NESO
National Energy System Operator

Natural Gas

Market design overview developed by NESO Whole Energy Markets Team

June 2025

Market design guidebook developed by NESO Whole Energy Markets Team

Market design overview:

We have developed market design guidebooks to outline the current market structure and existing policy across each vector. They reflect our deconstruction of holistic market design into its principal component parts, in order to comprehensively represent the status quo design for each vector. This was our first step towards a comparison of holistic market design across the five vectors in our scope to explore opportunities for greater coordination across energy markets. For the avoidance of doubt, the guidebooks' purpose is to depict existing market design and policy, rather than to recommend future changes.

We intend for these vector guidebooks to serve as a point of reference for participants across the energy industry, to share understanding of how markets are structured and outline the latest policy developments as of publication date Q2 2025.

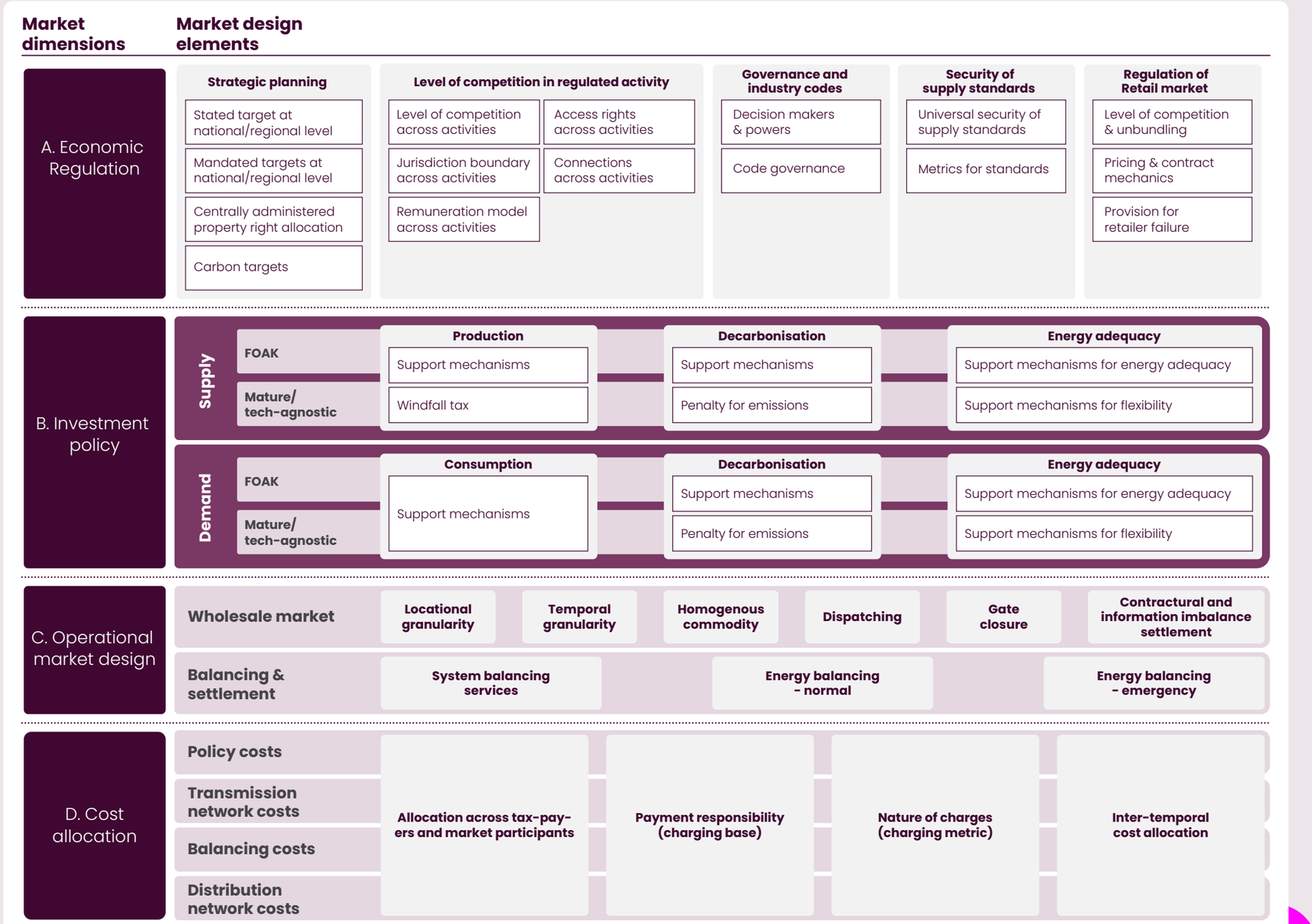
Our Market Design framework is made up of four key dimensions as set out below, and this framework forms the structure of each market design guidebook:

A. Economic Regulation: Structure of the energy market across vectors, value chains and market participants

B. Investment policy: Market interventions employed to achieve specific policy objectives

C. Operational market design: The structure of wholesale and short-term operational energy markets to match physical supply and demand

D. Cost allocation: Cost recovery for networks and investment policy.



NESO
National Energy System Operator

Contents

A. Economic Regulation: Structuring of the energy market across vectors, value chains and market participants

Strategic planning:
Level of government intervention in planning of infrastructure, further specified through the existence of regional & national, capacity or production targets, carbon targets, & centrally administered property right allocation.

Definition of Natural Gas:

Natural Gas is a simple hydrocarbon consisting of one carbon atom bonded to four hydrogen atoms. Natural gas is a naturally occurring mixture of hydrocarbons, consisting by majority of methane but also trace amounts of nitrogen, oxygen, carbon dioxide and other gases. Natural gas goes through several processes to remove impurities to bring the mixture to pipeline quality.

This guidebook discusses natural gas, including biomethane as both flow through the National Transmission system (NTS) gas network and are traded as the same commodity.

Biomethane for fuel is produced by a process of anaerobic digestion of organic materials, often using waste products in an oxygen-free environment. The gas is then upgraded, the process by which it is purified for commercial use.

Brief history of Natural Gas in the UK

Early Infrastructure and Nationalization

- **The Gas Act of 1948:** This act marked a new era for the gas industry in the UK by nationalising 1,064 local gas undertakings and consolidating them into twelve Area Gas Boards with the Gas Council as the central coordinating body. Each board operated autonomously with its own chairman and board structure. This restructuring aimed to centralise and streamline the gas industry.
- **The beginning of Liquefied Natural Gas (LNG) (1959):** The first shipment of Liquefied Natural Gas (LNG) to the UK arrived at Canvey Island in Essex in February 1959. This marked the beginning of a transition toward the use of LNG in the natural gas system.
- **Discovery of natural gas in the North Sea (1965):** Gas deposits in the North Sea are discovered by BP, marking the beginning of domestic natural gas production at scale.
- **Transition from town gas to natural gas (1967 to 1977):** Prior to the creation of the natural gas distribution network, town gas (where coal is heated in the absence of air, creating flammable gasses such as hydrogen and methane) was the main gas heating source for households and industries. Between 1967 and 1977 homes and businesses in the UK were converted to use natural gas instead, driving the development of a national gas network including the National Transmission system.

- **Formation of British Gas Corporation (1973):** The Gas Council was abolished, and the British Gas Corporation was established. This change aimed to further centralise the control and operation of the gas industry in the UK, enhancing efficiency and coordination across the sector.
- **Further exploration in the North Sea (1970s and 1980s):** The North Sea truly emerged as an important oil-producing area in the 1970s and 1980s, with the UK Continental Shelf currently home to around 290 offshore installations, over 10,000 km of pipelines, 15 onshore terminals and over 2,500 wells.
- **Rough gas storage facility becomes operational (1985):** Rough, originally a gas field, became the largest gas storage facility in the UK to support seasonal trends in supply and demand for gas. Prior to its initial closure in 2017, the facility represented more than 70% of the UK's total gas storage capacity.

Privatization and Market Liberalization

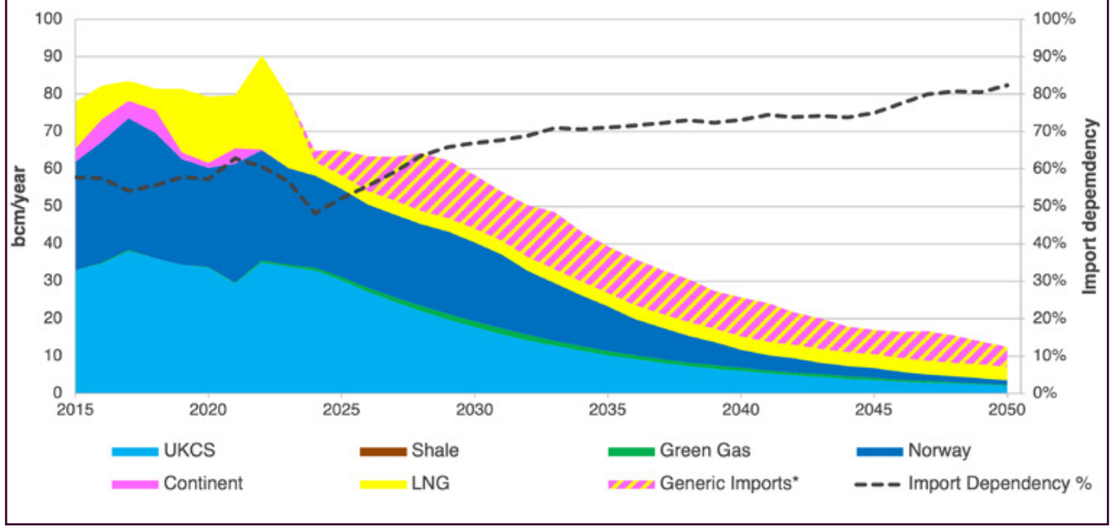
- **Privatisation (1986):** Assets of the British Gas Corporation were transferred to British Gas plc, initially fully owned by the government. The shares were then floated on the stock market. This move was part of a broader strategy to introduce market dynamics into the energy sector.
- **Reorganisation (1989/90):** British Gas plc restructured into three distinct business units: Gas Business in Great Britain, Exploration and Production, and Global Gas. The domestic gas business was further divided into five units in 1994: Transco (transportation and storage), Public Gas Supply (domestic market), Business Gas (large consumers), Service, and Retail.
- **Demerger (1997):** On 17 February 1997, British Gas plc split into two separate listed companies: BG plc and Centrica plc. Transco, responsible for the transportation and storage of gas, became part of the BG group, marking a significant shift in the market structure. BG plc took over upstream responsibilities, such as for gas exploration and production assets. Centrica plc focused on downstream activities, including gas sales, trading, gas retailing and services.
- Network Separation and Introduction of Competition (2000s): Following the privatization and restructuring of the gas industry, further steps were taken to introduce competition and efficiency into the sector. In 2002, Transco, the company responsible for gas transportation, merged with National Grid Group to form National Grid Transco. Subsequently, in 2005, National Grid Transco sold four of its eight regional gas distribution networks—Scotland, South of England, North of England, and Wales and the West—to independent companies: Scotia Gas Networks, Northern Gas Networks, and Wales & West Utilities. This divestment aimed to foster competition and improve service quality in the gas distribution market. The remaining four networks—North West, East of England, West Midlands, and London—were retained by National Grid until 2017, when a majority stake was sold, leading to the formation of Cadent Gas. These changes marked significant milestones in the liberalisation and modernisation of the UK's gas distribution infrastructure.

