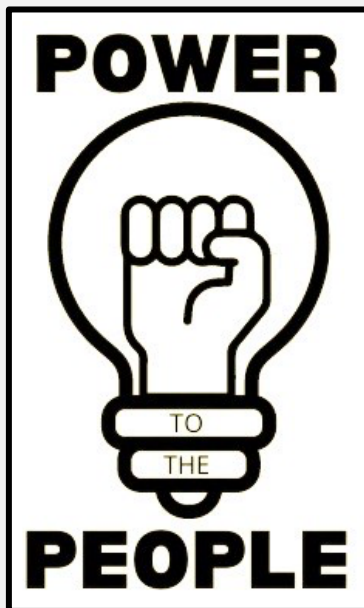


UNDERSTANDING THE ENERGY CRISIS



*A pamphlet to understand the UK's privatised
energy market and current price crisis*

in association with



WHAT IS 'POWER TO THE PEOPLE'?

'Power to the People' is a broad-based campaign across Scotland which was launched in June 2022 in response to the crisis of energy price rises.

We have activists who describe themselves as environmentalists, socialists, trade unionists, and of no political persuasion. What unites us is our over-riding concern about the rise in energy prices for people in Scotland and the consequences this will have.

New groups are being formed across Scotland and the rest of the UK.

We all are committed to working together to campaign for three demands:

- A freeze on all energy prices
- An end to late payment fees
- Scraping the use of prepayment meters

These demands are achievable but will only be won through mass participation in a movement designed to exert maximum pressure on our elected representatives.

This pamphlet forms part of our campaign to encourage people to become informed about the energy market. We believe that only through educating ourselves in the energy market and its effects upon working people can we find ways to push back against the price rises which energy companies and the government are attempting to impose upon us.

Disclaimer

The information in this pamphlet is written with a specifically Scottish audience in mind, although much in this pamphlet relates to the energy market across the whole of Great Britain. Where possible, this pamphlet has attempted to recognise regional and national differences, as well as demonstrate the integrated nature of the British energy market.

All information accurate at time of publication, **August 2022**. For any corrections, please contact powertothepeople2022@gmail.com.



Please feel free to copy this guide in whole, or in part. We only ask that you contact our campaign before doing so and let us know how you plan to use it.

Contents

Page

1. Introduction.....	3
2. How did the UK's energy network become privatised?.....	5
3. How is Britain's Energy Infrastructure currently organised?.....	9
4. Common market fundamentals in the buying and selling of energy.....	21
5. How is electricity bought and sold in Britain?.....	24
6. How is gas bought and sold in Britain?.....	31
7. How successfully has Ofgem met its regulatory obligations?.....	39
8. Has privatisation worked?.....	52
9. How am I billed for my energy?.....	59
10. What is the energy price cap, and how does it work?.....	67

1. Introduction

In April 2022, British consumers and businesses experienced the biggest hike in energy prices since 1988.¹ The price cap on domestic energy (energy used by households) was lifted by 54% in April, 2022 by the energy regulator, Ofgem, and will be lifted again in October 2022.

Average annual combined bills for electricity and gas have risen from £1,250 in 2021 to £2,250 in the summer of 2022, and with a further hike on 1 October, this will rise to £2,500 a year for the average consumer.² Since businesses, charities and the voluntary sector (including nursing and care homes) are not protected by the price cap on energy use, it is also expected that non-domestic energy bills will rise even more rapidly.

The costs to business will be passed on to consumers in higher average prices for everyday items, transport, and so on,³ further exacerbating inflation (currently at between 8-10%) and the widely discussed ‘cost of living’ crisis in the UK.⁴ Politicians, think tanks, charities, trade unions and other commentators have all warned that the rise in energy prices, considered to be one of the root causes of the wider costs of living crisis,⁵ will lead to a winter of ‘dire poverty’ for the poorest and a long period of financial struggle for everyone else.⁶ And energy market,⁷ as well as shocks to the global energy supply system (such as the COVID-19 pandemic and the Russian invasion of Ukraine).⁸

¹ P. Bolton and I. Stewart, [Domestic Energy Prices: Research Briefing](#), House of Commons Library, 2002, pp. 4-5.

² *Ibid.*, p. 5.

³ E. Conway, [‘Cost of living: The story of how an energy crisis very quickly turns into a price rise for everything’](#), (Sky News, 21 May 2022).

⁴ See: [‘Cost of Living Crisis’](#) (various items, The Guardian, last accessed 13 September 2022); S. Venkataramakrishnan, [‘Credit crunch: how the cost of living crisis is pushing households to breaking point’](#), (Financial Times, 8 August 2022); Anon., [‘Cost of Living Crisis’](#), (Institute for Government, 4 August 2022).

⁵ ‘A rapid increase in energy costs, particularly the wholesale price of gas, has been a key driver of the recent increases in inflation. Housing and household services (which include electricity and gas) and transport (which includes motor fuels) contributed to over half of annual CPIH inflation in June.’ [‘Cost of Living Crisis’](#) (Institute for Government, 4th August, 2022).

⁶ See, for example, the statement of former Prime Minister Gordon Brown in *The Guardian* (6th of August 2022), ‘Gordon Brown: [‘Set emergency budget or risk a winter of dire poverty’](#)’; *The Guardian*. (28 December 2021). [‘Why is the UK facing an energy crisis and how do we cope with it?’](#).

⁷ See, for example, UN. (3 August 2022), [‘UN chief slams ‘immoral’ profiteering amid global energy crisis.’](#)

⁸ See, for example, Politics Home (20 September 2021). [‘The Energy Crisis Explained — What Is Causing It, And What Can The Government Do About It?’](#).

European-wide energy policy (including poor contingency planning, inherent problems with energy markets within the EU, etc.), has been blamed for the wider crisis in the region.⁹ Other commentators point to special conditions with the UK (including government policy, the role of the regulators, the behaviour of private energy companies) to explain the crisis.¹⁰ Understanding the interaction between these various factors at the global, regional, and local levels can be very challenging.

This pamphlet is aimed at helping everyone understand how the energy that reaches their home is produced, rather than a broader discussion of ‘energy’.

For most people, this will be in the form of gas or electricity. While the oil industry is important to the energy industry and the UK economy more generally, it is beyond the scope of this pamphlet to discuss the particularities of the oil market. While many economists have argued that there is a strong historical link between the price of oil and gas, this particular link has weakened over recent years. It would also require another pamphlet of a similar length to untangle the oil markets in Britain and abroad.

This pamphlet also aims to give you a clear explanation of the main causes of the current energy crisis. It tries to assume no prior knowledge of energy markets, which explains why this pamphlet is so long! You should also understand how Britain is particularly poorly placed in Europe to cope with the current energy crisis. We hope this leaflet will serve to help your own research and thinking about the provision of energy in Britain and further afield, help you to get informed about the public debates about energy that currently dominate the news, and think about how governments, organizations and individuals can begin to cope with and solve this crisis. The pamphlet also gives considerable space to discussing the structural features of the energy sector in Britain, the organization of energy supply, and the role of the UK government and the regulators (Ofgem) in setting and enforcing energy policy.

Throughout this booklet, you will see continued reference to the ‘GB energy market’. Northern Ireland has always existed in an energy market with the Republic of Ireland, has its own energy regulator, and a very different domestic energy mix compared to Great Britain. This pamphlet makes careful use of the relevant geographical terms in an attempt to distinguish between policies and economic effects which are spread across the UK state, and those which relate specifically to the energy market of Great Britain.

⁹ See, for example, EUISS. (January 2022). [Europe’s Energy Crisis Conundrum: Brief 2.](#)

¹⁰ See, for example, Rodes, Gazis and Gross, [Is the UK facing an Energy Security Crisis?](#), Energy Futures Lab, Imperial College London, (no date).

2. HOW DID THE UK'S ENERGY NETWORK BECOME PRIVATISED?

Since the mid-1980s, the system of energy production and supply operating in the UK has been defined by the commitments of successive Conservative and New Labour governments to private ownership, the free-market, and competition. Waves of privatization of former public enterprises took place under the governments of Margaret Thatcher (1979-1991) and John Major (1991-1997), justified by an overarching 'neo-liberal' ideology, as well as by more specifically local economic and political conditions, including the intention to confront and curb the power of trade unions in the UK.

Neoliberal economics and 'Thatcherism'

What we call now call neoliberal ideology, which was called 'Thatcherism' in the UK (after Prime Minister Margaret Thatcher) and 'Reaganomics' in the United States (after President Ronald Reagan) in the United States was essentially an argument for a return to 'classical liberal' economic policies, applied to an age in which technological and political contexts made a global economic system feasible and, arguably, desirable.¹¹ Classical liberal economics says that the economic role of the state should be as limited as possible, allowing private enterprise, individual initiative and self-interest to work through free markets in order to secure citizens maximum economic and political liberty. The state's limited role in economic management should be monetary, e.g. securing the national currency and using changes in interest rates and money supply to influence the spending, saving, borrowing, and investment behaviours of individuals and firms.

Neo-liberalism makes the strong claim that competitive, for-profit businesses are more likely than not-for-profit, public enterprises to be efficient and produce the best outcomes for consumers (high quality goods and services; fair prices) since consumers in free-markets are able to exercise 'exit freedom' (i.e. shop somewhere else), and this is an effective incentive to do business fairly and at a good price.¹² They also argue that exaggerated trade union power is an unnatural and costly force within a market economy, tending to lead to inflated wage demands, higher prices, and inflation. In the late 1970s, so called 'stagflation' (a low productivity, high inflation economy) under the Labour governments of Harold Wilson and James Callaghan, punctuated by waves of strikes organized by miners, steel workers, dock workers, and auto-workers (amongst others), seemed to

¹¹ Harvey (2005) *A Brief History of Neoliberalism*. Oxford University Press

¹² See, for example, Hansard (10 April 1986). [Gas Bill: HL Deb , vol 473 cc312-24](#).

demonstrate to a wider public the problems with the 'big state' and an overly powerful trade union movement. The fact that the most powerful trade union organizations were rooted in nationalized industries, including the coal, dock, and auto industries gave an additional incentive for a radical Conservative government to embark on wholesale 'restructuring' of the heights of British public enterprises.¹³

Pre-1986 GB Energy Market

Before the mid-1980s, the production of energy (including coal, gas and electricity) in the UK was under the monopoly control of several large corporations, with distribution handled by regional and municipal public electricity suppliers. To that time, the main producers of energy were the British Gas Corporation, the Central Electricity Generating Board (CEGB), the North and South of Scotland Electricity and Hydro-Electricity Boards, the National Coal Board.

Post-1986 GB Energy Market

Privatisation of the energy market and the numerous attempts Ofgem have made to increase competition in the energy sector can be broken down into three main periods:

(a) the break-up of the state monopolies (1989 to 1999)

(b) the rise of the 'Big Six' (1999-2014)

I New entrants and increased 'opening up' of energy markets (2014-2021)

The break-up of the state monopolies (1989 to 1999)

The British Gas Corporation was privatized by the Gas Act of 1986, though the new private company 'British Gas' maintained a monopoly on gas supply for technical reasons long after this legislation was passed.¹⁴ The CEGB and Scottish Electricity Boards were privatized by the Electricity Act of 1989, in this case leading to the creation of six new private companies: PowerGen, National Power, National Grid Company, and Nuclear Electric in England and Wales, as well as North of Scotland Electricity plc (later Scottish Hydro-Electric plc.) and ScottishPower.¹⁵

These reforms created regulators in the persons of the Director of Gas Supplies and the Director of Electricity Supplies, heading up the Offices of Gas Supply (Ofgas) and Electricity Regulation (OFFER) respectively, who were tasked with protecting the safety and health of energy consumers, promoting efficiency and economy in energy supply in the UK, 'enabl[ing] persons to compete effectively in

¹³ For a critical overview of privatization in the UK, see: Seymour in *The Guardian* (29 March 2012), '[A Short History of Privatization](#)'.

¹⁴ [Gas Act 1986](#); see also: Essex (2004). 'Privatisation of Energy: Was it Necessary?', *Economic Affairs*, September, 2004. pp. 15-16.

¹⁵ [Electricity Act 1989](#); see also: Essex (2004), pp. 15-17.

the supply of gas', ensuring continuity of supply and keeping tabs on energy prices to make sure they were fair.¹⁶

This early form of energy regulation has to be understood as regulation of prices, supply and consumer well-being, and not so much of one of 'energy markets'. While Thatcherism had privatized gas and electricity and made some of the necessary the statutory provisions for a competitive market in industry, up until that late 1990s energy production and supply – other than oil – was still the exclusive privilege of the companies created by privatization. This meant that customers did not really have the ability to use the 'exit freedoms' (switching, or what insiders call 'market participation') at this point. In this regard, big changes happened in the UK because the New Labour needed to bring British legislation in line with a European standard.

Through the 1990s, European countries were also engaged in wide-scale privatizations of former public services and publicly owned enterprises (including utilities and energy production and supply); at the same time, and partly as a response to the new neo-liberal consensus of the early to mid-1990s, the European Union issued a number of directives on competition in internal energy markets that essentially clashed with the structure and organization of the UK energy industry of the time. The Competition Act (1998) was meant to rectify this, bringing UK and EU competition law into agreement, and this had the specific effect on the UK energy industry of setting a timeline for (a) new business to enter energy markets and (b) customers to be able to switch from one supplier to another.¹⁷

The rise of the 'Big Six' (1999-2014)

These big companies (often called the original 'Big Six') – British Gas, EDF Energy, E.ON, RWE, npower, ScottishPower and SSE – were the firms that had emerged from previous monopoly suppliers through the 1980s and 1990s, having the advantage of 'vertical integration' (having the capacity within a single firm to produce, sell and physically supply and maintain electricity supply and, in the case of British Gas, gas supplies), which was carried over from the period of public ownership.¹⁸ Between 2004 and 2010, the original 'Big Six' had dominated the market entirely, sharing 100% of all customers between them; around 2014-16 this dropped to around 905, before dropping further to about 75% in 2020.¹⁹

¹⁶ [Gas Act, 1986. Section 4.2.d](#); [Electricity Act 198. Sections 2 & 3](#).

¹⁷ Ofgem. (no date). [Competition Act 1998: Application in the Energy Sector](#). p. 9; see also: [Competition Act 1998](#).

¹⁸ Ofgem. (6th October 2008). [Energy Supply Probe: Initial findings report](#). p.6.

¹⁹ Hass, 2008. p. 459.

New entrants and increased ‘opening up’ of energy markets (2014-2021)

On the supply side, some of these companies are what are called ‘assetless’ energy retailers: these companies (such as OVO and Octopus) have no capacity to generate electricity (unlike, for example, Scottish Power or British Gas), but instead buy all their supplies from the wholesale market.²⁰ As Lawrence Haar argues, the entry of these sorts of companies into the market was encouraged by the UK regulator and government, particularly from 2014 onwards when it was recognised that the dominance of a handful of big companies was destroying competition and harming customers.²¹

²⁰ Haar (2021). The viability of the UK’s assetless electricity retailers. *Economic Affairs*. 2021: 41. pp. 458-464.

²¹ Ibid, p. 458.

3. HOW IS BRITAIN'S ENERGY INFRASTRUCTURE CURRENTLY ORGANISED?

The British energy market is among the most liberalised and privatised across the world. Indeed, the European Union used Britain's privatised and regulatory framework as a basis for its own EU directives in the late 1990s in an attempt to force privatisation of energy markets throughout the whole of the EU. At every point possible, the UK government has sought to privatise the process of producing, transporting, distributing and delivering energy into our homes – and at every stage, every company involved is making a profit, sometimes at obscene amounts.

Overview of Britain's Electricity Network

Britain's electrical infrastructure network – the system of generators, transformers and cables which take our electricity from its site of generation to our homes – has largely remained unreformed for over eighty years. The Energy Supply Act (1926) began concentrating the production of electricity and the construction of a 'National Grid'. By the 1960s, computerisation and technological developments had allowed for the construction of a 'supergrid'.²² But the principles upon which the UK government decided upon energy policy remained the same: an emphasis on fewer, large-scale sources of electricity production, and prioritising efficient distribution of electricity to sources of high demand (i.e., areas with large populations).

While the past decade has seen some shift towards small-scale, decentralised renewable generators, researchers have pointed out that the UK government seems 'locked in' to a energy model of centralisation, and that unless systematic restructuring takes place, the UK will struggle to achieve energy security, or meet its emission reduction climate targets.²³

Organisation of the Electricity Network

²² NMGroup (2018) <https://nmgroup.com/en/resources/news/history-of-uk-electricity-network>

²³ Interestingly, the authors present both a 'centralised' and 'decentralised' model for the UK's future energy market. Whilst a centralised system is not inherently flawed, the authors suggest it does make it harder to achieve policy goals already set. <https://seec.surrey.ac.uk/Research/SEERS/SEERS1.pdf>

The current British electricity network is divided up into four sections: **generation**, **transmission**, **distribution**, and **supply**.²⁴ In England and Wales, the network was 'horizontally privatised', with generation, transmission, distribution and supply largely being carried out by sets of separate companies in each area. In Scotland, due to both the geography and range of sources of electricity generation, two dominant energy networks were created, both of which have retained a strong 'vertical' structure and having stakes across all sections of the energy sector.

