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By Iona Stewart

Introduction to the domestic energy market

Summary

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Contents

Summary

Domestic energy is energy used in the home. For instance, for lighting, cooking, heating, and powering devices. It is usually provided to households in the form of electricity or gas.

This briefing explains key concepts in Great Britain's domestic energy market. It aims to answer these questions:

- How is the domestic energy market structured?
- How is a typical household energy bill calculated?
- What are the current challenges in the energy supply market?

It is a set of Library briefings on domestic energy. Others are Domestic Energy Prices, Gas and electricity prices under the Energy Price Guarantee and beyond and Households off the gas-grid and prices for alternative fuels.

This briefing focuses on Great Britain's energy market. Northern Ireland has a different energy market, with its own rules and regulations.

How is the domestic energy market structured?

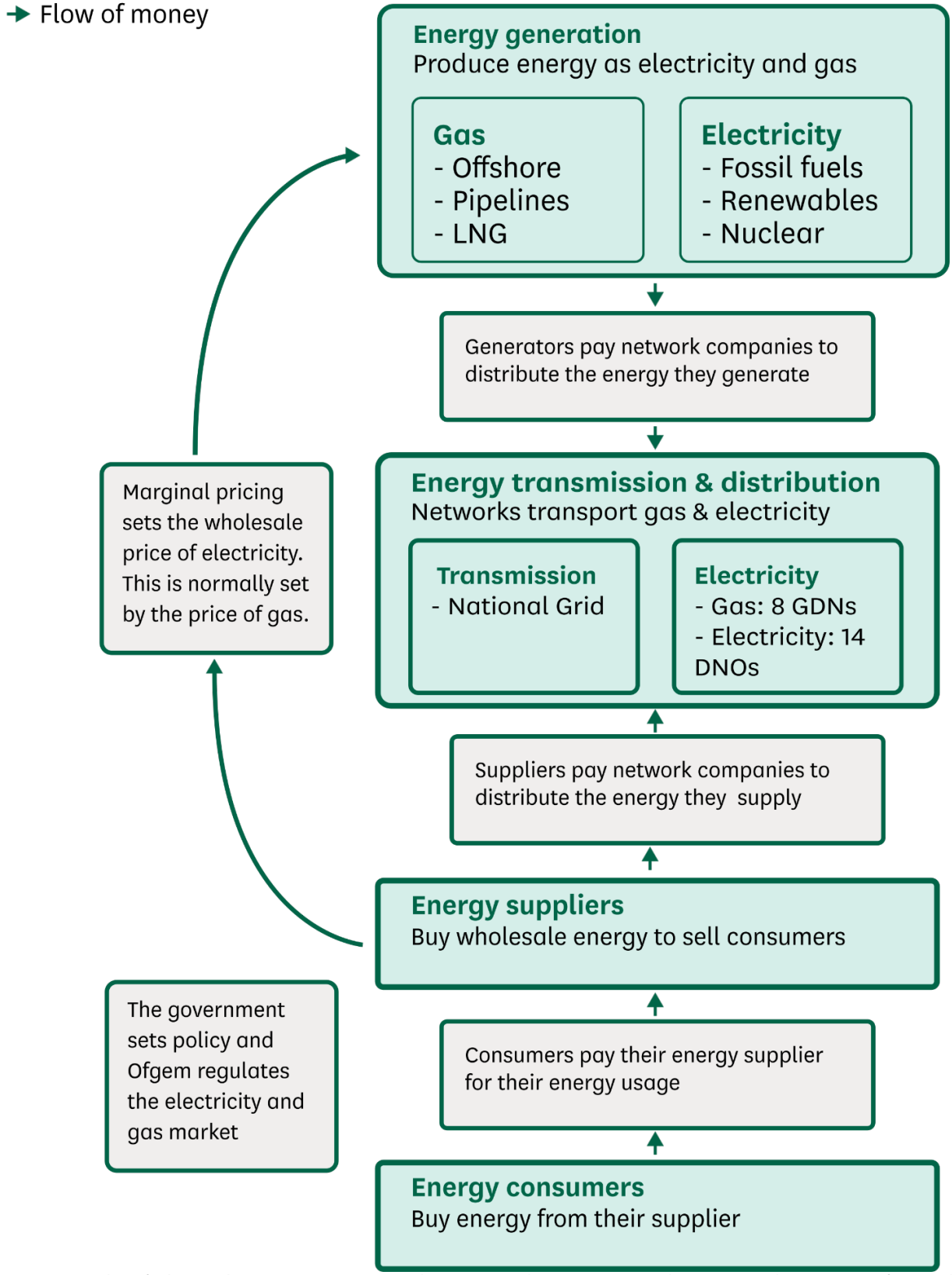
In Great Britain, most households are supplied with gas and electricity through the energy system. This system is composed of:

- generation (producing energy)
- transmission and distribution (transporting energy from where it is generated to where it is needed)
- retail (energy suppliers buy gas and electricity from energy generators on the wholesale market and sell to consumers on the retail market)

The Government sets energy policy and the Office of Gas and Electricity Markets (Ofgem) regulates the electricity and gas markets.

The structure of the domestic energy market is shown in the diagram below.

The domestic energy market in Great Britain



Notes: LNG is liquefied natural gas. GDNs are Gas Distribution Networks. DNOs are Distribution Network Operators. Ofgem is the Office of Gas and Electricity Markets (Ofgem).

How and where is energy generated?

Energy generation refers to producing gas (from extraction) and electricity (from burning fossil fuels, nuclear or renewables).

Most of the gas consumed in the UK came from domestic production (54% in 2022), with the remainder coming from imports. The UK imports gas through pipelines from Europe and tankers of liquified natural gas (LNG) from various countries.

Most of the electricity consumed in the UK is generated in the UK. In 2022, 41% of electricity was generated from fossil fuels, 41% was from renewable sources (such as solar power and wind power), and 15% was from nuclear energy.

How is energy transported?

Once generated, gas and electricity are transported through transmission and distribution networks.

Gas is transported across the country by the National Transmission System (NTS). The NTS supplies gas to the eight Gas Distribution Networks (GDNs) that cover different geographical regions of Great Britain and provide gas to households.

Electricity is transported from power stations by transmission networks. Electricity substations are used to transfer high voltage electricity from transmission networks into lower voltage electricity on distribution networks, which supply households.

Who supplies energy to households?

The supplier buys gas and electricity on the wholesale market and sells it on to domestic consumers in the retail market. There were 21 active suppliers in the domestic gas and electricity retail markets as of March 2023

Who governs the energy market?

The Government Department for Energy Security and Net Zero sets policy and the Office of Gas and Electricity Markets (Ofgem) regulates the electricity and gas markets.

Recent Government policy has focused on the energy 'trilemma' of sustainability, security and affordability.

The Energy Bill 2022-23 aims to ensure a "a cleaner, more affordable and more secure energy system for the long term".

How are energy bills calculated?

Customers' bills are calculated by multiplying the prices per unit (unit rates) of gas or electricity by the amounts used, plus the daily 'standing charge'.

Tariffs are either fixed for a certain amount of time, typically one year or more (a 'fixed rate' tariff) or they can go up or down according to the market (a 'variable' tariff).

Energy price cap and Energy Price Guarantee

The Energy Price Guarantee (EPG) was introduced between October 2022 and March 2024 to reduce price increases for domestic customers. Under the scheme, the Government sets maximum prices for gas and electricity and compensates energy suppliers for providing gas and electricity at below cost prices. Before the EPG, maximum prices for customers on standard variable tariffs (SVTs) were controlled by Ofgem's price cap.

The price cap and EPG are often described in terms of the annual bill for a household with typical energy consumption paying by direct debit, but the actual cost for each household depends on how much energy is consumed.

What affects the cost of an energy bill?

The cost of an energy bill depends on energy usage, energy supplier and tariff, type of meter, payment method, and location.

Why does the price of gas drive electricity prices?

The price paid for wholesale electricity on the 'spot market', where around two fifths of electricity is thought to be sold, is set using a system called 'marginal cost pricing'. The most expensive type of energy used to generate electricity sets the price for all types of energy, including renewables. As gas is often the most expensive energy source, prices of electricity generated by gas effectively set the wholesale price for all generation.

What are the current challenges in supplying energy?

Wholesale prices rises

Wholesale energy prices started to dramatically increase from mid-2021 to summer 2022, both globally and in the UK, after having been stable for a decade. The initial rise in energy prices was mostly because of rising demand after Covid-19 restrictions were lifted, and then because of Russia's full-scale invasion of Ukraine. Prices have returned to lower levels in 2023.

Supplier failure

Many suppliers that could not protect themselves against the increase in wholesale prices have traded at a loss, become insolvent and had to notify the regulator, Ofgem, that they can no longer trade.

Ofgem has two main processes for maintaining the supply of energy to customers when a supplier fails: transferring customers to a 'supplier of last resort' or establishing a special administration regime (SAR). The costs of supplier failure are recovered through domestic energy bills. This is an indirect cost of higher wholesale prices.

Loss of competition

Suppliers operate in a competitive market where they set their own prices, and consumers can choose suppliers based on preferences such as price and service. Increases in wholesale energy prices have meant that most suppliers are selling energy near the maximum tariff possible, the Government's price cap or Energy Price Guarantee (EPG). This has effectively halted competition as there is no incentive for customers to save money by switching supplier.

Fuel poverty

Price rises have a disproportionate impact on lower-income households. There is concern that high energy prices are causing more households to be in fuel poverty, where they must spend a high proportion of their income to keep their home at a reasonable temperature.

In the latest estimates, around 13% of households in England, 25% in Scotland, 14% in Wales, and 24% in Northern Ireland were classed as being in fuel poverty. However, fuel poverty data for different nations are not directly comparable and do not account for the recent rapid increases in domestic energy prices.

Energy company profits

Many companies that generate energy (oil and gas producers and electricity generators) have announced record profits because of rising wholesale energy prices.

1 How is the domestic energy market structured?

Domestic energy is energy used in the home. For instance, for lighting, cooking, heating, and powering devices. It is usually provided to households in the form of electricity or gas.

1.1 What is domestic energy?

Electricity and gas

In 2022, domestic energy was used for space heating (62%), water heating (17%), lighting and appliances (17%) and cooking/catering (3%).[1] The largest sources of domestic energy usage were gas (64%), followed by electricity (24%), oil (6%) and renewables for heat (4%).[2] This briefing covers the domestic electricity and gas market. Other domestic energy sources will be covered in the Library briefing Households off the gas-grid and prices for alternative fuels.[3]

- **Gas:** The domestic sector accounted for 57% of gas consumption in the UK in 2022.[4] 75% of domestic gas is used for space heating, 22% for water heating and 2% for cooking.[5]
- **Electricity:** The domestic sector accounted for 35% of electricity consumption in the UK in 2022.[6] Almost three-quarters (74%) of electricity was used for powering lighting and appliances, 16% for space heating, 6% cooking/catering and 5% for water heating.[7]

Central heating

1 Department for Energy Security and Net Zero (DESNZ), Energy consumption in the UK 2023, End use data tables (U3)
2 DESNZ, UK Energy in Brief 2023, 1 September 2023
3 House of Commons Library, Households off the gas-grid and prices for alternative fuels, 20 September 2023
4 DESNZ, UK Energy in Brief 2023, 1 September 2023
5 DESNZ, Energy consumption in the UK 2023, End use data tables (U3)
6 DESNZ, UK Energy in Brief 2023, 1 September 2023
7 DESNZ, Energy consumption in the UK 2023, End use data tables (U3)

Central heating is a system to heat multiple rooms in a building by circulating heated air or water through pipes to radiators or vents. Single or multiple fuel sources can fuel these systems.

England and Wales

According to the 2021 Census in England and Wales, 74% of households used mains gas central heating and 9% used electric central heating. This is broadly similar to the proportion of households using different types of central heating in the 2011 Census.[8]

The library dashboard, Constituency data: Central heating, 2021 Census, shows the type of central heating used in households by constituency in England and Wales.[9]

Northern Ireland

According to the 2021 Census in Northern Ireland, 50% of households in Northern Ireland used oil as their only central heating. This was followed by 32% using mains gas, 15% using two or more types of central heating, then 2% using electric only.[10] Between the Census 2011 and Census 2021 the proportion using oil only decreased from 62% and the proportion using mains gas increased from 17%.[11]

The Library briefing Households off the gas-grid and prices for alternative fuels, provides further information on Northern Ireland census data in section 1.3.[12]

Scotland

Data on central heating from the most recent census for Scotland have not been released yet.

How is the energy market structured?

In Great Britain, most households are supplied with gas and electricity through the energy system. This system is composed of four parts:

- Generation (producing energy)

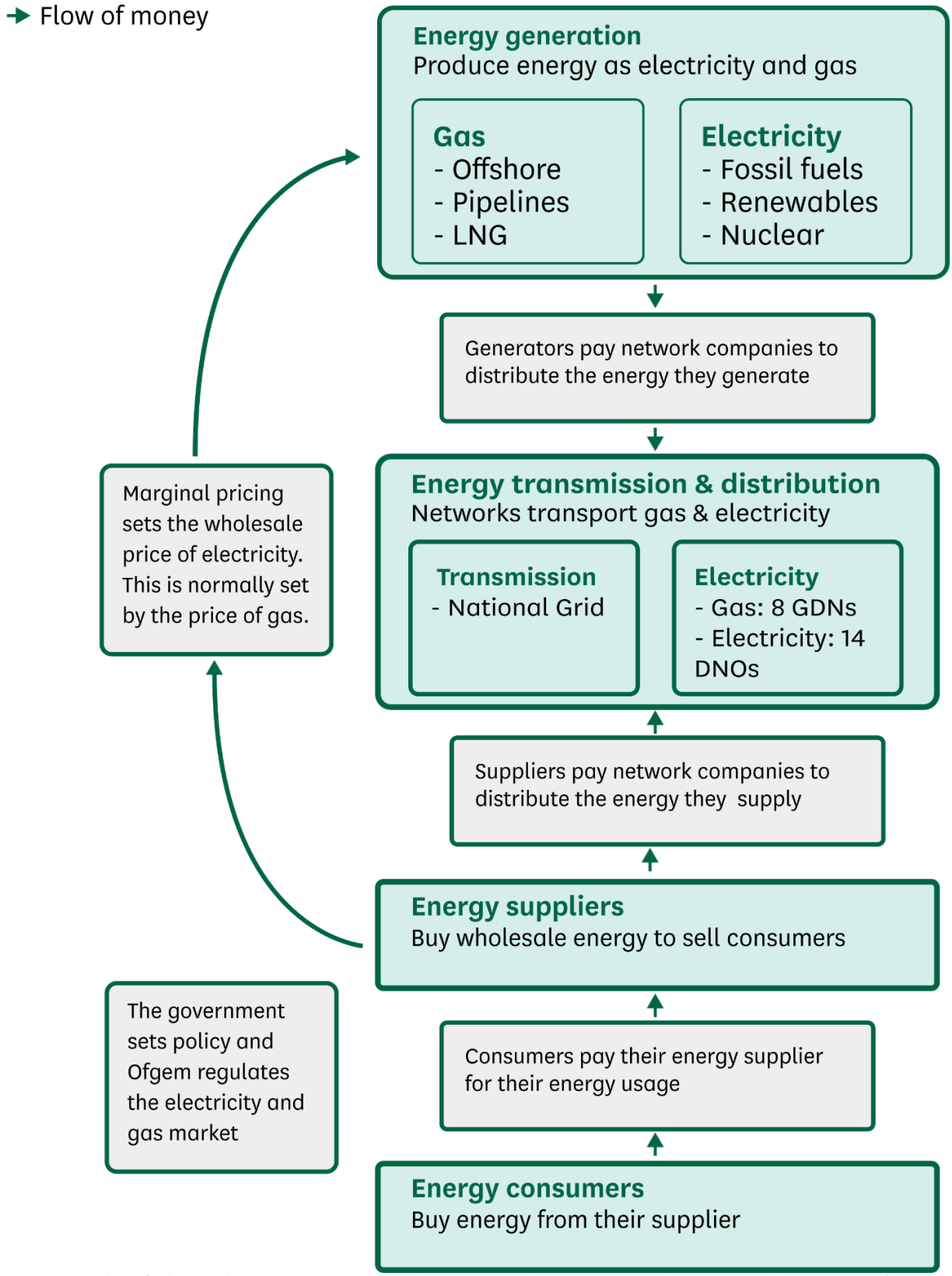
8 ONS, 2021 Census, Dataset TS046
9 House of Commons Library, Constituency data: Central heating, 2021 census, 19 June 2023
10 Northern Ireland Statistics and Research Agency, Census 2021 main statistics housing and accommodation tables, MS-E11 Central heating (household based) - (classification 1)
11 Northern Ireland Statistics and Research Agency, Central Heating, KS404NI
12 House of Commons Library, Households off the gas-grid and prices for alternative fuels, 20 September 2023

- Transmission (moving the energy long distances from where it is generated to where it is needed)
- Distribution (moving the energy short distances from the transmission system into the homes that will use the energy)
- Retail (energy suppliers buy gas and electricity from energy generators on the wholesale market and sell it to homes on the retail market)

The Government sets policy to deliver its aims on energy and the Office of Gas and Electricity Markets (Ofgem) regulates the electricity and gas markets.

This is shown in the diagram below.

The domestic energy market in Great Britain



Notes: LNG is liquefied natural gas. GDNs are Gas Distribution Networks. DNOs are Distribution Network Operators. Ofgem is the Office of Gas and Electricity Markets (Ofgem).

Domestic and non-domestic energy markets

The domestic sector accounted for 27% of UK energy consumption in 2022. In comparison, transport accounted for 40%, industry for 17%, and services[13] for 16%. Energy consumption from the domestic sector has decreased by 16% since 2000.[14]

The domestic and non-domestic[15] energy markets operate in different ways. These are shown in the table below.

Differences between the domestic and non-domestic energy market

	Domestic	Non-domestic
Gas consumers	~24 million	~0.9 million
Electricity consumers	~29 million	~2.5 million
Energy unit price	More expensive	Cheaper
Contract terms	Shorter	Longer
Dual fuel options	Available	Not available
VAT	5%	20%
Impact of price fluctuations	Affected less	Affected more
Government schemes		
Energy price cap	✓	✗
Energy Price Guarantee (EPG)	✓	✗
Energy Bill Support Scheme (EBSS)	✓	✗
Alternative Fuel Payments	✓	✗
Energy Bill Relief Scheme (EBRS)	✗	✓
Energy Bills Discount Scheme (EBDS)	✗	✓

There are approximately 29 million electricity and 24 million gas consumers in the domestic market.[16] Most domestic energy consumers (70% of electricity customers and 80% of gas customers[17]) have dual fuel accounts, meaning they buy gas and electricity from the same supplier. In comparison, there are approximately 2.5 million non-domestic electricity meters[18] and 0.9 million non-domestic gas meters.[19]

Due to economies of scale, suppliers generally offer non-domestic consumers (such as businesses) lower prices per unit of energy than domestic consumers

13 Includes agriculture, commercial, public administration and miscellaneous.

14 Department for Energy Security and Net Zero (DESNZ), UK Energy in Brief 2023, 1 September 2023

15 'Non-domestic consumers' means businesses that operate out of non-domestic premises and have a non-domestic energy contract. This excludes businesses that operate out of a home (domestic property).