Development of Market Mechanisms

- **National Balancing Point (1996):** The establishment of the National Balancing Point (NBP) marked the UK's shift towards a market-driven natural gas sector. The NBP became a benchmark for gas prices in the UK, facilitating spot trading (where gas is traded in between a wide range of participants in time periods that range from within-day to annual) and futures trading (where two market participants agree to buy or sell a particular price and quantity of gas at a future date). This system allowed natural gas prices to reflect market conditions more accurately.

The Decline of UK Continental Shelf Gas Supply

NESO, 2024



- **Futures Market (1997):** The London International Petroleum Exchange (IPE) began trading natural gas futures, linking futures prices with spot prices and integrating the UK's gas market with global financial markets.

Growth and Decline in Production

- **North Sea Gas Production:** From the 1970s to 2000, domestic gas production from the North Sea increased dramatically, replacing coal as a major energy source. However, from the mid-2000s onwards, production declined significantly due to declining reserves, rising costs and reduced investment.
    - Rough storage initially closed in 2017 but was reopened in 2022 with an aim to contribute toward energy security, capable of storing both natural gas and hydrogen.
- **Reliance on Imports:** With declining domestic production, the UK is increasingly reliant on gas imports. This dependency exposes the UK to the global gas market fluctuations.

Government national stated production targets by technology

- There are no direct natural gas production targets. The North Sea Transition Deal between UK Government and the oil and gas industry includes a structured decarbonisation approach as part of the energy transition in the North Sea. The approach includes delivering investment of £14-16 billion in new technologies like CCUS and hydrogen and the creation of 40,000 new jobs in the supply chain.
- The government currently does not specify a production target of annual biomethane by a specific date. Instead, expected deployment, and therefore production, is published for biomethane support schemes. For example, the Green Gas Support Scheme (GGSS) is expected to support 8 TWh of annual biomethane production at its peak (by around 2030).

Centrally administered property right allocation

Centrally administered property rights exist through allocation by Crown Estate for offshore natural gas fields:

- The Crown Estate manages land and assets on behalf of the Crown, including the extensive seabed crucial for gas exploration and production. Managed independently by the Crown Estate Commissioners, the estate operates under the Crown Estate Act 1961.
- The Scottish Crown Estate, established in 2017 following the Scottish Crown Estate Act, manages land and property in Scotland, including seabed rights.

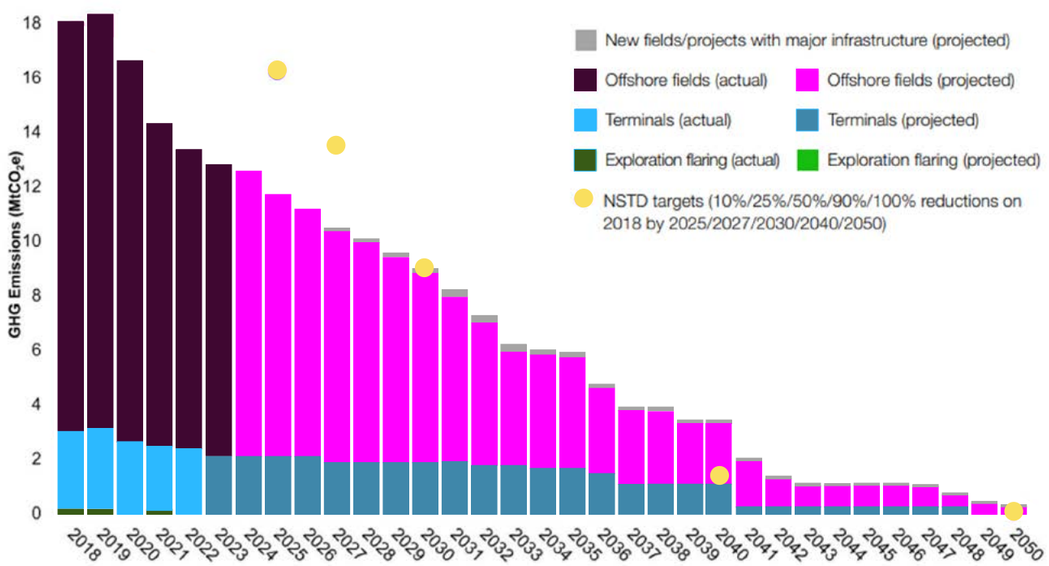
In addition, offshore natural gas producers require a North Sea Transition Authority (NSTA) exploration permit to explore, develop and produce natural gas on the UKCS.

Carbon targets

- The North Sea Transition Authority, which is responsible for licensing and regulating offshore pipelines and storage, commits in the North Sea Transition Deal (NSTD) to reduce greenhouse gas emissions from upstream oil and gas activities through supply decarbonisation against a 2018 baseline, by 10% in 2025, 25% in 2027 and 50% in 2030, while reducing carbon emissions to zero by 2050.
- Climate Change Act legally set targets to achieve net zero in UK by 2050 and therefore has broader implications.

Progress of the UK upstream oil and gas industry against NSTD targets

North Sea Transition Authority 2024



Level of competition in regulated market

Regulated level of competition & unbundling for activities such as transmission, distribution, interconnections, terminals, permanent storage (sequestration), system operations

Transmission network ownership and system operation

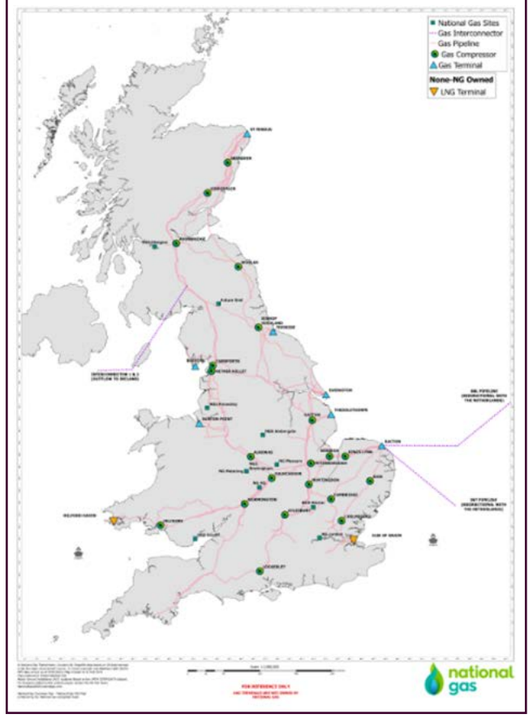
Level of competition and jurisdiction boundary

Natural Gas transmission is a national monopoly activity:

- National Gas Transmission (NGT): As the owner and operator of the network of high-pressure pipelines known as the National Transmission System (NTS), NGT manages approximately 7,600 kilometres of pipeline infrastructure. The NTS connects coastal natural gas supply points, as well as gas from two connected biomethane producers, to gas consumers including:
  - Gas Distribution Networks
  - Combined Cycle Gas Turbines (CCGTs) [i.e., electricity generators]
  - Industrial and commercial sites.
- Additionally, NGT facilitates international energy trade and security through three major interconnectors linking the UK to the European gas market. These interconnectors are: Interconnector (UK) from Bacton to Zeebrugge in Belgium, BBL (Balgzand to Bacton Line) to the Netherlands and Moffat to Northern Ireland and the Republic of Ireland via the Isle of Man.
- NGT Metering: This division is responsible for the maintenance and management of around 6.8 million combined gas assets across the UK. These assets include domestic, industrial, and commercial gas meters, ensuring accurate measurement and billing for gas consumption across a diverse range of users.

Map of UK Gas Transmission Network and Interconnectors

National Gas Transmission 2024



Remuneration model

The remuneration model for the National Transmission System (NTS) is regulated through the Revenue = Incentives + Innovation + Outputs (RIIO) framework, which determines allowed revenue based on delivering services and a return of investment (a regulated asset base model):

- Incentives: Encouragement to exceed performance targets, or penalties for poor performance

- Innovation: Innovation projects are evaluated based on specific performance metrics, including environmental benefits, cost savings and efficiency.
- Output: Measurable outputs companies must deliver. Developed by Ofgem for UK gas and electric network companies. The NGT is currently in the second phase of the RIIO framework.