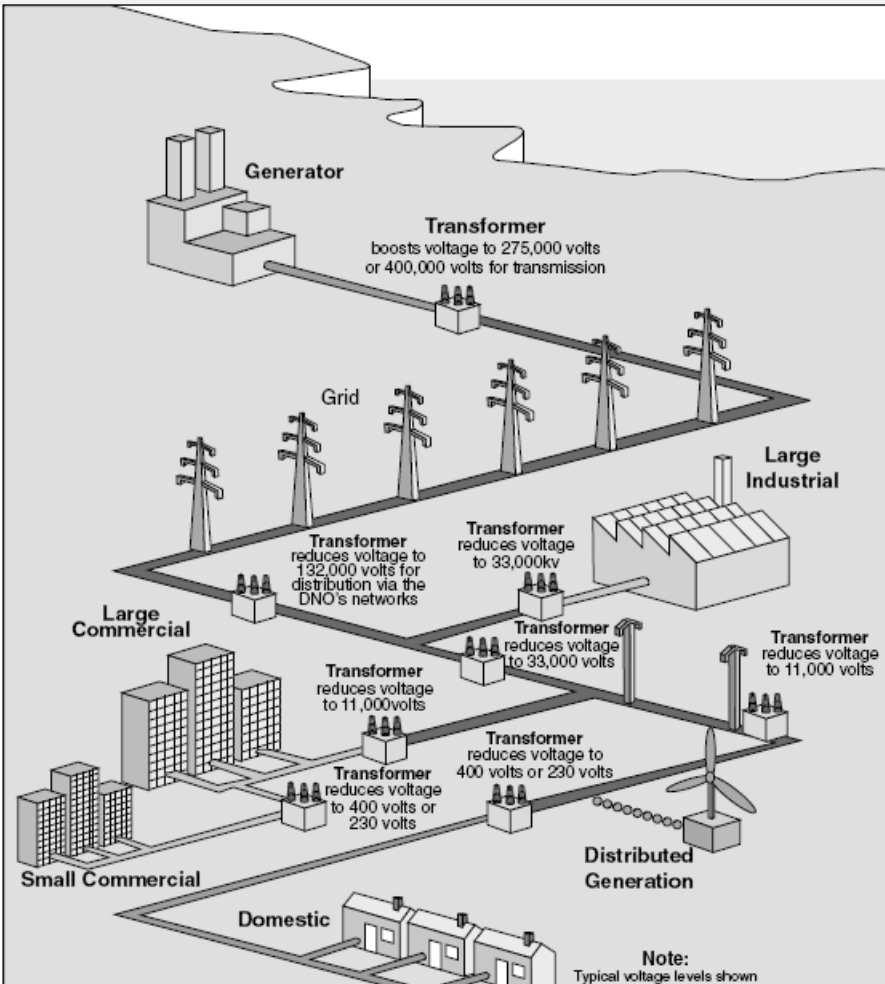


Image 1. The UK Electricity Grid

<https://publications.parliament.uk/pa/cm200910/cmselect/cmenergy/194/19404.htm>

²⁴ You can find a full list of all electricity companies involved at all stages of the electricity network here: <https://www.ofgem.gov.uk/publications/list-all-electricity-licensees-including-suppliers>

However, this is slowly beginning to change as even these companies have begun to sell off sections of their energy infrastructure to other private companies.

Electricity Generation

While most electricity in Britain is generated in large power plants strategically located around the country, increasingly smaller generating companies are able to produce energy that can be sold into the national electricity grid. Companies that produce and sell energy into the national grid might include, for example:

- the Hinckley Point A and B nuclear power plants in Somerset (with Hinckley Point C currently under construction by French-owned EDF)
- the Cruachan Hydro power station in Argyll, owned by Drax (whose major shareholders are asset management companies).
- the Gigha Renewable Energy, owned by the islanders themselves, generates electricity from several turbines on the island and sells it into the grid (via an intermediary).
- Private, family-run businesses (such as farms) with one or two turbines or solar panels selling electricity into the grid.

Private energy generating companies are responsible for maintaining and investing new sources of electricity production in the UK. Exactly how they decide which method of electricity generation to choose, as well as the size and location of the generator, will be determined in part by:

- individual companies' market decisions (e.g., how much it cost them to bid for government licences and the current price of energy – and profit they think they can make in the future)
- the terms of government licences (e.g., it may specify how many wind turbines can be built and in which places in the country)
- the extent of government subsidies and tax relief to offset initial investment costs
- broader policy direction set out by the government (e.g., the decision to phase-out coal-fired power stations).

Despite electricity production being privatised, therefore, both the UK and Scottish governments play an interventionist role in both encouraging and discouraging investment in energy production. But even considering this, limits to their ability to shape energy generation remain. The UK's over-reliance on market principles to drive investment was highlighted by the private companies themselves: Independent research conducted for SSE in 2021 showed that if energy generation companies actually built the hydro-pump storage facilities the Scottish government had given them planning permission for, up to £650 million

could be saved in costs by 2050, yet ‘market forces’ were holding them back in making use of such licences.²⁵

Electricity Transmission

Britain’s electricity transmission network is geographically divided up into three areas, with one of three companies responsible for each area’s infrastructure.

They are:

- the National Grid plc, covering England and Wales
- SP Energy Networks covering Central and Southern Scotland (a subsidiary of Scottish Power)
- Scottish and Southern Energy Networks (SSE) covering Northern Scotland

These companies own and are responsible for the system of long-distance underground cables and large electricity pylons that distribute our electricity from the site of generation (such as the Torness nuclear power plant in East Lothian or a wind farm in the North Sea), to local substations, closer to where it can then be sent to people’s homes.

Using an alternating current (AC) enables the electricity to be ‘stepped up’ to between 275,000 and 400,000V as it passes through transformers along the network. This enables the companies to transmit it long distances more easily to where it is needed most, and with minimal energy loss.

Electricity Distribution

Once the electricity passes from the transmission cables into district substations, it becomes the responsibility of ‘**Distribution Network Operators**’. These companies have a responsibility for taking the electricity from the local substation and delivering the electricity into your home. The power is gradually ‘stepped down’ through several transformer substations so that by the time it is less than a kilometre from your house, a substation can safely convert it to mains voltage (230V) and finally deliver it to your mains fuse box in your home.

Distribution companies own and have responsibility for maintaining utility ducts, cables, local substations and sometimes electricity poles in more rural areas.

Like transmission companies, Distribution Network Operators are organised on a regional basis. There are fourteen distribution companies in Great Britain, with two in Scotland: Scottish Hydro Electric Power Distribution Plc (a subsidiary of SSE) and SP Distribution Plc (a subsidiary of Scottish Power).

²⁵ <https://www.sse.com/news-and-views/2021/02/investing-in-pumped-storage-could-save-up-to-690m-a-year-on-pathway-to-net-zero/>

To increase competition, Ofgem have also increasingly been granting licences to 'Independent Distribution Network Operators', who typically work with large building contractors to install and manage local power networks in residential or commercial areas. These are still very rare, however.

Electricity Supply

Your supplier has the responsibility for buying electricity on the wholesale market and to sell it to you. Your energy supplier will make decisions about which kinds of electricity to buy (e.g., wind, hydro, nuclear, gas), and from which companies they should buy.

Energy suppliers are essentially giant billing and forecasting operations, monitoring how much electricity you use and making forecasts to help them predict how much electricity their customers will need in the future. Given that energy companies buy their electricity from the wholesale market in advance of you using it, they also act as massive credit facilities. Customers might be paying for energy used 3 to four months in arrears (or even more), and so just one of the average 'big five' suppliers might be managing over £1 billion turnover *each month*, just for domestic customers. This is also a reason why they are keen for you to 'overpay' into your energy account, on the proviso that this amount will be used should your electricity usage change between winter and summer.

As of September 2022, the 'Big Five' energy suppliers are:

- British Gas (inc. Hive, owned by UK-based, parent company Centrica)
- Ovo Energy (owned by majority shareholder Stephen Fitzpatrick and who recently bought over the supply-side of SSE)
- E.ON (a German multinational)
- EDF Energy (a subsidiary of the French state-owned energy company)
- Scottish Power (owned by Spanish multinational Iberdrola).

These suppliers are also responsible for supplying gas to customers, as well.

In 2019, the so-called 'big six' became the 'big five', when Npower was bought over by German multinational E.ON. More recently, in 2020 SSE sold its domestic energy supply business to Ovo Energy, in part because it claimed it wanted to focus more on its generation, transmission and distribution subsidiaries.

Other Players in the Electricity Network

There are also private companies which run and manage interconnector cables which connect Britain to electricity grids in continental Europe and Ireland, as well

as the behind-the-scenes company DCC that deals with all energy smart meters and acts as a 'digital spine' for the communication of all energy meters.

Overview of Britain's Gas Network

Britain draws its gas from a variety of sources. In 2021, Britain imported 59% of its gas supplies, with the remaining 41% of demand being met through domestic

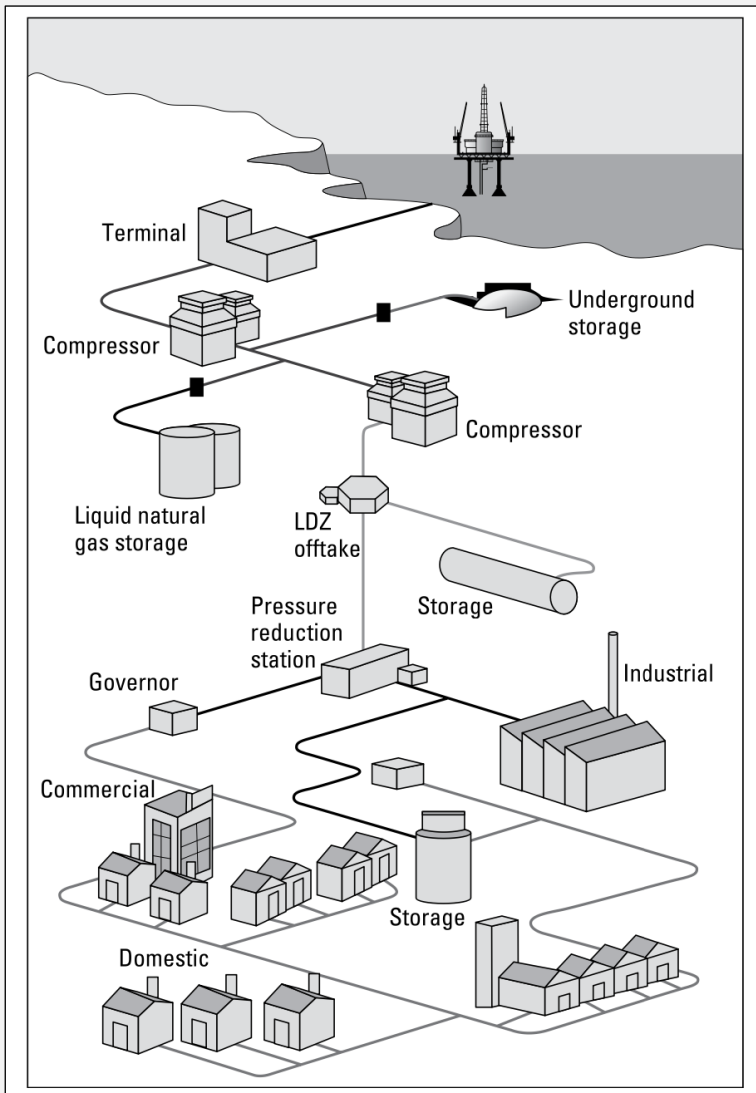


Image 1. The Gas Electricity Grid

S. Fowler, *The Gas Industry for Dummies*. John Wile Chichester, 2015. p. 41.

North Sea supplies. Pipelines connecting GB to Norway (making up 63% of total gas imports), as well as the Netherlands and Belgium, facilitate this. Other major gas suppliers, including Qatar and the USA, export gas to Britain in the form of Liquid Natural Gas (LNG) via tanker, and is placed in storage facilities until ready to be used.²⁶

Organisation of the Gas Network

Like the electricity network, Britain's gas network since privatisation has been divided up into its four component parts: **extraction and production, transmission, distribution and supply.**²⁷ The relatively simple network of regional and national gas boards has quickly become a complex web of companies through continuous buy-outs, sell-offs, mergers, demergers, takeovers and re-brands. Little wonder that the typical consumer feels confused about who is actually responsible for ensuring the lights stay on.²⁸

Gas Extraction and Production

Whilst there are thousands of companies registered to extract gas in Britain, only forty-one companies (including several subsidiaries of major companies like BP) have a revenue in excess of \$500 million (as of 2021).²⁹ The six biggest companies – all multinationals and players in the global energy market – include:

- Shell (\$261.5 billion)
- Unipet (\$46.5 billion)
- Esso (\$23.7 billion)
- BG Group (\$16.1 billion)
- Kuwait Oil Company (\$10.8 billion)
- Shell Global LNG Ltd. (\$8.1 billion).

The UK government controls the licencing of all offshore gas (and oil) production. In recent years at least, the government has been less reluctant to grant as many new licences for oil and gas exploitation compared to Norway, evidenced by the successful and high-profile campaign to stop drilling in the Cambo oil field. With

²⁶ Mettrick & Ying (2022)

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1094421/DUKES_2022_Chapter_4.pdf

²⁷ Ofgem (2022) <https://www.ofgem.gov.uk/publications/list-all-gas-licensees-including-suppliers>

²⁸ For a forensic breakdown of all history of the ownership of the British gas and electric energy network since privatisation, see here: <https://www.businessjuice.co.uk/energy-guides/national-grid/>

²⁹ Dun & Bradstreet https://www.dnb.com/business-directory/company-information.oil_and_gas_extraction.gb.html

the appointment of Liz Truss as Prime Minister, however, this seems likely to change, further demonstrating the current government's unwillingness to carry out any long-term strategic plan to decarbonise the UK's economy to protect consumers in the long-run against continued energy price rises.

Gas Transmission

Britain's gas transmission network is called the **National Transmission System** (NTS). The entire transmission pipeline is monitored from a control centre in Hinckley, Leicestershire, which makes sure gas supplies are secured every day and the pressure in the pipes are maintained. All the transmission pipes in Britain are currently owned and operated by one company: National Grid Gas, a subsidiary of National Grid Plc. In March 2022, however, National Grid attempted to sell National Grid Gas to an Australian-led consortium of financiers, although this deal is under investigation by the UK government on national security grounds.³⁰

Upon discovery of North Sea oil and natural gas in the 1960s, a network of pipelines were constructed to bring the gas onshore to areas where it could most quickly reach densely-populated areas. Today, there are now 29 feeder pipes taking natural gas from the North Sea (such as the Piper or Forties gas fields in the North Sea) to points of regional distribution around the UK at around 23mph. Most of these pipelines land at Humberside, Yorkshire and on the West Coast of England.

The transmission system also includes the storage and transmission of Liquefied Natural Gas (LNG) brought in from overseas (such as from the USA and Gulf states). The UK currently has three sites of storage: two in South Wales at Milford Haven, and one in Kent.

A part of the transmission system also involves ten underground sites which are used to store natural gas within rocks, ready to enter the network again should there be a shortage of supply. These sites are all based in England, predominantly in Yorkshire and Cheshire.

Compared to other European countries, Britain is in a highly vulnerable position in terms of its ability to store gas. In the 1980s, Conservative government ministers rejected plans to build mass gas storage plants, considering them a wasted investment. The government considered the UK's gas reserves plentiful to ensure security of supply – even though it was widely recognised these supplies were finite and would only keep Britain self-sufficient in natural gas for around thirty years. Even in the 2010s, when the volume of gas being produced in the North Sea

³⁰ Sharma & Sandle (2022) <https://www.reuters.com/markets/deals/uk-investigates-sale-national-grids-gas-transmission-business-report-says-2022-08-07/>

was declining, Conservative ministers continued to mothball gas storage facilities. Today, Britain has only 1% of Europe's gas storage facilities – enough to last the country for just four of five days in winter. The Netherlands, by comparison, has nine times the storage of the UK, with Germany having sixteen times the gas storage capacity of Britain. The failure to invest in gas infrastructure meant that during the 'Beast from the East' storm in 2018, gas prices surged eightfold above typical levels, and the National Grid announced a formal warning that the country could run out of gas if the cold weather continued.³¹

The transmission network also transports gas from onshore gas terminals to large-scale industrial users and other pipelines connected to Europe and Ireland. There are over seventy 'large-scale' users of gas that the NTS also supplies directly, including gas electric generation such as Pembroke B in Wales, Peterhead in Scotland, and Staythorpe C in the East Midlands.

The transmission network forms the backbone of the UK gas network. It is also the high pressure part of the GB gas network, operating at pressures between 45 and 85 bar. The gas is moved through the system using twenty-eight compressor stations situated around the country. From here, over 140 pipes lead off the transmission network, going either to power stations and large industrial consumers (in total around 60 customers) and to the fourteen distribution areas around Britain.

Gas Distribution

National Grid Gas sends the gas to local distribution networks. The gas will enter a pressure reduction station at which point it becomes part of the UK's **Local Transmission System** (LTS). There are eight distribution networks across the UK, covering about 275,000km in pipework (the transmission pipeline by comparison is made up of only around 7,600km of pipework).