16 DESNZ, Quarterly domestic energy switching statistics, 28 September 2023

17 Ofgem, Record number of customers with small and medium sized suppliers, 28 February 2018

18 Department for Business, Energy & Industrial Strategy (BEIS), Regional and local authority electricity consumption statistics, 26 January 2023

19 Cornwall Insights, Introduction to the GB energy markets academy, September 2022

as they consume higher volumes of energy. However, non-domestic consumers are subject to more regulation and higher VAT.

Most non-domestic consumers will agree a contract with a supplier at a fixed price for a longer fixed period than in domestic energy contracts. When a contract comes to an end, the new price they face will depend on the current wholesale price. Non-domestic energy costs are therefore more volatile than those for households which are more protected by domestic consumer support schemes.

The Government has different existing and new support schemes for energy bills. For domestic consumers, these include the Energy Bills Support Scheme (EBSS), Energy Price Guarantee (EPG) and Alternative Fuel Payments. For non-domestic consumers, these include the Energy Bill Relief Scheme (EBRS) and Energy Bills Discount Scheme (EBDS). The Library briefing, Constituency casework: Government support for energy bills, provides more detail. [20]

[20] House of Commons Library, Constituency casework: Government support for energy bills, 20 March 2023

How does Northern Ireland's energy market differ from the rest of the UK?

The energy market is different in Northern Ireland from the rest of the UK, with its own rules and regulator.

Two thirds of homes in Northern Ireland use home heating oil, a fuel that can be used in the household to provide heating. There are no consumer price regulations for heating oil because there is more competition from many different suppliers compared to gas and electricity. This is also the case in Great Britain, although there are fewer households that use heating oil.

The Northern Ireland Utility Regulator regulates the electricity and gas markets. Unlike in Great Britain, gas and electricity suppliers can announce price increases whenever they need to, if it is approved by the Utility Regulator. The regulator caps profits at 2% for the two gas suppliers (SSE Airtricity and Firmus) and 2.2% for the electricity supplier (Power NI).

More detail can be found on Northern Ireland Statistics and Research Agency's (NISRA) overview pages for energy, electricity, gas and other fuels (including heating oil).

1.2 Generation: How and where is energy generated?

Energy generation refers to producing gas (from extraction) and electricity (from burning fossil fuels, nuclear or renewables). **Supply** measures how much energy is available for use by consumers. The total supply of energy must match the total **demand** for energy to ensure there is always enough energy available.

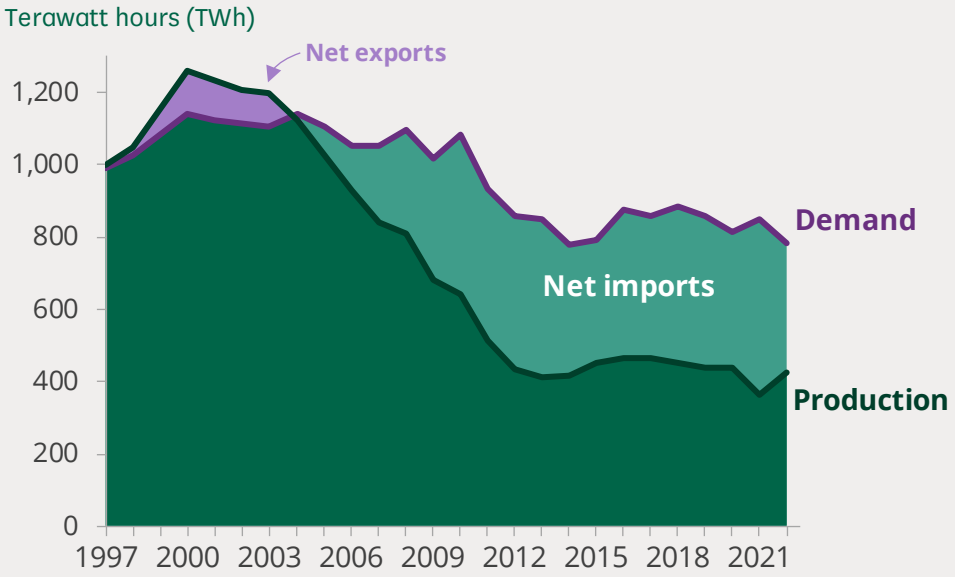
How is gas produced?

Natural gas is a fossil fuel found underground. Gas production involves physically releasing gas through drilling wells or hydraulic fracturing (fracking).

The UK currently imports more natural gas than it exports. In 2022, 54% of UK gas demand came from domestic production, with the remainder coming from imports.[21] The UK's reliance on imported gas has increased as production of gas in the UK fell faster than demand. This is shown in the chart below.

[21] DESNZ, Digest of UK Energy Statistics (DUKES), Chapter 4 natural gas,

The UK's reliance on imported gas increases as production falls faster than demand



Source: Department for Business, Energy and Industrial Strategy (BEIS), Digest of UK energy statistics (DUKES): natural gas, Table 4.2

Domestic supply

The UK has a domestic supply of gas from the UK Continental Shelf (UKCS) in the North Sea.

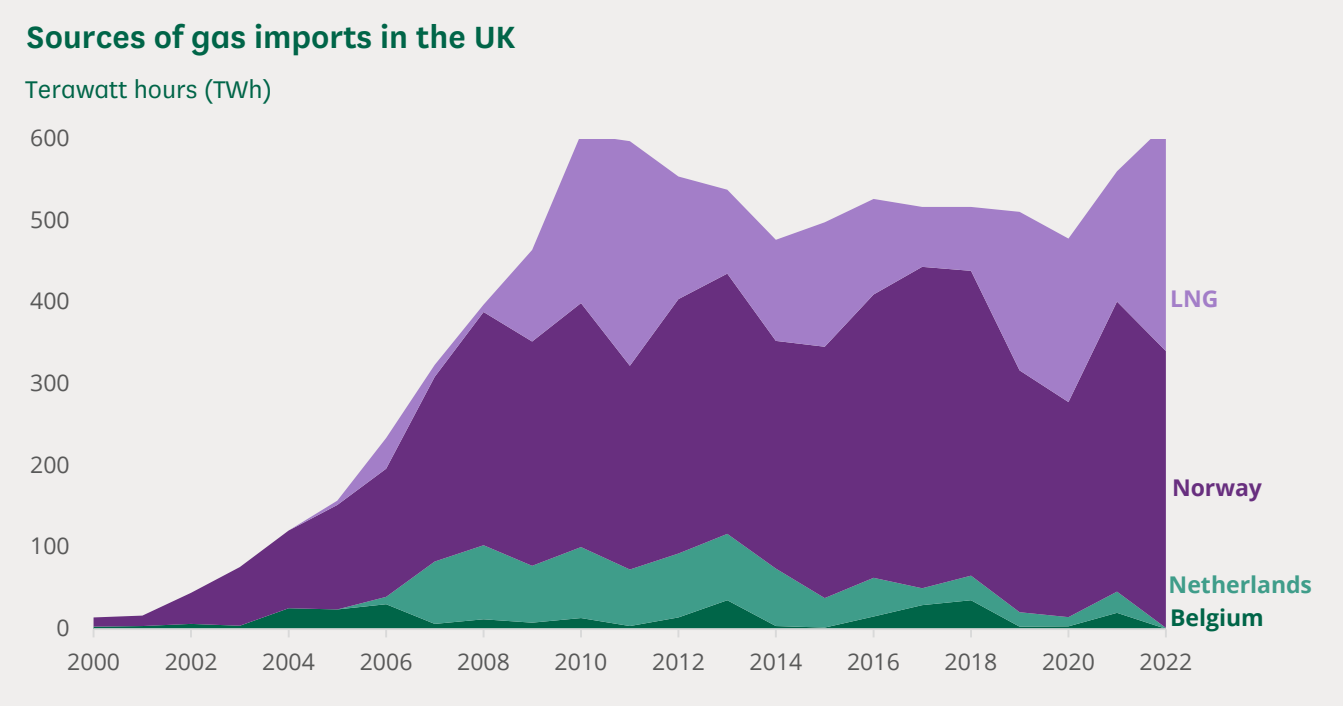
Until the mid-2000s, the UK was self-sufficient with gas. Production had expanded rapidly in the 1990s and the UK was a net exporter of gas. Since 2000, output had decreased due to gas fields reaching the end of their life span. Whilst there are some new fields further away, they are more expensive to reach.

The UK became a net gas importer in 2005 and had to build infrastructure and trade links to source gas. It still exports some gas, mainly to continental Europe (at certain times during the year) and to Ireland.

Imports

In 2022, 46% of gas consumed in the UK was imported.[22] The UK imports gas through pipelines from Europe and tankers of Liquified Natural Gas (LNG) from various countries.

[22] BEIS, Digest of UK energy statistics (DUKES): natural gas, Table 4.2



Source: BEIS, Energy Trends: UK gas, table 4.4

The UK got over half (55%) of its gas imports from Norway in 2022. This comes via the Langeled pipeline, which was opened in 2006.[23] Other pipeline gas imports come from the Interconnector UK (IUK) to Belgium, which opened in 1998, and Balgzand Bacton Line (BBL) to the Netherlands, which opened in 2006. These imports from continental Europe may include some gas which originally came from Russia.

Liquefied natural gas (LNG) has become a popular method of transporting natural gas over the past few decades. The UK has imported LNG commercially since 2005, with imports increasing rapidly from 2008 and peaking in 2011. In 2022, 35% of UK gas demand was imported LNG.

What is the difference between natural gas and LNG?

Liquefied natural gas (LNG) is natural gas that has been converted to a liquid state by cooling. This enables transportation of gas by ship, as the volume is significantly reduced from the gaseous state. Therefore, it provides an alternative means of transportation where pipeline infrastructure does not already exist or is not viable. Once at its destination, LNG is converted back to a gas to and used in the same way as natural gas that has not been liquefied.[24]

The UK has been importing LNG from an increasingly diverse range of sources. In 2005, the UK only imported LNG from Algeria and Trinidad and Tobago, while in 2022 LNG was imported from 13 countries. From 2009 to 2021, the

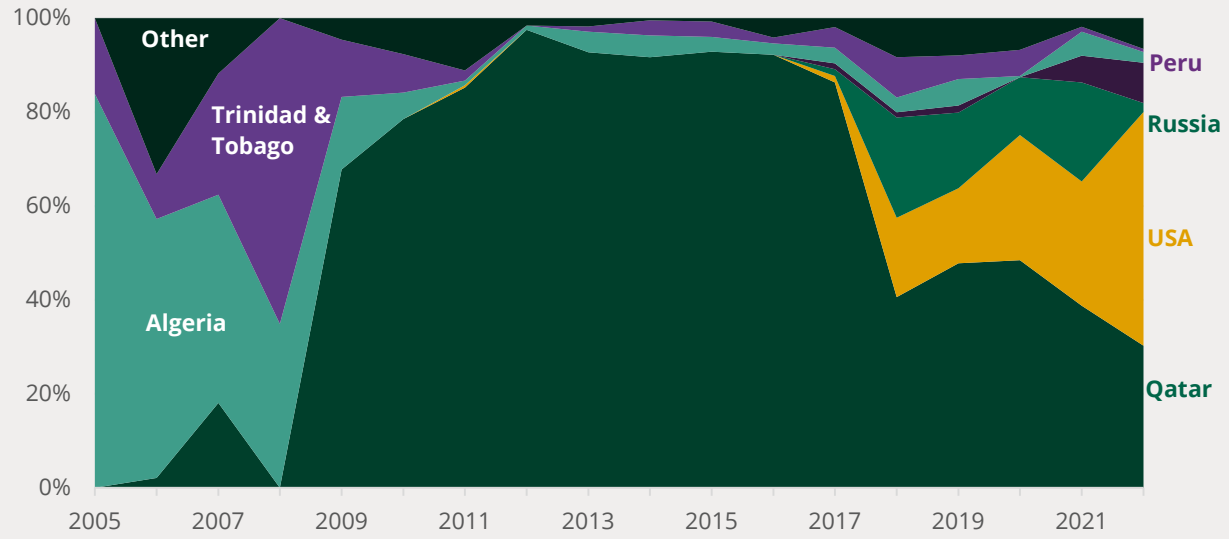
[23] DESNZ, Energy Trends: UK gas, table 4.4

[24] DESNZ, Supply of Liquefied Natural Gas in the UK 2022, 30 March 2023

largest proportion of imported gas has come from Qatar. Since 2017, the proportion of gas imported from the USA has increased and it overtook Qatar in 2022. In 2022, the USA provided 50% of LNG imports, Qatar provided 30% and Peru provided 9%.[25]

Sources of Liquefied Natural Gas (LNG) gas imports in the UK

Percentage of the total LNG imports



Source: BEIS, Energy Trends: UK gas, table 4.4

Imports from Russia

From 2018, imports of liquefied natural gas (LNG) from Russia increased considerably. By 2021, 22% of imported LNG in the UK was from Russia, which was 4% of the UK's total gas supply. However, following Russia's invasion of Ukraine, the UK is reducing dependency on Russian fossil fuels.

No LNG was imported to the UK from Russia between April and December 2022.[26] The UK has banned the import of Russian gas from the start of 2023.

The Library briefing, Imports of fossil fuels from Russia, provides further information.

[25] BEIS, Energy Trends: UK gas, table 4.4

[26] BEIS, Energy Trends: UK gas, table 4.4. December 2022 is the most recent month for which data was published.

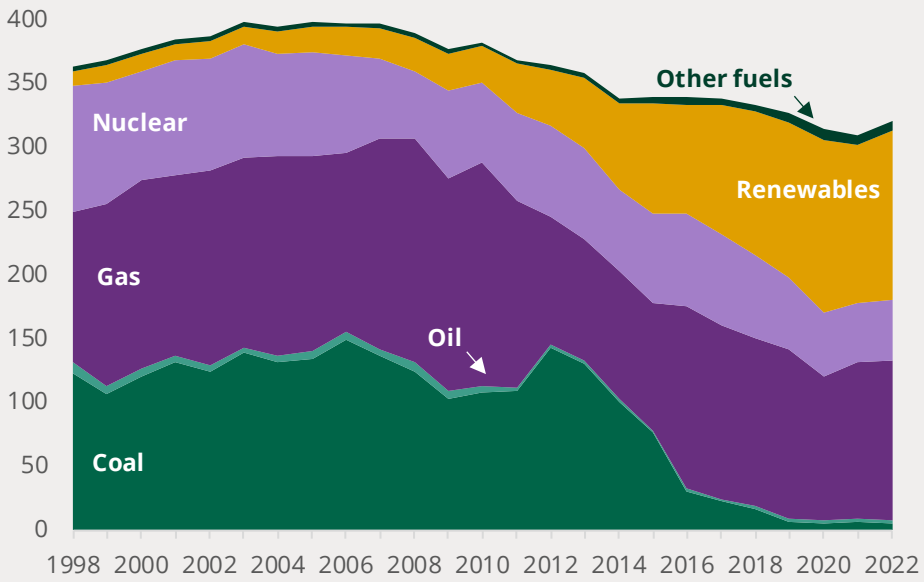
How is electricity generated?

Most of the electricity consumed in the UK is generated in the UK. It is supplemented with imports from Europe when price differentials are favourable. Total electricity supplied in 2022 was 320 terawatt-hours (TWh). There were net exports of 5 TWh, this is the first time in over 40 years that exports exceeded imports.[27]

In 2022, 41% of electricity was generated from fossil fuels, 41% was from renewable sources (such as solar power and wind power), and 15% was from nuclear energy.[28] The proportion of energy generated from different sources has changed over time.[29]

The proportion of electricity generated from renewable sources has increased to two fifths over time

Terawatt hours (TWh)



Source: DESNZ, Energy Trends: UK electricity, ET 5.1

The changing electricity mix timeline

- Around the year 2000, the electricity generation mix was dominated by coal and gas generation. About a fifth was from nuclear energy and electricity generated from renewables was negligible.

27 DESNZ, Energy Trends: UK electricity, ET 5.1

28 DESNZ, Energy Trends: UK electricity, ET 5.1

29 Full details of energy consumption in the UK (including the fuels used to supply heat and transport demand) can be found in the Government's Energy Consumption in the UK report, or the Digest of UK energy statistics report, both published annually.

- From 2000, there was a small increase in renewable generation, but also further rises in gas generation.
- Total generation has decreased by around a fifth since 2010. Renewable generation has increased five-fold and fossil fuel generation has halved.
- Coal generation is due to be phased out by 2024[30]. Large offshore wind projects are planned.[31] Existing nuclear power stations will be decommissioned in the 2030s, but the Government's ambition is for around 25% of projected 2050 electricity demand to be generated from nuclear energy.[32]

How does the changing energy mix affect energy security?

Energy security is commonly defined as 'the uninterrupted availability of energy sources at an affordable price'.[33] The changing generation mix makes it more complex to ensure that electricity demand meets electricity supply. Previously, generation was mostly provided by large, centralised power stations (often fuelled by coal), which could provide continuous power. Whereas, some types of renewable energy, such as wind and solar are intermittent and based on weather conditions. Both demand and supply are therefore increasingly variable, making it harder to continuously meet demand.

Electricity imports

Electricity interconnectors are high-voltage cables that run under the sea, underground or via overhead cabling, to connect the electricity systems of two countries. They allow the trading and sharing of surplus electricity, such as that generated from wind and solar farms.[34]

The UK has seven interconnectors connecting to France, the Republic of Ireland, Belgium, Norway, and the Netherlands.[35] In 2021, 7% of the UK's electricity supply was imported from interconnectors to Europe.[36] France was the source for more than half the UK's imported electricity (53%), followed by Belgium (24%), the Netherlands (15%) and Norway[37] (5%). However, in 2022,

30 BEIS, End to coal power brought forward to October 2024, 30 June 2021
31 BEIS, UK signs agreement on offshore renewable energy cooperation, 18 December 2022
32 BEIS, Nuclear energy: What you need to know, 6 April 2022
33 International Energy Agency (IEA), Energy security
34 National Grid, What are electricity interconnectors?
35 BEIS, Electricity interconnectors in the UK since 2010, 30 June 2022
36 BEIS, Digest of UK Energy Statistics (DUKES), 2022 Chapter 5: Electricity
37 The new North Sea Link interconnector with Norway became operational at the start of October 2021 and provided 5 per cent of total electricity imports despite only being in operation for 3 months.

the UK was a net exporter of electricity for the first time in over 40 years due to cuts in output from nuclear and hydroelectric energy in Europe. [38] Most exports were to France, which had large nuclear outages.

1.3 Networks: How is energy transported?

Once generated, gas and electricity are transported through transmission and distribution networks. The transmission network is like the motorways, carrying vehicles (gas and electricity) at high speed (high volume gas and high voltage electricity) across the country. The distribution networks are like the local roads, connecting motorways with communities to help vehicles complete their journey.

Gas networks

Gas is physically extracted and brought onto Great Britain's network of gas pipelines. The gas network is the medium across which gas is transported to consumers across England, Wales and Scotland.