The RIIO-2 period began in April 2021 and will run through to March 2026. Reviews and re-openers allow for adjustments.

Gas Shippers

Gas shipping is a regulated activity with shippers responsible for buying gas from producers which is then transported to end consumers. If a shipper wishes to move gas through NTS pipelines, they must book capacity on the network.

Access rights

- Users can obtain commercial rights to flow gas onto (or take gas off of) the NTS by buying NTS pipeline 'capacity'. Entry capacity delivers gas and NTS exit capacity offtakes gas. A User needs to hold one unit of capacity in order to flow one unit of energy onto (or off of) the system. This is known as the 'ticket to ride' principle. There are two types of capacity available to users of the transmission network, firm and interruptible/off-peak capacity. Firm capacity is financially and contractually guaranteed to be available, whereas interruptible/off-peak capacity can be withdrawn (interrupted) by NGT if the system cannot provide it on the Gas Day (05:00 to 05:00):
- Firm Capacity: The NGT license stipulates the obligated amount of capacity for each entry, exit, and storage point in Great Britain. This obligated value is referred to as the Baseline. The Baseline capacity is initially made available through long-term auctions, which are categorised as follows:
  - Entry Points: Capacity spans from Y-2 to Y-16 years
  - Exit Points: Capacity spans from Y+4 to Y+6 years

  The capacity bought in the initial Long-Term auction(s) is deducted from the Baseline amount, and the remaining capacity rolls down to the Monthly auctions, which are also considered Long-Term Auctions. Any capacity bought in the Monthly Auctions is further deducted. For Entry points (this concept does not apply to Exit points), any remaining capacity becomes available in the Weekly Auctions, which are considered Short-Term Auctions. The process continues to the Day-Ahead and Within Day Auctions, where any remaining Entry capacity after all Long-Term Auction purchases is made available for sale (including for Exit points, where unsold capacity from the day-ahead auction is then offered within-day).
- Firm Capacity (Non-Obligated): If Firm Capacity is sold out a user can request additional Firm Capacity, known as Non-Obligated Firm Capacity. The Gas National Control Centre (GNCC) assesses the network conditions and demand to determine if it is feasible to release additional Firm Capacity above the sold-out Baseline amount, which is released at their discretion.
- Interruptible or Off-Peak Capacity: Aside from Firm Capacity, there is an Interruptible product available for both Entry and Exit points. On Entry, it is called Interruptible, while on Exit, it is known as Off-Peak. This product is released only at the Day-Ahead stage, based on an algorithm that calculates how much Firm Capacity has been sold versus what has been utilised over a rolling 30-day period.
- Postage stamp charges are a uniform charge on transporting natural gas on the NTS that does not vary according to distance travelled. At entry and exit points the standard charge is applied. The gas transmission charging methodology details the specifics of the calculation of this charge.

The following is a table of capacity market products

Capacity Market GB Product	Timeframe	Details
Quarterly System Entry Capacity (QSEC)	Auction held annually in March. Bids are for quarterly Y+2 to Y+16 capacity.	Entry capacity.
Annual Monthly System Entry Capacity (AMSEC)	Auction annually in February. Bids are for monthly Y+1 capacity in April to September Y+2.	Entry capacity. Pay as bid, subject to reserve price. Unsold capacity available on RMTnTSEC.
Rolling Monthly Trade and Transfer System Entry Capacity (RMTnTSEC) and Rolling Monthly Trade Initiation Surrender System Entry Capacity (RMTISSEC)	Monthly auction m-1 stage.	Entry capacity. Pay as bid, subject to reserve price. Capacity holders can also surrender excess capacity they hold from annual auctions
Weekly System Entry Capacity (WSEC)	Bid window: D-10 8am to 5pm Allocation window: D-9 7am to 5pm	Entry capacity. Unsold capacity after RMTnTSEC is available here in a pay as bid auction.
Day Ahead Daily System Entry Capacity (DADSEC)	Bid window: D-7 5am to D-1 1pm Allocation window: D-1 2pm, 5pm and 1am.	Entry capacity. Unsold capacity from WSEC will be available here in a pay as bid auction.
Within Day Daily System Entry Capacity (WDDSEC)	Bid window: D-1 2am to D-0 2am Allocation window D-0 5am to D-0 2:30am	Entry capacity. Unsold capacity from DADSEC will be available here in a pay as bid auction.
Daily Interruptible System Entry Capacity (DISEC)	Bid window: D-7 tam to D-1 1pm Allocation window: D-1 pm to D-1 3pm	Entry capacity. Interruptible. Pay as bid auction.
Enduring Annual (Flat) Exit Capacity (EAFLEC) Increase	Y+4 to Y+6 from July 1st to 31st.	Exit capacity. Purchased capacity can be increased or decreased in a later application window.
Enduring Annual (Flat) Exit Capacity (EAFLEC) Decrease	Y+1 in October. July 1st to 15th	Exit Capacity. Ability to decrease exit capacity holdings previously purchased.
Annual NTS (Flat) Exit Capacity (AFLEC)	Y+1 to Y+3 Just 1st to 31st.	Exit capacity. Booked capacity can't be sold or changed.
Day-Ahead Daily Exit Capacity (DADNEX)	Bid window: D-7 5am to D-1 2pm Allocation window: D-1 3pm to D-1 4pm	Exit capacity. Unsold obligated exit capacity will be made available in a pay as bid auction.
Within-Day Daily Exit Capacity (WDDNEX)	Bid window; D-1 2pm to D-0 2am Allocation window D-0 6:30 to 2:30	Exit capacity. Unsold DADNEX capacity rolls into this auction, pay as bid.
Daily Off-Peak Exit Capacity (DONEX)	Bid window: D-7 5am to D-1 2pm Allocaiton window: D-1 3pm to D-1 4pm	Exit capacity.

Bid window is the specific period during which gas shippers can submit their applications or bids for capacity.

Entry capacity is the right for Users to flow gas into the NTS. Exit capacity is the right for Users to withdraw gas from the NTS.

Connections

Connections to the transmission network are are on a first-come, first-served basis. It can take 12 months for a standard connection (for smaller transmission connected projects using standard connection locations and designs) and up to 24-36 months for a bespoke connection (where a project might demand a higher volume of gas or have other unique elements that make the connection process more challenging).

System operations at transmission level

System operations are a national monopoly, managed by a single natural gas system operator being National Gas Transmission (NGT), who is responsible for operating the NTS in GB. As the Gas System Operator, NGT is responsible for the real-time operations and keeping the National Transmission System (NTS) operating safely, reliably and efficiently. That means balancing supply and demand on the network through its Residual Balancer role and ensuring safe operating pressures are maintained within the pipes. NGT's Gas National Control Centre (GNCC) uses a range of tools and strategies to operate the NTS safely, reliably and efficiently every day.

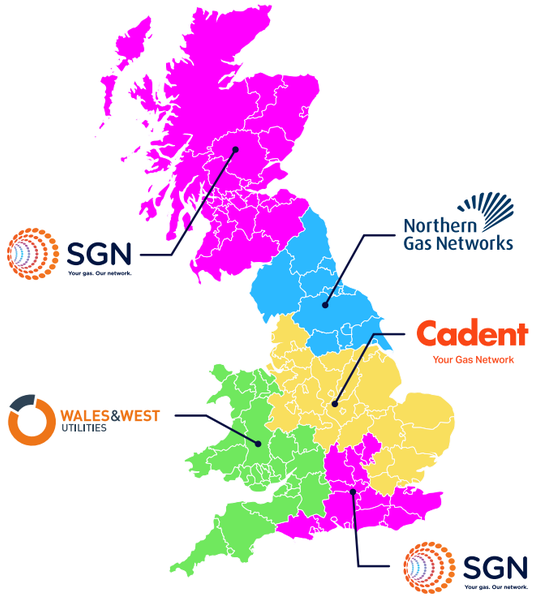
Distribution ownership and system operation

Level of competition and jurisdiction boundary

Natural gas (including biomethane) distribution networks are a monopoly activity undertaken by the four Gas Distribution Networks across different geographic areas of Great Britain. Competition was introduced into distribution to encourage efficiency and innovation through the establishment of Independent Gas Transporters (IGTs).

- Gas Distribution Networks (GDNs): These monopoly networks are responsible for transporting natural gas (including biomethane) from the National Transmission System (NTS) to end consumers including homes, businesses, peaking power generation plants (which operate intermittently to generate electricity for timeframes when demand is high), and industrial sites. There are four GDNs:
  - SGN (formerly known as Scotia Gas networks): Provides natural gas to 5.9 million customers and manages methane distribution networks in Scotland and the south of England, operating 74,000 km of pipelines.
  - Northern Gas Networks: Supplies natural gas to 2.7 million customers in the North-East, Northern Cumbria, and much of Yorkshire, and operates 37,000 km of pipelines.
  - Cadent: Delivers natural gas to 11 million customers throughout the North-West, West Midlands, East Midlands, South Yorkshire, East of England, and North London, and operates 131,000 km of pipelines.
  - Wales & West Utilities: Provides natural gas 7.5 million customers across Wales and the Southwest and operates 35,000 km of pipelines.
- Independent Gas Transporters (IGTs): Private independent distribution networks that develop, operate, and maintain local natural gas transportation systems. These IGT networks connect either directly to the Gas Distribution Network (GDN) through a Connected System Entry Point or indirectly via another IGT. While IGT networks serve domestic, industrial, and commercial premises, the majority of their market consists of new housing and commercial developments. It is estimated that approximately one million consumers are connected to IGT networks, with 16 companies recognised as IGT operators.