Compared to the fourteen Local Distribution Operators (LDOs) within the electricity network, there are comparatively fewer gas companies (sometimes called a 'gas transporters') working within this part of the system:

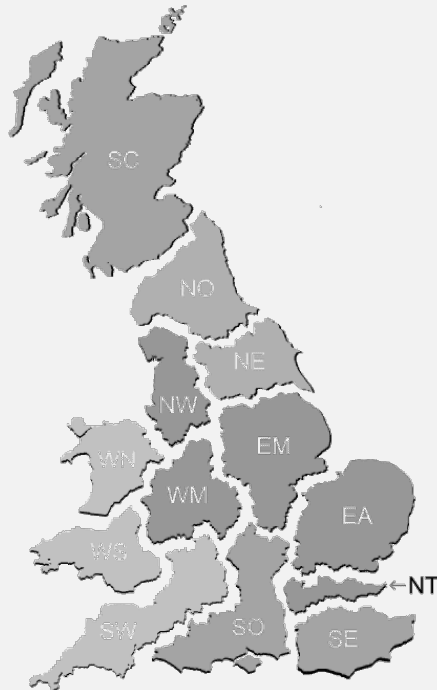
- **Cadent**, which operates the distribution network for the North-West of England, the West Midlands, East Midlands, East of England and North London.
- **Northern Gas Networks**, which operates gas distribution network in the North of England.

³¹ Ambrose (2021) <https://www.theguardian.com/business/2021/sep/24/how-uk-energy-policies-have-left-britain-exposed-to-winter-gas-price-hikes>

- **Wales and West Utilities**, which operates the network across Wales and the South West of England
- **SGN** (formerly Scotia Gas Networks) which controls the Scotland and Southern England networks.

There is also a network of independent gas suppliers who transport gas around the UK to the approximately 10% of customers in the UK who are not connected to the gas network. These will also include customers whose homes are heated either using LNG or Liquefied Petroleum Gas (LPG).

As well as reducing the pressure of the gas in the pipelines as it gets closer to the point of delivery (your home), the gas shippers will also add an odour to the gas so that gas leaks are easier to detect. They also are likely to be responsible for any gas leaks which you smell outside, connect houses to gas mains, as well as move or replace gas meters in homes.



Similar to electricity DNOs, increasingly there are more independent LDOs, which transport gas to local district heating networks and other schemes. Currently, however, there are only fifteen companies which do so, with a total of 1 million consumers connected.

Gas Shippers

Unlike the electricity market, where suppliers buy electricity from the wholesale market directly and sell it to the consumer, the gas market has an additional player: the **Gas Shipper**. These companies *do not* have any responsibility for physically moving the gas through the network – this is entirely the work of Local Distribution Operators and National Grid Gas. Rather, a gas shipper's main role is as follows:

6. To enter into contracts from gas suppliers to purchase gas on their behalf on the wholesale gas markets
7. To specify to both the National Grid and the LDOs where gas needs to enter into the network and where it needs to be transported to (e.g., which areas of the country for consumers, businesses, etc.)
8. To pay a fee to both the Grid and LDO for successfully delivering the amount of gas ordered
9. To receive payment from the gas suppliers for successfully purchasing the gas they require for their customers.

Shippers can obtain a licence from Ofgem to buy and sell gas. As of 2021, there were 271 registered gas shippers in Britain, ranging from subsidiaries of the 'big five', mining and minerals conglomerate Glencore, to investment firms and financial institutions like J. P Morgan, BNP Paribas, and Barclays Bank.³²

Gas Suppliers

The companies that actually send you a bill for the gas you use are the **gas suppliers**. They have no responsibility for maintaining the gas pipes entering your property. Their only responsibility is to make sure they that you are billed correctly according to the amount of gas you use, and thus purely a retail relationship. They will buy gas for you from **gas shippers**; unlike electricity suppliers they are not directly responsible for buying gas on the wholesale market.

While most of the large energy companies will have subsidiaries of their company which are separately licenced to do this for themselves (though not necessarily so), smaller energy suppliers will not have this option. Smaller gas suppliers are also more likely to rely on those shippers who take more risky gambles on gas prices in order to undercut the 'big five', and thus attract more customers. However, as was seen in Autumn 2021, when energy prices widely fluctuate, this puts both shippers and suppliers at greater risk of going bust.

³² Ofgem (2022) <https://www.ofgem.gov.uk/publications/list-all-gas-licensees-including-suppliers>

4. COMMON MARKET FUNDAMENTALS IN THE BUYING AND SELLING OF ENERGY

This section aims to explain how electricity and gas is bought and sold in Great Britain. While the broader question of privatisation and its effectiveness in delivering its objectives will be explored later, this section will establish how the market is supposed to function *in principle*.

From a neoliberal perspective, the *fundamental principles* of the energy market as it is currently arranged are to encourage:

- Customers to be able to choose the most competitive energy deal (through switching supplier)
- Energy companies to be able to purchase energy from their supplier or gas shipper of choice (e.g., buying from the cheapest shipper, or only buying energy from 'green' sources such as wind turbine generators)
- As much competition and diversity in the market as possible. The growth of 'non-physical traders' or, in other words, banks, financiers and investment firms who trade in energy.

In general terms, energy producers sell to energy suppliers, who then bill their customers for the energy used, with prices fluctuating based on supply and demand. Gas and electric markets are set up differently, however, and involve different players in the exchange process – an understanding of the similarities and differences in the two markets can help gain a deeper understanding of the flaws at the heart of GB's energy system.

Types of Markets

There are two types of markets where the buying and selling of electricity and gas takes place: **the wholesale market** (for exchanges between generators of electricity and electricity suppliers), and **the retail market** (for exchanges between electricity suppliers and consumers – both domestic and commercial).

This division of these two marketplaces for electricity reflects the fact that energy has been thoroughly privatised in Britain and the role of companies have been divided up between:

- (a) selling electricity to consumers (where there is competition between companies to attract customers), and
- (b) the production, transmission and distribution of electricity – where a natural monopoly already exists and the high costs in building the energy infrastructure generally prevents new companies entering the marketplace.

The Industry Regulator and Regulations

The rules governing the buying, selling and trading of gas and electricity are set out in two industry codes, enforced by Ofgem:

- The Balancing and Settlement Code (BSC) for electricity
- The Uniform Network Code (UNC) for gas

The rules say that:

- For electricity, wholesale contracts can be made just before the moment of delivery;
- For gas, shippers can continue to create contracts with each other during the 'gas day', until 3am (ie., 2 hours) before the new gas day begins.

Energy Balancing

Additionally, both markets have 'balancing mechanisms' in place to make sure both parties – the producers and the suppliers – either put into or take out of the system as much energy as they said they would. This is important because if they do not, the system could go out of balance, and this would create a safety issue. For this reason, a Service Operator in each system monitors the 'balance' and is responsible not only for maintaining that balance, but keeping record of unfulfilled contracts on behalf of either the producer or supplier, and charging them the difference required to keep the system in balance.

The Role of Non-Physical Traders

Both gas and electricity are considered 'forward' trades: both commodities can be traded *in advance* of being delivered to the end consumer. Given that electricity and gas cannot physically be swapped, traders buy a contract from a producer. This is a promise that on a specified future date and time, the specified amount of electricity or gas will be delivered into the Grid. This contract can be traded multiple times, as traders seek to 'trade their position' (i.e., make a profit) on what the gas or electricity was originally bought at.

Supposedly, speculators in such commodity markets help bring in additional sources of funding (or 'liquidity') into the system and also stabilise prices, though a quick read through several economists' blogposts on this topic will reveal the real truth: profiteering. Indeed, one author claims that 'you can hit real big in the energy markets of Europe', and that 'one of the easiest countries to start trading in is the United Kingdom'.³³

³³ Ahindura (2021) <https://blog.sopherapps.com/understand-what-the-uk-electricity-market-trading-is-about-406883c1ac36>

They may, for example, buy up ‘excess’ electricity in the market from one supplier (who has, perhaps, overestimated how much their customers needed) and selling it at a higher price to another supplier. On gas markets, they may bet that the next-day price will decrease.

Financial trading is critical to both markets as all trades are for future delivery. With multiple trading on contracts, buyers and sellers can better assess the “true” value of the commodity as there is greater trust in the price through liquidity of trades. Liquidity refers to the ease of buying or selling a commodity in the market. The higher this is, the more competitive a market is deemed to be.

For electricity liquidity is relatively low, churn of traded volumes against delivered volumes is only around 3. Gas churn is closer to 20 times, and as a result gas trades tend to be contracted further into the future as there is more confidence in the price.

Differences between the Gas and Electric Markets

While the GB gas market has some similarities with the way in which the electricity market operates, there are some key differences. One important difference is the use of ‘gas shippers’ who act as intermediaries between generators and suppliers. While on one level the gas market is less complex than the electricity market – for example, ‘balancing’ procedures take place on a daily, rather than half-hourly basis – the number of actors are greater, and there is greater reliance on international supplies makes the market harder to understand.

Another key difference is that gas can be stored. Unlike electricity, gas does not have to be extracted from the ground and immediately used by the consumer. It can be transported around the system and stored for prolonged periods until ready to be used. This may be in large, above-ground tanks and holding facilities, or in underground facilities where the gas is pumped into porous salt rock, and can be easily re-extracted and brought back into the gas network when required.³⁴ Consequently, there is less pressure on the national grid to be able to predict up-to-the second demand for energy, and countries can also build storage facilities to be able to hold reserves in gas from times of crisis.

³⁴ Legislation from the UK government prevents gas storage being used for hoarding supplies.

5. HOW IS ELECTRICITY BOUGHT AND SOLD IN BRITAIN?

Understanding the GB Electricity Market

Great Britain is a net importer of electricity, with approximately 7.3% of Britain's energy was imported in 2019.³⁵ Scotland, however, is a net exporter of electricity, as the country not only uses only 58% of its energy needs, but powers enough electricity to meet its domestic consumption three times over in a year.³⁶

The domestic energy market is made up of six key players and groups:

- **Energy generators** (from Scottish Power Renewables' wind farms to a small wind turbine in a farmer's field)
- **Energy suppliers** (such as EDF, British Gas, Scottish Power)
- **Energy traders** (speculators whose only job is to buy and sell energy to make profit)
- **The Electricity System Operator** (National Grid, who monitors how much electricity passes through the Grid and may buy electricity from overseas markets in order to meet GB demand, before reselling it to suppliers)
- **Financial Intermediaries** (who will broker deals and ensure trades are, where necessary carried out anonymously and in line with market regulations)
- **Large energy consumers** (such as multinational corporations) who buy enough energy to be able to purchase on the wholesale market without the need of a supplier.

The Wholesale Electricity Energy Market

Just as the owner of a small local shop may go to a wholesaler to buy supplies in bulk to sell it to their customers at a mark-up later, so too do the energy suppliers use the wholesale market to buy energy in in large quantities in order to reduce costs as much as possible. Energy suppliers buy electricity through a variety of

³⁵ Murray (2019) <https://www.nsenerybusiness.com/features/electricity-export-france/>

³⁶ Scottish Government (2022)

<https://www.gov.scot/binaries/content/documents/govscot/publications/statistics/2018/10/quarterly-energy-statistics-bulletins/documents/energy-statistics-summary---march-2022/energy-statistics-summary---march-2022/govscot%3Adocument/Scotland%2BEnergy%2BStats%2BQ4%2B2021.pdf>

different **contracts**, of varying lengths, and all of which can be bought and sold on different wholesale markets, depending on what type of contract is being purchased. The Wholesale Market is also a complex mix of different markets, in which different contracts can be traded. They are:

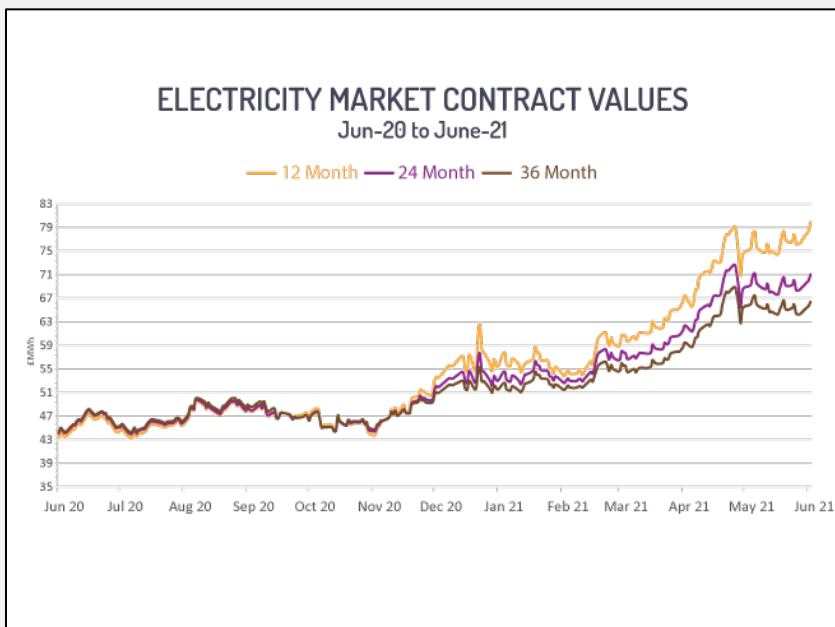
- The Forward Market
- The Day-Ahead Market
- The Balancing Mechanism Market

The Forwards Market

This market – sometimes called a ‘futures market’ – allows suppliers to buy electricity from generators for energy they think they will need ahead of time. This can range from a contract from a generator to provide electricity a month in the future, or on a season-, year-, two year-, or three-year ahead basis. Whatever the length of the contract becomes known as the Settlement Period – the moment when the energy will actually be delivered.

The variety of contracts that can be traded on the forward market allows suppliers to ‘hedge’. In being able to buy a variety of different contract lengths, at different prices, and from different generators, suppliers are *in theory* able to spread the risk of dramatic price rises or falls to which they might be exposed. As figure 3 shows, since November 2020 there has been increasing volatility in prices between contract types, making it far harder for suppliers – particularly those who trade predominantly on the shorter-term contract types – to remain in business.

Although buying for electricity three years in the future may seem risky, the big energy suppliers will, to a large extent, be able to predict how much energy will be consumed across the UK at any given point in time. This is known as the **base load**. Historically, the base load of energy has not varied much, and thus on the longer-term future markets, the price of energy had been relatively stable. However, this assumes that customer demand is the main cause of any rise in the cost of electricity: the past two years have shown this not to be the case (see section on the rise in energy prices for more information on this).



The Day-Ahead Market

As well as being able to buy electricity on futures markets based on longer-term predictions of consumer use, electricity suppliers still need a market where they can buy and sell electricity when they have a much clearer idea about how much their customers will need to use. This is done on the **day-ahead market**. The price of the electricity bought on this market will vary at different times of the day.

Confusingly, the Day-Ahead market is actually a broader term to describe a range of smaller marketplaces, where many different contracts can be made. You could, for example, agree to buy electricity anywhere from a week ahead of delivery (the weekly market), to the moment before the trading period ceases and the delivery time arrives (the intraday market).

The UK's wholesale electricity energy market uses a system called **national pricing**. This means there is a single set price for the cost of electricity. Suppliers bid to control a share of the sum total of the electricity being produced.

However, the electricity market is not like other markets. Electricity suppliers are not like supermarkets. Unlike Tesco, which could buy a crate of tinned soup from a producer and not sell a single tin for an entire year, electricity producers do not have the advantage of being able to store electricity for long periods of time. At

the moment of production (i.e., as the blades of the wind turbine turns), the electricity has to be put into the grid and sent to the consumer more or less immediately.³⁷ The supply and demand of electricity becomes a constant juggling act to make sure generators do not produce more than is needed (and potentially overload the grid), and that consumers are provided with a constant supply of energy to meet their needs and do not suffer power cuts.

To best be able to balance the difference between supply and demand, the electricity market works on trading in half-hour chunks called **Settlement Periods**. An energy supplier can buy as much energy as they think they will need to sell onto consumers in any thirty-minute Settlement Period. They can make contracts to buy the electricity at any time from two years beforehand to the moment before the time of that Settlement Period beginning (this moment is called the **Submission Deadline**). Contracts to buy and sell electricity between the generator and supplier cannot be made during the half-hour slot. During the thirty-minute window of the Settlement Period, the electricity generator is expected to fulfil their part of the contract and supply the electricity – and the energy supplier is expected to use their contracted volume of electricity.

The Balancing Mechanism Market

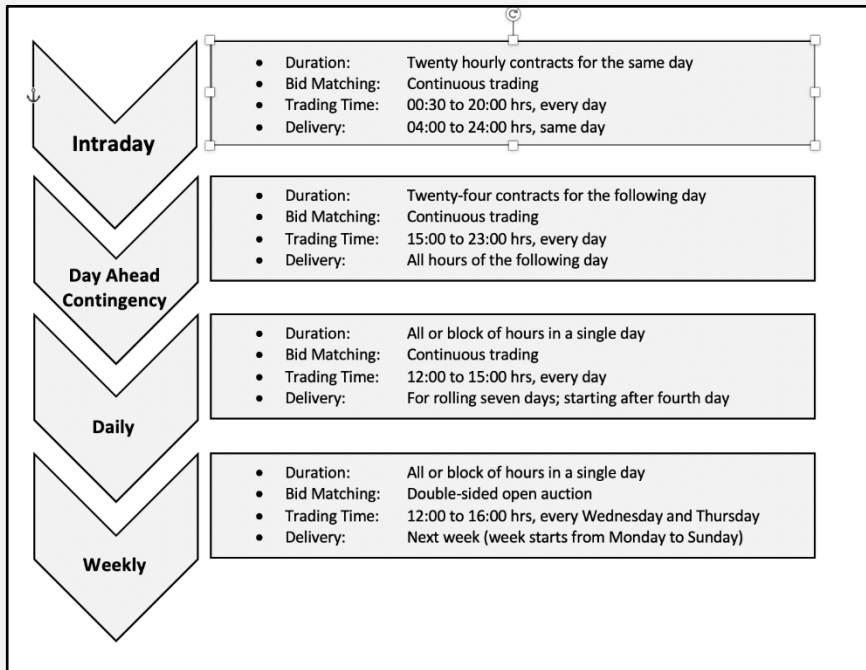
In practice, there is never a perfect balance between supply and demand of electricity. In any one half-hour Settlement Period:

- Energy suppliers may have incorrectly forecasted how much energy they will need (e.g., their consumers have not used as much as they forecast)
- A generator may have problems producing the amount of energy that has been contracted (e.g., the spike in demand is so sudden that the generator cannot produce the electricity fast enough)
- One of the transmission or distribution companies might have problems transporting the electricity (e.g., a local substation or transformer breaks down).