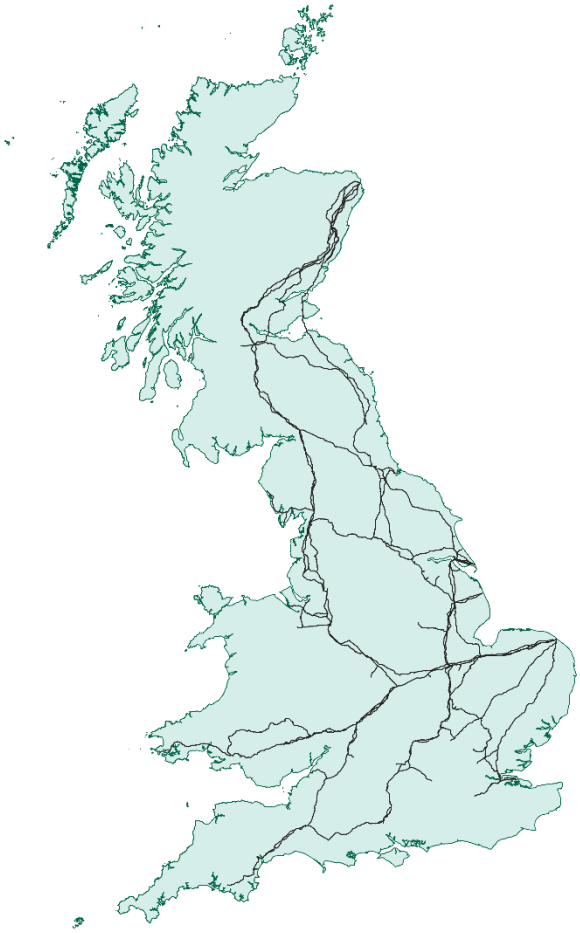
The gas is transported through transmission and distribution pipelines on the Great Britain gas network. The transmission and distribution systems are split into different pressure tiers. The highest pressure is in the national transmission system and the lowest pressure is used to connect to households on the distribution system.

Transmission

The National Transmission System (NTS) provides the large-scale transport of gas across the country. It is owned and operated by the National Grid Group, which is a group of businesses that provides energy services. Some very large consumers such as gas fired power stations are supplied directly by the transmission system, but most are supplied by the distribution system. The map below shows the transmission network across Great Britain.

[38] DESNZ, Digest of UK Energy Statistics (DUKES), 2022 Chapter 5: Electricity

Gas transmission network in Great Britain



Source: National Grid, Transmission network shapefiles, © National Gas Transmission

What is the National Grid Group?

National Grid Group is a group of businesses that provides energy services. In the UK these include:

- the GB transmission electricity system operator (ESO), which manages the transmission network to ensure supply and demand are balanced at all times;
- the transmission network owner (TO) in England and Wales;
- the distribution network operator for the East and West Midlands, South West and Wales (following its acquisition of Western Power Distribution in

2021); and

- the transmission network owner and operator for the gas grid.[39]

Due to potential conflicts of interest between the transmission network owner and operation roles, National Grid was required by Ofgem and the Government to legally separate the electricity system operator role from its commercial aspects.[40] The separation came effect in April 2019.[41]

The Energy Bill [HL] 2022-23 includes proposals to establish a new, independent Future System Operator that would take on the existing capabilities and functions of the transmission electricity system operator and (where appropriate) the gas transmission network owner and operator.[42] The new operator would "bring together the planning for the electricity and gas systems, and potentially systems for new technologies like hydrogen and carbon capture and storage".[43]

More information can be found on these roles on the National Grid website, the Library briefing paper on Electricity Grids and the Government factsheet on the Future System Operator .

Distribution

Most consumers are supplied gas by Gas Distribution Networks (GDNs). There are eight GDNs that cover different geographical regions of Great Britain and are fed by the National Transmission System (NTS). These distribute gas to households and other small and medium consumers and are owned and managed by four companies. Consumers cannot switch GDN: they are monopolies for their region.

How do gas networks charge energy suppliers?

As gas is a physical fuel, energy suppliers are required to 'book capacity' on the transmission network. These are charged on a pence per kilowatt basis for bringing gas onto the network and taking gas off the network. Distribution charges, known as Local Distribution Zone (LDZ) charges, are based on the pressure at which the gas is flowing. Suppliers pass these 'network costs' onto consumers in their energy bills, as seen in section 2.1.

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39 National Grid Group, About Us, undated; National Grid, Gas Transmission, undated; National Grid, Electricity Distribution, undated; National Grid, Western Power Distribution and National Grid: your questions answered, undated [accessed 22 November 2022]

40 Ofgem, Ofgem confirms plans for greater separation of National Grid's electricity system operator role, 3 August 2017

41 National Grid, Separating the Electricity System Operator (ESO) from Electricity Transmission (ET), undated [accessed 22 November 2022]

42 Energy Bill [HL] 2022-23 [as amended in Committee]

43 BEIS, Energy Security Bill factsheet: Future System Operator, 6 September 2022. The Energy Bill 2022-23 is referred to as the Energy Security Bill in some government publications.

Electricity networks

Read library briefing Electricity Grids for more detail

Once electricity is generated, it is transported to energy consumers through transmission and distribution networks on the Great Britain electricity network (also referred to as the 'electricity grid'). This is a network of wires that connect electricity generators and consumers across England, Wales and Scotland.

Transmission network

Transmission networks carry electricity from large power stations long distances around the country at high voltages. In England and Wales electricity is carried at higher voltages of 275 kilovolts or 400 kilovolts. In Scotland, electricity is carried at 132 kilovolts.

There are numerous owners of the mainland and offshore transmission networks. All are licensed by Ofgem and all are monopolies of specific areas.

- In England and Wales, the electricity transmission network, including the transmission substations, is owned by National Grid.
- The transmission network in southern Scotland is owned and maintained by SP Energy Networks, and in northern Scotland by Scottish and Southern Electricity Networks. These Scottish companies also own the distribution networks in their areas.
- The transmission network for offshore wind is owned by an offshore transmission owner (OFTO).

The Electricity System Operator (ESO), licensed by Ofgem, ensures that supply and demand on transmission networks is matched, or 'balanced'. The ESO can instruct power stations and other assets to change their generation or consumption to maintain system balance. The National Grid System Operator (SO) manages the Great Britain transmission network.

Distribution network

Distribution networks transport lower voltage electricity from a substation on the transmission network to consumers in homes and businesses. Electricity is distributed at lower voltages of up to 132 kilovolts in England and Wales and up to 33 kilovolts in Scotland. Electricity substations are used to transfer high voltage electricity on transmission networks into lower voltage electricity on distribution networks.

What are electricity substations?

In substations, the voltage of electricity is stepped up or down through pieces of equipment called transformers.

- **Transmission substations** are found where electricity enters the electricity network. As the output from power generators (such as power stations or

wind farms) varies in voltage, it must be converted to a level that suits its means of transmission.

- **Distribution substations** lower the voltage of electricity from the transmission system to the distribution networks. The voltage is further decreased to around 240 volts before it is delivered to business and domestic consumers. At 240 volts, the electricity is within the safe operating limits of domestic appliances.

A Distribution Network Operator (DNO) is a company licensed to distribute electricity. They own and maintain cables in their operation areas.

There are 14 DNOs, in Great Britain which correspond to distinct geographical areas. These are shown in the map below. Although each Distribution Network is a separate geographical area, there aren't separate electrical systems. This means electricity can flow between areas, and metering is placed at the boundaries of the areas so that these volumes can be measured.

14 Electricity distribution networks in Great Britain

Source: National Grid ESO, GIS Boundaries for Great Britain DNO License Areas, May 2020

As a result of increasing demands for balancing renewable generators connected directly to the distribution network (known as embedded generation) DNOs are taking on more operational and balancing roles, transforming them to Distribution System Operators (DSO).

What is embedded generation?

The distribution network increasingly has small-scale generators, known as embedded generators, such as onshore wind farms and solar parks, that are connected directly to it rather than to the transmission network.[44] Around 30% of generated electricity is connected directly onto the distribution network rather than the transmission network. [45] This is expected to grow as renewable generation becomes more common in the future.

How do electricity networks charge energy suppliers?

Network operators charge suppliers per unit of energy transmitted to use the electricity networks. These costs are passed to consumers as a "network" cost in their energy bills. This fee includes the cost of using the infrastructure, plus losses in physically transporting the energy though the wires. See section 2.1 for more detail.

1.4 Suppliers: Who supplies energy to households?

A supplier is a licensed entity which contracts with consumers to supply gas and/or electricity. The supplier buys gas and electricity on the wholesale market and sells it on to domestic consumers in the retail market. It pays transmission and distribution network charges to deliver gas and electricity to consumers premises and arranges for metering.

What is the difference between the wholesale and retail market?

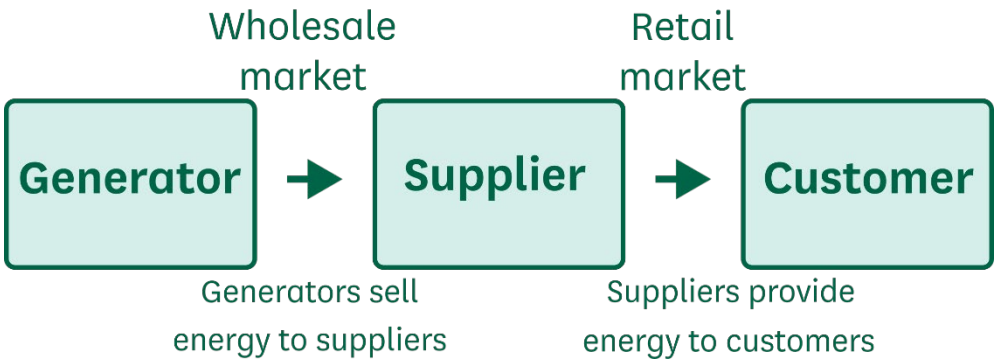
The energy market is separated into a wholesale and a retail market.

The **wholesale market** is the market for the sale and purchase of gas and electricity between generators and suppliers. Suppliers buy the gas and electricity they require to meet their expected consumers needs. This is a competitive market, so suppliers can choose generators and wholesale prices can vary between trades.

44 National Grid ESO, What is embedded generation?
45 National Grid ESO, What is transmission connected generation?

The **retail market** is the market for the sale and purchase of gas and electricity between consumers and suppliers. Consumers can choose their supplier through switching in the competitive energy market where a wide variety of tariffs at different prices are available.

Interaction between the wholesale and retail energy markets



What is 'hedging'?

Wholesale energy prices can fluctuate due to external supply and demand factors, such as political tension or natural disasters. To protect themselves from unexpected price surges, energy suppliers use 'hedging'. Energy market hedging refers to the practice of suppliers intermittently purchasing smaller amounts of wholesale energy to match the anticipated demand of their customers, instead of buying wholesale energy in one amount on the spot market.

Energy suppliers may experience a net financial loss as a result of hedging. If the amount of energy purchased in advance does not match the energy demand of customers, energy suppliers have to buy or sell energy at real-time market prices to match this demand. These real-time prices may differ significantly from the price the suppliers paid for energy purchased in advance. Energy providers may suffer a net financial loss because of this. For instance, the supplier may have to sell excess energy at a loss.

How many energy suppliers are there?

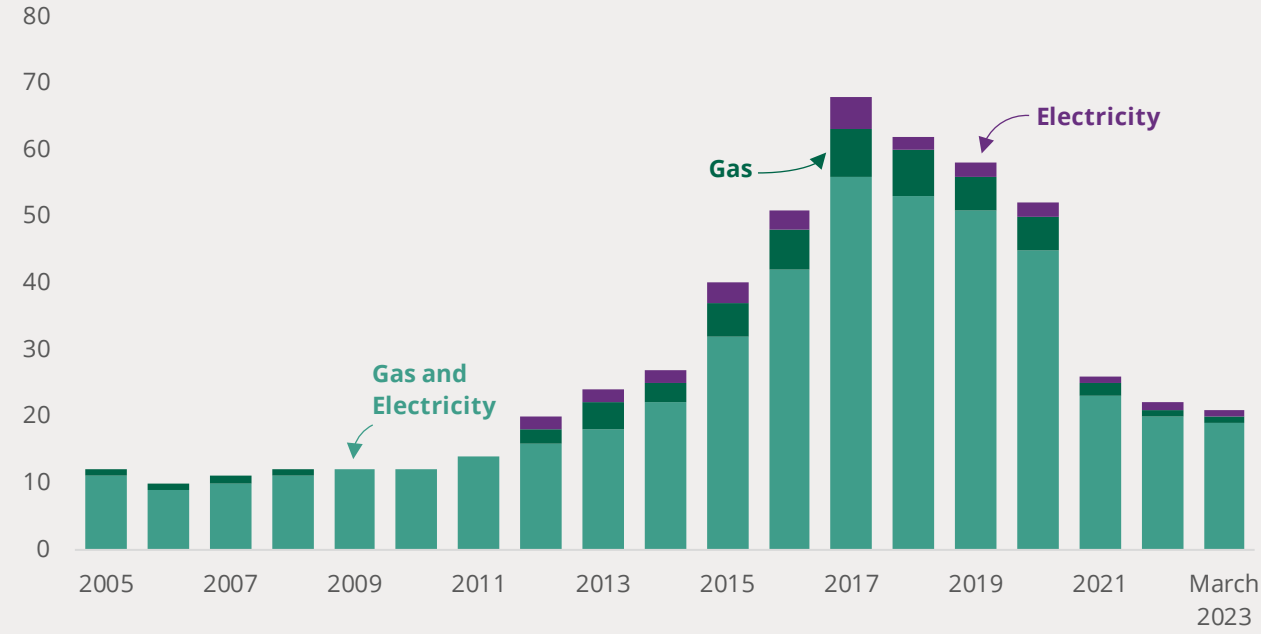
Since the energy market was opened to competition from the 1990s, domestic energy consumers have had the freedom to choose their energy supplier. Prior to this, British Gas and the 14 regional public electricity suppliers had a monopoly to supply all domestic gas and electricity consumers.

There were 21 active suppliers in the domestic gas and electricity retail markets as of March 2023. This consisted of 19 suppliers active in both gas and electricity, one in gas only and one in electricity only.[46]

The chart below shows the number of active licensed suppliers in the domestic gas and electricity markets. It also gives a breakdown by those supplying both gas and electricity, and those who supply only one fuel.

Number of active domestic suppliers by fuel type in Great Britain

In December



Source: Ofgem, Retail Market Indicators, Number of active domestic suppliers by fuel type (Great Britain)

The energy supplier market consisted of six large energy companies, and a similar number of small suppliers, in the 2000s.[47] Since 2010, smaller suppliers began entering the market in greater numbers. The total number of domestic suppliers went from 12 in December 2010 to a peak of 70 suppliers in mid-2018.

In December 2020 there were 52 suppliers, this dropped to 26 in December 2021. The increase in market exits was due to rising wholesale prices. From then onwards, the number of active domestic suppliers remained fairly stable. See section 3.3 for more information on supplier exits.

Who are the 'large legacy suppliers'?

The "Big Six" was the name collectively given to the six larger energy

[46] Ofgem, Retail Market Indicators, Number of active domestic suppliers by fuel type (Great Britain)

[47] NAO, The energy supplier market, 22 June 2022

companies who supply most of Britain's gas and electricity. Ofgem now refers to these companies as 'large legacy suppliers'. After recent takeovers there are now five such companies. Each of them generates electricity and delivers both gas and electricity to homes and businesses. They are:

- Centrica plc (three retail brands: British Gas, Scottish Gas and Nwy Prydain in England, Scotland and Wales, respectively)
- E.ON UK (which acquired RWE npower in 2020)
- Scottish and Southern Energy (SSE) now part of OVO Energy
- EDF Energy
- Scottish Power

In the first quarter of 2023 the combined gas market share of the large legacy suppliers (this includes OVO Energy after the acquisition of SSE in 2020) was 71%. The market share held by other large, medium and small suppliers was 29%.[48]

1.5 Policy makers and regulators: Who governs the energy market?

Historically, parts of energy generation, transportation, and supply were run by the public sector. Most of the market is now privatised; generation and supply are competitive, and transportation through networks is regulated as the operators are monopolies. The Government sets policy and the Office of Gas and Electricity Markets (Ofgem) regulates the electricity and gas markets.

Who sets energy policy?

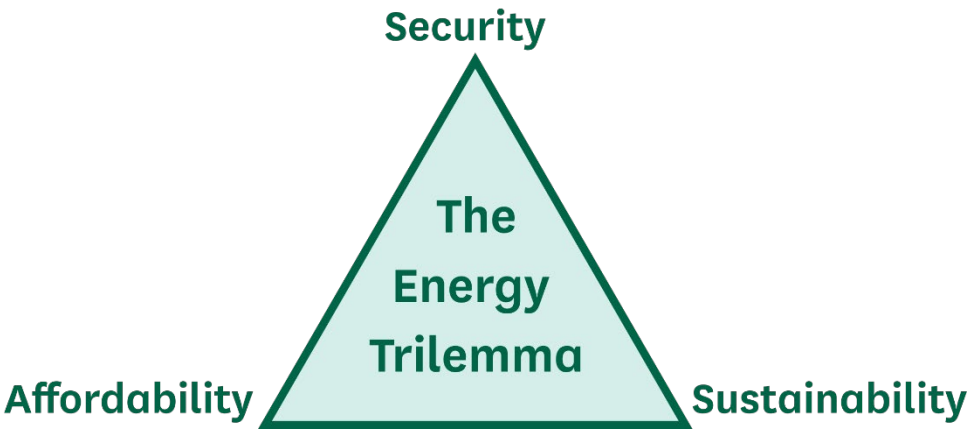
Energy policy is the responsibility of The Department for Energy Security and Net Zero (DESNZ). It sets the policy agenda and is responsible for legislation. It also had a critical role in shaping investment into the market with the 'net zero' target at the centre of policy making. Previously, it was the responsibility of the Department for Business, Energy and Industrial Strategy (BEIS).

The energy policy of successive Governments has used the energy 'trilemma' framework with the following three objectives:

[48] Ofgem, Retail Market Indicators, Electricity supply market shares by company: Domestic (Great Britain)

- **Sustainability:** Decarbonise electricity generation
- **Security:** Ensure uninterrupted supply
- **Affordability:** Minimise the cost of energy to consumers

The energy trilemma



How are the electricity and gas markets regulated in Great Britain?

In Great Britain, the generation, transmission and supply of gas and electricity is regulated and licensed by Ofgem. As the regulator for the energy market, Ofgem is responsible for:

- Industry governance: supply licences and industry codes, policy schemes, ensuring all suppliers must treat customers fairly and have special regard for customers in, or at risk of, vulnerable situations
- Compliance and enforcement
- Competitive operation of markets
- Networks regulation and price control

In Northern Ireland, electricity and gas networks are regulated by the Utility Regulator.

Network regulations

The companies that own the transmission and distribution networks are monopolies. There is only one network company in each area, therefore consumers do not have a choice of who their network company will be in the way they can choose who their energy supplier is and can switch to get a deal.