Map of Gas Distribution networks in the UK



Remuneration model

The remuneration model for distribution network operators is regulated through the Revenue = Incentives + Innovation + Outputs (RIIO) framework, which determines allowed revenue based on delivering services and a return of investment, called a Regulated Asset Base (RAB) model:

- Incentives: Encouragement to exceed performance targets, or penalties for poor performance.
- Innovation: Innovation projects are evaluated based on specific performance metrics, including environmental benefits, cost savings and efficiency.
- Output: Measurable outputs companies must deliver. Developed by Ofgem for UK gas and electric network companies. Networks are currently in the second phase of the RIIO framework.

The RIIO-2 period began in April 2021 and will run through to March 2026. Reviews and re-openers within this period allow for adjustments to be made to the framework so that it continues to meet the needs of consumers and the industry.

Access rights

A distinction is made between two types of users of gas distribution networks, small (typically domestic consumers or SMEs) and large consumers (consuming more than 5,860,000 kWh per annum, typically industrial and large commercial premises):

- Small consumers: Only firm access rights (where there is uninterruptible and guaranteed access) are available to small gas consumers.
- Large consumers: Large consumers by default have firm access rights but can opt for an interruptible contract. To enter into an interruptible contract, shippers, on behalf of their consumers, must successfully bid for interruption rights through an interruption tender process. The window when offers for interruption can be submitted is normally open in June each year, though additional ad-hoc interruption tender events may be held at other times if necessary. Under the terms of Uniform Network code (UNC), bids for interruption are made by shippers on behalf of their customers, and an interruptible contract is between the distribution network and the shipper.

Connections

- Connections to the distribution networks are on a first-come, first-served basis, and are bespoke to the network operator.

Interconnectors

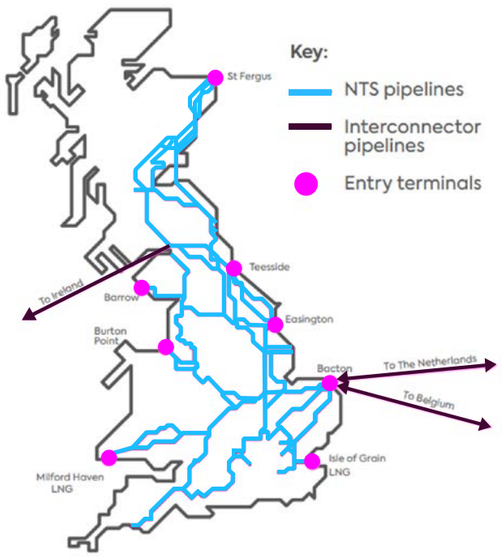
Level of competition & jurisdiction boundary

There are currently three gas interconnectors which connect to the NTS. These are:

- Interconnector (UK) from Bacton to Zebrugge in Belgium
- Balgzand to Bacton Line (BBL) from Bacton to the Balgzand in Netherlands
- Moffat to Northern Ireland and the Republic of Ireland via the Isle of Man.

Map including Gas Interconnectors

Gas Ten Year Statement, National Gas Transmission 2024



Remuneration model and access rights:

The activities of the gas interconnector owners and operators are regulated by Ofgem through the standard gas interconnector license conditions to ensure that gas is transported competitively to the NTS and that secure energy supplies are maintained.

Connections

No consuming or supplying assets are directly connected to gas interconnectors, instead the interconnectors connect to the gas national transmission networks on both sides of the interconnector.

Terminal

Level of competition & jurisdiction boundary

There are currently 3 operational Liquid Natural Gas (LNG) terminals in GB:

- South Hook LNG, Milford Haven, South Wales
- Dragon LNG terminal, Milford Haven, South Wales
- Grain LNG, Isle of Grain, Kent.

Remuneration model and access rights:

Terminals do not have a regulated revenue model. LNG terminals in the UK can set their own auction practices in a merchant manner.

Connections

No consuming or supplying assets are directly connected to LNG terminals, the LNG terminals connect directly to the gas National Trans-mission System.

Permanent storage (sequestration)

N/A for natural gas

Governance and industry codes

Decision makers involved in the energy sector & their respective powers, and code governance of the different vectors

Prime Minister and Secretary of State

The Prime Minister and Secretary of State set strategic direction and drive major initiatives such as net-zero targets. In addition, they have a strong role during crisis management, e.g., during the recent energy crisis. Finally, they formulate key energy policy, including:

- Defining the remit of government departments
- Generating roles and select delivery bodies to fulfil functions
- Driving inclusion of Net Zero into law.

DESNZ

Department for Energy Security & Net Zero

The Department for Energy Security and Net Zero or DESNZ (formerly known as BEIS: Business, Energy and Industrial Strategy) is established to ensure the UK's energy security and to support the transition to a net zero economy. It is mandated to shape energy policy, regulation, and implementation. It plays a crucial role in creating policy frameworks, strategic direction and targets by formulating primary and secondary legislation:

- Primary legislation: DESNZ has significant powers under the primary legislation related to natural gas, such as the Gas Act (competition reforms and consumer protections) and Energy Act (energy security, net zero, consumer protections and promotion of investment).
- Secondary legislation: DESNZ utilises secondary legislation to implement detailed rules and regulations, such as the Gas Safety (Management) Regulations (GSMR), aimed at ensuring the safe management of gas systems and appliances in non-domestic premises.
- Subsidy programs: DESNZ administers multiple subsidy programs, such as the Industrial Energy Transformation Fund (IETF), which supports a wide range of energy efficiency and decarbonisation projects in the industrial sector, with a focus on reducing carbon emissions.

Ofgem

ofgem

Ofgem's key roles and responsibilities are code management, revenue allocation for regulated monopolies, license approval for regulated entities and retail market regulations:

- Gas Market Codes under Ofgem's responsibility:
  - Uniform Network Code (UNC)
  - Independent Gas Transporter UNC (iGT UNC)
  - Smart Energy Code (SEC)
  - Retail Energy Code (REC)
- Ofgem is also responsible for regulating the activities of the gas interconnector owners and operators through standard gas interconnector licence conditions.
- Process for code modification: Proposals for modifications to industry codes are submitted by industry participants or Ofgem. The proposal is assessed by a panel comprising industry stakeholders. After industry consultation, the panel votes on the modification, either ratifying it themselves or making a recommendation to Ofgem, which then makes the final decision on whether the modification should be implemented. If the panel is initially designated the ultimate decision maker on code modification, Ofgem can at any time request that they be made the ultimate decision maker. The Gas System Operator, National Gas Transmission, (NGT) plays an important role in proposing and assessing code modifications. NGT can submit modification proposals to the UNC and other industry codes and is a member of various code panels that review proposed changes. They are also responsible for implementing changes and ensuring compliance.
- Revenue allocation for network development: Ofgem sets price controls through the RIIO (Revenue = Incentives + Innovation + Outputs) framework. This framework determines the revenue that network companies can earn, incentivising efficiency and innovation while ensuring the delivery of reliable services. Ofgem assesses and approves investment plans submitted by network companies and allocates funds accordingly to ensure the development and maintenance of the gas network.
- Role in gas market licensing: Ofgem is responsible for issuing licenses to companies involved in transporting, shipping, and supplying natural gas. This includes ensuring that applicants meet the required standards and conditions. Ofgem also handles modifications, revocations, and transfers of existing licenses to maintain compliance with regulatory standards and promote market stability.
- Role in the natural gas retail market: Ofgem regulates the retail gas market to ensure fair pricing and practices. It oversees energy suppliers, enforces compliance with regulatory requirements, and protects consumers, particularly vulnerable ones. This includes setting price caps on default tariffs and monitoring market activities to prevent unfair practices.

North Sea Transition Authority

North Sea Transition Authority

The NSTA is responsible for licensing exploration and regulating development of the UK's oil and gas resources. It has four key responsibilities:

- Accelerating the energy transition: The NSTA is responsible for the licensing and consenting of offshore hydrogen pipelines and offshore hydrogen storage. The NSTA also regulates the UK's offshore carbon dioxide transport and storage industry and are the licensing authority for carbon storage permits. The NSTA also keeps track of North Sea industry progress against emission reduction targets.
- Regulating and promoting oil and gas developments which are technically, economically and environmentally sound.
- Continuing to improve the understanding of the upstream UK oil and gas industry and its international markets, to promote open competitive markets.
- Collecting, analysing and selectively disseminating data relating to the UK's hydrocarbons reserves in order to assist planning and decision taking in Government and the industry.

Treasury

HM Treasury

The Treasury plays a crucial role in shaping financial policies for the energy sector, ensuring alignment with the government's economic and environmental goals. Key responsibilities include:

- Approval and risk management: Departments must obtain Treasury approval for trans-actions deemed novel, contentious, or repercussive.
- Fiscal oversight: The Treasury oversees public spending on energy infrastructure and initiatives.

Devolved administrations

Devolved administrations do not set overarching policy and regulatory frameworks for the natural gas sector. This responsibility primarily lies with the UK government. Devolved administrations do have responsibilities related to energy efficiency measures. For example, Scotland, Wales, and Northern Ireland have their own policies and programs to improve energy efficiency. Supporting low carbon innovation is part of the devolved administrations' responsibilities. They have various initiatives and programs to promote low carbon technologies and practices. The devolved administrations have their own climate change laws and policies. They contribute to the UK-wide targets but also set their own specific goals and regulations.

National Energy System Operator [NESO]

NESO National Energy System Operator

The remit of the National Energy System operator NESO, following the 2023 Energy act includes the following roles for gas::

- A system planner providing strategic direction for gas. This includes developing the Gas Future Markets Plan, which outlines projects, actions and plans needed to transition the market towards a decarbonised energy system. NESO will give strategic oversight and enhance coordination across the energy system.
- Independent advisor providing analysis and information to the Government and Ofgem

NESO will promote three objectives as its primary duties:

- Net Zero
- Efficiency and Economy
- Security of Supply.