As electricity cannot be bought and sold during the Settlement Period, and given that there is always going to be a gap – no matter how slight – between generation and consumption, the unpredictability of the electricity market must have a way of retaining ‘balance’. In effect, this means keeping the frequency of the current at around 50Hz throughout the Grid.

³⁷ There are exceptions. In Scotland, Hydro Pump storage facilities allows excess electricity to be used to pump water up a hillside, for it to be released back down the hillside through giant turbines at times of mass demand. However, not nearly enough have been built by private companies -- despite licences granted by the Scottish Government -- to have a serious impact on our ability to store electricity on mass. Other technologies such as large battery storage are still in development and remain untested.

To do this, an ‘independent’ third party balances the generators’ abilities to produce electricity and the demands of suppliers to use it. This, then, forms the



third major market where electricity in the UK can be traded – the **Balancing Mechanism Market**. This ‘balancing’ is carried out by the **Electricity System Operator** (or ESO, on a separate contract, currently run by National Grid Plc).

The Electricity System Operator's primary role is to make sure the frequency of the electric current flowing through the National Grid does not drop below 50Hz. If it does, the ESO has the power (and produces the responsibility) to produce more electricity to stop the frequency dropping (and thus your lights going out). Similarly, they can instruct generators to reduce supply if there is a danger of the frequency rising and overloading the grid. Domestic consumers are always prioritised over all other players in this regard.

During any one 30-minute Settlement Period, National Grid ESO will be monitoring control panels to make decisions about which generators should increase their output, and which should decrease output in order to keep to the required 50Hz target. To do this, National Grid ESO oversees a process of **bids** and **offers** made during this time on the part of the generators and suppliers to make decisions about who to accept electricity from, and to whom they should send electricity, to make sure demand and supply remains balanced. For example:

- Generators who are not producing electricity at full capacity can set a price for which they are willing to produce more electricity and transmit it into the Grid. Likewise, suppliers can offer to reduce their demand on the Grid for a price, if they are not requiring as much energy as they thought. **Offers** are a proposal to increase generation or reduce demand.
- Similarly, generators who are producing too much electricity can reduce the amount they are producing by setting a price for which they would be prepared to do this. And suppliers can set a price for which they would buy up more electricity that is in the system. A **bid** is a proposal to reduce generation or increase demand.

The Electricity System Operator, in real time, will accept the bids and offers made during the Settlement Period accordingly to make sure demand is met. Their government licence dictates that they must always aim for the lowest bids first and work up from there, to ensure best value for customers and suppliers. It may also rely on European energy markets, too, if required (for example, if a generator is already producing at maximum capacity, or a transformer stops working).

After the half-hour period Settlement Period is over, the actual amount of electricity used in the period is compared against the contracted amounts made before the half-hour period began and are also adjusted for any bids or offers made during the period.

However, even after the 'balancing mechanism' has been applied, there will still be further discrepancies. This will be because the *exact amount* of electricity that the Grid needed at an exact moment cannot be controlled precisely. This may mean that:

- Suppliers must pay the Grid for any extra energy used
- Generators must pay the Grid for any shortfall in contracted electricity not produced

And also

- Suppliers must sell back any excess electricity not used
- Generators must sell any excess electricity generated that was not contracted for into the grid

Finally, the Balancing and Settlement Code, a government document, explains the process of working out who has generated, used and paid for what they said they would. The complexity of this task is such that it can take a full fourteen months to

have final, accurate record of payments. This is done by another private company: Exelon.

As the electricity generation mix has evolved, the need for balancing services has increased as the SO has to manage a system that is increasingly made up of intermittent generation (e.g. wind and solar) and changing demand.

As a result National Grid is continuing to open up balancing services markets to smaller, distribution-connected and “behind the meter” participants. It does this through competitive auction tenders and bilateral agreements with specific parties.

As new services have come online and technologies improve battery storage, Demand Side Response (DSR) and small-scale gas engines have entered the market to provide services.

The Retail Market

This is the market most of us are familiar with. This is the final cost we see on our bill that our energy supplier sends us for the cost of putting on the kettle or watching TV. Energy suppliers are supposed to compete with each other to offer compete with other suppliers to offer the most competitive rates, thus driving down energy costs for consumers.

The wholesale market price's effect on consumers to some extent depends on what kind of tariff you are on. If you are billed on a variable tariff, then changes in the wholesale price could affect you month-by-month. If you are on a fixed rate tariff, however, you will be offered a fixed price for your energy for a set duration, and no matter what happens to the wholesale price over this time, the price you pay per unit of energy used will not change. Of course, this can lead to some consumers paying more or less for their energy, depending on changes in the wholesale price.

6. HOW IS GAS BOUGHT AND SOLD IN BRITAIN?

Up until the mid-2000s, Great Britain was self-sufficient in natural gas. The discovery of oil and gas supplies in the North Sea in the 1960s led to the replacement of coal (or 'town') gas with natural gas in little over ten years. Unlike in Norway, the UK government decided to prioritise its gas supplies for domestic homes, heating and businesses, rather than for export. In the 1970s and 1980s, the transition to natural gas helped many households replace coal fires and expensive electric heating with cheaper gas central heating. This policy choice led to Britain having one of the world's highest penetration levels for domestic gas use, with over 80% of homes being connected to the network, and over 40% of electricity production coming from gas-fired power stations. By comparison, only 35% of households in France, and 20% in Ireland, rely on domestic gas heating.³⁸

While it was well known that supplies in the North Sea would only keep Britain self-sufficient in natural gas supplies for about a generation, little was done to consider the longer-term energy security of the country. Indeed, since 2005, the UK has no longer been able to meet all of its gas needs, as production in the North Sea began to decrease. New pipelines between Belgium (1998) and the Netherlands (2006) have connected GB to European gas markets and increased access continental supplies (e.g., from Russia), and increasingly Liquefied Natural Gas (LNG) has been imported by shipping tankers from places like Qatar, Russia, the USA and even Australia. But as gas prices increase and we now have reached key climate tipping points, the reliance on gas has placed British households in a highly vulnerable position.

Understanding the GB Gas Market

In Britain today, about a third of the country's gas supplies are used by households, a third by industry (both large and medium-sized companies), and a third for electricity generation. Britain's reliance on gas can be put in even more stark terms considering that in terms of overall energy usage for the average

³⁸ Cornwall Insight, 'An Introductory Guide to the GB Energy Industry' (2018). p. 24-25
<https://es.catapult.org.uk>

domestic customer, about 12,000KWh is provided by gas – four times the amount of electricity.³⁹

The Wholesale Gas Market

The Uniform Network Code makes reference to fourteen individual players in the gas market. Some of these are minor players in the market, such as acting as agents on behalf of more major players, or owners of large gas storage facilities.

The wholesale electricity market includes five main groups of players:

- **The producers and importers** are the people who extract the gas from off-shore (as yet, GB does not have any on-shore gas production, unlike the USA). It can also include private companies who, on licence, can import gas from overseas either through continental pipelines connected to Europe, or via LNG tankers.
- **The National Transmission System Operator (NTSO) and the gas distributors** transport the gas through the GB transmission and distribution pipeline network, respectively. This is done for a fee. These companies own the infrastructure and are responsible for maintenance, but have no ownership of the gas inside the pipes. (This is similar to the railway network whereby Network Rail own the tracks, but not the trains!)
- **Gas Shippers** buy gas from importers and producers and sell it onto gas suppliers. They are responsible for telling the NTSO and the distribution companies how much gas will be entering and leaving the system each day.
- **Gas Suppliers** buy gas from shippers, and accurately billing the customer for the gas for the amount used.
- **Non-Physical Traders**, just as in the electricity markets, gas markets also for traders, financial institutions and speculators to trade in gas. However, as they do not need a licence to do this, they can only either buy gas from producers and importers and the gas to shippers, or sell to each other. They cannot sell to suppliers.
- **Large Industrial Companies** (such as gas-fired power stations) who buy enough gas to be able to purchase on the wholesale market without the need of a shipper.

The wholesale market is a complex mix of contracts which can be traded between shippers, non-physical traders and producers.

³⁹ Cornwall Insight, *An Introductory Guide to the GB Energy Industry* (2018). p. 26 <https://es.catapult.org.uk>

The main markets in which these contracts to buy and sell gas take place in:

- The Futures Market
- The Day-Ahead Market
- The Balancing Mechanism Market

The Futures Market

The futures market for gas typically allows traders to swap contracts on a longer-term basis than for electricity. Typical contracts may be made anywhere from six to fifteen years or more in length. They can include complex clauses that allow for the amount of gas to be specified in the contract to vary, for example.

The 50% of gas not traded is sold and purchased on longer term contracts. We will look at the various contracts that have existed in the chapter on “Price Drivers” on page 29. But the current “post-2000” contracts have been spurred on by fears of insecurity of supply as the country becomes more and more dependent on imported gas. Buyers, therefore, seek to secure volumes of gas over the medium term with contracts of 8-12 years, even though the pricing of that gas is nearly always indexed to the NBP price nearer the time of delivery, usually on a „month ahead“ basis. These are bilateral negotiated deals, but within a competitive market framework, echoing the traded “OTC” market, being mostly flat gas and delivered at the NBP, with limited FM on both parties.

The Day-Ahead Market

Prior to privatisation, there was not a developed ‘day-ahead’ market for gas – it simply was not necessary. British Gas bought natural gas in bulk on a long-term basis, and any excess could easily be stored and called upon should supplies be needed to balance the system.

The Gas Act (1995) and the widespread marketisation of gas took place nearly ten years after the initial privatisation of British Gas. This set the conditions for making sure the system was ‘balanced’ – that the amount of gas put into the system by each producer and shipper was the same amount that was taken out, and that each company paid for their correct share.

In order to balance their portfolios on a daily basis, traders use contracts of varying length, such as “Within-Day”, “Day-Ahead”, “Balance of Week”, “Weekend” and “Working Days Next Week”. These are used once it becomes

clearer how much demand there will be on the system, and can be used to 'top-up' the gas a shipper may have already bought on the futures market.

The National Balancing Point (NBP)

Gas shippers are not responsible for the physical transportation of gas through the British gas network. Shippers only have responsibility for telling the Transmission System Operator (TSO) how much gas will be entering and leaving the system on a daily basis. Therefore, there is the constant danger that incorrect estimations could lead to over-pressurisation or a drop in pressure. The TSO's primary responsibility is to make sure the pressure remains constant. The TSO will therefore purchase or sell gas on a daily basis in order to keep the system balanced and retrospectively send the cost of the gas purchased onto the shipper.

In the mid-1990s, the actual 'balancing' of the system (i.e., working out who had paid for what) was done on a monthly basis, and could take up to fifteen days to work out to settle arrears. As computerisation and technological developments allowed for increasingly real-time data to be collected, so did the final stages market liberalisation began to emerge. Market liberalisation can be said to have been completed, therefore, in 2005 when gas could be bought, sold, and balanced on a daily basis.

'Balancing', similar to electricity, involves the TSO – initially Transco, now National Grid Gas – buying gas to add into the system on the day of delivery, and billing shippers for doing so. This system is unique to Great Britain (with perhaps, the exception of the Netherlands), in that the cost of balancing the system is not considered a penalty or fine. Each day, National Grid Gas simply balances out the system through buying more gas (or not, as the case may be), and passing any subsequent costs onto the shipper. In other words, National Grid Gas does this on behalf of the gas shipper community and does profit from this part of its role.

The TSO buys gas on a daily basis to balance the system at the 'On-the-Day Commodity Market' price. Thus, when the system is short of gas on a daily basis, the price tends to go up. When the system has a glut (i.e., is 'long') in gas, the price goes down.

When Britain had a nationalised gas network, the gas was bought 'at the beach' – or in other words, direct from the producer at the moment it reached the transmission network. However, privatisation and the fact the UK is now no longer a 'gas island') changed this. Gas could enter the system from any number of points, and withdrawn by any number of Distribution Supply Operators and

shippers. Thus, a new industry standard needed to be created, hence: **The National Balancing Point.**

The National Balancing Point (NBP) serves two key functions for the British gas industry:

- It is the 'virtual point' at which gas is considered to have entered and left the high-pressure gas transmission network (i.e., it covers the whole of the GB transmission network).
- It is the trading point at which gas is bought and sold at the daily (i.e., 'spot') price.

Given (a) the amount of gas traded on a daily basis using the National Balancing Point in order to keep the gas network safe⁴⁰, (b) that GB is a major gas market, and that (c) 'balancing' is done by one operator, traders increasingly recognised the NBP as the benchmark for the British daily price of gas (and also, influential in influencing international gas prices). In simple terms, the National Balancing Point is the British equivalent of the US 'Henry Hub' daily gas price – the only difference being that Henry Hub is an actual place in Louisiana!

If a gas shipper is out of balance on a given day, they will have to pay for any shortfall or excess. National Grid Gas charges:

- shippers who are short of gas are charged at the highest price transacted by National Grid Gas that day on the On-the-Day Commodity Market
- shippers who have put excess gas into the network are charged at the lowest price traded that day.

While NGG should aim to make sure their charges are as close to the daily average as possible (and this, in turn, should be as close to the daily market price as possible), gas suppliers should always do less well from being out of balance than if they had sold the gas on the commodities markets.

To keep the grid in balance, NGG have a variety of options, including:

- **Linepacking:** This is the operational flexibility within the gas pipe network to have more or less gas in it without compromising safety (this is between 20 and 45 bar pressure).
- **The On-the-Day Commodity Market:** NGG could buy or more gas to put into the network, by using European pipelines (e.g., Zeebrugge).
- **Underground Storage:** Gas can be pumped into underground storage facilities to be stored, or can be taken and pumped into the network.
- **Capacity buyback:** NGG can compensate shippers if they do not put gas into the system, even if they have had a contract approved to do so.

⁴⁰ In financial terms, this is referred to as 'liquidity' – the amount of money flowing through the system.

On-the-Day Commodity Market (OCM)

Any one 'gas day' runs between 06.00am and 05.59am the following day. The On-the-Day Commodity Market is an intrinsic part of balancing system. Gas traders have continued flexibility on the appointed gas day to continue shifting their position in terms of the amount of gas they may put into or take out of the system.

Using the OCM gas shippers can swap contracts between each other (anonymously) in order to balance their own supplies without NGG having to intervene. Trading of gas can take place on the 'intraday' market from 12noon on the day prior to the appointed 'gas day' up to 04.00am. After this, only the NGG is able to put gas into or take gas out of the system, with shippers then being billed accordingly.

Non-Physical Traders

Financial participants in the gas markets—i.e., traders that do not form part of the gas supply chain that have no intention of ever taking physical delivery of gas—may also invest in, hedge or seek financial exposures to gas contracts either by trading in cash settled derivatives or closing out their trades in physically delivered derivatives before the final settlement date.

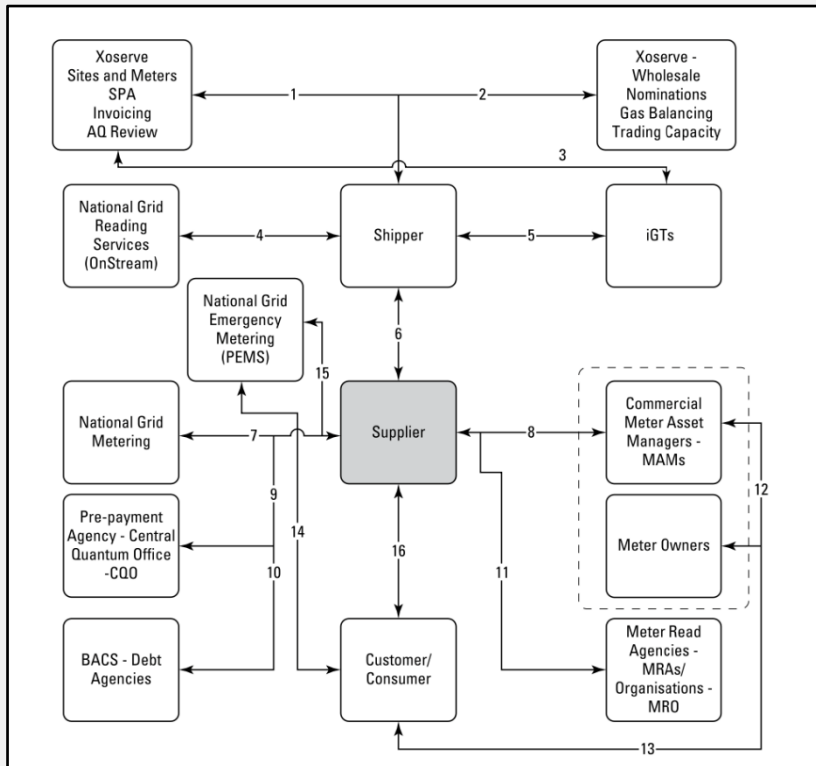
Entities that only trade in gas, but do not ship it do not need to obtain a gas shipper licence from Ofgem for trading on U.K. markets such as ICE Futures Europe (IFEU). Traders and shippers trading gas on an exchange will be subject to regulation by the Financial Conduct Authority, including for compliance with market abuse regulations and derivatives trading requirements, and activities must be carried out in accordance with the rules of the relevant market.