To ensure consumers are treated fairly, regulators put in place arrangements to ensure revenues collected are 'reasonable'. This makes sure they cover costs, allow for investment and are profitable, while also protecting consumers from overcharging.

Network price controls have been a feature of the energy industry since privatisation. All network owners are subject to price controls by Ofgem. The controls cap the maximum revenue that can be collected from customers.

RIIO Framework

Ofgem overseas the price control settlement process using the RIIO framework. RIIO stands for **Revenue = Incentives+Innovation+Outputs.**

- **Revenue:** The revenue is set each year with the price control settlement and is adjusted in line with how network companies perform. The 'Maximum Allowed Revenue' sets how much networks can charge in total. Revenue should allow for an adequate rate of return of approximately 4.3%.
- **Incentives:** Networks have incentives that allow them to collect additional revenue. These are framed around environmental improvements, connecting users, reduced loss of supply etc.
- **Innovation:** Network companies partner with private sector investors to bid for money to fund innovation via an Ofgem-led annual competition known as the Network Innovation Competition.
- **Outputs:** Network companies have a series of outputs that they said they would deliver during their RIIO negotiations. A 'scorecard' determines how network companies have performed, and the revenue is adjusted accordingly.

1.6 The Energy Bill 2022-23

The Energy Bill 2022-23 aims to deliver a "a cleaner, more affordable and more secure energy system for the long term".[49]

The bill would allow for 26 separate energy-related measures. These are structured around three 'key pillars':

- leveraging investment in clean technologies
- reforming the UK's energy system and protecting consumers
- maintaining the safety, security and resilience of the energy systems across the UK

It was introduced in the House of Lords on 6 July 2022. Second reading was held on 19 July 2022 and third reading was on 24 April 2023. The bill was introduced to the House of Commons on 25 April 2023. Second reading was on

[49] House of Lords Library, Energy Bill [HL]: HL Bill 39 of 2022–23, 14 July 2022

9 May 2023 and third reading on 5 September 2023. The Energy Bill is currently at "Ping-pong stage" (being sent back and forth between the Lords and the Commons).[50]

The Library published five Energy Bill briefings ahead of the second reading in the Commons that provide an overview of the Bill, some general policy background and stakeholder reaction. A follow up briefing on the Energy Bill's Committee stage report was published ahead of the third reading with information about what happened at committee stage and how the Bill has changed as a result. The briefing The Energy Bill and households: FAQs answers frequently asked questions about what the Energy Bill would do if it became an Act in its current form.

[50] UK Parliament, Parliamentary Bills, Energy Bill [HL], 5 October 2023

2 Understanding energy bills

Energy bills comprise a variety of costs. They are calculated by multiplying the prices per unit (unit rates) of gas or electricity by the amounts used, plus the daily 'standing charge'. Tariffs are either fixed for a certain amount of time, typically one year or more (a 'fixed rate' tariff) or they can go up or down according to the market (a 'variable' tariff). The price cap and Energy Price Guarantee (EPG) set maximum tariffs and standing charges for energy. The cost of an energy bill depends on energy usage, supplier and tariff, meter type, payment method and location. The price of electricity is linked to the price of gas.

2.1 What are the components of an energy bill?

Wholesale costs of gas and electricity make up the largest part of an energy bill. Other costs include network costs, social and environmental policy costs, supplier operating costs and margin, other direct costs, and taxes, like VAT. The diagram in section 2.3 shows how the components of the default tariff cap have changed over time.

Wholesale costs

Wholesale costs are the amount a supplier pays to get the gas and electricity to supply households with energy. Suppliers buy energy from electricity generators and gas producers on the wholesale market.

Daily spot prices on the wholesale market are highly volatile. To protect themselves from variations in prices, energy suppliers 'hedge' their energy by purchasing through forward-looking contracts. This means that rather than buying gas or electricity on the spot market for immediate delivery and being exposed to whatever the price may be, suppliers access the market continually, buying some energy up to years in advance. As a result, there is a considerable time lag between changes in the spot price of gas and electricity and changes in consumer prices. See section 1.4 for more detail.

Network costs

Network costs cover the price that suppliers pay to transmission and distribution networks for gas and electricity. These are set by the distribution network in each region and cover the use and maintenance of the pipes and wires that get the gas and electricity to customers homes. They also include 'balancing' charges. Supply and demand is balanced second-by-second for electricity and daily for gas. These charges vary over time. Different parts of

Great Britain have different network companies and they don't all charge the same price to use and maintain the energy network. See section 1.3. Some network costs are shown as a separate standing charge on your bill, but some energy providers choose to add it in to their unit prices.

Supplier of Last Resort (SoLR) Costs

In recent months, networks costs have included an additional charge to cover 'Supplier of Last Resort' (SoLR) levy costs. These costs are faced by suppliers who have taken on customers from the many smaller suppliers that have gone out of business in recent months. In effect, these are indirect costs of higher wholesale prices that customers have to pay.

Section 3.3 provides more information on this.

Operating costs

Operating costs are the costs incurred by suppliers to cover billing, metering, customer relations, central overheads, office costs, industry charges, sales and marketing.

Policy costs

Policy costs are the costs related to government social and environmental schemes to save energy, reduce emissions, encourage take-up of renewable energy and help vulnerable people. They cover the following policies:

- Renewables Obligation: supports large scale renewable generation, paid on electricity bills
- Feed-in Tariff: supports small scale renewable generation, paid on electricity bills
- Contracts for Difference: (CfD) supports large scale low carbon generation, paid on electricity bills
- Energy Company Obligation (ECO): supports energy efficiency measures in homes, paid on gas and electricity bills
- Warm Homes Discount: provides a discount to vulnerable households, paid on gas and electricity bills
- Assistance for Areas with High Electricity Distribution Costs: paid on electricity bills
- Green Gas Support Scheme and Green Gas Levy: funds the Green Gas Support Scheme, paid on gas bills

The Government has said that from 1 October 2022 policy costs will temporarily be shifted from energy suppliers to the Government as part of the Energy Price Guarantee (EPG).[51]

Supplier profit and margin

When suppliers set their prices they will try to cover their costs as well as make a profit. Margins are a supplier's overall earnings before deducting interest, tax and other costs.

Ofgem's price cap methodology allows for an operating profit or Earnings Before Interest and Taxation (EBIT) for suppliers of 1.94% of revenue. This is a rate of return allowed for suppliers, to ensure they can finance their businesses.

This does not mean that suppliers will earn this rate of return. Their actual profit depends on the actual costs they face. Ofgem data on profit margins showed that only one of the large legacy suppliers (British Gas) made a profit on domestic energy supply in either 2019, 2020 or 2021.[52]

Most energy supply companies also have electricity generation businesses which have generally performed better and benefited from high wholesale prices.[53] See more information in the section 3.6.

Value Added Tax (VAT)

Value Added Tax (VAT) is a 5% tax added to the level of the tariff.

Other direct costs

Other direct costs could include apprenticeships, developing energy saving technology and third-party services.

2.2 How is an energy bill calculated?

Customers' bills are calculated using unit rate and standing charges, which can be on fixed or variable tariffs. A **fixed rate tariff** sets the cost of energy for a certain amount of time, typically one year or more, while prices on a **variable tariff** can go up or down according to the market.

51 BEIS, Energy bills support factsheet: 8 September 2022 (Updated 21 September)
52 Ofgem, Retail market indicators, Pre-tax supply margins of the large legacy suppliers
53 Ofgem, Wholesale market indicators, Large suppliers: Electricity generation profitability by technology type

An energy bill is calculated by multiplying the unit rates (prices per unit) of gas or electricity by the amount used plus the daily standing charge. Energy suppliers can determine the unit rates and standing charges, provided they do not exceed the maximum price set by the energy price cap or EPG[54] (discussed in section 2.3).

Unit rate

The unit rate is the price for each unit of gas or electricity used. It is charged at pence per kilowatt hours (p/kWh).

Energy meters record how much gas and electricity is used. This is what the unit rate charge of bills are based on. For standard meters, customers need to send manual readings to their energy companies, otherwise they will estimate how much energy has been used. Smart meters send automatic readings to energy suppliers.

What is a kilowatt hour (kWh)?

A kilowatt hour (kWh) is the unit used to measure energy use per hour. One kilowatt equals 1,000 watts. Each appliance in a household, including heating, lights and the TV, will use watts of energy when turned on. 1 kWh will power a 40 watt light bulb for 25 hours.

A consumer may have more than one unit rate, such as day, night and weekend rates. For example, those with an Economy 7 electricity meter pay a cheaper rate for electricity for seven hours at night (off-peak) and a higher one in the day.[55] See section 2.5 for more detail.

Standing charge

A standing charge is a fixed daily cost for keeping consumers connected to the energy network. It is charged in addition to the unit rate regardless of how much gas or electricity consumers use.

What do standing charges include?

The payment of a standing charge reflects the fixed costs of providing and maintaining energy supply. It includes charges from transmission and distribution network companies for using pipes and power lines, the maintenance and installation of meters and billing and accounting. It also includes the costs of failed suppliers from the Supplier of Last Resort (SOLR) process (see section 3.3) and some of the costs of government energy schemes for green initiatives and vulnerable customers.

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54 The price cap sets a maximum price that suppliers can charge users for their standing charge.

55 EDF, 7 facts about Economy 7 meters, tariff and times

How are standing charges set?

There is no requirement for energy suppliers to have standing charges on bills, but the majority of them do. Some energy suppliers choose not to show it as a separate charge on an energy bill and include these costs in the unit rate instead. Tariffs with a low or zero standing charge may have a much higher unit rate to ensure these fixed supply costs are met.

Standing charges vary by region due to the different costs to transport power to where people live. See section 2.5 for more detail.

What are the different types of energy tariffs?

Fixed rate, fixed term tariffs

With a fixed energy tariff, the unit rates and standing charge stay the same for the length of the contract agreed with an energy supplier. This is usually 12-18 months. This means that the cost per unit and the standing charge are fixed, but not the energy bill, which is dependent on how much energy is used. If customers leave the plan before the contract end date, they are generally charged an exit fee.

Fixed-term tariffs are not covered by Ofgem's price cap or the Government's Energy Price Guarantee (EPG). As such, most fixed rate tariffs available to new customers are more expensive than variable rates. However, the EPG does provide a discount to those on fixed tariffs above the EPG unit prices. Many suppliers withdrew their cheaper fixed tariffs from the market when wholesale prices started to increase. This led to a fall in the number of customers on fixed tariffs.

Ofgem statements on the number of customers protected by the price cap imply that approximately half of customers were on fixed tariffs in Summer 2021.[56] Their numbers have fallen to around 3 million in July 2023 or around one in ten domestic customers. The vast majority of these were not on prepayment meters.[57]

Variable rate tariffs

With a variable tariff, the unit rates and standing charge can increase or decrease. Suppliers might change the price of unit rates and standing charge if the cost of wholesale energy changes, or if Ofgem changes the price cap or the Government changes the EPG. This means the energy bill could increase or decrease from month to month, even if the same amount of energy is used. The contract is usually open-ended and has no exit fees for switching to a different tariff.

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56 Ofgem, Record gas prices drive up price cap by £139 – customers encouraged to contact supplier for support and switch to better deal if possible, 4 August 2021

57 Ofgem, Energy prices to fall again this winter, 25 August 2023

A **standard variable tariff (SVT)** is an energy supplier's default tariff and is usually the most expensive one, although this might not be the case in the current market.

According to Ofgem, around 29 million households were on SVTs in July 2023. Of these, around 4 million were on SVTs for prepayment meters.[58] This is an increase from around 15 million households that were implied to be on variable tariffs in Summer 2021.[59]

What is a default tariff?

Customers are either on non-default tariffs, where they have made an active choice about their energy tariff, usually fixing it at a certain rate, or on default tariffs, where they are more likely not to have done so. Customers will automatically move to a default tariff when the term of a fixed rate tariff expires unless they agree a new deal with their energy supplier.

To protect customers from being overcharged, Ofgem's energy price cap (or the EPG) limits the maximum that can be charged for customers on standard default tariffs. See Section 2.3 for more information.

What is typical domestic consumption?

To calculate an average annual energy bill, the standing charge is added to the 'typical' levels of energy consumption multiplied by the unit rates for gas or electricity. There are two main sources of data for typical domestic energy consumption: BEIS (now DESNZ) and Ofgem.

The official statistics produced by BEIS assume 13,600 kWh of gas and 3,600 kWh of electricity[60] is 'typical'. These estimates are calculated using **mean consumption**; the total amount of domestic energy consumption is divided by the number of customers. These estimates have changed over time, based on a review of the available evidence, most recently in March 2020.[61]

Ofgem uses lower annual consumption levels for its definition of 'typical': 2,700 kWh for electricity and 11,500 kWh for gas. These figures were last updated in October 2023 and are based on **median consumption** values.[62] The box below explains the recent update to these figures.

58 Ofgem, Energy prices to fall again this winter, 25 August 2023
59 Ofgem, Record gas prices drive up price cap by £139 – customers encouraged to contact supplier for support and switch to better deal if possible, 4 August 2021
60 Standard electricity use, not Economy 7
61 BEIS, Review of the average annual domestic gas and electricity consumption levels, May 2020
62 Ofgem, Decision for Typical Domestic Consumption Values 2023, 25 May 2023

New lower typical domestic consumption values (TDCV) from October 2023

From October 2023, Ofgem will use 'typical' annual domestic consumption values of 11,500 kWh for gas and 2,700 kWh for electricity. These are lower than the values of 2,900 kWh for electricity and 12,000 kWh for gas previously used following the 2019 revision. The lower values are based on data for 2019 and 2021, not the pandemic-affected data for 2020.

The lower consumption values will make annual bills look lower than the current levels, even with the same unit costs and standing charges. However, they will better reflect recent median levels of consumption. This is because unit costs are multiplied by these levels of consumption and added to daily standing charges to give annual bills/price cap levels for 'typical' consumption.

The choice of 'typical' consumption levels does not have a major impact on trends in the level of bills or the price cap (the 'shape' of a price trend in a chart) but it does affect their absolute levels and any data on changes expressed in pounds per year.

Ofgem uses the median because it is more representative of what is typical. A mean average figure would be increased by the small numbers of consumers who use very large amounts of energy. The median is the value that half of consumers use less than and half of customers use more than.

The consumption data from Ofgem is used to calculate the average annual bill under the price cap and the Energy Price Guarantee (EPG). See section 2.3.

2.3 What is the average energy bill under the energy price cap and Energy Price Guarantee (EPG)?

The 'average' bill is calculated using 'typical' domestic consumption figures.

The Energy Price Guarantee (EPG) was introduced over the period October 2022 to March 2024 to reduce price increases for domestic customers. Under the scheme, the Government sets maximum prices for gas and electricity and compensates energy suppliers for providing gas and electricity at below cost prices.

Before the EPG, maximum prices for customers on standard variable tariffs (SVTs) were controlled by the price cap. The level of the cap is set by the regulator Ofgem at a level which is intended to allow energy suppliers to cover their costs and make a 2% profit.

The price cap and EPG are often described in terms of the annual bill for a household with typical energy consumption paying by direct debit, but the actual cost for each household depends on how much energy is consumed.

What is the energy price cap?

The 'Default Tariff Cap' for gas and electricity, also known as the energy price cap, came into force for all customers at the beginning of 2019. It followed the introduction of tariff caps for customers on prepayment meters in April 2017 and for vulnerable customers in February 2018. The price cap limits the rates suppliers can charge for the standing charge and for each unit of electricity and gas used. The cap covers prices for customers on default or standard variable tariffs. It does not cap individuals' total bills, which depend on how much energy they use.

Ofgem sets the price cap by calculating how much it costs an efficient supplier to provide gas and/or electricity to a customer. Ofgem reviewed the level of the cap once every six months to Summer 2022 and quarterly thereafter to reflect changes in underlying costs, such as the wholesale cost of gas.[63]

Why was the price cap introduced?

The price cap was introduced to ensure that customers pay no more than a fair price for their energy, as determined by Ofgem's analysis of supplier costs. The intention is that it should be low enough to protect vulnerable customers, but high enough to encourage suppliers to offer tariffs below the level of the cap, to maintain competition and incentivise switching supplier for different tariffs.

It was introduced following findings from the Competition and Markets Authority (CMA) that 70% of customers of the six largest energy firms were on expensive default tariffs and customers were paying £1.4 billion more per year than they would in a fully competitive market.[64]

How is the price cap calculated?

The cap sets maximum prices for a unit of energy and daily standing charges for customers in each energy supply region of Great Britain. See section 1.3 for more information on the 14 energy supply regions. For example, in quarter 4 of 2023 price cap, the maximum price of electricity would be 27.4 pence per kilowatt hour (p/kWh) and a standing charge of 53.4 pence per day (with regional variations). For gas, the maximum price would be 6.9 p/kWh and a standing charge of 29.6 pence per day (with regional variations). It does not cap maximum annual bills.

63 NAO, The energy supplier market, 22 June 2022

64 NAO, The energy supplier market, 22 June 2022

Unlike a litre of petrol, people are less likely to know how many kilowatt hours (kWh) of gas or electricity they normally use, or how much each unit normally costs. In response, Ofgem often describes the price cap in terms of the annual bill it would represent for a household with typical energy consumption.

Ofgem uses their typical consumption figures (see section 2.2). As of October 2023, these are 11,500 kwh of gas and 2,700 kwh for electricity a year. Previously these were 12,000 kwh of gas and 2,900 kwh of electricity a year. To calculate the annual bill, the capped unit prices for gas and electricity are multiplied by these typical consumption levels and added to standing charges to arrive at the illustrative annual amount bill in each region. These regional levels are averaged to give the headline figure for Great Britain. The direct debit cap figures are quoted almost exclusively, but there are different caps for different payment methods. See section 2.5.

A cap on prices - not bills

The energy price cap and the Energy Price Guarantee (EPG) are often misdescribed as the actual cost of a consumer's bill. For example, in September 2022 then Prime Minister Liz Truss said:

> "We have taken action by the government stepping in, making sure that nobody is paying fuel bills of more than £2,500."

In September 2022, research by the polling firm Opinium for the comparison site Uswitch found that about 38% of people believed that:

> "my bill cannot exceed £2,500 a year".[65]

This is false. The £2,500 figure was based on the amount a "typical" household would pay, based on average energy usage, but it was not a cap on the total cost of the bill. A households energy bill will largely depend on the amount of electricity and gas they use. Households that use more energy will pay more, those which use less will pay less.

These findings came at a time of concern that people who wrongly believed their annual bill couldn't exceed £2,500 may unknowingly have built up much higher bills. Additionally, this is detrimental to sustainability and energy security objectives.

See the Commons Library briefing papers Energy bills and the price cap for further background on the price cap.

[65] Source: Full Fact, Liz Truss wrong to repeatedly say energy bills are capped at £2,500, 29 September 2022

How does Ofgem set the price cap?

Ofgem reviewed the levels of the cap twice a year up to summer 2022, publishing updates in February, which set the levels of the cap in summer (April-September), and August, which sets the cap for winter (October-March). From October 2022 the price was due to cover three month (quarterly) periods with the first to run from 1 October 2022 to 31 December 2022 (quarter 4 2022).