Energy security standards

Mandatory security standard metrics for network resilience and energy adequacy, and their statistical approach

Network

The National Risk Assessment on Security of Gas Supply is an annual assessment required by the Gas (Security of Supply) Regulation EU 2017/1938, incorporated into UK law by the Gas (Security of Supply and Networks Codes) (Amendment) (EU Exit) Regulations 2019. The regulation is based on the principle that measures (even in situations of tight supply) should be market-based for as long as possible. This is an annual process that DESNZ produce and publish, with inputs from National Gas Transmission and using data from the NESO Future Energy Pathways. The National Risk Assessment includes the N-1 calculation, which tests whether the National Transmission System (NTS) is able to meet the 1-in-20 peak day demand even with the failure of the single biggest piece of infrastructure.

The Gas Transportation Transmission Planning Code requires National Gas Transmission to plan and develop the NTS to meet the Security Standard. The NTS security standard is that the pipeline system must, taking into account operational measures, meet the 1-in-20 peak aggregate daily demand including within day gas flow variations. The 1-in-20 peak aggregate daily demand is the level of daily demand that, in a long series of winters, with connected load held at the levels appropriate to the winter in question, would be exceeded in one out of 20 winters, with each winter counted only once.

Energy adequacy

With the establishment of NESO, one of NESO's License requirements is to produce an annual Gas Security of Supply Assessment, with the first one to be published October 2025..

Regulation of retail market

Specific retail market interventions, including elements such as price caps, mandated or incentivised usage-based and/or time-of use pricing, and mechanisms for guaranteed supply continuity under retailer failure.

Level of competition and unbundling

The GB retail market is a competitive market, with licensed suppliers offering a range of tariffs and services to consumers.

- This competition aims to drive down prices and improve service quality
- There used to be six major gas retailers in GB: British Gas, EDF Energy, E.ON, npower, Scottish-Power and SSE. However, today there are a large number of smaller suppliers gaining a greater foothold in GB.
- Recent market volatility, especially during the energy crisis in 2021-2022, led to several supplier failures. Regulatory interventions included the introduction of the price cap (to prevent those on standard variable and default tariffs from being overcharged), enhanced financial resilience requirements for suppliers (minimum capital requirements, customer credit balance protection), and the Supplier of Last Resort mechanism to protect consumers when a supplier financially fails and maintain market stability.

Ability to change supplier

Consumers are free to change suppliers without any restrictions.

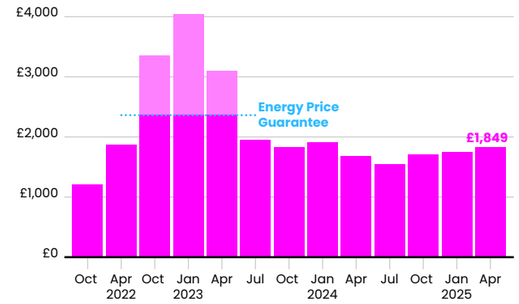
Powers to enable price cap and price cap in place

A price cap was introduced in Jan 2019 by Ofgem, who has the power to enable a price cap as part of its remit:

- The price cap limits the amount suppliers can charge customers on standard variable tariffs and default tariffs.
- The cap is reviewed every three months by Ofgem to reflect changes in wholesale energy costs, ensuring fair prices for consumers.
- This amount changes with Ofgem's periodic reviews, reflecting the fluctuating wholesale energy costs and ensuring consumers are not overcharged.

How the energy price cap has changed

Ofgem data / BBC chart 2024



* For a typical household on a price-capped, dual-fuel tariff paying by direct debit. Source: Ofgem

Minimum capital requirements for suppliers for license

Currently, there are no minimum capital requirements to obtains a retailer license, however, this is set to change as of the 31st of March 2025. The minimum capital requirement will be based around a Capital Floor (absolute minimum) and a Capital Target (preferential minimum capital), and are the same for electricity and gas suppliers:

Tariff pricing

All gas tariffs consist of a unit rate charge and a standing network charge. The unit rate charge is the cost per unit of gas used by a consumer. The standing network charge is a fixed, daily fee paid to your supplier. Currently no widely available time of use tariffs (ToUT) for natural gas exist for consumers. Both of these figures are subject to individually set gas price caps for the latest quarter.

Provision for retailer failure

The Supplier of Last Resort (SoLR) mechanism ensures that customers of a failed supplier are transferred to a new supplier, preventing disruption in service. Suppliers acting as SoLR must demonstrate financial stability, customer service quality, operational capability and plans to integrate transferred customers seamlessly into their systems.

B. Investment policy: Market interventions employed to achieve specific policy objectives

Supply:
Mechanisms to incentivize supply side investments

Production

Mechanisms incentivising or disincentivising investment with production as the key policy objective, via support mechanisms or windfall taxes

Support mechanism for production

The UK government is expected to continue support for oil and gas projects (including CCS and blue hydrogen production), even when the country reaches net zero in 2050. The Climate Change Committee's Balanced Pathway in the Seventh Carbon Budget includes that 13% of the UK's energy needs will still come from gas by 2050.

- Tax relief: In 2022, the Government implemented a tax relief for investment in oil and gas production alongside a tax on ring fence profits as part of the Energy Profits Levy. Companies can reduce their taxes on profits under the Energy Profits Levy through a decarbonisation allowance, set at 66%.

Windfall tax

The Energy Profits Levy (EPL) was introduced on 26 May 2022 to tax the exceptional profits of oil and gas companies arising from unexpectedly high oil and gas prices. The EPL was charged at 35% (rising to 38% from 1 November 2024), bringing the total headline rate of tax on oil and gas profits to 78% (30% Ring Fence Corporation Tax, 10% Supplementary Charge and 38% EPL). It is due to end on 31 March 2030. The EPL applies to companies operating in the UK and on the UK Continental Shelf.

In addition, the Energy Security Investment Mechanism (ESIM), confirmed on 12 June 2023, ensures that the Energy Profits Levy (EPL) remains in place until 31 March 2030 unless oil and gas prices fall to historically normal levels for a sustained period. ESIM will permanently disapply the EPL if average oil and gas prices are at or below the ESIM threshold for two consecutive quarters.

Decarbonisation

Mechanisms incentivising investment with decarbonisation as the key policy objective, either through support mechanisms or emission penalties.

Support mechanism for decarbonisation

The Green Gas Support Scheme (GGSS) provides tariff support for biomethane production via anaerobic digestion, which is injected into the gas grid. Biomethane is deemed carbon neutral as it is produced through the anaerobic digestion of organic materials. These materials, such as plants, absorb CO_2 from the atmosphere during their growth. The CO_2 released during the combustion of biomethane is offset by the CO_2 absorbed during the growth of the organic materials, making the process carbon neutral. The scheme is funded by the Green Gas Levy, applied to all licensed fossil fuel gas suppliers. Registered participants receive quarterly payments over a period of 15 years. Payments are based on the amount of eligible biomethane that a participant injects into the gas grid and are based on p/KWh. Payments work on a tiered system of three tiers, which provides a payment based on volume injected into the grid per tier:

- Tier 1 < 60k MWh/year
- Tier 2 is for the next 40k MWh/year injected
- Tier 3 is above 100k up to 250k MWh/year

In addition, there is an ongoing effort to decarbonise upstream oil and gas:

- The North Sea Transition Deal aims to leverage the UK's offshore oil and gas production strengths to facilitate a shift to clean growth by:
  - Reduction of Greenhouse Gas Emissions: The oil and gas sector commit to early targets for reducing greenhouse gas emissions from production, using a 2018 baseline. The Deal's targets correspond to an absolute reduction in production emissions of 10% in 2025, 25% in 2027, and 50% in 2030 (corresponding to 60 million tonne (Mt) reduction in greenhouse gas emissions by 2030) on the pathway to net-zero by 2050
  - Investment in new energy technologies: The Deal commits to investing up to £14-16 billion by 2030 in new energy technologies, focusing on carbon capture, utilisation, and storage (CCUS) and hydrogen
  - Local UK commitment: The sector will voluntarily aim to achieve 50% local UK content across the lifecycle of all new energy transition projects and oil and gas decommissioning by 2030.

Penalty for emissions

The UK ETS (Emissions Trading Scheme) now includes coverage of CO_2 venting by the upstream oil and gas sector.

Energy adequacy & flexibility

Mechanisms incentivising investment with energy adequacy and/or flexibility as the key policy objective, through support mechanisms.

Support mechanism for adequacy

There are no direct mechanisms that support energy adequacy in the UK gas market, however, several market signals beyond wholesale prices do contribute to system adequacy:

- Shippers are required to balance their inputs and outputs within the system, as described in the security of supply standards (A. Market fundamentals) and pay cash-out price if they do not comply. These price signals have been effective in ensuring market supply security.

- Operating Margins in the oil and gas sector, which ensure that there is gas held in reserve, ready to be released at short notice to rebalance the network in a range of scenarios. Operating Margins can be either an increase in supply onto the NTS or a reduction in demand from the NTS. This allows NGT to meet unexpected demand or supply disruptions and are another price signal that reward capacity adequacy. NGT purchases OM through an annual tender process, typically running from November to March. Contracts start on 1 May each year. NGT have two types of OM contract: Capacity Arrangements to procure capacity in GB gas storage sites, and Delivery Arrangements to contract for the option to buy the OM gas when it is required.

Support mechanism for flexibility

There are no subsidy support mechanisms that explicitly incentivise investment in flexible assets in the natural gas market.

Demand:
Mechanisms to incentivise demand side investments

Consumption

Mechanisms incentivising investment with consumption as the key policy objective, through support mechanisms for consumption.

Support mechanism for consumption

There are no support mechanisms for consumption of natural gas with consumption itself as the key policy objective.