Several commentators have observed that part of the reason new entrant suppliers were able to undercut established names such as British Gas and EDF is that they have been able to deal with shippers who buy gas primarily unhedged on the spot market. Shippers who do not adequately hedge do not need to price in the cost of hedging arrangements, so—provided the spot price stays well below the consumer price cap and fixed rates—lower prices can ultimately be offered to the consumer. However, if the spot price rises significantly, unhedged suppliers cannot pass the price rise to consumers, eroding or eliminating the suppliers' margin. This dynamic is suggested to be behind the recent failures at small suppliers. It should also be said that start-up companies tend to have lower overheads in terms of e.g., office space or pensions costs than do incumbents,

which may also have contributed to the lower cost base at new entrant suppliers; on the other hand, incumbents will often benefit from economies of scale.

The Gas Retail Market

In the gas retail market, suppliers buy gas in bulk on the wholesale market from shippers and sell it on to customers in the retail market.



As with electricity, being a gas supplier involves more than simply buying in bulk and selling on. The two industries are remarkably similar, but as you'd expect slight differences also exist. The main difference is that gas suppliers are almost purely focussed on retail – there is far less interaction with the gas network and the transmission of gas compared to electricity, as can be seen from the above diagram.

A gas supplier needs to do the following competently if they wish to stay in business:

- Win initial customers.
- Forecast customers' gas consumption and buy this from shippers on the wholesale market.
- Bill customers – In other words, be able to read their meters.
- Respond to queries when things go awry. If they go really wrong (for example with customers who have bad debt), they need to be able to process losses of their customers to another supplier.

7. HOW SUCCESSFULLY HAS OFGEM MET ITS REGULATORY OBLIGATIONS?

As competition spread through energy markets from the mid-1990s to early 2000s, most of the regulatory functions of the initial market regulators Ofgas (Office of Gas Supply) and OFFER (Office of Electricity Regulation) were transferred to a single, new body called Ofgem (Office of Gas and Electricity Markets).⁴¹

Ofgem's Flawed Structure and Objectives

Ofgem has the power to enact price controls, use regulations and fine energy companies to achieve its principal objective of protecting “the interests of existing and future gas and electricity consumers,” both domestic and industrial.⁴²

Ofgem is supposed to achieve this by:

- promoting value for money
- promoting security of supply and sustainability
- supervising and developing markets and competition
- implementing regulation and delivering government schemes

As energy policy has developed from the early 2000s to the present, significant new functions have been given to Ofgem as a regulator including responsibilities for promoting and enforcing ‘net-zero’ policies, and attempting to engage and help vulnerable consumers through a variety of social welfare, energy efficiency and other incentivised money-saving schemes.⁴³

As well as setting the rules for energy suppliers, networks and generators, Ofgem is also responsible for making sure companies follow them.

Ofgem has significant powers to enforce such rules, including:

- **Investigations** which can result in fines, payments to Ofgem’s redress fund and payments to affected customers.

⁴¹ Ofgem. [Our Role and Responsibilities](#). (Webpage).

⁴² Ofgem (2015) <https://www.ofgem.gov.uk/publications/ofgems-response-department-energy-and-climate-changes-july-2015-consultation-new-smart-energy-code-content-and-related-supply-licence-amendments>

⁴³ Ofgem: [Our Role and Responsibilities](#). (Webpage); see also: Ofgem: [Environmental and Social Schemes](#).

- **Orders** which compel a company to comply with rules, and can put in place restrictions until they do so, for example stopping them taking on new customers.
- **Revocation**, whereby Ofgem can revoke a company's licence – forcing them to close down entirely.

In addition to formal enforcement action, Ofgem can also take compliance action, where it works with companies when issues are identified or self-reported.

Compliance cases can result in agreements by suppliers to change their processes and redress payments. Ofgem enforces rules across a range of areas, including:

- **Consumer experience rules**, including customer service, accurate billing, complaints, debt, payments and switching.
- **Technical rules on levies, schemes and industry requirements**
- including payments towards renewable energy costs, participating in schemes on energy efficiency and smart metering.
- **Competition, pricing and network rules** including limits on what suppliers can charge under Ofgem's price caps.

Part of Ofgem's failure is down to an impossible juggling act involving:

1. changing government priorities (which have been historically focussed on) increased consumer 'choice' and 'competition'*
2. consumer protection (e.g., from price fixing)*
3. the industry's desire to make 'acceptable' profits*
4. regulating supplier finance and companies' abilities to ensure sufficient 'liquidity' for their activities*
5. ensuring competition for high-consumption premises*
6. consumers' desire for low prices
7. protecting vulnerable consumers
8. making sure safety standards are upheld
9. that there is a security of energy supply
10. and the pressure to monitor decarbonisation efforts, as well as promoting energy efficiency

Ofgem does *attempt* to balance these demands, but the end-result has been that Ofgem is now a 'tottering edifice' of 'Principal Objectives', 'Primary Duties', 'Secondary Duties' and 'Tertiary' Duties in the gas sector alone – and this is before even considering its responsibilities in the electricity market!⁴⁴ Indeed, as one industry expert admitted, the regulations and obligations on energy suppliers is such 'a mess of confusing and complex obligations' that in some instances even

⁴⁴ https://www.regulation.org.uk/key_issues-too_big.html

Ofgem was unable to provide a clear and coherent response to the questions submitted to ensure the company he consulted for was given correct advice!⁴⁵

At the heart of the structural failure of Ofgem is what is called the ‘energy trilemma’: that it is being asked to balance (a) sustainability, (b) security of supply and (c) affordability, all without clear guidance from government as to how trade-offs should be managed.

Additionally, as can be seen from this list, five of the ten priorities are a sole product of privatisation and a marketized energy system. One clear benefit of public ownership would be to simplify the regulatory structure and demands placed on Ofgem to juggle the competing demands placed on it.

The restructuring of Ofgem into a ‘super-regulator’ was the among the first such mergers that were to typify the later restructuring of the State’s bureaucracy under the last Labour government. Whilst these mergers were done primarily on cost-saving grounds (although supposedly also to pool expertise), super-regulators do not, in particular, have sufficient time to offer the strong, politically aware but risk-averse leadership that is needed within regulatory institutions. And as Ofgem was burdened with an increasing number of responsibilities, so it became harder to monitor the detailed implementation of their strategies where the principal characteristic of regulation is that ‘the devil is in the detail’. By way of example, Ofgem, with around 1,000 full-time paid staff) compared with some other regulators but it alone publishes dozens of documents monthly and at least one (sometimes two) active consultations ongoing at any one time in 2022, it is not hard to see how Ofgem struggles to keep on top of all of its regulatory activities.⁴⁶

It is also relevant that politicians regularly heap additional duties on the larger regulators. The following chart has been prepared by the Centre for Competition Policy at the University of East Anglia and brilliantly shows how the energy industry regulator Ofgem now has a tottering edifice of Principal Objectives, Primary Duties, Secondary Duties and Tertiary Duties in respect of the gas industry – and it has another quite separate set of objectives etc. for its regulation of the electricity industry.

Whilst some, like Citizens’ Advice and the House of Commons Committee for Business, Energy and Industrial Strategy have offered constructive and helpful comments for market reform primarily aimed at supporting the consumer, the

⁴⁵ Watt Logic (2021) <https://watt-logic.com/2021/10/27/ofegm/>

⁴⁶ Ofgem https://www.ofgem.gov.uk/energy-policy-and-regulation/engagement/calls-input?sort=publication_date

fundamental tension that lies at the heart of the ‘energy trilemma’ will not go away.

The Failure to Regulate New Energy Companies Entering the Market

Ofgem’s inability to juggle the multiple priorities and responsibilities that it has was particularly evident in the emphasis it placed on encouraging greater competition through encouraging new energy companies to enter into the British energy market.

Initially, Ofgem had concerned itself with price controls (i.e., price caps) because of the lack of competitiveness in the UK energy market and the continued dominance of British Gas (and other former regional suppliers who continued to maintain a loyalty with customers – particularly in Scotland and Wales). As the entry of new suppliers and the market was opened up to more competition, Ofgem was satisfied that the market ‘ensured fairness’ in pricing and services through market mechanisms (e.g. the ability of consumers to switch between suppliers).⁴⁷

But even in 2008, there were concerns that while the former state monopolies had been broken, an oligopoly (i.e., dominance by a few firms) had taken its place. Indeed, even in 2012, the ‘big six’ energy suppliers still retained just below 95% of all domestic energy consumer business in Britain.⁴⁸ This led to further interventions by Ofgem, particularly to break the ‘vertically integrated structure’ of the big six, which often involved in each company producing and supplying its own energy to its customers, with comparatively little being sold on the wholesale market. Therefore, Ofgem moved to force the Big Six to sell increasing amounts of energy on the wholesale market (initially 30% of energy produced, but gradually increasing), as well as recommending the break-up and sell-off of the various divisions of each company.⁴⁹ As a result, by 2018 there were 70 companies competing to supply households, and by 2019, these new entrants’ share of the market rose to around 30%.⁵⁰

The market model many of these companies used, however, was the equivalent of ‘loss leader’ sales techniques used in supermarkets. The suppliers aimed to offer

⁴⁷ Ofgem. (6th October 2008). [Energy Supply Probe: Initial findings report](#). pp. 18-19.

⁴⁸ <https://www.reuters.com/article/britain-energy-customers-idUSL5N0MM36O20140326>

⁴⁹ This is, for example, what eventually led to SSE selling its retail arm to Ovo Energy.

⁵⁰ <https://www.instituteforgovernment.org.uk/blog/energy-policy-price-rises>

very attractive starter deals – occasionally making losses in doing so – with the hope that customers would revert to their much higher Standard Variable Tariff once the deal expired. This was a strategy described as “tease and squeeze” by some in the industry.⁵¹ In part, Ofgem *did* respond to this in two ways: first, the introduction of a ‘price cap’ in 2018 prevented companies charging excessive amounts for their Standard Variable Tariff. Second, Ofgem proposed providing more customer data sharing among rival suppliers, so that customers on unfavourable tariffs could be targeted by rival suppliers and encouraged to switch. However, in times of high energy prices, this policy is now largely redundant for most but the highest consumers of energy.

The Failure of Encouraging ‘Competition’

The drive to encourage new energy suppliers into the market has been a ‘lose-lose’ situation for consumers. The market conditions and assumptions made by many of the energy suppliers who entered the market post-2008 was based on a model of low energy prices. Indeed, even if some of these companies wanted to adopt a different business model, their ability to do so was greatly hampered by their inability to finance their activities on the energy markets to the same degree as the Big Six.

Further, it was less the activities of small players onto the energy market that led to the Labour Party first developing a policy for a cap on energy prices in 2014, and more the profiteering of the Big Six, who were still seen to be exploiting their market position and hiking up energy prices throughout the 2010s. Indeed, by the late 2010s, the situation was untenable such that it was a Conservative government that actually introduced price caps on energy. There was no realistic alternative to this policy: either companies remained free to hike up their Standard Variable Tariffs as the gas price increased and remained trading, but at the expense of their most vulnerable customers. Auto-Switch services through price comparison websites – entirely unregulated by Ofcom – also allowed new suppliers to amass customers so quickly that they could not handle with the customer service pressures put on them.⁵² One former energy advisor to the Coalition government between 2010 and 2015 recalled a conversation with an executive of the Big Six who said that anyone who “can set themselves up with a mobile phone in a shopping aisle” could set up an energy supplier.

⁵¹ Wilkes (2022) <https://www.instituteforgovernment.org.uk/blog/energy-policy-price-rises>

⁵² [https://www.citizensadvice.org.uk/Global/CitizensAdvice/Energy/Market%20Meltdown%20-%20Dec%202021_v2%20\(1\).pdf](https://www.citizensadvice.org.uk/Global/CitizensAdvice/Energy/Market%20Meltdown%20-%20Dec%202021_v2%20(1).pdf), p. 3

Ofgem had entire responsibility for setting the terms of entry into the market, but as they sought to expand the competitiveness of the energy sector after 2010, very few restrictions or conditions were placed in their way. Ofgem's assumption was that new entrants would automatically have lower cost bases due to lack of legacy costs and infrastructure, and would have the 'operational flexibility' to deliver innovative new business models serving consumers at lower cost (e.g., they could pay their staff lower wages). Ofgem also allowed small, new entrants into the energy market to be exempt from industry schemes like ECO or the Warm Home Discount. This not only gave them an unfair advantage, but meant that for companies who grew too quickly, could find themselves unable to deal with the new costs they would incur once the size of their customer base required them to join such schemes.

Ofgem either did not know or did not care about the commercial viability of many of these business practices. Margins were so low that new entrants were unable to grow their capital in any meaningful way, while the large burden of non-supply activities (e.g., help for vulnerable customers) and external costs (e.g., the green tariff) reduce the scope for competition. Also, the lack of capital limited the ability of new suppliers to properly 'hedge' their costs (i.e., limit potential debts), leaving them vulnerable should wholesale prices rise. Indeed, Citizens' Advice found that the average failed 43rig43ty supplier was using consumer credit built up through overpaying on direct debits as a cheap way to fund their growth, rather than seek money from investors!⁵³ The reliance of failed suppliers Green Supplier and Utility Point on customer credit balances peaked at about 90 per cent of total assets in 2020!⁵⁴

While prepayment meters are a blunt instrument for reclaiming debt, many of these new energy companies failed to install prepayment meters as a means of ensuring customers' debts. As part of an energy company's licence agreement, if they hold over 50,000 customers they must offer a 'range of payment options' to customers – including installing prepayment meters. In reality, this can result in many people in vulnerable situations being placed onto the higher standing charges that come with prepayment meters, as well as self-disconnection. PurePlanet had over 234,000 customers when it failed in 2021 with none using prepayment meters. It was only in 2018, when Bulb had grown to over 500,000 customers, did it begin offering prepayment meters as a means of payment. And Octopus Energy had over 3 million customers and even at the time of writing still

⁵³ Citizens Advice (2021)

[https://www.citizensadvice.org.uk/Global/CitizensAdvice/Energy/Market%20Meltdown%20-%20Dec%202021_v2%20\(1\).pdf](https://www.citizensadvice.org.uk/Global/CitizensAdvice/Energy/Market%20Meltdown%20-%20Dec%202021_v2%20(1).pdf), p. 3

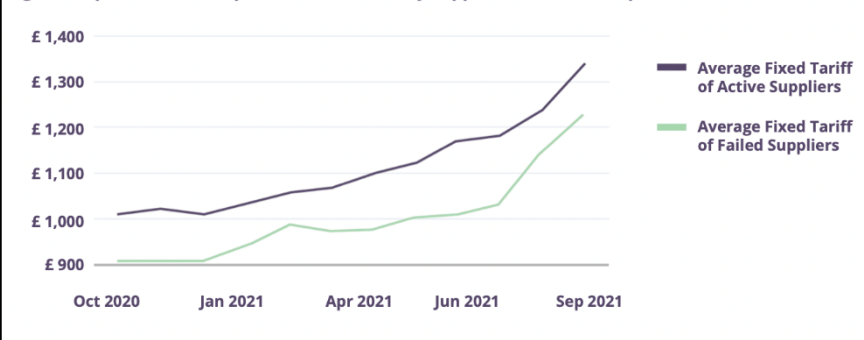
⁵⁴ Argus (2022) <https://www.argusmedia.com/en/news/2335499-regulation-could-have-reduced-market-failure-ofgem>

excluded prepayment from its internet tariff search function – potential customers had to write an email to request a quote! The fact remains though, that many energy suppliers did not offer prepayment meters –perhaps because it was too expensive for them to pay the up-front installation costs, perhaps because they were not taking adequate meter readings, or perhaps because they expanded too quickly to be able to deal with the number of cases of customers getting into debt. Whatever the excuse, allowing vulnerable people to get into significant energy debt and not offer support was a further breach of these companies licencing agreements.

Ofgem did eventually try to restrict rules for new entrants into the market in 2019, and later in 2021 attempted to introduce new rules to ensure financial resilience, but all this came too late – eleven suppliers went under between Ofgem first considering taking action, and new rules coming into effect. And this was *before* the mass collapse of suppliers in Autumn 2021!