The price cap has been replaced for 18 months by the **Energy Price Guarantee (EPG)** which was introduced from 1 October 2022. This is described in the following section. Ofgem will still update the price cap every three months during the period the EPG applies. The maximum prices are set by the lower of the price cap or EPG, therefore if the cap falls below the EPG, maximum prices will be those set out in the price cap. [66]

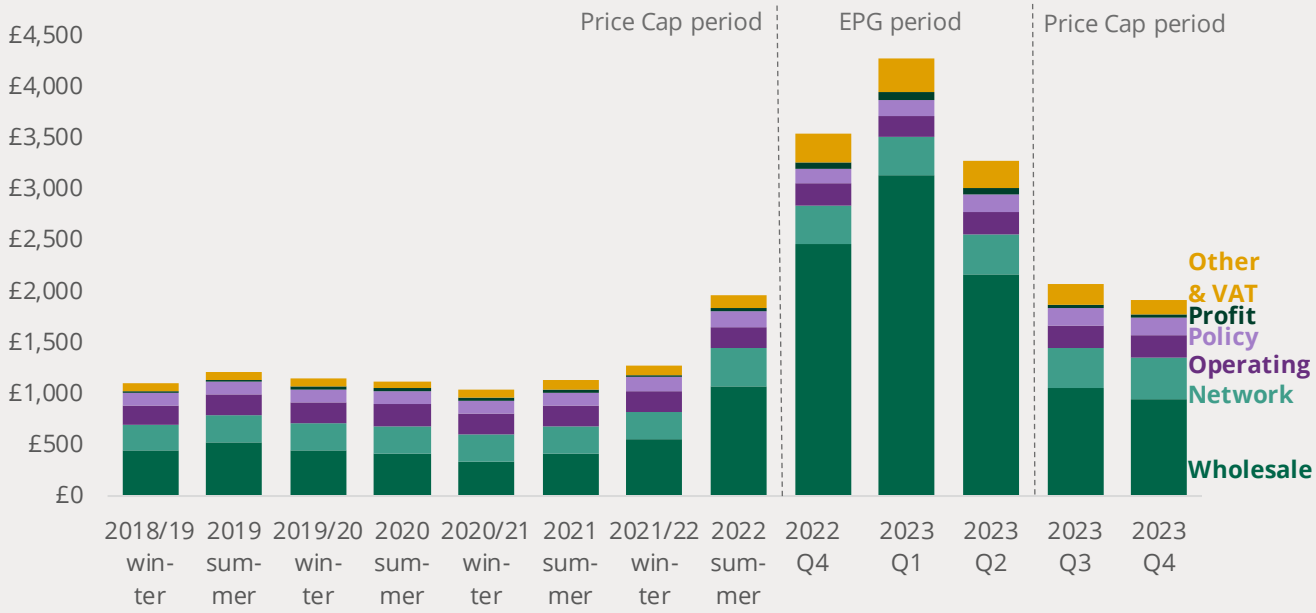
Ofgem sets the price cap using its own estimates of the different costs that suppliers will face in the upcoming price cap period. These mainly consist of the wholesale cost of gas and electricity, network costs, supplier operating costs and the costs of government policy which are passed on to customers. It adds an element for supplier profit (Earning Before Interest and Taxation or EBIT) of just over 1.9% of revenue and VAT is added at 5%. These components of a bill are discussed in section 2.5.

The following chart looks at changes to the default tariff cap for direct debit customers. The caps for other payment methods are somewhat higher. It includes the different cost elements that made up the cap. This shows that higher wholesale costs are responsible for recent increases in the price cap (see section 3.1 for further detail).

[66] Ofgem, Price cap - Letter from BEIS on the cap's role in delivering the Energy Price Guarantee (EPG), 24 November 2022

Cost components of the default price cap

Annual bill equivalent for typical levels of consumption, direct debit dual fuel customers



	Price cap period	Wholesale	Network	Operating	Policy	EBIT	Other & VAT	**Total**
Price cap	2018/2019 winter	£446	£250	£195	£118	£20	£76	**£1,104**
	2019 summer	£524	£262	£201	£125	£22	£83	**£1,217**
	2019/2020 winter	£451	£264	£203	£127	£20	£78	**£1,143**
	2020 summer	£422	£265	£209	£133	£20	£77	**£1,126**
	2020/2021 winter	£337	£265	£203	£132	£19	£86	**£1,042**
	2021 summer	£408	£268	£204	£138	£20	£101	**£1,138**
	2021/2022 winter	£550	£268	£204	£137	£23	£96	**£1,277**
	2022 summer	£1,077	£371	£203	£152	£35	£131	**£1,971**
EPG	2022 Q4	£2,468	£372	£214	£152	£63	£281	**£3,549**
	2023 Q1	£3,137	£372	£214	£152	£76	£329	**£4,279**
	2023 Q2	£2,170	£388	£223	£165	£59	£275	**£3,280**
Price cap	2023 Q3	£1,051	£394	£223	£165	£37	£204	**£2,074**
	2023 Q4	£950	£397	£226	£167	£44	£140	**£1,923**

Notes:
These are costs for a typical dometsic fuel bill paid by direct debit. Typical bills for customers using other payment
Other includes direct debit uplift, adjustment allowance and headroom.
Operating costs includes smart meter costs.
Network costs include supplier of last resort levy costs.
Profit is earnings before interest and tax (EBIT)

Source: Ofgem, Energy price cap (default tariff): 1 October to 31 December 2023 , Model – Default tariff cap level v1.15

Before the summer 2022 increase the changes to the level of the cap had been relatively small. In summer 2022 the price cap increased from its earlier equivalent annual level of £1,277 per year to £1,971; a 54% increase. In quarter 4 2022, the cap was set to £3,549; an 80% increase. This led to heightened concerns about the impact on household finances, particularly vulnerable

households, and on the wider economy. Therefore, the price cap has been replaced by the **Energy Price Guarantee (EPG)**.

Without the EPG, the price cap would have risen to £4,279 in quarter 1 2023 and decreased to £3,280 in quarter 2 2023, which is over 150% increase from the winter 2021/22 cap. The price cap for Q3 2023 fell to £2,074 which is lower than the EPG, so prices fell to the cap level. The cap remained below the EPG levels in Q4 2023 at £1,923.

What is the Energy Price Guarantee (EPG)?

The Energy Price Guarantee (EPG) was introduced to reduce the extent of price increases for domestic customers. The scheme limits the amount consumers on domestic contracts can be charged per unit of gas and electricity over the period 1 October 2022 to 31 March 2024.

The Government will fully compensate suppliers for providing these below cost prices by paying them the difference between the EPG level and what suppliers would otherwise have charged customers. As part of this support the Government said that it would temporarily remove policy costs ('green levies' currently around £150 a year) from energy bills and pay these costs directly.[67][68]

The library briefing Gas and electricity prices under the Energy Price Guarantee and beyond provides further information.

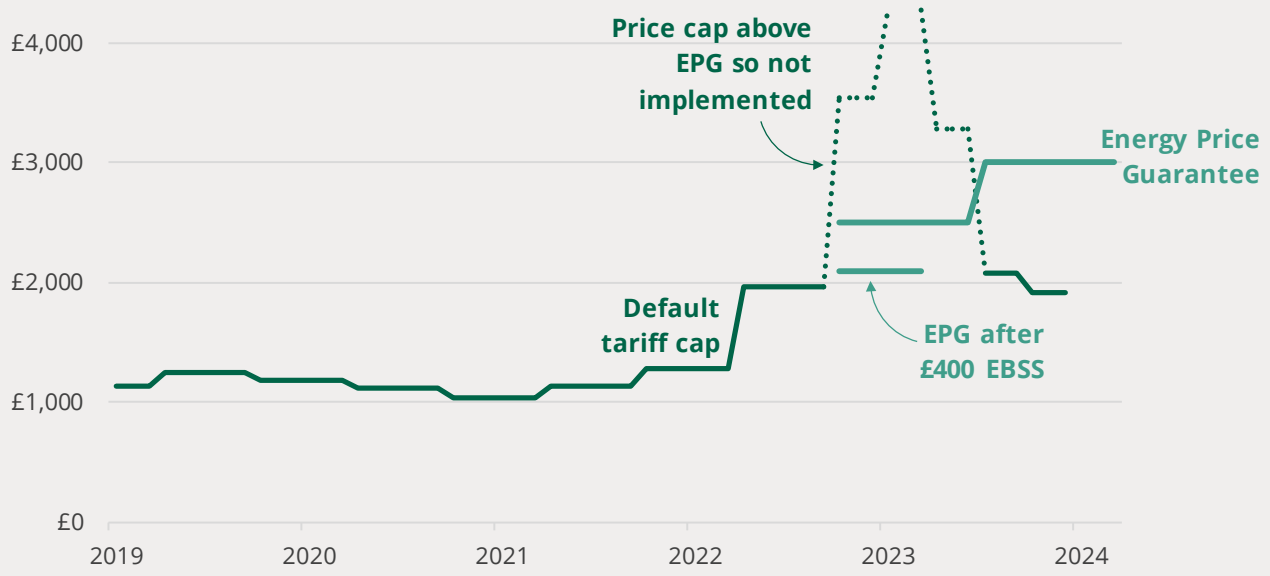
The following chart shows how the EPG compares to earlier price cap levels.

[67] In effect the difference between the £2,500 Energy Price Guarantee and the default tariff cap (were it still in place) less around £150 for policy costs.

[68] BEIS, Energy bills support factsheet: 8 September 2022 (Updated 21 September)

The EPG limited energy price rises to 27% in October 2023, rather than the 80% increase in the cap. Bills in winter 2022/23 eased by the £400 EBSS

Average annual direct debit dual fuel bill for typical levels of consumption, cash prices, Great Britain



Source: Ofgem, Retail market indicators, Breakdown of the default tariff price cap (£, direct debit)

Between 1 October 2022 to 30 June 2023 the EPG was set at a level equivalent to an annual bill of £2,500 for a "typical" household for a dual fuel direct debit customer. From July 2023 bills under the EPG would increase from £2,500 to £3,000 for 'typical' annual consumption. This higher price level is planned to last to the end of March 2024.[69]

The price increases under the October 2022 to March 2023 EPG level were softened by the £400 Energy Bill Support Scheme (EBSS) payment which is being paid in six separate monthly instalments from October 2022 to March 2023. This means that while the headline prices under the EPG remains the same into summer 2023, the actual increase faced by consumers in their monthly bills was approximately 20% from £2,100 to £2,500[70].

The price cap fell to £2,074 between July and September 2023 and to £1,923 between October to December 2023. As the maximum prices are set by the lower of the cap or EPG it meant that prices were set by the price cap from July 2023 onwards.

Energy Bills Support Scheme (EBSS)

The Energy Bills Support Scheme (EBSS) provided a £400 non-repayable

69 HM Treasury, Autumn Statement 2022, 17 November 2022

70 HM Treasury, Energy bills support extended for an extra three months, 15 March 2023

discount to households with a domestic electricity connection in England, Scotland and Wales to help with energy bills between October 2022 to March 2023.

The discount was applied to monthly household electricity bills for 6 months starting in October 2022. Customers got: £66 in October and November, £67 in December, January, February and March.

Households who do not have a domestic electricity connection also received support. The Northern Ireland Energy Bills Support Scheme provided £400 support to households in Northern Ireland.[71]

The Government announced new support funds for households not on mains gas or electricity, "equivalent support" for businesses and support for households on fixed tariffs above the EPG. There is also different support for households in Northern Ireland which has a different energy market. Further details of this are available in Domestic energy prices and Gas and electricity prices under the Energy Price Guarantee and beyond briefing papers.

[71] Gov.uk, Help with your energy bills

2.4 How much have standing charges increased?

Standing charges are the fixed daily cost for keeping consumers connected to the energy network (see section 2.2).

On average the standing charges under the price cap for direct debit customers increased by 135% for electricity from 22.8 pence per day in winter 2018/19 to 53.4 pence per day in quarter 4 2023. For gas, the standing charges under the default price cap increased by 15% from 25.8 pence per day in Winter 2018/19 to 29.6 pence per day in quarter 4 2023.[72]

Standing charges under the default price cap, Great Britain

Pence per day for direct debit customers with single rate meters, including VAT

Price cap period	Electricity	Gas
Summer 2017	19.7	22.4
Winter 2017/18	19.8	22.6
Summer 2018	20.8	23.4
Winter 2018/ 2019	22.8	25.8
Summer 2019	23.4	26.5
Winter 2019/ 2020	23.5	26.7
Summer 2020	24.4	27.3
Winter 2020/ 2021	24.4	26.1
Summer 2021	24.9	26.6
Winter 2021/ 2022	24.9	26.1
Summer 2022	45.3	27.2
Q4 2022	46.4	28.5
Q1 2023	46.4	28.5
Q2 2023	53.0	29.1
Q3 2023	53.0	29.1
Q4 2023	53.4	29.6
Change Winter 2018/19 to Q4 2023	**135%**	**15%**

Source: Ofgem, Energy price cap (default tariff): 1 October to 31 December 2023, Supplementary model - default tariff cap level v1.19

Why have standing charges increased?

Standing charges have increased for a range of reasons, including the increased cost of moving customers from failed suppliers (which is paid for by

[72] Ofgem, Default tariff cap level: 1 April 2022 to 30 September 2022, Supplementary model - default tariff cap level v1.10

the Supplier of Last Resort (SoLR) levy), as well as increased policy costs and fixed network costs.

- The **Supplier of Last Resort (SoLR) levy** covers the unrecoverable costs of a supplier taking on the customers of a failed supplier and reflects the significantly higher costs of purchasing wholesale energy. It is paid via transmission and distribution network costs which are included in the standing charge. See section 3.3 for more information on Supplier of LAST Resort (SoLR) charges.

- **Fixed network costs**, relating to fairly distributing costs of maintaining the electricity networks, have increased.

- **Policy costs** levied on a per customer basis have increased over the longer term, such as the introduction of a Green Gas Levy, and also an increase in the costs associated with the Warm Home Discount rebate.

2.5 What affects the cost of an energy bill?

There are several factors that affect the price of an energy bill. This includes energy usage, region, energy supplier and tariff, payment method, meter type and time of day.

Energy usage

A household's energy usage will depend on its size, the number of occupants, its energy efficiency and the number of appliances or devices used. The more energy a household uses, the higher their energy bill will be. The less energy a household uses, the lower their energy bill will be.

The size of a household

The larger a property is, the more energy a central heating system needs to heat it. Typically, gas usage increases by 2,500kWh per year to heat each extra bedroom.[73] Energy usage is also likely to be higher in households with more people.

Ofgem publishes Typical Domestic Consumption Values. These are what an average household is expected to use in terms of kilowatt-hours for gas and electricity, over the course of a year. See section 2.2.

The averages are provided for three groups of consumers based on their energy usage; low, medium and high. Households with more bedrooms and residents have higher typical energy consumption. This can be seen in the table below.

[73] UKPower, Average gas and electric usage for UK households

Typical domestic consumption values

Kilowatt-hours (kWh)

Usage profile	Home type	Number of residents	Average annual use: Gas	Electricity Profile Class 1	Electricity Profile Class 2
Low	Flat or 1 bedroom house	1-2 people	7,500	1,800	2,200
Medium	2-3 bedroom house	2-3 people	11,500	2,700	3,900
High	4+ bedroom house	4-5 people	17,000	4,100	6,700

Notes: Profile class 1 electricity meters are single rate and profile class 2 meters are multi-rate. Profile class 2 predominantly consists of Economy 7 meters which have two rates, peak and off-peak. There is no meter type distinction for domestic gas consumption data.

Source: Ofgem, Decision for Typical Domestic Consumption Values 2023, 25 May 2023

Energy efficiency

Efficient energy use means using the lowest possible amount of energy to provide a given amount of heating or lighting for example. The more energy efficient a household is, the less energy it will use, and the lower the energy bill will be.

Several factors affect the energy efficiency of housing, including property type and insulation.[74] Flats are the most energy efficient property type, and a detached house is likely to be less energy efficient than a similar-sized terraced house, as there is a greater chance of heat loss through walls. Insulation reduces the amount of heat lost through walls, roofs and floors, meaning that less energy is required to heat a household.

Domestic appliances, such as fridges, lights and kettles, can have different energy ratings. An energy rating is a way of measuring and showing how energy-efficient an appliance is, based on how much energy it uses. The more energy efficient an appliance is, the less energy will be used, and the lower the domestic energy bill will be.[75] Different heating systems also have different energy efficiencies. For instance, new gas boilers are more efficient than older ones, but heat pumps are even more efficient as they use ambient heat from outside.

Energy supplier

This chart shows trends in domestic energy bills by tariff offered by the large legacy suppliers and all other suppliers. It compares their average standard variable tariffs with the default tariff cap and the cheapest tariffs available in

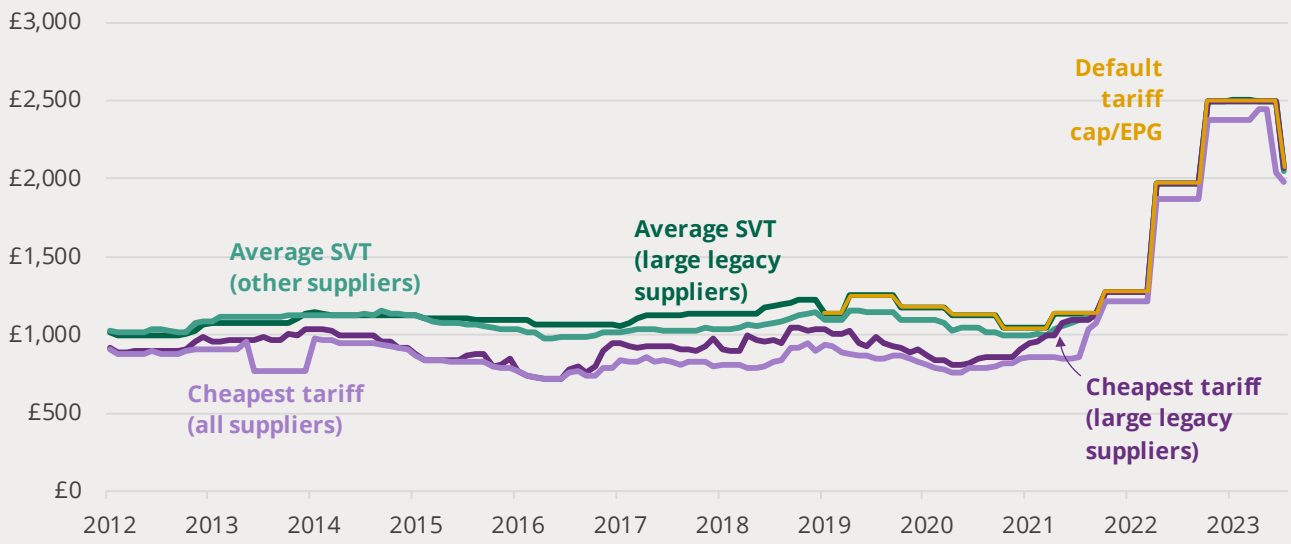
74 ONS, Energy efficiency of housing in England and Wales: 2022, October 2022

75

the market (including 'white label' tariffs)[76]. Large legacy suppliers tend to have higher tariffs than other suppliers.