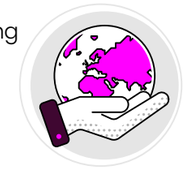
Decarbonisation

Mechanisms incentivising investment with decarbonisation as the key policy objective, either through support mechanisms or emission penalties

Support mechanism for decarbonisation

Support mechanisms involving Carbon Capture Usage and Storage (CCUS) support the continued use of natural gas, while decarbonising its consumption. For the different support mechanisms available, please refer to the carbon market design playbook.

Penalty for emissions



Currently the UK Emissions Trading Scheme (ETS) applies to gas related emissions from power generation, energy intensive industries and the aviation sector. In addition, it applies to combustion of fuels on a site where combustion units with a total rated thermal input exceeding 20MW are operated. It does not apply to domestic consumption.

Energy adequacy & Flexibility

Mechanisms incentivising investment with energy adequacy and/or flexibility as the key policy objective, through support mechanisms.

To date no energy adequacy support mechanisms related to gas demand have been identified.

C. Operational market design: Market design elements that match supply and demand and enable stable and reliable day-to-day operations

Wholesale market

Operational market design related to facilitating the matching of supply and demand

Wholesale Market

The National Balancing Point (NBP) is a virtual location originally created by the Uniform Network Code (UNC) to support the balancing of Great Britain's (GB's) gas system. However, it evolved to also become a trading point.

GB's gas market operates as a single unified market through the National Balancing Point (NBP), a virtual trading location where gas is traded and settled. The gas market employs a market-based pricing mechanism, where prices are determined by the supply and demand dynamics at the NBP.

The UNC outlines the rules and procedures for gas transportation, balancing, and settlement.

Locational granularity

The national balancing point provides a uniform gas price regardless of location.

Temporal granularity

The primary temporal granularity for gas trading in GB is on a daily basis. Gas shippers may incur imbalance charges if they do not balance their inputs and outputs over each gas day, which runs from 05:00 to 05:00 the following day. Any imbalances at the end of the gas day are subject to settlement processes where imbalances are charged according to the rules set out in the UNC.

Dispatch

GB's gas market operates on a system that includes elements of mainly self-dispatch (where gas shippers manage their flows as the primary balancers of the NTS) with centralised re-dispatch as required (where the gas System Operator acts as the residual balancer of the NTS):

- Gas shippers are responsible for scheduling their gas injections and withdrawals. They forecast their demand and supply requirements and make nominations accordingly. Shippers nominate the amount of gas they intend to inject into and withdraw from the NTS) for each gas day, which are then submitted to National Gas Transmission, the System Operator (SO)
- The SO is the residual balancer of the NTS. The SO ensures that the aggregate of all nominations meets the system's operational requirements. If the system becomes imbalanced, the SO can take centralised balancing actions, e.g., buying or selling gas on the On-the-Day Commodity Market (OCM) to ensure system stability.

Gate closure

To manage the pipeline network, shippers must provide their expected supply and consumption for each Gas Day. This information helps forecast supply and demand, allowing for necessary adjustments. Shippers submit this data through the nomination process. With this nomination, shippers must tell National Gas Transmission, the SO, how much gas they intend to either input or offtake at each specified entry or exit point on the system. A shipper can record its initial gas flow nominations up to 30 days in advance and can also change them at any time up to 3am on the Gas Day (i.e., they are changing nominations for the Gas Day that ends in 2 hours time). Shippers can make renominations within the gas day to adjust their previously nominated quantities. This allows for flexibility and adjustments based on real-time changes in demand or supply conditions. There is a 1-hour lead time required for nominations or renominations to be accepted by the SO. If a renomination is made after 3 am, it will not be effective until 5 am, which is the start of the next gas day.

Contractual and information imbalance settlement

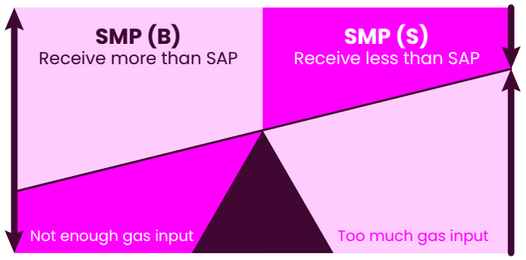
The imbalance settlement process for gas ensures that any discrepancies between contracted and actual gas supply and demand are financially settled accordingly:

- Imbalance charges: Imbalance charges are calculated based upon the differences between what a shipper delivers to the system and what they take off the system; allocations are used to determine this which are the shippers share of physical flows. Market participants (gas shippers) who are out of balance incur imbalance charges calculated based on the system imbalance price, which reflects the cost of resolving imbalances. The aim is to incentivise accurate forecasting and scheduling by market participants. Two types of charges exist:
  - Imbalance ('Cash-Out Charges'): Encourage shippers to balance their inputs with their outputs via a dual cash-out system:
    - 'Long' shippers – over delivery of gas: When shippers over-deliver gas into the NTS, they receive payment for the excess gas at the System Marginal Price Sell (SMPs). This price is the lesser of either the System Average Price (SAP) minus a differential value (revised and published annually by National Gas Transmission) or the lowest priced SO trade on the On-the-day Commodity Market (OCM) for that day. This payment is lower than the average daily gas price, incentivising shippers to balance their deliveries since they earn less than if they had sold the gas themselves at the average daily price.
    - 'Short' shippers – too little gas: When shippers under-deliver gas into the NTS, they must pay for the shortfall at the System Marginal Price Buy (SMPb). This price is the greater of either the System Average Price (SAP) plus a differential value (revised and published annually by National Gas Transmission) or the highest priced SO trade on the On-the-day Commodity Market (OCM) for that day. This charge is higher than the average daily gas price, incentivising shippers to maintain balance.

The cost or income from balancing trades is passed back to shippers via neutrality, as explained below.

Imbalance Pricing

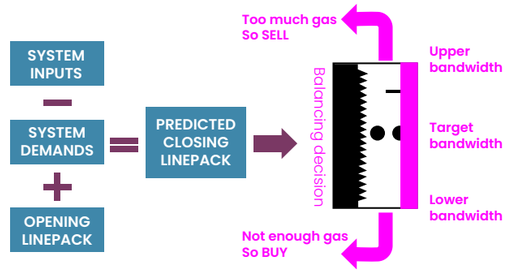
End to End Balancing Guide, National Gas Transmission 2024



- Scheduling Charges: Encourage shippers to accurately nominate the amount of gas they flow on and off the system. This is calculated by taking the difference between the nominated values and the actual flows of shippers.
- Settlement period: Imbalance settlement is conducted for each "Gas Day," which runs from 5 am to 5 am.
- Market balancing actions: The projected closing linepack (PCLP) for the end of the gas day is assessed at regular intervals throughout the Gas Day to ensure the system remains balanced, so that at the beginning of the next gas day the linepack can react to the operational situation. The Gas System Operator, as the residual balancer, can carry out market-balancing actions if it believes the system is likely to move outside the acceptable range of balance. This includes:
  - Trading on the On-the-day Commodity Market (OCM) to buy or sell gas and
  - Using other tools like location-specific gas trades (though this is usually only used to address a localised constraint rather than a national imbalance).
  - Flexibility contracts known as Operating Margins (OM). Operating Margins are to be used for unexpected operational stresses on the NTS as a rapid response.

Linepack flexibility illustration

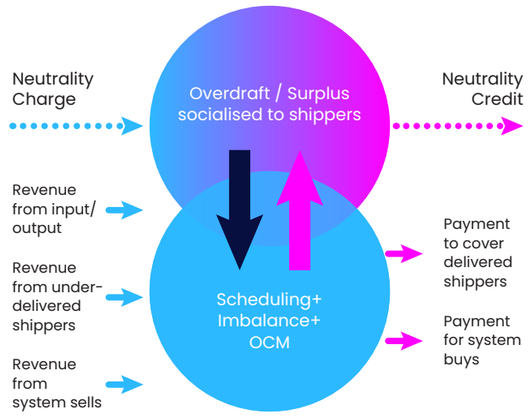
End to End Balancing Guide, National Gas Transmission 2024



- Neutrality mechanism: The neutrality mechanism ensures that National Gas does not profit or make a loss from actions related to their role as system residual balancer. Revenues raised from these actions are distributed to shippers under various criteria. This includes:
  - Imbalance settlement. All money from imbalance charges and market-balancing actions is fed into a neutrality pot and redistributed to shippers based on their usage of the system.

Neutrality Mechanism illustration

End to End Balancing Guide, National Gas Transmission 2024



Balancing and settlement

Processes and mechanisms to manage and reconcile discrepancies between supply and demand and ensure operability of the system.

System balancing services

Mechanisms and contractual arrangements employed by system operator to facilitate real-time system operation, including sub-settlement period energy balancing (to resolve short-term discrepancies between supply and demand), and ancillary services to maintain system stability and security

Sub Settlement period balancing

Two key services are used during sub-settlement balancing (i.e., within day 5AM – 5AM):

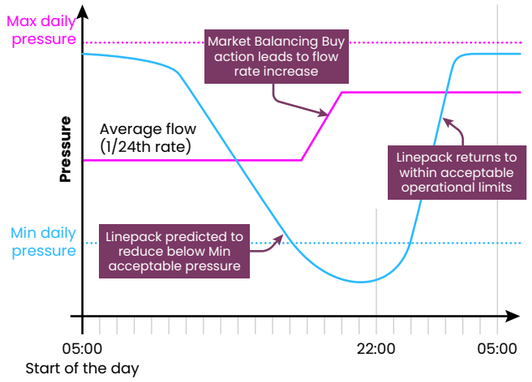
- The On-the-day Commodity Market (OCM) is a short-term balancing mechanism in the UK gas market, operated by ICE Index as appointed by National Gas Transmission (NGT) and Ofgem. It allows market participants, such as gas shippers and suppliers, to place bids (to buy gas) or offers (to sell gas) to address sub-settlement supply and demand imbalances. As a residual balancer, NGT can also place bids on the OCM if needed. The weighted average price of trades for a specific delivery day on the OCM forms the System Average Price (SAP), which is used to calculate charges for shippers who do not balance their portfolios (see Contractual and information imbalance settlement section). By using the OCM, participants can avoid penalties like imbalance/ cash-out charges and scheduling charges, ensuring efficient and reliable gas system operation.
- Reserve Services: Essential backup mechanisms used by NGT to ensure there is sufficient supply to meet demand, particularly during periods of unexpected supply shortfalls or sudden increases in demand. Different types of reserve services exist, such as:
  - Operating Margins (OM): Contracts for gas to manage short-term operational stresses and ensure the system remains within safe operational limits. OM gas can be called upon by NGT at short notice to support the system until a more sustainable solution is delivered.