The result was predictable: the start of energy companies going bust as the price cap ate into, and eventually removed, any ability for them to make profit. The

Fig. 3 Comparison of fixed price tariffs offered by suppliers, Oct 2020 - Sept 2021¹⁸



graph shows the unsustainability of the prices being offered by the suppliers who went bust. Without an ability to 'hedge' their costs, they were locked into offering low prices for their consumers. Whilst for the shareholders and executives who had been able to profit off customers for a decade or more the pain was minimal, the failure of increasingly large energy suppliers led to further increases in consumer bills. Even right-wing economists who argue for greater competition and fragmentation of the energy market have described Ofgem's view as 'extraordinarily one-dimensional and simplistic view of the market, which actively harms consumers'.⁵⁵

⁵⁵ Watt Logic (2021) <https://watt-logic.com/2021/10/27/ofegm/>

Ofgem's 'Supplier of Last Resort' (SOLR) programme was designed to deal with the event of a customer's energy supplier going bust and ensure a method was in place both to ensure continuity of supply, as well as ensure a smooth and orderly transition to another solvent energy company. The scheme initially seemed to perform well, because the debts of the companies going bust were relatively low. But in 2021, as the number of companies going bust grew into a tsunami, the scheme itself becoming unaffordable, with costs being passed onto the consumer. Ultimately, the consumer has paid twice: first, for the short-term profiteering of the smaller entrants onto the market, and second, for the cost of taking on their debts.

In total, 28 suppliers have gone bust since August 2021, with 4 million consumers having seen their supplier go bust. Through the SOLR, this will cost consumers £2.4 billion, or about £94 per customer from 2022. In addition, the UK government will spend £1.7 billion on propping up failed supplier Bulb. One in six British customers have seen their energy supplier go bust over the past few years, and with this, have seen their bills go up on average around £30 per month as they switch supplier, not to mention experiencing poor communication with the new supplier, billing delays, and lost debt protections. Those on Universal Credit will have particularly suffered, as many of the failed suppliers went bust at the same time as the government chose to reduce their weekly payments by £20 in October 2021.⁵⁶

None of this should be surprising. Britain has experienced energy shocks before, most recently a gas price spike in 2008 which led to bills doubling in some cases. The financial crisis in 2008-09, and the decline of fossil fuels all indicated prices would not always remain low. And yet nothing was done to prepare for a world of higher prices.

Intervention in a 'Free' Market

In a liberalised, well functioning market, there should be little need for a government regulator to have to intervene in the functioning of an industry. In the dysfunctional British energy market, however, this has not been the case. Indeed, Ofgem's interventions have variously shown how energy companies cannot be trusted to act in the interests of their customers, energy security or the

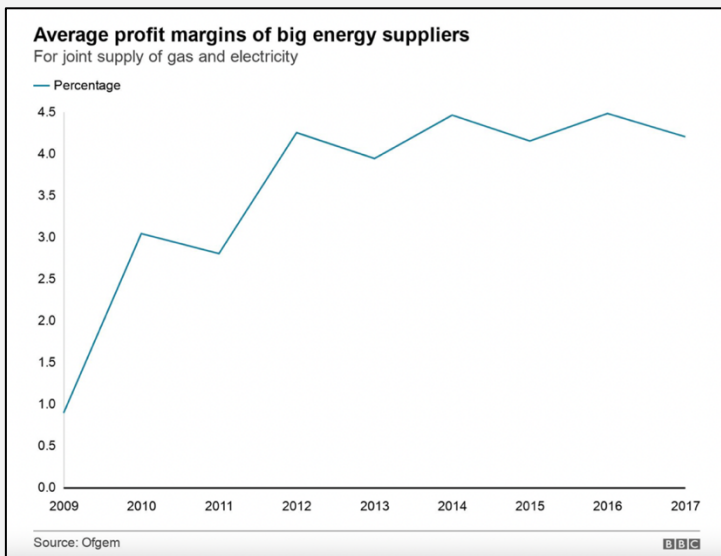
⁵⁶ Citizens Advice (2021)

[https://www.citizensadvice.org.uk/Global/CitizensAdvice/Energy/Market%20Meltdown%20-%20Dec%202021_v2%20\(1\).pdf](https://www.citizensadvice.org.uk/Global/CitizensAdvice/Energy/Market%20Meltdown%20-%20Dec%202021_v2%20(1).pdf) p. 3

environment. Contradictorily, at the same time, Ofgem's interventions to protect consumer prices have also unintentionally caused further price rises!

A research paper from the Centre for Law, Economics and Society at University College in 2020 tracked the development of Ofgem's interventions in the market and showed that time and again Ofgem has failed to fully appreciate the impact of its decisions, and that its failure to adopt an evidence-based approach to policymaking has led to it making interventions which actively harm the consumer.

First, in 2009, Ofgem adopted a 'non-discrimination policy'. This was based on the regulator rejecting the industry's justifications for charging customers different standing charges according to where they lived in the country and the method of payment the customer used. A policy of 'undue discrimination' was introduced, whereby suppliers could only charge customers different amounts if they could be clearly justified to Ofgem. Whilst from a consumer protection perspective the policy was beneficial – those living in more rural areas or not paying by Direct Debit could expect to see compensation for being overcharged – the result was a reduction in new suppliers entering the market. Additionally, researchers were sceptical about the scheme's ability to pass on real savings to the most vulnerable (probably in part because this would require further investigation of energy companies' billing procedures and subsequent interventions).⁵⁷



⁵⁷ Mantzari (2021) https://www.ucl.ac.uk/cles/sites/cles/files/cles_4-2020.pdf, p. 28

Second, in 2010, in the Retail Market Review, Ofgem made a second major intervention into the energy market. The ‘simple tariffs’ regime was based on (limited) behavioural economic research which showed the number and complexity of tariffs being offered by energy suppliers was overwhelming consumers and, far from promoting choice, actively *discouraged* customers from switching supplier. Ofgem recommended a reduction in the number of tariffs (essentially simplified into four groups). The end result was predictable: it restricted consumer choice, effected the competitive prices and put prices up.⁵⁸

The 47th of all of these interventions was that Ofgem subsequently referred itself *and* the entire British energy market to the Competition and Markets Authority in 2016. It determined that Ofgem’s interventions in the retail energy market were based less on thorough economic analysis and more on concerns that its powers would be reduced or removed by the Government.

Overall, Ofgem had an impossible task. It could never have regulated the market given Ofgem’s competing responsibilities it had. Thus, the result of the Competition and Markets Authority review was a return to the pre-2008 policy of price caps as the only tool left open to both the government and Ofgem to control prices!

Ofgem’s Failure to Regulate Breaches in Licence Conditions

Two key reports – worth reading in full – explain in forensic detail how Ofgem has, in the words of Citizens Advice, ‘allowed unfit and unsustainable energy companies to trade with little penalty’. Ofgem, they claimed, knew full well of the widespread problems at the heart of the British energy market, but despite this, ‘failed to take meaningful action.’⁵⁹

The failure to properly regulate suppliers is manifold and wide-reaching. Only two in five of the enforcement cases Ofgem raised against suppliers was over issues of ‘customer experience’ – this is quite shocking considering for suppliers, especially for gas, this really is their only responsibility! Ofgem also have considerable powers to stop companies from being able to take on new customers until licence terms are met, and yet it has been over three years since Ofgem last used this

⁵⁸ Mantzari (2021) https://www.ucl.ac.uk/cles/sites/cles/files/cles_4-2020.pdf, pp. 28-29

⁵⁹ Citizens Advice (2021)

[https://www.citizensadvice.org.uk/Global/CitizensAdvice/Energy/Market%20Meltdown%20-%20Dec%202021_v2%20\(1\).pdf](https://www.citizensadvice.org.uk/Global/CitizensAdvice/Energy/Market%20Meltdown%20-%20Dec%202021_v2%20(1).pdf) p. 3

power, despite the fact that only **1 of the 20** suppliers that failed between August to mid November 2021 had a **‘living will’** in place, a new requirement from Ofgem which would have protected customers when suppliers failed.⁶⁰

A further example of a failure of licence conditions and regulation is the **‘Renewables Obligation’**. This is a scheme (the so-called ‘Green Levy’) that requires energy suppliers to make mandatory payments to the government towards renewable schemes. These can range from building new wind farms, but also social schemes such as home insulation and also to help with feed-in tariffs for small-scale renewable projects to be hooked into the grid. Energy suppliers pass this cost directly onto customers and should be collecting the money through monthly bills. Yet, Ofgem requires the suppliers to pay the money only once a year! This has meant that when suppliers have gone bust, the money has not been paid (even though it was collected by the supplier!). Any shortfall must be made up by every other supplier, and so, gets added onto everyone else’s bills! Over £218 million will be spread through everyone’s bills in 2022.

Similarly, Citizens’ Advice found that Ofgem had never taken formal enforcement action against any supplier for ‘back billing’ – the regulation forbidding energy companies for billing customers for energy used over a year ago – despite the report finding that such practices ‘remains rife’. Similarly, Ofgem last opened an investigation

into accurate billing of customers over five years ago, despite the fact that over

The case of Avro Energy

Avro’s entire business model seemed to be based on using consumer credit to buy future energy on wholesale markets, rather than rely on investors and more secure (but expensive) forms of funding. Suppliers used customer credit balances as a cheap source of finance, rather than funding from lenders or investors. Administrators for Avro Energy said the company had “no external funding” and was financed through ‘working capital generated by its trading operations’.

On average, each of Avro’s six executives pocketed £500,000 per a year, and yet, as their Chief Executive Jake Brown said to the Business, Energy and Industrial Strategy Committee in April 2022, “I was not paid directly by Avro. I essentially worked for a management company that charged a fee to Avro.”

⁶⁰ Citizens Advice (2021)

[https://www.citizensadvice.org.uk/Global/CitizensAdvice/Energy/Market%20Meltdown%20-%20Dec%202021_v2%20\(1\).pdf](https://www.citizensadvice.org.uk/Global/CitizensAdvice/Energy/Market%20Meltdown%20-%20Dec%202021_v2%20(1).pdf), p. 4

36,000 people contacted Citizens' Advice between 2020-21 alone for inaccuracies in their bills.⁶¹

Indeed, Citizens' Advice also found that energy suppliers are in breach of their licence conditions that demands that customers must be able to make complaints by phone, and that all suppliers should have a phone number that is easy to find and free to call. Rather, some suppliers seemed to have removed telephone lines altogether, allowing customers only contact through online chat facilities.⁶²

Failure to Prioritise Carbon-Reduction

While many on the Left recognise that market conditions do not provide the stability and security required for long-term planning to take place, the arguments about *why* this is the case are often less clear. Again, we can look at the 'energy trilemma' to see where weaknesses and failures in the system emerge.

One firm example lies in the carbon-reduction strategies of many energy companies.

A second issue concerns 'switching'. Switching supplier has been at the heart of the British energy market model since the late 1990s when competition for both gas and electricity supplies were liberalised. Some of the big energy suppliers have recently argued that the focus on switching customers to the best deal has led to a race to the bottom, with suppliers focussing purely on low prices and not on the social responsibilities they also hold to decarbonise the economy. Energy regulator Ofgem has been criticised for deterring companies from cutting their prices when they drop. The government body has today (Monday, May 16) announced a change to the market stabilisation charge (MSC) so that suppliers who win customers with cheaper deals will have to pay the old supplier 85% of the difference in tariffs. The MSC became effective on April 14, but it is yet to be activated. Currently, it would be activated if energy prices fall 30% below the level of the wholesale energy price assumed by the current level of the price cap. However, today's decision reduces this trigger point to a 10% fall. Currently, if activated, the losing supplier is reimbursed by 75% of the cost of the energy above the trigger point they had bought in advance for the customer they have lost,

⁶¹ Citizens Advice (2021)

[https://www.citizensadvice.org.uk/Global/CitizensAdvice/Energy/Market%20Meltdown%20-%20Dec%202021_v2%20\(1\).pdf](https://www.citizensadvice.org.uk/Global/CitizensAdvice/Energy/Market%20Meltdown%20-%20Dec%202021_v2%20(1).pdf), p. 19

⁶² Citizens Advice (2021)

[https://www.citizensadvice.org.uk/Global/CitizensAdvice/Energy/Market%20Meltdown%20-%20Dec%202021_v2%20\(1\).pdf](https://www.citizensadvice.org.uk/Global/CitizensAdvice/Energy/Market%20Meltdown%20-%20Dec%202021_v2%20(1).pdf), p. 20

assuming they had bought energy as set out in the price cap methodology. However, today's decision has increased this to an 85% reimbursement. The regulator argued the change would make the MSC more robust, but financial journalist and expert Martin Lewis said it would deter competition, making it less desirable for companies to offer cheap deals to customers.

They have suggested that longer term customer relationships are needed for low carbon services. The problem is, that – they would say that! The fact remains that this then defeats the purpose in having a competitive energy market where consumers shop around for the best deal. At the very least, the danger would remain that customers would be exploited by their energy supplier who would keep tariffs as high as possible, secure in the knowledge that their customers were unlikely to look elsewhere for a better deal – exactly what was happening in the mid-2000s.

Similarly, the House of Commons BEIS Committee, said that Ofgem's proposed decisions in its recent draft determination for Electricity Distribution RII02 price control, on energy network losses, reputational regulation for its Environmental Action Plans and the potent greenhouse gas SF6, alongside the delay in incorporating the up-to-date cost of carbon, would seem to indicate that Ofgem 'just don't get it'. There is a need for more consistently strong environmental expertise.

8. HAS PRIVATISATION WORKED?

When viewed over the longer term, the wholesale privatisation of the UK energy market has failed on almost every metric one chooses to examine. In part, of course, private companies are not the only ones to blame for the fact that the UK is particularly poorly placed to weather the energy crisis. Since privatisation, both Labour and Conservative governments have constantly interfered with Ofgem's remit, with Ofgem itself repeatedly failing to ensure all parts of the supply networks function in the interests of consumers.

Therefore, to judge the success or failure of privatisation in the UK, we can only examine the claims made by supporters of privatisation and ask to what extent these benefits have occurred, namely:

- Has privatisation led to greater choice for consumers?
- Has privatisation led to cheaper bills for British consumers?
- Has privatisation led to increased investment in UK energy infrastructure?

Has privatisation led to greater choice for consumers?

Ofgem's current list of licenced gas and electricity producers, distributors, shippers, suppliers and other independent energy companies runs to many hundreds of separate companies.⁶⁴ Unquestionably, since privatisation there has been a quantitative increase in the number of companies competing in the UK energy markets. But simply having more companies competing for customers does not in itself

The implication of supply competition has always been that customers who do not switch are just stupid, and therefore in the end it is their own fault that they are landed with higher prices.

The alternative – that customers are the best judges of their own interests, and do not want to spend their evenings searching the internet amongst the bewildering claims of 70 companies offering them such “good deals”, and what they really want is a secure stable and not volatile supply at a price with a fair rate of return, and to spend as little time and effort on this – has clearly escaped ministers' and regulators' minds.

As one of those 'stupid' customers, I am very glad that I did not switch to the latest bunch of companies going bust. Frankly, like most customers, I have better things to do.⁶³

– Prof. Dieter Helm

⁶³ Helm (2021) <http://www.dieterhelm.co.uk/energy/energy/the-gas-and-electricity-crisis-causes-and-consequences/>

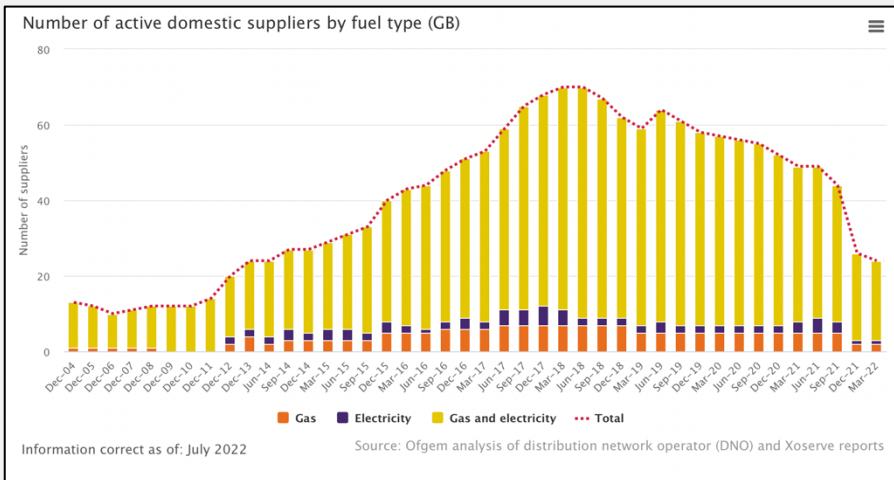
⁶⁴ Ofgem: [List of all electricity licensees including suppliers.](#)

either make a market ‘competitive’ nor does it necessarily mean that prices will be low.

In 2022, the UK energy market is currently experiencing a phase of ‘consolidation’ (i.e., there are fewer companies operating than before), and that energy prices have consistently risen since the mid-2000s. In terms of suppliers (the metric of most concern for consumers), the GB market reached a peak between March and June 2018, when 70 separate energy suppliers were competing. Latest figures demonstrate that the energy price crisis that started in Autumn 2021 has reduced this to just 24 companies.⁶⁵

What this demonstrates – and has been argued elsewhere in this pamphlet – is that ‘market competition’ only really exists at a time when prices for gas are relatively low. When wholesale prices rise, many of these suppliers go bust. And it is through Ofgem’s ‘Supplier of Last Resort’ that means that it is the customer who ends up footing the bill to ensure that both customers and debts of insolvent companies can be absorbed by the remaining suppliers.