Large legacy suppliers have generally charged more than other smaller suppliers for their standard variable tariffs (SVT) and cheapest tariffs

Average annual direct debit dual fuel bill for typical levels of consumption, cash prices, Great Britain



Source: Ofgem Retail Market Indicators, Prices and profits

Average Standard Variable Tariff (SVT)

From around 2015 the average price of SVTs of other suppliers was marginally lower than legacy suppliers. In 2021, the gap between the legacy and other suppliers narrowed rapidly. The average price of legacy suppliers' SVTs has coincided with the default tariff since its introduction in 2019. From April 2022 onwards, the average SVT for all suppliers (legacy and other) remained close to the price cap or EPG.

Cheapest tariff

Over the last decade, large legacy suppliers have generally not offered the cheapest tariff in the market. From September 2021 onwards, the cheapest tariff for legacy suppliers remained the same as the price cap or EPG. The gap between the cheapest tariff in the market and the price cap or EPG (in effect the average standard variable tariffs (SVTs) for large legacy suppliers) fell rapidly from August 2021 onwards. The cheapest tariff under the EPG in August 2023 was £163 lower. This shows that competition in the energy supply sector has effectively come to a halt. See section 3.4 for further details.

[76] Tariffs available with white label suppliers are included in the calculation of the cheapest tariffs. White label suppliers are organisations without supply licenses that partner with an active licensed supplier to offer gas and electricity using their own brand.

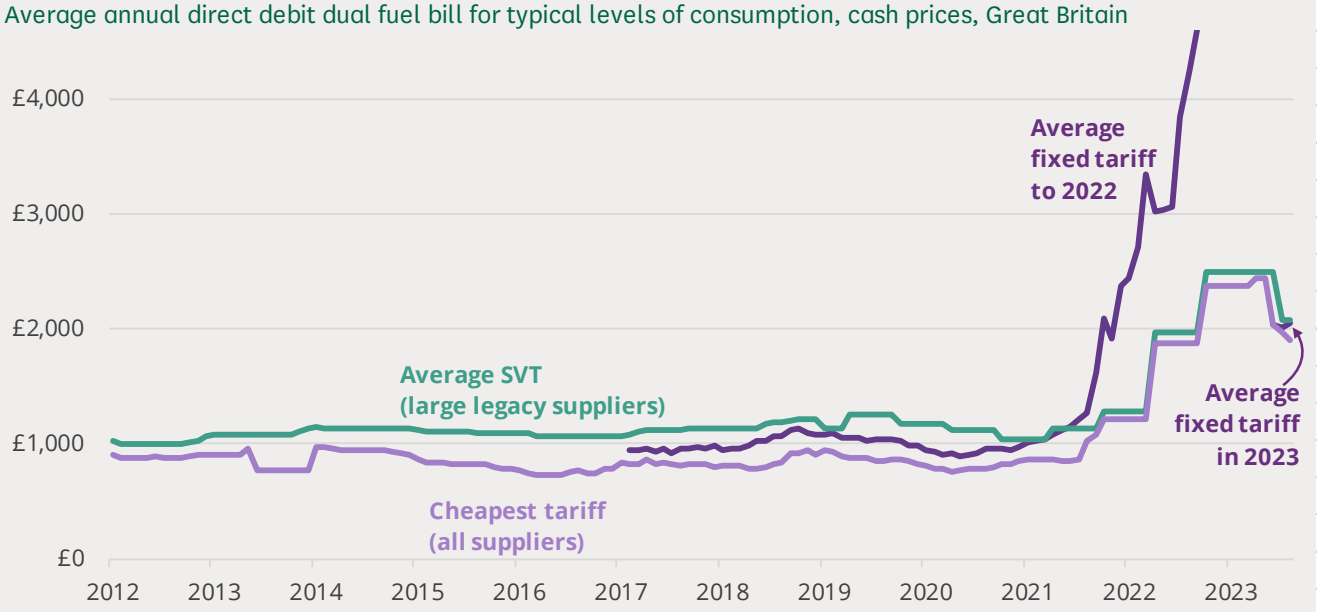
Tariff type: Fixed and variable tariffs

With fixed tariffs, you pay a set unit price for your gas and electricity over the course of the fixed contract. With variable tariffs, including standard variable tariffs (SVTs), the unit costs can change due to changes in wholesale energy prices as long as they don't exceed Ofgem's price cap or the Energy Price Guarantee. See Section 2.3 for more details.

The chart below compares the price of fixed tariffs to the price cap and the cheapest tariff on the market.

Fixed tariff prices soared from late 2021 to reach £4,600 in September 2022

Average annual direct debit dual fuel bill for typical levels of consumption, cash prices, Great Britain



Source: Ofgem Retail Market Indicators, Prices and profits

Average fixed price tariffs[77] were typically priced between the cap and the cheapest tariff on the market from 2019 to early 2021. They increased to above the price cap in mid-2021 and since then have increased very rapidly. This is clear by the steep increase in the price of fixed tariffs up to September 2022.

There is a gap in data between September 2022 and June 2023. Ofgem stopped publishing these figures as suppliers withdrew new fixed tariffs after the introduction of the EPG.

The number of new fixed tariffs on offer has increased recently therefore data is available from June 2023 onwards. The majority of fixed tariffs remain available to existing customers only and have limited publicity, with prices generally close to the price cap.

[77] Simple average of all fixed priced tariffs launched each month.

Fixed tariffs were not covered by the price cap and reflect the future price expectations of suppliers. Given the volatility of wholesale prices in recent months they will also include an 'uncertainty premium' effectively paid by consumers for the certainty of fixing prices.

Meter type

Energy meters record how much gas and electricity is used. This is what bills are based on. Smart meters are being rolled out to replace standard meters. There are also single rate and multi-rate electricity meters.

Smart meters

Energy smart meters are advanced electricity and gas meters which can offer a range of intelligent functions. Standard meters are being replaced with smart meters for those that are eligible. Customers don't have to take meter readings with smart meters. Instead, readings are sent automatically to energy providers. This ensures bills are based on actual use rather than estimates.

Smart meters are intended to have benefits for consumers, suppliers and networks.

- For **consumers**, smart meters provide more accurate bills, easier switching, clearer energy use through an in-home display, and the potential for reduced bills based on reduced consumption.
- For **suppliers**, smart meters could mean avoiding site visits (for example to check meters) and reduced customer service overheads due to more accurate billing.
- For **networks**, smart meters could facilitate a smarter network, and the real-time data supplied by smart meters could make balancing the network easier.

Single-rate and multi-rate electricity meters

The most common type of meter is a standard, single-rate electricity meter. With this meter, electricity will cost the same at any point in the day.

Multi-rate meters include Economy 7, Economy 10 or another time-of-use meters that charge different rates at certain times of the day, typically to allow customers to be charged lower rates for electricity used during off-peak periods. For instance, customers with Economy 7 meters pay a lower rate for electricity for seven hours at night (off-peak) and a higher one during the day.

In 2019, Ofgem estimated that around 4 million out of a total of 29 million domestic electricity customers in Great Britain have multi-rate meters. 80% of domestic electricity consumption were on single-rate meters and 20% were

on multi-rate meters. Around 14% of all electricity meter points were multi-rate.[78]

There is no meter type distinction for domestic gas consumption data.[79]

Payment method

What are the different payment methods?

Energy companies offer different ways to pay for energy bills.

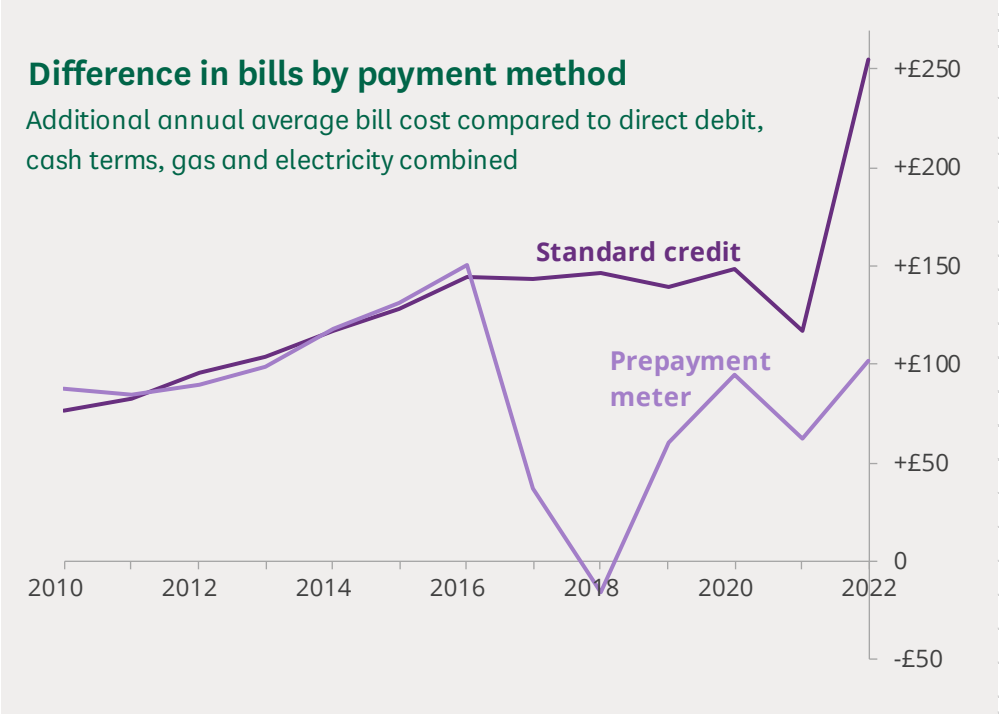
- **Direct Debit** - this is where a set amount is taken from a customer's bank account every month. The amount is based on readings given by the customer or taken by the energy company.
- **Standard credit** - this is where customers get a bill once a month or once a quarter. When customers get the bill, they arrange payment. The amount is based on an estimate of how much energy they've used, or the exact amount if based on a meter reading.
- **Prepayment meters** - Instead of getting a bill for the energy that customers have used, they pay for their gas and electricity before they use it. There are two types of prepayment meter: smartcard and keys. Customers can top up their smartcard and keys from newsagents, garages and the Post Office.
- **Fuel Direct** - this is a way of paying bills directly from customers' benefits if they are having difficulty paying their bills. The Department for Work and Pensions (DWP) will agree an amount that will be taken from customers benefit payments each month and paid directly to their energy supplier.

Which payment methods are cheapest?

Direct debit customers have traditionally been offered the cheapest tariffs, followed by standard credit customers and those using prepayment meters. Standing charges are higher for standard credit (quarterly bill) and prepayment customers, intended to reflect the higher costs of suppliers face for these customers. For instance, energy companies need to maintain and service prepayment meters and the network of payment points for prepayment meter customers. Direct Debit is usually cheapest because there are fewer costs involved for the company.

The chart below shows the difference in standard credit and prepayment meters compared to direct debit.

78 Ofgem, Review of typical Domestic Consumption Values 2019, Open letter
79 Ofgem, Review of typical Domestic Consumption Values 2019, Open letter



Source: DESNZ, Annual domestic energy bills,(Tables 2.2.1 & 2.3.1)

The additional cost for 'typical' energy consumption[80] was very similar for prepayment and standard credit customers in the early 2010s. In 2016 it was around £150 a year. The introduction of the price cap for prepayment customers in 2017 led to a fall in their relative cost. In 2018 they were around the same as for direct debit customers, while average standard credit bills were around £150 higher. Price caps were extended to all payment methods in 2019 and prepayment bills became relatively more expensive again. The large increase in prices in 2022 resulted in an increase in the absolute size of the gaps to direct debit bills.

From October 2022 to June 2023, prices for all payment types increased to reflect their respective price caps under the EPG. From July 2023, the price cap was lower than the EPG for customers paying by direct debit and standard credit so sets their maximum prices, meaning these households will pay rates capped by the new (lower) price cap. The EPG mechanism will still be used for one element of prepayment customer bills to reduce them to below their price cap level. This is to meet the Government's commitment to remove the 'prepayment premium' (see box below). This support will be delivered through lower unit prices for gas only (electricity bills are already lower for prepayment customers under the new cap).

Energy Price Guarantee: Prepayment customers

[80] This chart uses DESNZ data which assumes annual average consumption of 3,600 kWh and 13,600 kWh for electricity and gas respectively.

In the Government's Spring Budget 2023, it announced that the prepayment meter premium would be removed to align the costs of prepayment meter customers and direct debit customers. This has been done through the following steps with the Energy Price Guarantee:

- Between June and September 2023, the premium that prepayment customers pay has been removed by providing a unit rate discount on gas, saving around £21 per year.
- From October 2023 this discount will instead be delivered through a discount to standing charges, so that low usage customers are also supported, saving around £40 per year.[81]

Location

Energy network charges vary by region and reflect the costs of running the network in that area and the number of consumers that those costs are spread over. Each regional network will set network charges for suppliers. Gas and electricity suppliers pass these costs onto the network costs of customers energy bills. This cost reflective approach is designed to promote efficient use of the network, for example, by providing a signal to generators that locating close to their customers requires less transmission network to be built.

How do prices vary across the country?

The Energy Price Guarantee (EPG) and price cap currently set regional caps for the unit costs and standing charges respectively. Under the October to December 2023 price cap direct debit prices varied in the following ways (all prices include VAT):[82]

- Standing charges for gas were the same in each region at 29.6 pence per day (p/day)
- Unit costs for gas varied from 6.8 pence per kilowatt hour (p/kWh) in seven regions to 7.1 p/kWh in Southern Western
- Standing charges for electricity varied from 38.5 p/day in London to 62.2 p/day in North Wales and Mersey
- Unit costs for electricity vary from 26.5 p/kWh in Yorkshire to 28.4 p/kWh in London.

81 Department for Energy and Net Zero (DESNZ), Energy Price Guarantee, 25 August 2023

82 Ofgem , Energy price cap (default tariff): 1 October to 31 December 2023, Model - Default tariff cap level v1.19, 25 August 2023; DESNZ, Energy Price Guarantee (prepayment meters): regional rates and standing charges, October to December 2023, 25 August 2023

The Government publishes average price data for the former regional electricity company areas across the UK. These all use the same assumptions about consumption.[83] Variations in price therefore reflect differences in the prices paid per unit and standing charges.

The following table shows the average regional gas and electricity bills in 2022 for direct debit customers with typical levels of consumption. Average gas prices are not produced for Northern Ireland where most households use heating oil.

The UK average electricity and gas bill was £2,248 in 2022. Merseyside and Wales had the highest average bill of each region, £76 above the UK average, whilst the North East had the lowest average bill, £63 below the UK average.

Average gas and electricity bills by region in 2022, £

Typical levels of consumption, direct debit customers

	Electricity	Gas	**Total**	*Difference from UK total average*
Merseyside & N Wales	1,269	1,055	**2,324**	*+£76*
South East	1,269	1,030	**2,299**	*+£51*
London	1,189	1,091	**2,280**	*+£32*
South Wales	1,212	1,064	**2,276**	*+£28*
Eastern	1,215	1,058	**2,274**	*+£26*
South Scotland	1,198	1,068	**2,266**	*+£18*
South West	1,206	1,057	**2,263**	*+£15*
Southern	1,190	1,072	**2,262**	*+£14*
West Midlands	1,197	1,051	**2,248**	*-£0*
North Scotland	1,173	1,059	**2,232**	*-£16*
North West	1,186	1,043	**2,229**	*-£19*
Yorkshire	1,183	1,044	**2,227**	*-£21*
East Midlands	1,181	1,040	**2,221**	*-£27*
North East	1,151	1,034	**2,185**	*-£63*
Northern Ireland	1,039	..	**..**	
UK/GB	**1,194**	**1,054**	2,248	

Source: DESNZ, Annual domestic energy bills, Tables 2.2.3 and 2.3.3

Competition in the sector means that customers are not restricted in their choice of supplier. This reduces variation in prices across the country. However, suppliers face different network costs in different parts of the country, and these will be reflected in prices paid by consumers.

The library briefing Gas and electricity prices under the Energy Price Guarantee and beyond includes a full breakdown of the Energy Price

[83] 3,600 kWh for electricity and 13,600 kWh for gas

Guarantee and price cap by region, payment method and standing/unit charges.

Why do electricity prices vary?

Electricity transmission charges are based on location; neither electricity generation nor consumption are distributed evenly across the UK (generation is often located away from large areas of population, such as London, while consumption is driven by the more heavily populated areas), so the amount the transmission network is used will vary according to end location and generator location (generators also pay). The charges are intended to create incentives for generators to locate close to demand.

National Grid Electricity Transmission (NGET) also recovers revenue for its role in balancing the electricity system, but these charges do not vary by region.

Electricity distribution charges are set regionally based on the cost of efficiently running the network across the region. These charges vary between regions as the cost of distribution varies considerably (due to geography, infrastructure and population density). For example, some regions have more losses (energy escaping from the wires and pipes) than others as older equipment fares less well than new. Charges vary within regions according to the type of supply taken (voltage and number of rates).

Hydro Benefit Scheme

The Hydro Benefit Replacement Scheme was introduced in 2005 and supports the distribution network in the north of Scotland. There is a per kilowatt hour levy on each electricity unit sold across the UK which is then passed onto the North Scotland DNO (Scottish Hydro Electric Power Distribution), reducing the annual distribution cost to households in the Scottish Hydro area.

Why do gas prices vary?

Gas transmission charges are recovered from all customers, and while it has a regional element, the differences between regions are small and probably absorbed by suppliers. Gas distribution network charges are levied on gas shippers and based on the distribution costs in their regions. A small number of gas customers in Wales and Scotland are connected to small gas networks, with the costs of these shared across the UK.[84]

[84] Ofgem, Regional differences in network charges, 23 October 2015

Are cost reflective charges fair?

There has been debate about the fairness of network charges, including for rural customers (who tend to pay more as more infrastructure is required to transport the electricity) and to address the increase of on-site renewable generators which are less reliant on network infrastructure.

In October 2015, Ofgem published a report on the regional differences in network charges, which found no compelling case from a regulatory perspective to move to a national network charge.[85] It found that the current cost reflective approach helps to ensure efficient use of the network and keeps overall costs down by making charges transparent and keeping each network company's local accountability to its customers.

[85] Ofgem, Regional differences in network charges, 23 October 2015

2.6 Why does the price of gas drive electricity prices, including renewables?

Electricity is increasingly generated from renewable energy in the UK, and the cost of renewable generation has significantly decreased in the past decade.

Despite this, the price paid for wholesale electricity on the 'spot market', where, according to the Competition and Market's Authority around two fifths of electricity is thought to be sold[86], is largely determined by the price of natural gas.

This is because 'spot market' prices are set using the 'marginal cost pricing' system, which prices electricity from all sources according to the most expensive source.

As gas is often the most expensive energy source, prices of electricity generated by gas effectively set the wholesale price for all generation. Thus, as gas prices have increased, the price of electricity has also increased.

What is marginal pricing?

Marginal cost pricing is where units of electricity are sold at the price of the most expensive unit needed to meet demand at a particular moment in time.