Linepack flexibility:

Adjusting the pressure of gas (within an acceptable range) in the pipeline system using the system's compressors, to manage changes in supply and/or demand. Higher pressure allows more gas to be stored, while lower pressure reduces the storage capacity. By compressing the gas, operators can increase the pressure within the pipeline, allowing more gas to be stored. Sub-settlement period balancing services are therefore less important in the gas network compared to electricity due to this tool being able to vary the linepack according to the supply and demand balance.

Linepack flexibility illustration

End to End Balancing Guide, National Gas Transmission 2024



Locational Actions

Locational actions are used to address a constraint in a specific location rather than reduce the total volume of gas in the system. National Gas Transmission may trade gas at specific NTS entry and exit locations in the following [not exhaustive] events: NTS constraints to increase or reduce the actual flow rate or Gas Balancing Notification or Margins Notice to address the Linepack position in the NTS.

Energy balancing – normal

Routine processes and mechanisms to ensure balance of supply and demand under typical operating conditions, further specified through the primary balancer, residual balancer, dispatch mechanismand gate closure where applicable.

In GB's gas market, shippers are primarily responsible for balancing gas supply and demand by ensuring their inputs match their outputs through day-ahead nominations, within-day renominations, and real-time adjustments. In National Gas Transmission's role as the residual balancer, as the gas System Operator (SO) they manage imbalances by buying or selling gas on the On-the-Day Commodity Market (OCM) to maintain overall system stability. Both shippers and the SO interact in the wholesale gas market, with their trades influencing the System Marginal Price.

Energy balancing – emergency

Procedures and mechanisms implemented to address severe imbalances between supply and demand that threaten the stability and reliability of energy system, further specified through the central balancing function, wholesale market closure, balancing notice and load shedding merit order.

Central balancing function

National Gas Transmission issues Margins Notices (MN) and Gas Balancing Notifications (GBN) when they identify a risk to the physical balance of gas on the network.

As a pre-emergency tool, NGT can issue Margins Notices (MN) and Gas Balancing Notifications (GBN) when they identify a risk to the physical balance of gas on the network:

- A Margins Notice is a message sent to all shippers indicating a potential supply/ demand imbalance for the next gas day.
- Gas Balancing Notification (GBN): Issued before or during a gas day for shippers to adjust their gas flows or participate in the OCM market in order to correct the imbalance.
- Network Gas Supply Emergency (NGSE): If a GBN is not resolved, it may be escalated into an NGSE.

Capacity buy-back

This mechanism involves the system operator purchasing back firm capacity rights from shippers who hold firm capacity rights.

Closure of wholesale market

In extreme conditions, NGT would ask the Network Emergency Co-ordinator (NEC) to declare a NGSE. A "supply emergency" is defined as "an emergency endangering persons and arising from a loss of pressure in a network or any part of that network."

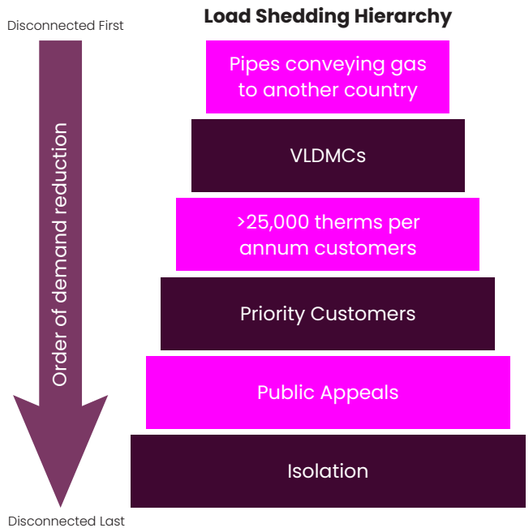
Declaring a NGSE gives NGT access to additional tools to restore the supply-demand balance. These emergency tools include requiring gas consumers to stop using gas, and the suspension of NGT's role as residual balancer of the OCM to ensure the system is managed through emergency protocols rather than market mechanisms.

Load shedding merit order

In the event of a gas supply emergency, the order in which exit points are disconnected from the gas network follows a specific priority system outlined in the Uniform Network Code. Here are the key points related to the merit order for load shedding:

E1 - Network Gas Supply Emergency Procedure

National Gas Transmission 2024



VLDMCs - Very Large Daily Metered Consumer supply points are very large supply points taking more than 50 mtpa

D. Cost allocation: Allocation mechanisms of various costs

Policy costs

Costs incurred from providing policy support to achieve specific government objectives, generally for investments

Allocation on taxpayer and market participants

Most gas policy costs are passed on to final consumers through their gas bills. In exceptional circumstances, costs can be imposed on tax-payers, e.g., the Government Energy Price Guarantee from October 2022 – March 2024.

Charges (levies), charging base and basis

Several levies are charged to market participants, such as:

- The Green Gas Levy (GGL) is designed to fund the Green Gas Support Scheme (GGSS). It is collected from licensed gas suppliers based on the volume of gas they supply to consumers, measured in kWh, and this cost is typically passed on to end-users through their gas bills. The GGL came into effect on 1 April 2022. Suppliers can be exempt from the GGL if at least 95% of their total gas supply for the scheme year is certified biomethane. To qualify for this exemption, suppliers must prove their biomethane supply levels using retired green gas certificates from an approved biomethane certification scheme.
- The Climate Change Levy (CCL) has been in place since 2001 and applies to businesses, public sector organisations, and other non-domestic entities. It is charged on electricity, gas, solid fuels, and liquefied petroleum gas (LPG). Energy suppliers are responsible for collecting the CCL by including it in the energy bills of their non-domestic customers. The CCL rates, specified by the government per kilowatt-hour (kWh) for different types of energy, are applied to the total energy consumption of non-domestic users. These rates can be updated annually.
- Energy company obligation (ECO): The Energy Company Obligation is a scheme across Great Britain that requires large energy suppliers to implement energy efficiency and cost-saving measures to improve the ability of low-income, fuel-poor, and vulnerable households to heat their homes.
- Warm Homes Discount (WHD): The Warm Homes Discount is a Great Britain-wide scheme that imposes legal obligations on energy suppliers to provide eligible households with a one-off annual discount on their energy bills, contingent on meeting specific participation thresholds, such as the number of customers supplied.

Transmission network costs

Costs incurred to remunerate network transmission companies to account for investment, operational & maintenance costs for transportation over long distances

Allocation to taxpayer and market participants

Transmission network costs are allocated 100% to market participants, including gas shippers and suppliers. Ultimately, these costs are passed to consumers through their gas bills.

Charges (actual costs to allocate), charge base (who pays) and charge basis (metric):

Transmission network charges are designed to comply with the regulatory framework and are updated periodically. The maximum revenue National Gas Transmission (NGT) can earn for transporting gas (known as “Allowed Revenue”) is determined by price control formulae set by Ofgem. The regulated Allowed Revenue is recovered from a range of transportation charges for access to and use of the NTS. The revenues and charges are set in accordance with the NGT Licence and the Uniform Network Code (UNC).

The key elements of these charges include:

- Capacity charges: Allowed revenue costs associated with gas transmission are allocated equally between entry and exit points, with a 50/50 split.
    - Entry and exit capacity charges: These charges are applied for the right to flow gas into or out of the NTS. Charges are based on the capacity booked by the shippers, regardless of actual usage. If a user’s flow exceeds their capacity entitle-ments for any given gas day, a shipper will incur overrun charges.
- Reserve Prices: Entry and exit points have a reserve price, which are the minimum prices set for capacity auctions. These prices are calculated based on the charging methodologies prescribed in the Uniform Network Code (UNC) Section Y – Charging Methodologies. Capacity reserve prices are based on a Postage Stamp methodology, a single uniform tariff is applied to entry points and a single uniform tariff applied to exit points.
    - All capacity prices for Entry Points are generally the same apart from a 10% discount on the reference price (i.e., the average price for capacity) for Interruptible capacity, and an 80% discount on the reference price for Storage points. One exception is Entry Capacity which was booked before 06 April 2017 has the fixed price when it was booked. All capacity prices for Exit Points are the same apart from a 10% discount on the reference price for Off-Peak capacity and an 80% discount on the reference price for Storage points.
- Auction Mechanisms: NTS Entry and Exitcapacity is sold through various auctionmechanisms as detailed in section A. These auctions determinethe price shippers pay based on market demand.
- Commodity charges are charges based on the actual flow of gas through the system, measured in pence per kilowatt-hour (kWh). They cover the variable costs of transporting gas and are typically applied to the volume of gas transported. This charge is known as the General Non-Transmission Services charge (applicable to entry and exit

flows), as well as a small number of specific Non-Transmission charges.

Inter-temporal cost allocation

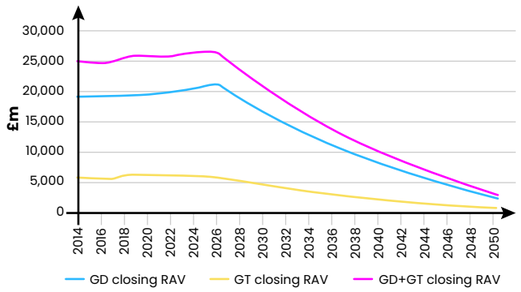
Under the current regulatory model, the gas transmission network owner and operator National Gas Transmission makes investments in the network, which are then paid for by customer network charges (i.e., Shippers) to cover depreciation over 45 years and return on investment over the asset's lifetime.