Unsurprisingly, as the market was opened up to further competition, energy companies engaged in increasingly questionable – and often, illegal – practices to compete for customers and increase their own profit margins. The following list is just *some* of the many examples that demonstrate the unethical, questionable and often illegal activities energy suppliers and generators have been involved in:



⁶⁵ Ofgem (2022) <https://www.ofgem.gov.uk/energy-data-and-research/data-portal/retail-market-indicators>

ScottishPower

In 2013, Ofgem forced ScottishPower to repay £1 million to customers, and pay a further £7.5 million into vulnerable customers' fund for mis-selling energy using misleading sales pitches, by staff who had not been given adequate training.⁶⁶ In 2016, it was fined a further £18 million by Ofgem for 'poor customer service'. In practical terms, over 300,000 customers received late bills, often meaning customers who had overpaid for gas or electricity could not reclaim money they had overpaid.

In the late 1990s, ScottishPower was engaged in a scheme described by MPs as 'a fraud on the public'.⁶⁷ During the time when the company retained a high street presence, it sold extended warranties on white goods (fridges, freezers, etc.), to over 750,000 customers, many of whom were pensioners. The scheme provided for a full refund if no claim was made over a five-year period. Records showed that the scheme was based on the assumption most customers would not bother to claim their refund at the expiration of the warranty. In 2001, ScottishPower sold their shops (along with liability for the scheme) to a rival company, Powerhouse. In the deal, ScottishPower was asked to provide £75 million security funding should customers start to claim back their warranty. When this indeed happened, ScottishPower refused to provide the funding, shortly after which, Powerhouse went bust. By 2016, with ScottishPower having paid little over £6 million in compensation and with customers still on average hundreds of pounds out of pocket, the financial authorities gave up pursuing ScottishPower arguing that the compensation package secured thus far was the best outcome achievable.⁶⁸

Intergen

The electricity generator Intergen (based in Edinburgh, but owned by parent investors in the Czech Republic and China) manipulated their generating signals to National Grid. The company falsely claimed over four critical 'darkness' evening periods in winter 2016 that it could not meet the demand for electricity generation required, leading to National Grid fearing a shortage. The company also sent false information about its power plants' generation capabilities. In this four-day period, it was estimated that Intergen was able to make an additional £12.8 million through market manipulation. On discovering the manipulation (from a tip-off from another generator), in April 2020 Ofgem eventually fined Intergen £37.2 million.⁶⁹

⁶⁶ Ofgem (2013) <https://www.ofgem.gov.uk/publications/scottishpower-agrees-pay-consumers-ps85m-following-ofgem-sales-investigation>

⁶⁷ BBC (2016) <https://www.bbc.co.uk/news/uk-scotland-scotland-business-36089288>

⁶⁸ Bowers (2014) <https://www.theguardian.com/business/2014/jul/17/scottish-power-utilities>

⁶⁹ Ofgem (2020) <https://www.ofgem.gov.uk/publications/ofgem-requires-intergen-pay-ps37m-over-energy-market-abuse>

EDF Energy

In 2020, French energy giant EDF Energy was forced to pay £6 million after Ofgem discovered it had ‘frequently inflated’ the minimum amount of power one of its electricity generators could supply the grid. This resulted in National Grid having to buy more electricity than necessary to meet demand.⁷⁰

Ovo Energy

In 2020, Ovo Energy was fined £8.9 million for overcharging customers over a 5-year period, and sending bills late, all due to faulty billing systems. Ofgem found that these failures were largely as a result of Ovo not putting enough resources or effort into ensuring they were complying with the terms of their licence. In total, between 2015 and 2018, over 500,000 customers were sent an inaccurate bill.

The ‘Big Six’

In 2016, the Competitions and Markets Authority found that the range of tariffs and gas prices offered to customers on prepayment meters by the Big Six energy companies were structured in such a way as to limit competitors to enter the market and limit the ability of consumers to find more competitive rates.⁷¹ Whilst Ofgem recommended changes to open the market up for prepayment customers, no fines were given.

Has privatisation led to cheaper bills for British consumers?

Pre-privatisation, British Gas bought one hundred percent of its gas on long-term contracts. On the one hand, this was the major reason why energy prices for consumers remained comparatively high and why, on privatisation, prices for gas dropped by 24% (the gas price drops for industrial and electricity producers were even greater). Post-privatisation, the liberalisation of the financial industry allowed for major market changes in both the gas and electric markets. Long-term contracts (over one month in length) were also joined by short-term contracts (less than one month) and spot markets.

This also later joined by the financial industry, who were later able to trade in gas and electricity on international trading exchanges. Whilst these non-physical traders could not sell gas or electricity to the end-consumer, they were able to use these commodities to bet on prices rising or falling. Ostensibly, the reason for allowing them to enter into the market was to bring in more ‘liquidity’. In getting

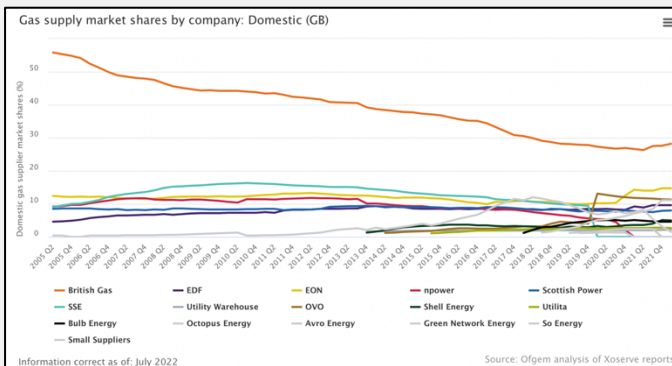
⁷⁰ <https://www.ft.com/content/7dabf64c-b2df-47a2-9267-3f2116e35205>

⁷¹ Competition & Markets Authority (2016) <https://www.gov.uk/cma-cases/energy-market-investigation>

more money flowing through the system, more companies would be able to enter the market and compete against the big energy companies. Additionally, in opening markets up to more trading and energy contracts changing hands among traders more frequently would result in greater confidence in the final contract price. (In financial trading terms, this is referred to as ‘churn’. The more churn there is – the more a contract changes hands between traders before the delivery point of the energy – the more certain a trader can be in the price they pay for the final delivery.) Whilst this did happen, the result was a significant increase in short-term thinking – an unwillingness to invest for the long-term, and short-term betting on energy prices, rather than hedging through long-term contracts.⁷²

“Supporters of privatisation claim that it benefits consumers, as market competition between suppliers should lead, in theory, to lower prices. In reality, the opposite has occurred. Even before the current energy crisis began, domestic energy bills steadily increased in “real” (ie inflation-adjusted) terms by 50% from

1996 to 2018. By early 2022, energy bills are expected to continue to increase by more than 30%. Over 3 million people in the UK are now estimated to live in fuel poverty.”⁷³



In July 2022 the wholesale market continued to experience high volatility following Russia’s invasion of Ukraine and a series of events that limited the delivery of LNG supplies and Norwegian pipeline gas to Great Britain. As a result, fixed tariff prices, not protected under the price cap, have continued to fluctuate significantly. The average fixed tariff price was £3,851, up by £789 from £3,062 in June 2022.

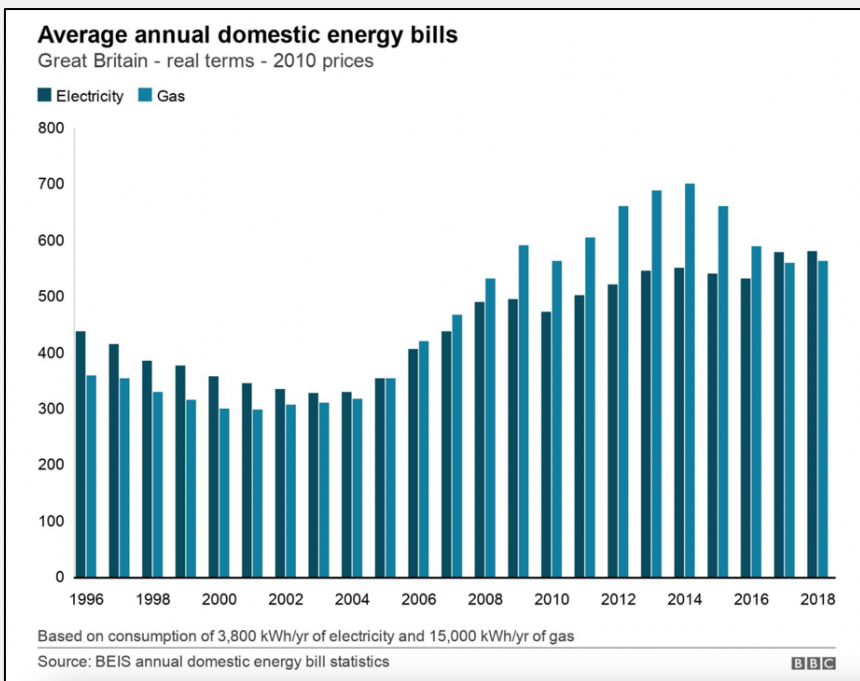
The average price of SVTs with large legacy suppliers for a typical dual fuel customer paying with direct debit remained at £1,970, coinciding with the summer price cap level. The cheapest tariff basket was also unchanged at £1,959.

⁷² Juris (1998)

https://documents1.worldbank.org/curated/en/158051468760578549/124524322_20041117180613/additional/multi-page.pdf, p. 37

⁷³ Baines & Hager (2021) <https://www.theguardian.com/commentisfree/2021/nov/24/uk-energy-sector-public-ownership-bulb-collapse>

As a result, the differential between the average price of SVTs for the large legacy suppliers and the cheapest tariff basket remained at £11.



From 14 April 2022, we have required suppliers to pay a Market Stabilisation Charge when acquiring new customers. The market stabilisation charge will only apply in certain market conditions (that would otherwise create risks to market stability), which we will assess on a weekly basis. You can find out if the Market Stabilisation Charge has been triggered, and if so what the level of the charge is on our website at [Market Stabilisation Charge dashboard](#) | Ofgem.

In 2021 profits earned by the large legacy suppliers continued to vary substantially, but generally showed a decline. In 2021, British Gas was the only supplier with a positive margin which stayed relatively stable at 1.73% compared to 1.75% in 2020. ScottishPower had the lowest margin at -9.08%, showing a significant drop from -1.99% in 2020. EDF also recorded a negative margin at -5.49%, a decline from -4.04% in 2021. No data was available for OVO and E.ON in 2021, as these suppliers no longer hold a generation licence and are therefore not legally required to submit a Consolidated Segmental Statement.

Has privatisation led to increased investment in UK energy infrastructure?

Profiteering has led to billions of pounds being siphoned off into private shareholders pockets rather than used for decarbonisation. Campaign groups *We Own It* and *CorporateWatch* found that at the peak of the Big Six's power, energy companies 2013 paid out £8.5 billion to shareholders *in one year*.⁷⁴

Private energy companies have claimed that they continually invest in new technologies, renewable forms of power generation and other systems which benefit consumers. But this ignores the fact that it is *more expensive* for private companies to raise the many millions of pounds needed for such investment through banks, than it would if the UK government were to do it through issuing gilts. The money would come from many of the same banks, billionaires and investment funds that currently invest in the utility companies, but the government would just pay them less in return! *We Own It* and *CorporateWatch* found that if under public ownership, in 2013 alone, the government would have saved £4.2 billion in debt payments.⁷⁵

In the North East of England, the electricity distribution company Northern Powergrid (owned by American conglomerate Berkshire Hathaway, which is itself owned by US billionaire Warren Buffett). If you're in London, the South East or the East of England, your electricity is delivered to you by UK Power Networks. Last summer it paid its billionaire Hong Kong owner, Li Ka-shing, a £237 million dividend for the second year in a row. This is all while our energy prices are skyrocketing.

The behind-the-scenes work on the electricity grid is also a sector where profits at their highest. The amount that transmission and distribution companies can charge for services are set through five-year deals with Ofgem, with any investment costs inevitably being passed onto the consumer. This has made this sector of energy supply among the top ten most profitable sectors in the whole of the UK economy.

In a detailed article in the *Financial Times* in August 2022, summarised this point in quoting an industry expert who said that Ofgem's plans for future investment in the electricity grid appeared to place almost all the inflation risks on customers' shoulders'. UK Power Networks (UKPN), which deals with electricity distribution in London and is owned by Hong Kong billionaire Li Ka-shing, paid £217 million to investors in 2022 alone. An initial plan (which later fell through) to sell UKPN to another Australian-based finance company was set at over £15 billion, despite

⁷⁴ Corporate Watch (2014) <https://corporatewatch.org/energy-rail-and-water-privatisation-costs-uk-households-250-a-year/>

⁷⁵ Corporate Watch (2014) <https://corporatewatch.org/energy-rail-and-water-privatisation-costs-uk-households-250-a-year/>

having paid only £5.5 billion for the company fifteen years ago.⁷⁶ The *Financial Times* also reported in the same article that Ofgem had found that after Storm Arwen in Autumn 2021, between 50 and 75% of the electricity poles damaged in the storm were more than forty years old, and that routine tree cutting had not been done, suggesting these factors had significantly contributed to the blackouts experienced by people in the South of Scotland and North of England.

Perhaps most shockingly, Britain's electricity grid is now aging so badly that many of the cables used to transmit electricity around GB have not been replaced since they were installed at the end of the Second World War. As more and more electricity is pushed through the cables, the more inefficient they become as power leaks out. In 2021-2022 alone, roughly 25 terawatts of electricity was lost to inefficient and older cables – enough to power 7 million homes, or the total sum of electricity imported by GB in the same year.⁷⁷

Demand for electricity is expected to be three times greater in 2050 than today, and unless significant investment is made, Britain's energy infrastructure will simply be unable to cope.

⁷⁶ <https://www.ft.com/content/4dbce4a9-24c4-481e-b803-e0a4a34c21cb>

⁷⁷ <https://www.ft.com/content/4dbce4a9-24c4-481e-b803-e0a4a34c21cb>

9. HOW AM I BILLED FOR MY ENERGY?

What kinds of tariffs are there?

Prepayment Tariff

This is the energy equivalent of a pay-as-you-go phone. You'll need to have a pre-payment meter to use it. As the name suggests, you pay for the energy before you use it by topping up the meter online, with a key, card or tokens.

It's usually the most expensive way to pay for your energy but it does give you total control over what you're using and spending.

Dual-Fuel Tariff

With a **dual fuel tariff** you get both your gas and electricity from one supplier, which can make life a bit simpler. Suppliers may also give you a discount in order to get double your custom.

It's worth checking what deals you could get if you signed up for gas and electricity separately – those savings might outweigh any discount you're offered for both.

Economy, Economy 7, and Economy 10

With an 'economy' tariff, you'll typically get cheaper 'off peak' energy for either seven or 10 hours a day. Economy 7 usually has its off-peak hours between around midnight and 7am, whereas Economy 10 spreads its cheapest hours throughout the day at set times.

Some providers will offer a time-of-use tariff, particularly aimed at electric car owners for charging their vehicles overnight too. Off-peak energy can be cheap, but whatever you use outside of these times will be charged at a much higher rate. You'll get a special meter to monitor rates. An economy tariff could be helpful if you can arrange to use energy at off-peak times. But if you know you won't change your habits to make the most of the discounted rates, think before you switch.

Standard Variable Tariff

Prices on a variable tariff can go up or down according to the market. So if prices fall, you could benefit from cheaper energy bills. However, you'll pay more when they rise.

However, default and variable tariff customers are protected by Ofgem's price cap, which puts a limit on the maximum suppliers can charge for each unit of energy.

Suppliers will also have a Standard Variable Tariff as their default pricing plan. If you had a fixed rate contract with your supplier that came to an end, they'll probably have rolled you onto this tariff. According to Ofgem, around 22 million households in the UK are on a supplier's standard default tariff. The good news is that standard variable tariffs are easy to get out of. There are no exit fees to pay, and you can switch at any time – when alternative deals become available again.

Fixed-Rate Tariffs

A fixed rate tariff guarantees the price of your energy for a set period of time (usually 12-18 months). After this you're free to switch and save again, but if you leave early, you'll likely be charged an exit fee.

Fixed rates are helpful for keeping control of your budget, and the rates you'll pay will probably be lower than those of a standard default tariff. However, only the unit cost is set at a fixed rate. This is how much you'll be charged per unit you use. If you start consuming a lot more energy, your bills will go up. Fixed rate tariffs are designed to protect you from energy price rises – for example, the current UK energy crisis. If you're on a fixed rate tariff, these price increases won't be passed on to you, and your cost per unit (kWh) will remain the same.

Capped Tariffs

The cost of your energy per unit (kWh) is capped at a certain point – and it won't go over this agreed amount. Prices can be capped in two different ways:

- Capped prices per kWh – where the maximum price is set per unit of power consumed. Example: you will not pay more than £X per kWh.
- Capped prices in comparison to another price – where the maximum difference between one tariff compared with another one is fixed in advance, for example: the tariff A capped rate will be no more than X% over tariff B.

Prices can go down as well as up, but the rates or price won't exceed the agreed limit. However, it doesn't cap the total cost of your payments at the end of the month because this depends on how much gas or electricity you use.

Unlimited Energy Tariffs

This tariff gives you unlimited energy use for a whole year at a cost you know when you sign up. It's a recent introduction, with very few suppliers offering it, but

more suppliers are considering creating similar deals if they see a potential demand.

The supplier will need to know how much gas and electricity you typically use based on your old bills to work out how much you should be charged overall. Once they have worked that out, the cost will be fixed for the whole year, whether you use more or less power than in previous years that the tariff was fixed around.

