

The Planning Act 2008 sets out how companies should consult the public about major projects.

<http://www2.nationalgrid.com/WorkArea/DownloadAsset.aspx?id=13788>

Transfer and trade methodology statement

The methodology we use to facilitate the transfer of unsold (or the trade of sold) NTS firm entry capacity for the month ahead, from one ASEP to another.

<http://www2.nationalgrid.com/uk/industry-information/gas-capacity-methodologies/entry-capacity-transfer-and-trade-methodology-statement/>

Uniform network code

This is the legal and contractual framework for the supply and transportation of gas in the UK.

<http://www.gasgovernance.co.uk/UNC>

Xoserve

Xoserve delivers transportation transactional services on behalf of all the major gas network transportation companies in Great Britain. It provides one consistent service point for the gas shipper companies.

<http://www.xoserve.com/>

ASEP (aggregate system entry point)

Point comprising one or more system entry points at which gas shippers can buy entry capacity.

DN – distribution network

A gas transportation system that delivers gas to industrial, commercial and domestic consumers in a defined geographical boundary. There are currently eight DNs, each consisting of one or more local distribution zones (LDZs). DNs typically operate at lower pressures than the NTS.

DNO – distribution network operator

DNOs own and operate the distribution networks that are supplied by the NTS.

Gas Day

A period of 24 consecutive hours starting at 5am on a given calendar day and ending at 5am on the next.

GT – gas transporter

Formerly public gas transporters (PGTs), GTs, such as National Grid, are licensed by the Gas and Electricity Markets Authority (GEMA) to transport gas to consumers.

Interconnector

A pipeline transporting gas to another country. The Irish Interconnector transports gas across the Irish Sea to both the Republic of Ireland and Northern Ireland. The Belgian Interconnector transports gas between Bacton and Zeebrugge. The Belgian Interconnector is capable of flowing gas in either direction. The Dutch Interconnector (BBL) transports gas between Balgzand in the Netherlands and Bacton. It is currently capable of flowing only from the Netherlands to the UK.

IP – interconnection point

The point or points at which an interconnector is connected to the NTS. It comprises either an NTS system entry point and/or an NTS connected system exit point.

LDZ – local distribution zone

A geographic area supplied by one or more NTS offtakes. It consists of LTS and distribution system pipelines. There are 12 LDZs that take gas from the high-pressure transmission system for onward distribution at lower pressures.

NBP – National Balancing Point

An imaginary point on the UK gas supply system through which all gas passes in accounting and balancing terms.

NTS – National Transmission System

A high-pressure gas transportation system consisting of compressor stations, pipelines, multi-junction sites and offtakes. NTS pipelines transport gas from terminals to NTS offtakes.

Natural gas

Gas consisting of methane and ethane. Occurs naturally in the earth's crust.

NTS offtakes

Sites that directly offtake gas from the NTS, such as large industrial sites and distribution network offtakes.

RIIO-T1

RIIO relates to the current Ofgem price control period which runs from 1 April 2013 to 31 March 2021. We refer to this as RIIO-T1.

Shipper

A company with a shipper licence that is able to buy gas from a producer, sell it to a supplier and employ a GT to transport gas to consumers.

Storage facility

Seasonal gas storage comprises depleted gas fields, aquifers, salt cavity storage, mined caverns and disused mines. Peak storage includes gas holders, linepack, lengths of pipeline buried specifically for storage use, and LNG storage. Storage sites can be used to meet variations in gas demand, whether within-day or seasonal. These sites will often buy gas over the summer while the price is low, and then sell it over the winter while the price and demand are high.

SO – System Operator	We are the System Operator of the National Transmission System (NTS) and have responsibility to transport gas from NTS supply points to NTS offtakes, subject to operational obligations in relation to safety and system resilience, environmental aspects, and supporting efficient market operation.
Transmission system entry point (SEP)	The point at which gas is delivered into the NTS (often aggregated together with other system entry points to within an ASEP).
TSO – Transmission System Operator	Operator of a gas transmission network under licence issued by the Gas and Electricity Markets Authority (GEMA) and regulated by Ofgem.
UNC – Uniform Network Code	The UNC is the legal and commercial framework that governs the arrangements between the gas transporters and shippers operating in the UK gas market. It is made up of different documents including the Transportation Principal Document (TPD), Offtake Arrangements Document (OAD) and European Interconnection Document (EID).