The UK government and Ofgem are considering policies regarding the decommissioning of gas infrastructure, especially as the country aims for net-zero carbon emissions by 2050. The expected decline in consumers connected to the gas network poses a challenge, as fewer customers will bear the cost of maintaining and decommissioning the network.

Ofgem has valued the Regulated Asset Value (the outstanding capital value in network assets still to be recovered from consumers) of the gas transmission network at 5.5 billion at the start of the RIIO-3 control period (April 2026). Ofgem has identified this, alongside the gas distribution assets (with a total RAV value of £26.1 billion) to be considered going forward given the current transmission network cost allocation approach. At the projected rate of RAV recovery for the transmission and distribution networks, there will be a £3 billion still unrecovered by 2050.

RIIO-3 Finance Annex

Ofgem 2024



The existing policy for RIIO-1 and RIIO-2 is to depreciate the RAV at a rate that broadly approximates the useful economic life of the network assets and incentivises investment efficiency. Some considerations:

- As suggested in a 2023 Open Letter, Ofgem could implement a depreciation profile that would 'front load' the depreciation of RAV value to further accelerate the return of capital.
- In July 2024, The RIIO-3 Sector Specific Methodology Decision provides an update on this, whereby Ofgem is still considering whether to target baying back transmission RAV by the 2050 net zero target date.
- In July 2024 Ofgem stated it was still evaluating whether to target the payback of the gas transmission RAV by the statutory net zero target date of 2050. Current government policy suggests there could be significant opportunities to retain or repurpose larger sections of the Gas Transmission network, such as for hydrogen or CCUS transportation networks to support industrial decarbonisation. Additionally, the potential consumer bill impact of accelerating Gas Transmission depreciation is expected to be lower than for gas distribution due to the smaller RAV size of Gas Transmission, reducing the risks associated with any delays. NGT will submit evidence through its business plan to help Ofgem understand where the Gas Transmission network is most likely to be repurposed or retained beyond the net zero target.
- Ofgem acknowledges they must consider the potential role of repurposing assets for hydrogen or CCUS network usage when making decisions concerning the residual RAV.

Balancing costs

Costs incurred by the system operator to ensure real-time balance between supply and demand, including the procurement and deployment of balancing services

Allocation to taxpayer and market participants

Balancing costs from NGT taking residual balancing actions are allocated to shippers and paid through the neutrality mechanism, proportional to their contribution to the imbalance.

Charges (actual costs to allocate), charging base and charging basis:

Several charges are designed to cover the costs associated with balancing the gas National Transmission Network (NTS) and to incentivise shippers to balance the NTS. These charges include:

- Daily Balancing Regime: Daily balancing ensures that gas shippers balance their inputs and offtakes every day. Shippers must match the amount of gas they deliver into the system with the amount they withdraw. If there is an imbalance, they face daily imbalance charges.

The financial settlement of these imbalances is done through the neutrality mechanism. As explained in the balancing and settlement section, the System Marginal Buy Price (SMPbuy) applies when a shipper has delivered less gas than required, resulting in a short position. Conversely, the System Marginal Sell Price (SMPsell) applies when a shipper has delivered more gas than required, leading to a long position. These charges are typically expressed in pence per kilowatt-hour (p/kWh).

- System balancing actions: To balance the system, NGT as the gas System Operator may engage in Market Balancing Actions (MBAs) by buying or selling gas on the On-the-day Commodity Market (OCM). The costs or revenues from these actions are managed through a Balancing Neutrality Charge, which is distributed amongst all shippers, ensuring NGT remains financially neutral. Additionally, NGT manages the linepack, (the volume of gas in the network) to maintain operational limits, with associated costs also included in the balancing neutrality charge. These charges are typically expressed in pence per kilowatt-hour (p/kWh).
- Entry and exit capacity charges: Shippers are required to book entry and exit capacity to transport gas through the network. These bookings ensure that the network operator can make sure there is sufficient capacity available in the pipelines, alleviating congestion, and supply issues. Shippers pay a capacity charge on booked entry or exit capacity, regardless of whether it is used or not. They may also incur overrun charges if they exceed their booked capacity. These capacity charges and overrun charges are designed to encourage accurate capacity signaling and ensure that the network can be maintained and operated effectively. Entry and exit capacity charges are usually expressed in pence per peak day kilowatt-hour (p/pdKWh).

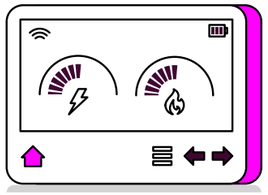
Distribution network costs

Costs incurred to remunerate network distribution companies to account for investment, operational & maintenance costs for final stage transportation to end users

Allocation on taxpayer and market participants

Gas Distribution Network charges are called Local Distribution Zone charges. The charges are set on April 1st for the subsequent 12 months.

- Capacity charges: Based on the maximum quantity of gas that a shipper may wish to flow through the network. The daily capacity charge is calculated by multiplying the peak daily capacity by the rate in pence/kWh.
- Commodity charges: Based on the quantity of gas a shipper has actually flowed through the network. The commodity charge is calculated by the volume of gas flowed through the system multiplied by the rate in pence/kWh.
- Customer charges: Charged to customers (for example, households, businesses, and industry) that have an annual quantity (AQ) between 73,200 and 732,000 kWh. Charges cover administrative costs such as emergency services and meter reading.



Payment responsibility (charging base)

Allocation of network and balancing costs across market participants, including distribution between supply (producers) and demand (consumers), and any exemptions or discounts for specific groups/technologies

Charging metric (charging basis)

Metric used to charge market participants for network or policy costs, generally either on an energy or capacity basis, including those designed to allocate costs to usage or capacity at specific times of the day or year.

Several charges exist to cover cost related to the gas distribution network:

- System Charges
  - Capacity Charges: These charges are for maintaining the ability to supply gas, ensuring the infrastructure can handle peak demands, including network reinforcement and maintenance. They are based on the registered supply point capacity (SPQ) and categorised by annual consumption bands (AQ). Registered SPQ is the maximum amount of gas that a specific supply point (an entity on the network that consumes gas) is allowed to offtake from the network, which helps to manage network demand. AQ Bands are categories of gas consumers based on their yearly

gas usage, expressed in pence per peak day kWh/day (p/peak day kWh/day), the bands and rates are:

  - Up to 73,200 kWh: fixed
  - 73,200 to 732,000 kWh: fixed
  - Above 732,000 kWh: rate dependent on the SPQ minimum rate

- Commodity Charges: These charges recover costs related to the actual volume of gas transported through the network to the customer, including operational costs such as gas balancing and energy loss management. Based on the volume of gas consumed, calculated per kWh, and expressed in pence per kWh (p/kWh), the bands and rates are:

  - Up to 73,200 kWh: fixed
  - 73,200 to 732,000 kWh: fixed
  - Above 732,000 kWh: rate dependent on the SPQ minimum rate

- Customer Charges

  - Capacity Charges: These charges are based on the registered SPQ, covering costs associated with maintaining individual supply point capacities and ensuring reliable gas delivery. For supply points with AQ less than 73,200 kWh per annum, the charge is fixed with an additional capacity charge based on the registered SPQ. For supply points with AQ over 732,000 kWh per annum, the charge is based on a function related to the registered SPQ. Expressed in pence per peak day kWh/day (p/peak day kWh/day)
  - Fixed Charges: These charges cover administrative and operational costs associated with meter readings, billing, and customer service. Applicable to supply points with an AQ between 73,200 and 732,000 kWh, varying with the frequency of meter readings. Expressed in pence per day (p/day).

- Other charges:
- Administration Charges: These charges cover administrative costs at Connected System Exit Points (CSEPs), Shared Supply Meter Points, and Interconnectors, and are variable based on specific administrative cost structures
- Supplier of Last Resort (SoLR) Charges: These charges cover the costs associated with ensuring continuity of supply when a gas supplier fails, managed through the Supplier of Last Resort process. Expressed in pence per kWh (p/kWh)
- LDZ System Entry Commodity Charge: This charge reflects the operating costs for entering distributed gas into the network and the benefits of deemed NTS Exit and distribution network usage. Expressed in pence per kWh (p/kWh).
- Distribution Network (NTS) Exit Capacity Charge (ECN): These charges are for booked NTS Exit Capacity and reflect the geographical location and specific exit zones. Expressed in pence per peak day kWh/day (p/peak day kWh/day)

Inter-temporal cost allocation

- Currently, gas distribution network decommissioning follows a 45-year depreciation model, leaving about £2.4 billion of residual Regulated Asset Value (RAV) by 2050.
- As suggested in an 2023 Open Letter, Ofgem could implement a depreciation profile that would 'front load' the depreciation of RAV value to further accelerate the return of capital.
- In July 2024 Ofgem decided to target paying back additions to the gas distribution (GD) RAV in line with the statutory net zero target date, which is 2050.
- In 2025, as part of Ofgem's Draft Determinations, it will be decided whether to apply this accelerated depreciation to the entire RAV or only to new RAV additions from RIIO-3 (gas distribution infrastructure that has been built during this performance period). Ofgem also notes that government decisions on hydrogen heating could significantly impact how much of the gas distribution (GD) network is repurposed for hydrogen in the future. However, Ofgem takes the view that, given the potential consumer bill impact from accelerating depreciation in GDNs, it is considered to be in the consumer interest to base decisions on current government policy, which suggests there could be significantly reduced usage of the GD network in the future.

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NESO
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