When reviewing the electricity market arrangements in 2022, the Government said the marginal cost pricing system provides an efficient signal for supply and demand decisions, is transparent and incentivises costs to be kept down.[87]

Merit order

In each half-hour trading period, each electricity generator bids the price it will accept to generate electricity, according to how expensive the electricity is to produce.

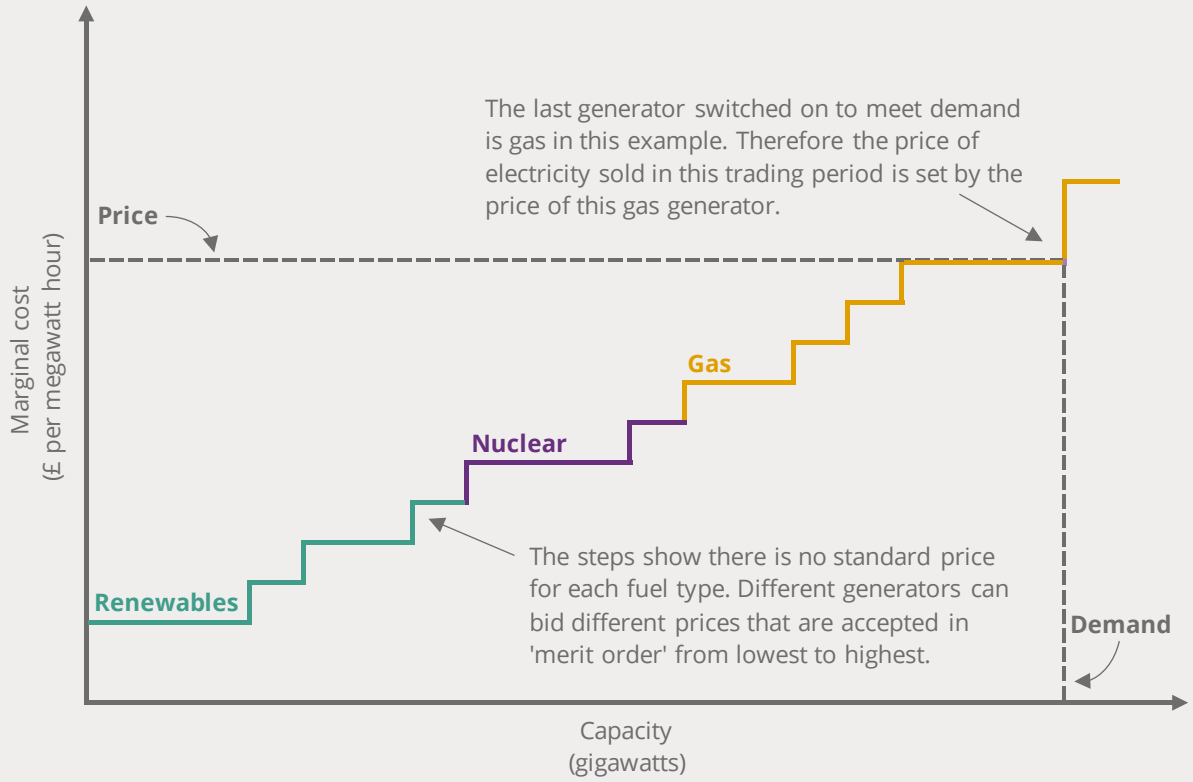
The bids are accepted in 'merit order' until the demand for electricity is met; the cheapest first, and the most expensive last. However, the price of all units of electricity is set according to the bid price of the most expensive unit needed to meet projected demand: this is the 'marginal cost'.

The example in the chart below shows how different types of generators (renewable, nuclear and gas) bid until the demand is met.

[86] Competition and Market Authority, Energy market investigation final report, 24 June 2016

[87] Department for Energy Security and Net Zero (DESNZ), Review of electricity market arrangements (REMA): Summary of responses, 7 March 2023

Illustration of marginal pricing and the 'merit order' of electricity generators in the wholesale market



Renewable generators typically have the lowest costs (because they do not have to buy fuel to burn) and so are the first to meet demand. Fossil fuel generators (including gas) often have the highest costs as they must buy fuel to burn, which also has a carbon price on it.

As a result, although most electricity is produced using sources with low marginal costs (42% by renewables and 15% from nuclear[88]), the price that is paid for electricity traded on the spot market is often higher, at the marginal cost of generating electricity with gas.

88 DESNZ, Energy Trends: UK electricity, ET 5.1

3 Current challenges in the supply market

The dramatic increase of wholesale gas and electricity prices has resulted in a number of challenges in the supply market, including: higher energy bills, supplier failure, loss of competition, increasing number of people in fuel poverty and record profits for energy generators.

3.1 Trends in wholesale prices

Wholesale energy prices started to dramatically increase from mid-2021, both globally and in the UK, after having been stable for a decade. Gas led the price rise, but electricity prices have followed as gas is typically the 'marginal fuel',[89] which means the cost of gas effectively sets the cost of electricity.[90] See section 2.6 for more details.

The high volatility of prices can be seen in the following charts on wholesale day ahead contracts. Day-ahead prices show how markets have reflected supply and demand close to real time, physical delivery. They impact on, but trade differently to the contracts for future delivery that are made through 'hedging'.

The Library briefing Domestic energy prices looks at wholesale price trends and their causes in greater depth.

Gas prices

This chart shows 'Day-ahead' gas prices at the Great Britain gas hub (the National Balancing Point) for delivery the following working day. The data is averaged by month, so is more focussed on medium to longer-term trends than daily prices on the spot market.

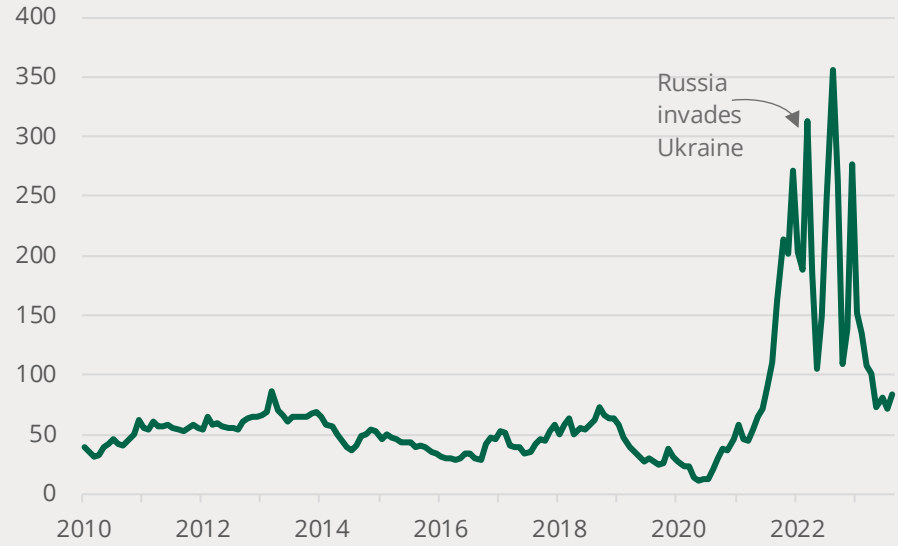
Since late September 2021 gas prices have reached historic highs. Following Russia's invasion of Ukraine in February 2022, gas flows from Russia to Europe have significantly decreased causing high prices and high volatility. Prices fell in spring, then increased in summer, before falling again in autumn and spiking in December 2022. There was then a return to lower prices in 2023.

89 The fuel used for peak load generation which responds to short term changes in demand.

90 Researchers at UCL estimated that gas set electricity prices 84% of the time in 2019. UCL news, Electricity prices dictated by gas producers who provide less than half of UK electricity (6 September 2022)

Monthly average day ahead contracts gas prices, Great Britain

Pence per therm

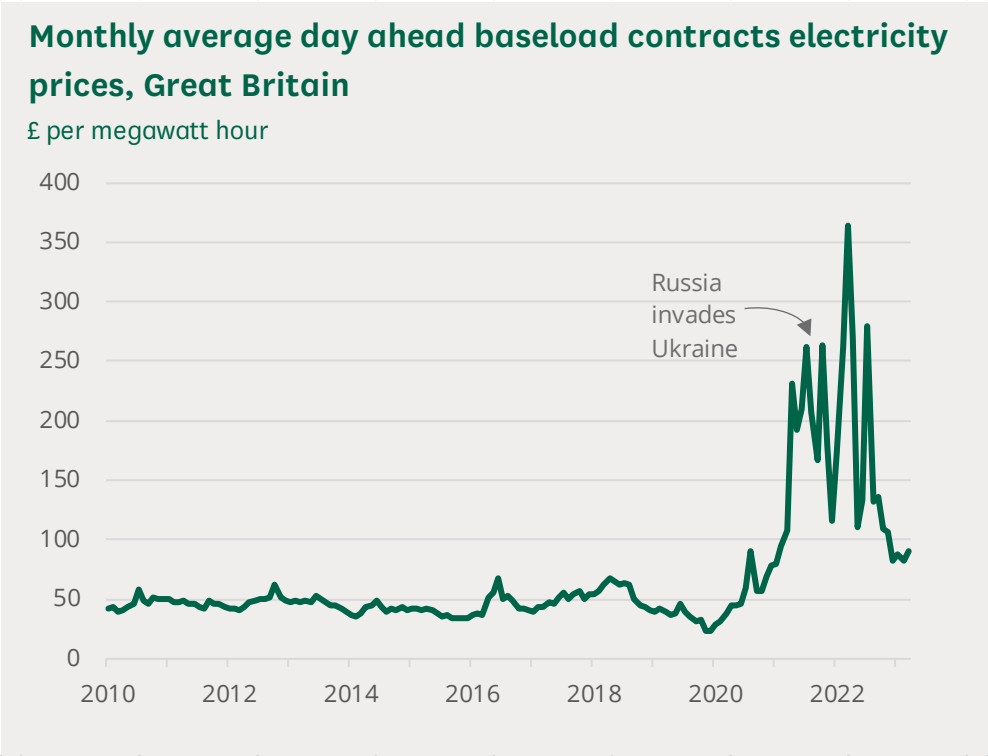


Source: Ofgem, Wholesale Market Indicators, Day Ahead Contracts Monthly Average

Electricity prices

This chart shows the price of electricity on the wholesale market in Great Britain for delivery the next working day at a constant 'baseload' rate. The data is averaged by month, so is more focussed on medium to longer-term trends than daily prices on the spot market.

Great Britain prices for electricity have followed a similar trend to gas with spikes in March, August and December 2022. There was then a return to lower prices in 2023. As explained earlier, the cost of gas generation effectively sets the wholesale price for electricity, so price trends are similar at present.



Source: Ofgem, Wholesale Market Indicators, Day Ahead Contracts Monthly Average

3.2 Why have energy prices increased recently?

Supply and demand affect the wholesale prices of energy. If supplies are short and demand is high, sellers can charge more, and the price goes up. Energy prices increased initially because of rising demand after Covid restrictions were lifted, among other reasons, and then because of Russia's invasion of Ukraine.

Why did prices increase before the war in Ukraine?

Before the war in Ukraine, the UK's wholesale energy prices increased for a number of reasons:

- **Life after lockdown:** Global demand increased with easing lockdown restrictions and production, which had slowed over the pandemic, struggled to meet demand.
- **Supply shortages:** A prolonged cold 2020/21 winter in Europe drained natural gas storage as people were using lots of gas for heating.
- **High demand for LNG:** High demand for liquefied natural gas (LNG) from Asia led to lower LNG imports to Europe.

- **National Grid IFA site fire:** In September 2021, a fire at a National Grid's IFA interconnector link to France restricted electricity imports from the continent until January 2023.[91]
- **Low gas storage:** European storage capacity, on average, is about 25 per cent of annual consumption compared with less than 1 per cent for the UK.[92] This restricts the UK's stockpiling ability and makes it more dependent on global wholesale prices.
- **Supplier market exits:** With the rise in wholesale prices, energy suppliers began exiting the market at a much faster rate than had ever occurred previously. When this happens, consumers help to absorb the cost through higher bills through the Supplier of Last Resort (SoLR) or Special Administration process. See section 3.3 for more details.

Why did Russia's invasion of Ukraine increase prices?

In February 2022, Russia lunched its invasion of Ukraine. Russia restricted exports and Western countries sanctioned imports on Russian fossil fuels. This reduced supply and significantly increased prices due to global, EU and UK reliance on Russian fossil fuels.

Reliance on Russian fossil fuels

Russia produced 18% of the world's gas output in 2021 and was the world's largest gas exporter.[93] In 2021, 4% of the gas used in the UK was from Russia. According to Eurostat, in 2020 imports from Russia made up 39% of the gas used in the EU.[94]

While the UK relies on Russian energy to a lesser extent than many other European countries, the UK gas and electricity markets are connected to those in continental Europe, so price trends are also connected. Moreover, as many European countries look to other sources of energy, increased competition for these leads to further price rises.

Russia was already reducing gas exports to Europe in the months before its invasion of Ukraine. The International Energy Agency (IEA) reports that:

> Russia's strategic behaviour of using natural gas as a political weapon has become increasingly obvious since September 2021.[95]

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91 National Grid, National Grid interconnectors have busiest January on record with 2.6TWh of power transported to strengthen security of supply, 30 January 2023

92 Offshore Energies UK (OEUK), Why is the UK exporting gas when we are in short supply?, 5 April 2022

93 IEA, Energy Fact Sheet: Why does Russian oil and gas matter?, 21 March 2022

94 Eurostat, Energy database

95 IEA, Gas market report Q4 2022

Russia stopped exporting gas to some EU states in summer 2022, including Poland, Bulgaria and Finland. It reduced exports of gas to Europe through the Nord Stream 1[96] pipeline (which transports gas from Russia to Germany) to around 20% of capacity in August 2022 and stopped these exports completely in September 2022.

Russian fossil fuel exports provided 45% of the Russian government's budget in 2021.[97] As such, Western countries, including the UK and EU, tried to stop or reduce their energy imports from Russia after the invasion. The UK has now banned imports of oil, petroleum products, gas and coal from Russia. The EU has not agreed a ban on Russian gas but has introduced policies aimed at moving away from dependence on it. This included Germany halting Nord Stream 2,[98] which was completed in 2021, from going live in response to the Russian invasion.[99]

3.3 Supplier failure

With the rise in wholesale prices, energy suppliers began exiting the market at a much faster rate than had ever occurred previously. Since 2021, 34 suppliers have exited Great Britain's domestic energy retail market. In quarter 1 2023, there were 22 domestic suppliers in the market, compared to a high of over 60 in 2018. [100]

The chart below shows the number of licensed suppliers that have started or stopped actively supplying customers in the Great Britain domestic gas and electricity markets in each quarter in comparison to the total number of suppliers that continued to supply the market in the same period.

96 Nord Stream 1 is a natural gas pipeline that directly connects Russia to Germany, via the Baltic Sea, that was completed in 2011.

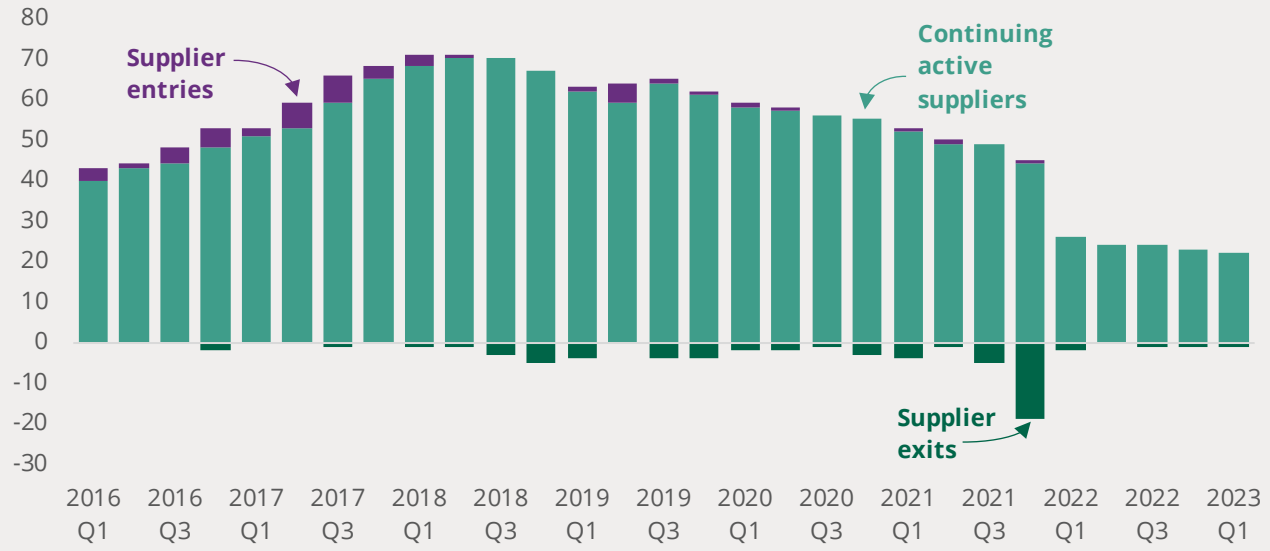
97 International Energy Agency (IEA), Energy Fact Sheet: Why does Russian oil and gas matter?, 21 March 2022

98 Nord Stream 2 is a natural gas pipeline that follows a similar route to the original Nord Stream 1 pipeline and, once operational, is expected to double the total capacity of that route.

99 House of Commons Library, Geopolitical implications of Nord Stream 2, 02 March 2022

100 Ofgem, Retail Market Indicators, Number of active domestic suppliers by fuel type (Great Britain)

34 suppliers have exited Great Britain's domestic energy retail market since 2021



Source: Ofgem, Retail Market Indicators, Supplier entries and exits in the domestic energy retail market (Great Britain)

Inadequate hedging (see section 1.4) has been the recurring theme in supplier failures. Suppliers purchased energy at a certain cost to be competitive, often against larger, more established suppliers, and had tight margins. As the price of energy has increased, those hedging arrangements have not been adequate. Suppliers have traded at a loss, become insolvent and had to notify the regulator, Ofgem, that they can no longer trade.

Ofgem have two main processes for maintaining continuity of supply when a supplier fails: the supplier of last resort (SoLR) process and the special administration regime (SAR).

Supplier of last resort (SoLR)

Under the SOLR process, Ofgem transfers customers from a failed supplier to an existing supplier to maintain their continuity of energy supply. Ofgem can appoint any licensee as a SoLR, but it will try to appoint a volunteer. It will collect information about the failing supplier's portfolio and share some of this with potential SoLRs. There is a bidding process and Ofgem will select a supplier that can demonstrate their ability to supply the additional customers.

From July 2021 to May 2022, Ofgem transferred nearly 2.4 million customers of 28 failed energy suppliers to alternative providers through its SoLR process.[101]

Special administration regime (SAR)

A special administration regime (SAR) is where a temporary special administrator continues running the failed company until it is either: rescued

[101] National Audit Office (NAO), The energy supplier market, 22 June 2022

(for instance, through a restructuring); sold; or has its customers transferred to other suppliers.

It aims to reduce the risk of financial failure spreading across the energy market and is only used in cases where SoLR is not feasible, such as doubts about the possibility of a viable SOLR or likely practical problems with their appointment. For example, where costs of supplying energy and honouring credit balances would affect the ability of a SOLR to serve their existing customers.

Bulb Energy is the largest supplier to have collapsed; it supplied approximately 1.6 million domestic customers prior to its collapse in November 2021.[102] As such, Ofgem chose to apply to court for a SAR. It is the only failed supplier to have had one.

How are the costs of supplier failure recovered?

The costs of supplier failure are recovered through domestic energy bills. This is an indirect cost of higher wholesale prices.

A SoLR has a number of additional costs, such as through the administration process or retaining the fixed tariffs for customers. To recover these costs, Ofgem approves SoLR claims, and allows costs to be passed onto domestic energy customers. These costs are added to the standing charge of domestic electricity customers' bills as network costs and added to the unit costs of domestic gas bills (see section 2.4).

From July 2021 to May 2022, Ofgem estimate the total cost of the supplier failure dealt with through SOLR is £2.7 billion. This costs around £94 in the annual bill for a typical direct debit customer paying for energy at the price cap level.[103]

In November 2022, the Office for Budget Responsibility (OBR) reported that the total cost of the Bulb Energy bailout has reached £6.5 billion, with £4.6 billion of that in 2022-23 included in the Autumn Statement.[104]The final cost of putting Bulb Energy into SAR will not be known until it is sold or wound up, because the costs incurred could be offset by any sale proceeds it is able to obtain. So far, the cost has fallen to taxpayers as part of general government spending, but the Department has the power to recover the final net cost through a levy on consumer bills, at a time of its choosing, which it plans to do.[105]

[102] National Audit Office (NAO), The energy supplier market, 22 June 2022
[103] National Audit Office (NAO), The energy supplier market, 22 June 2022
[104] Office for Budget Responsibility (OBR), Economic and Fiscal Outlook, November 2022
[105] National Audit Office (NAO), The energy supplier market, 22 June 2022

3.4 Loss of competition

Following privatisation, suppliers have operated in a competitive market where they set their own prices and consumers can choose suppliers based on preferences such as price and service.

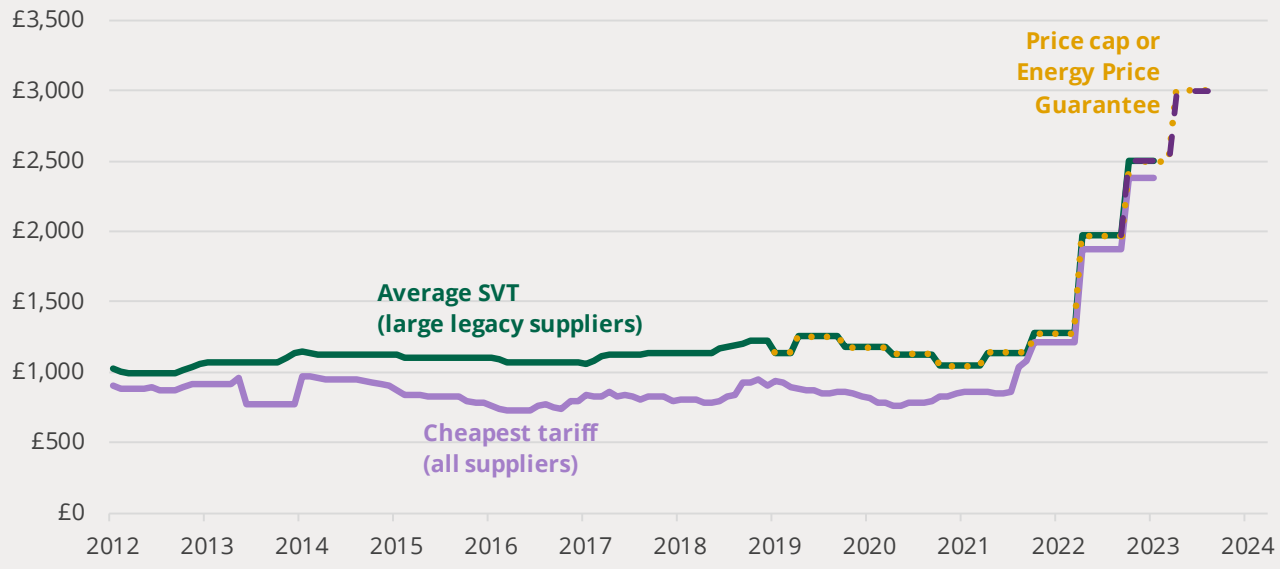
Increases in wholesale energy prices have meant that most suppliers are selling energy near the maximum tariff possible, the price cap or Energy Price Guarantee (EPG). This has effectively halted competition as there is no incentive for customers to save money by switching supplier.

How do rising wholesale prices reduce competition?

This can be seen on the following chart showing average bills for typical levels of consumption, over the past decade. It focuses on the two ends of the market, the cheapest tariffs and the average standard variable tariff (SVT) of the large legacy suppliers which has been virtually the same as the price cap, or the EPG since their introduction. Figures are based on a typical domestic dual fuel customer paying by direct debit.

The gap between the price cap or Energy Price Guarantee and the cheapest tariff narrowed rapidly in 2021 and 2022. The average SVT of large legacy suppliers has been virtually the same as the price cap, or the EPG since their introduction.

Average annual direct debit dual fuel bill for typical levels of consumption, cash prices, Great Britain



Source: Ofgem, Retail Market Indicators, Prices and Profits

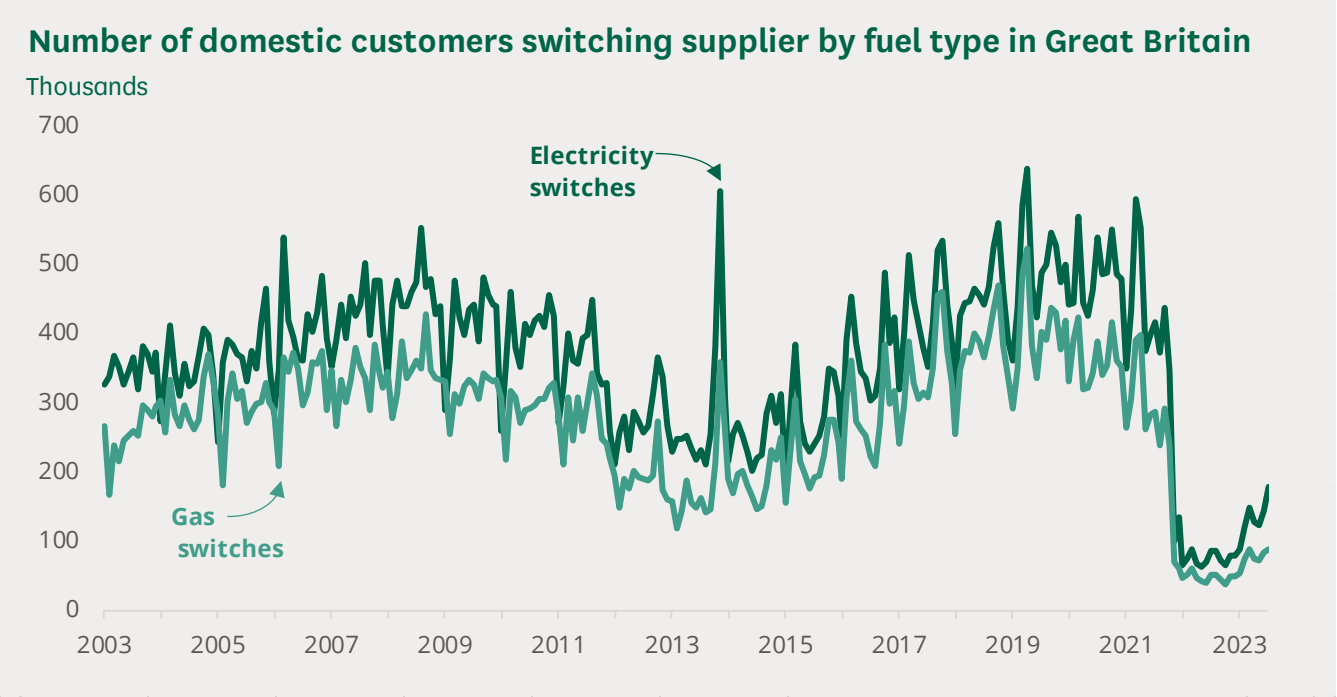
In 2021, the gap between the price cap and the cheapest available tariff narrowed rapidly. This was because the increase in wholesale prices meant suppliers could not offer cheaper tariffs and many charged the maximum they were allowed to under the cap. The narrow gap between the price cap and

the cheapest tariff in recent months shows that most customers cannot currently get a deal below the tariff cap.

How do rising wholesale prices reduce market switching?

Domestic switching had been on the rise since 2014 but slowed slightly during 2020. It had been falling significantly since the end of 2021 and throughout 2022 due to rising wholesale energy prices.

The chart below shows the total number of domestic customers switching gas and electricity supplier each month. It follows a seasonal pattern with peaks around May and November.



Source: Ofgem, Retail Market Indicators, Number of domestic customers switching supplier by fuel type (Great Britain)

The significant reduction at the end of 2021 coincided with rising wholesale energy prices. As a result, the total number of switches in 2021 was down 25% compared to 2020 and 30% relative to 2019. The annual domestic switching rate for 2022 reached a historic low of 3% in electricity and 2% in gas. Some gradual recovery has been observed in the first months of 2023.

This has effectively halted competition as previously switching suppliers or tariffs could save consumers money. As such, around 29 million households were on tariffs protected by the price cap in July 2023. [106]

[106] Ofgem, Energy prices to fall again this winter, 25 August 2023

3.5 How do wholesale energy costs affect domestic customers?

Wholesale energy prices are the biggest single element in energy bills. This means they largely dictate whether household bills go up or down. As such, increases in wholesale prices are by far the largest contributor to the increased prices paid by consumers. To illustrate, wholesale electricity prices made up around 40% of the 2021/22 winter price cap and increased to 75% of the quarter 1 2023 price cap. This is shown in the chart on the components of the default price cap in section 2.3.

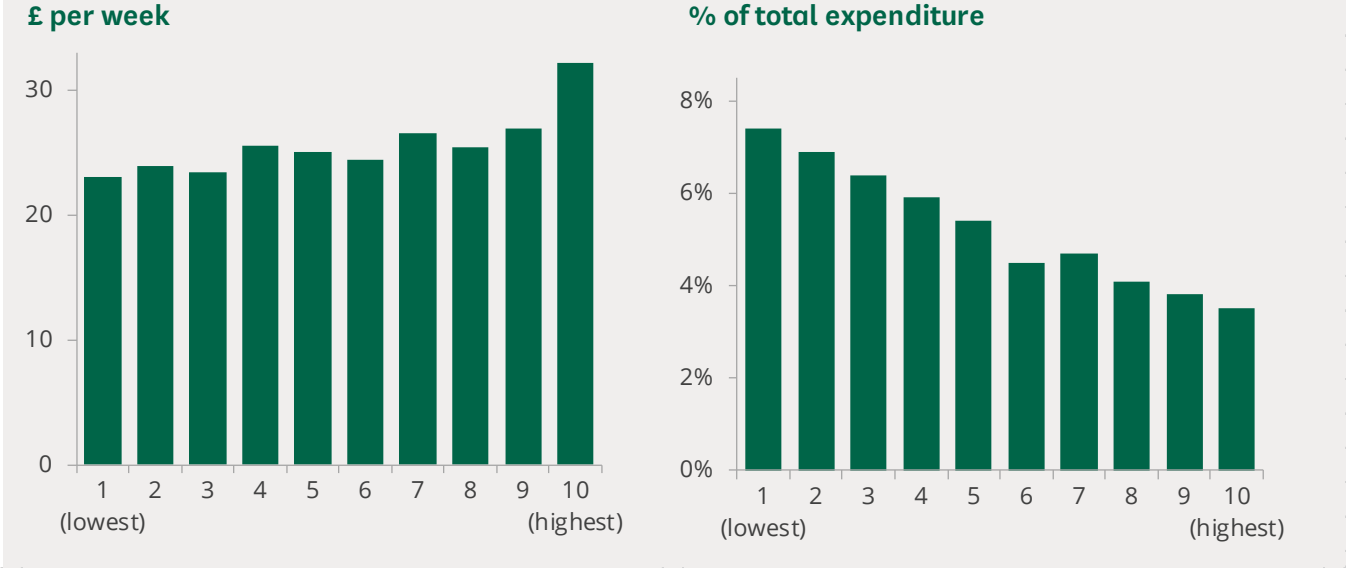
How does spending on energy vary by income?

Price rises have a disproportionate impact on lower income households. The charts below show that whilst households with the lowest incomes spend less money on energy, the proportion of total expenditure on energy is higher. This is because spending on energy to heat and power a home is, to a large extent, not discretionary.

In 2021-22, the lowest income households (in decile 1) typically spent £23 a week on energy accounting for 7.4% of their total expenditure. In comparison, the highest income households (in decile 10) typically spent £32 a week on energy accounting for 3.5% of their total expenditure.

Average weekly expenditure on domestic energy by income group, 2021-22

Income deciles (10% groups)



Source: ONS, Family spending workbook 1, tables 3.1 and 3.2

Fuel poverty

In general, households that must spend a high proportion of their household income to keep their home at a reasonable temperature are in fuel poverty. As such, there is serious concern that high energy prices are causing more people to be in fuel poverty.

In the latest estimates, around 13% of households in England[107], 25% in Scotland[108], 14% in Wales[109], and 24% in Northern Ireland[110] were classed as being in fuel poverty.[111] However, fuel poverty data for different nations isn't directly comparable. Fuel poverty is a devolved policy area and is defined and measured differently in each nation. Estimates have been produced at different times and sometimes with large gaps.

The latest fuel poverty estimates do not take account the recent rapid increases in domestic energy prices. As such, it is likely that the prevalence of fuel poverty is much higher than these estimates suggest.

Fuel poverty resources

- The briefing paper Fuel Poverty in the UK looks at how fuel poverty varies across the UK, how it has changed over time and measures to reduce it.
- The dashboard, Local area data: fuel poverty, provides estimates of households in fuel poverty for constituencies in England, and local authorities across the rest of the UK.
- The briefing paper, Constituency casework: Government support for energy bills, covers the new energy bill support schemes introduced by the Government in 2022 and 2023 to help households and businesses with rising energy prices.
- Citizens Advice provides information for people who are struggling to pay their energy bills.

107 BEIS, Fuel poverty statistics, Sub-regional fuel poverty 2020 data, Table 4

108 Scottish Government, Scottish House Condition Survey, Local Authority Analysis 2017-2019, Fuel Poverty and Extreme Fuel Poverty Tables

109 Welsh Government, Fuel poverty modelled estimates for Wales: as at October 2021

110 NI Housing Executive, Estimates of fuel poverty in Northern Ireland in 2019

111 The England statistics are for 2021, Scotland for 2019, Wales for 2018 and Northern Ireland for 2016.

3.6 Generator profits: Why are energy bills rising when energy companies are making record profits?

Companies that produce and generate energy, such as British Petroleum (BP) and Shell, have announced record profits for 2022. Shell reported profits of £32.2 billion, the highest in its 115-year history, and BP made profits of £23 billion, more than double its 2021 profits[112]. These record prices are initially because of rising demand after Covid-19 restrictions were lifted, and then because Russia's invasion of Ukraine in 2022 raised energy prices (see section 3.1).

Are domestic consumers paying for companies record profits?

Domestic consumers pay energy supply companies for their gas and electricity, not energy generators. Energy suppliers are not making record profits, as they need to pay the higher wholesale gas and electricity prices, and many have gone out of business (see section 3.3).

Whilst domestic energy bills are generally not the way most energy companies make money, they do indirectly contribute towards energy companies record prices. This is because consumers pay energy suppliers higher prices which are used to pay for the higher prices from energy generators.

However, some energy companies that own and operate energy suppliers also own and operate other elements of the energy system, such as energy generation. Whilst these energy companies may lose money in one part of their operation, such as supply, they are able to make profits in other areas, such as generation which has largely benefitted from high wholesale prices.

To illustrate, Centrica, which owns British Gas, made £18.9 million in profit from its electricity and gas supply businesses. In comparison, it made £758.2 million from its electricity generation business, of which, £753.1 million was from nuclear generation.[113]

Why are energy companies making record profits?

Wholesale oil and gas prices go up if supplies are short and demand is high, and down if supplies are plentiful and demand is low. Oil and gas producing companies make money by locating oil and gas reserves and drilling down to

[112] BBC News, What is the windfall tax on oil and gas companies?, 7 February 2023

[113] Centrica, Ofgem consolidated segmental statement

release them. The cost of doing this doesn't change much as energy prices go up and down, but the profits from selling it do. Following Russia's invasion of Ukraine in 2022, wholesale prices significantly increased (see section 3.1) which has resulted in record profits for many energy generation companies.

'Marginal cost pricing' (see section 2.6), has resulted in electricity generators that do not rely on gas, such as some renewable and nuclear generators, to benefit from higher wholesale electricity costs. These generators have experienced an increase in revenue, without an associated increase in costs, as the high wholesale gas prices feed into high wholesale electricity prices.

However, generators' profits vary depending on how they sell electricity. For example:

- Renewable generators who are part of the 'renewable obligation' government scheme may profit from selling electricity to the wholesale market and by selling renewable obligation certificates (issued for each unit of electricity generated), but they may have already sold the electricity at a lower price ahead of this.

- Contracts for Difference renewable generators selling into the wholesale electricity market will not profit as they receive their agreed 'strike price' whether the wholesale price is above or below this.

How are energy companies taxed in the UK?

Oil and gas producers pay a 40% tax on their profits, which is higher than taxes on other companies. To reduce the tax bill, energy producers can deduct the costs of shutting down old oil rigs, or offsetting future investments and losses from earlier years. BP and Shell have paid no tax and received payments from the UK government in some years through tax refunds related to losses or spending on things like decommissioning North Sea oil platforms.

What is the 'Windfall Tax'?

A windfall tax is an extra levy imposed by a government on a company. It targets firms which benefit from something they were not responsible for - in other words, a windfall. In May 2022, a 'windfall tax' of 25%, which was increased to 35% in November 2022, was introduced for all the oil and gas producers operating in UK waters between 2022 and 2028.

The windfall tax only applies to profits on UK oil and gas production, which only account for a small share of some companies profits. BP and Shell are headquartered in the UK but make most of their profits from activities around the world, and not in the UK. Companies can reduce what they have to pay by deducting more than 90% of the costs for new exploration and production from their windfall tax bills.

The government also introduced a temporary 45% levy on what it calls

"extraordinary returns" from low-carbon electricity generators in the UK. Larger operators started paying the Electricity Generator Levy on 1 January 2023.

There have been calls for higher taxes on energy companies, with some arguing it is a good way for the Government to raise money for energy support schemes as households face high energy bills (see section 3.5). However, energy companies argue that if the Government placed higher taxes on UK production, or taxed their global profits, it would make them less willing to invest in UK production and encourage them to move elsewhere where taxes are lower.[114]

[114] BBC News, Why are BP, Shell, and other oil giants making so much money right now?, 12 February 2023

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