Green Tariffs

Green, 'eco' or renewable energy tariffs can work in a number of ways. One option is that whatever amount of energy you use will be 'given back' by your supplier to the National Grid in renewable energy. Alternatively, they may supply your home with 100% renewable energy, a mix of renewable and non-renewable, or they may contribute to environmental projects instead.

Green tariffs aren't necessarily always the most expensive, but price isn't their best selling point and they may cost more than the cheapest tariff.

Online and Smart Meter tariffs

With a smart meter or online tariff you'll manage your account online only, with no paper bills or letters. If you opt for a smart meter tariff, obviously you'll need to have a smart meter that automatically sends meter readings to the supplier. Smart meter and online tariffs can be cheaper, as they save the supplier money on postage and paper. They are also potentially more eco-friendly.

What are the costs that make up my bill?

Both gas and electricity bills are made up of a range of different costs incurred between the point of production to the metering of the energy as it flows in your home. The precise make-up of your energy bills will vary depending on how much energy you use but rough costs can be divided up as follows:

Wholesale costs (50%)

This is the price at which your energy supplier has finally bought the gas or electricity at on the wholesale market. Your supplier will only give you an average cost for the overall wholesale cost over a billing period, but inevitably, this will be affected by the changing wholesale price on a daily basis (in the case of gas) and half-hourly basis (in the case of electricity). The wholesale costs will therefore include:

- **The raw cost of the energy.** This is the amount the electricity or gas supplier has paid for an energy contract specifying how much your company has paid for your energy. This price normally varies from company to company (depending on how good a deal they struck, how well they ‘hedged’ their costs, etc.), but in a time of high energy prices, most people will be paying (more or less) the same amount.
- **Energy loss costs in the network.** For electricity, this is around 10% of the wholesale cost: about 1-2% is lost during transmission, and anywhere between 3 and 10% at distribution, varying according to the DSO. This will also include electricity stolen through illegal connections.⁷⁸ For gas, the loss is much lower, though it includes ‘shrinkage’ (the amount lost through necessary industrial supply use, and theft), and ‘leakage’ (the amount lost through leaks and broken pipes). In total, under 1% of gas is lost in this way.⁷⁹
- **Imbalance costs.** These are the additional charges that are passed onto the gas shipper or electricity supplier for not having provided correct estimates of their customers’ energy use. This cost is passed back to National Grid and National Grid Gas to compensate them for buying additional electricity and gas, respectively, at the spot price.

Standing Charge Costs: Network Costs (25%)

This is the cost of transmitting the gas and electricity along the transmission lines, pipes and into the distribution system. On average, network costs will make up anywhere between 20 and 25% of your energy bill. It includes:

- **Transmission costs.** This is the fee that your supplier or gas shipper will pay to transport your energy from the producer, through the Grid, to your local area. These costs are relatively low (about 5% of your bill, or 0.5p/KWh).
- **Distribution costs.** This includes fees paid to the Distribution Network Operator for ‘stepping down’ your electricity to mains voltage and carrying the electricity into your home, or reducing the gas pressure as it enters into the town supply. This will cost about 15-17% of a typical bill.
- **Emergency costs.** This covers the 24-hour, GB-wide gas emergency phoneline.

⁷⁸ Energy and Climate Change Committee, ‘Energy Network Costs: Transparent and Fair?’ (10 February 2015), <https://publications.parliament.uk/pa/cm201415/cmselect/cmenergy/386/38607.html> (last accessed 15 September 2022).

⁷⁹ Graham Edwards, in evidence to Energy and Climate Change Committee, 9 September 2014, <http://data.parliament.uk/writtenevidence/committeeevidence.svc/evidencedocument/energy-and-climate-change-committee/network-costs/oral/12475.html> (last accessed 15 September 2022).

- **Balance costs.** This is the cost for the transmission company (i.e., National Grid, or National Grid Gas) in maintaining overall safety and balance in the entire GB energy system. This makes up less than 1% of your bill.

Standing Charge Costs: *Environmental and Social Obligation Costs* (12%)

Incorrectly, this has often been dubbed in the media as ‘the Green Levy’. In reality, your bill is made up of a combination of many different levies and fees that your supplier passes directly onto you so that it can meet its obligations based on current government policies. As of 2020, environmental and social obligation costs accounted for 2.5% of a gas bill, 15.3% of a dual fuel bill and 25.5% of an electric bill.

These tariffs and levies include:

- **Renewables Obligation.*** The Renewables Obligation (RO) was one of the main support mechanisms for large-scale renewable electricity projects in the UK. ROCs are certificates issued to operators of accredited renewable generating stations for the eligible renewable electricity they generate. Operators can trade ROCs with other parties. ROCs are ultimately used by suppliers to demonstrate that they have met their obligation. Where suppliers do not present a sufficient number of ROCs to meet their obligation in the reporting period (one year), they must pay an equivalent amount into a buy-out fund. The administration cost of the scheme is recovered from the fund and the rest is distributed back to suppliers in proportion to the number of ROCs they produced in meeting their individual obligation.
- **Contracts for Difference*.** In October 2014, the UK established CfD to deliver cost-effective large-scale renewable projects; an auction system now common across Europe. Payments to producers are contingent on the difference between a strike price and the market price, with the former being agreed via the Low Carbon Contract Company (LCCC), a UK government set-up. To ensure an efficient strike price, the LCCC holds allocation rounds every two years, with costs minimized through competition between projects. Once the renewable installation is online, if market prices are below the strike price then generators receive the difference as a payment from the LCCC, which is ultimately passed on to consumers through their power bills. However, if market prices climb above the strike price then generators pay back the difference to the LCCC and

bills are reconciled. Renewable producers agree to this deal as it underwrites risk on renewable returns, thus promoting greater institutional investor interest.

- **Electricity Energy Companies Obligation.*** The Electricity Energy Companies Obligation or ECO is a scheme levied on suppliers to invest in customer efficiency projects such as subsidised loft insulation. The schemes last for set periods, and the fourth iteration of this scheme – ECO4 – began in April 2022 and will last until 2026.
- **Feed-In Tariff.*** While this scheme closed to new entrants in 2019, existing small-scale generators (under 5MW of power) can receive payments from the National Grid when they send electricity into the system. Contracts typically last 20-25 years, and payments decrease over time.
- **Smart Export Guarantee.*** This is the successor to the Feed-In Tariff, but with two main differences. First, small-scale generators will only receive an 'export tariff' for the energy they produce that the Grid actually needs and uses (the Feed-In tariff compensated generators for all energy produced regardless of use). Second, the National Grid and other independent transmission companies are free to set their own fixed prices for buying this energy (although it cannot be set at 0p!).
- **Higher Distribution Cost Levy.*** This charge is added onto all. Customers' bills, making up about 1% of your bill. The money raised through this is used to support the building and maintenance of remote networks, as well as subsidise the cost of transporting electricity to those regions. Only users in the North of Scotland benefit from this reduction in their transmission and distribution costs – although it should be noted that the standing charge is still higher than many other parts of the UK!
- **Green Gas Levy and the Green Gas Support Scheme.** The Green Gas Support Scheme (GGSS) is a government environmental scheme that provides financial incentives for new anaerobic digestion biomethane plants to increase the proportion of green gas in the gas grid. Registered participants will receive quarterly payments over a period of 15 years. Payments are based on the amount of eligible biomethane that a

participant injects into the gas grid. The initial rate of 0.484p per meter per day applies from 30th November 2021 to 31st March 2022, and the second rate of 0.576p per meter per day applies from 1st April 2022 to 31st March 2023.

- **Warm Home Discount.** The Warm Home Discount (WHD) scheme came into effect in April 2011 and requires obligated domestic energy suppliers to deliver support to persons on low-income and who are vulnerable to cold-related illness or living wholly or mainly in fuel poverty.

Under the scheme, small, medium, and larger energy suppliers support people who are living in fuel poverty or a fuel poverty risk group. Some smaller suppliers that are not obligated under WHD also voluntarily participate in part of the scheme.

The Department for Business, Energy and Industrial Strategy (BEIS) is responsible for WHD policy and legislation. Ofgem's role is to administer certain elements of the scheme.

Supplier Operating Costs (12%)

Energy suppliers have numerous overheads that are an inevitable result both of making sure billing is accurate, and also a consequence of a privatised market.

Suppliers need to invest and spend money on:

- Reliable IT systems in handling customer data and billing
- Finance facilities to deal with massive monthly payments, direct debts and bills (upwards of £1billion)
- Accounting in relation to energy 'balancing' (the companies Elexon and Xoserve do this)
- Customer service and complaints
- Metering, meter maintenance, and smart metering
- Sales and marketing (inc. third-party commissions and brokering).

As a result of the government's price cap policy, Ofgem had to design a methodology which would allow each business to be able to add on legitimate operating costs onto customers' bills, according to the needs of their company.⁸⁰ Operating costs accounted for about 21.5% of a gas bill, and about 16.3% of an electricity bill in 2020.

⁸⁰ You can find a full explanation of Ofgem's methodology here:

https://www.ofgem.gov.uk/sites/default/files/docs/2018/09/appendix_6_-_operating_costs.pdf (last accessed 15 September 2022).

Profit Allowance (1.9%)

Because of the price cap being introduced, Ofgem now needs to calculate 's allowance for supplier profits, which is set at 1.9%, is now included within operating costs rather than shown as a separate allowance. The winter price cap (2021-22) allowed energy suppliers to claim £23 from each default energy tariff as profit. Under the new cap they will make more than £37.

Energy companies were allowed to claim operating costs of £204 from the average annual energy bill under the winter price cap, but that has grown by almost 10% to £220.

VAT (5%)

VAT is set at 5% for energy bills, which equates to £98 a year for the average household – up from £61 before April – or more than £2.1bn in total. The Treasury windfall led to calls before the price cap announcement for the government to offer extra help to hard-pressed families by temporarily cutting VAT, but this has so far been resisted.

Additional Costs

Under the terms of the government's price cap legislation, Ofgem has the power to add additional charges onto customers' bills if they deem it essential. In 2022, an average of £68 was added to customers bills to cover the charges of energy suppliers exiting the market. The bad debts of some customers will, over the longer term, also contribute to higher bills for everyone.

10. WHAT IS THE ENERGY PRICE CAP, AND HOW DOES IT WORK?

The idea to cap energy prices was first floated by Ed Miliband and the Labour Party in 2013 in response to rising public anger at the rampant profiteering of the ‘Big Six’ energy companies. Far from this being merely the public’s perception, all evidence pointed to this being the case. By the mid-2010s, *average* profits of the big energy companies increased from around 1% in 2009 to regularly topping 4% between 2012 and 2017. Similarly, Ofgem had recognised the relatively uncompetitive nature of the market and attempted market reforms which would increase competition with the hope this would bring down prices.

What neither the Labour Party, Ofgem, nor the Conservative-led government could control at this time was, however, international wholesale prices for gas, which itself is a large determinant of electricity prices. The price of gas rose considerably in 2008, with some customers seeing their bills double in the space of a year. This dramatic price rise greatly contributed to energy companies being able to profit more on the energy they sold.

The Conservative government and its allies spent the next few years ridiculing the Labour Party’s proposals. Cheerleader-in-Chief, the *Daily Mail*, claimed Miliband was ‘reviving 70s Socialism’. Ed Davey from the Liberal Democrats said that if implemented, the cap ‘risks blackouts, jeopardises jobs and puts investment in clean, green technology in doubt.’⁸¹

While former Prime Minister David Cameron reduced the 2015 election campaign to name calling, describing Ed Miliband’s party as full of “hypocritical holier-than-thou, hopeless, sneering socialists”, Theresa May had few qualms in demonstrating the Conservatives’ own hypocrisy less than two years later when she announced during the 2017 General Election that a re-elected Conservative government would introduce an energy price cap – a proposal indistinguishable to that proposed by Labour five years previously.⁸²

⁸¹ J. Chapman and M. Chorley, ‘The lights will go out over Britain’: Shares in energy firms drop 5% amid warnings of blackouts from Miliband’s plan to freeze bills’, *The Daily Mail*, (24 September 2013), accessed from <https://www.dailymail.co.uk/news/article-2431073/Ed-Milibands-speech-revives-70s-socialism-Fixing-energy-prices-boosting-minimum-wage-.html> (last accessed 15 September 2022).

⁸² Anon., ‘David Cameron makes personal attack on Ed Miliband and ‘sneering socialists’’, *The Guardian*, (28 March 2015), accessed from <https://www.theguardian.com/politics/2015/mar/28/david-cameron-makes-personal-attack-on-ed-miliband-and-sneering-socialists> (last accessed 15 September 2022).

What is less focussed upon is that even during the debate about energy tariffs and prices over the mid-2010s, price caps *already existed* in the UK energy market. Ofgem had a series of price caps for a variety of tariffs, namely for those on prepayment meters and also for the most vulnerable customers who received help through the Warm Home Discount. Theresa May's plan to cap prices for the most expensive tariff, the Standard Variable Tariff, would affect around 12 million households. All this did was demonstrate the direction of travel in energy policy: competition was failing to deliver low prices, and government intervention was the only means by which customers could be protected from the volatilities of the market.

On 19 July 2018, the Domestic Gas and Electricity (Tariff Cap) Act came into force. Ofgem set to work developing a pricing structure that would aim to keep prices as low as possible for consumers, whilst at the same time allowing companies to make 'acceptable' profits, and maintain competition in the marketplace, as well as meeting its other objectives on climate change and energy security.

The resulting 'price cap', therefore, was an attempt to balance these factors. It introduced the 'profit allowance' of 1.9% – the amount which Ofgem believed was an acceptable level of profit companies could make. This did mean, however, that the higher bills went, the more profit a company could make. A complex formula was also devised to allow companies to charge around 10% of a bill for its own operating costs.

The price cap was, then, *upper limits on what an supplier could charge for energy*. Most elements of the Standard Variable Tariff was capped: the wholesale cost, the Standing Charge, supplier costs, environmental and social obligations, and also the profit allowance. The energy price cap, however, was and has always been misnamed: there is no cap on how much you pay. If you use more energy, you will pay more.

While energy prices remained low, this policy was just about tolerable to the energy suppliers. But as soon as wholesale prices for gas and electricity began to rise, voices of discontent from within industry were quick to emerge. In providing evidence to the House of Commons Climate Change Committee, Michael Lewis, the CEO of E.On claimed that 'the fundamental profitability allowed is 1.9%; in practice hardly anybody is making any profit at all. In fact, the entire sector has been loss-making for several years, which is why 29 companies have gone bust'. What Lewis conveniently chose to ignore, was the ten-plus years the industry had been making rampant profits. Lewis seemed to suggest that people should have to suffer higher prices in order to defend continued profit margins for the energy suppliers. It also should have come no surprise to energy companies that energy

prices were going to increase – there had been previous energy shocks before, notably in 2008. The fact that energy prices jumped, particularly a year after the onset of the Covid-19 pandemic, was troubling but should not have been surprising.

What was less predictable, was Russia's invasion of Ukraine in February 2022 and the resulting affect this had in making gas and electricity prices spike. In response, former Chancellor Rishi Sunak announced a £400 discount applied from October 2022 to March 2023. Spread over six months, it would be applied to Council tax. Shortly after, the Scottish Government announced it would act similarly. The main problem here is that many landlords (particularly in those of multiple occupancy) have their council tax paid directly by their landlord. This means the landlord could pocket the £400 and not pass this onto the tenants.

As wholesale energy prices continued to rise, on 8 September, Prime Minister Liz Truss announced a new 'Energy Price Guarantee'. The policy will:

- Fix *domestic* energy prices for two years
- Bills will increase by around 27% on 1 October, on top of the 53% average increase in April 2022.
- The average UK bill will increase from £1,971 to £2,500 – remember this is an average! Some people will be paying *a lot more* than this!
- Any fluctuation in the price of energy above the cap above this will be paid for by the government directly to the energy companies (i.e., the 1.9% profit allowance will remain in place! The higher people's bills go, the greater profit in real terms companies will be making!)
- To further reduce bills, the government plans to scrap the 'green levy'. But this *could* include social obligations too, and if these are cut it will harm the most vulnerable in society.
- The UK government plan to also expand nuclear power, with an aim to have 25% of UK energy supplied by nuclear by 2050.
- Increase extraction of oil and gas from the North Sea though 100 more licences for exploration and drilling
- End the moratorium on fracking in England, and allow such projects to go ahead with the approval of local communities. Though this will not solve very much – Shale gas will be sold at the same price as natural gas, so if gas prices remain high, this will have little effect.
- Continue investment in renewables such as hydrogen, solar and wind (though this will be harder if green levies are scrapped!)
- A review of the regulation of the energy market, which potentially means dividing Ofgem up into different regulators.
- A proposal to decouple the price of electricity from the most expensive means of electricity generation

- Establish a £40 billion 'Energy Markets Financing Scheme' which will provide emergency funding to energy companies if they require short-term cash injections to support their trading positions in wholesale markets.
- The government also announced that it would be helping companies to purchase gas on long-term energy markets to ensure supply and continuity in prices. But this is exactly what British Gas was doing 30 years ago! Also... this does not necessarily mean bills will be lower. It could be helpful in the longer term if gas prices continue to rise, but it could also be locking us into higher prices for the next ten years.

This pamphlet is a collaborative effort from activists working in the 'Power to the People Campaign' and in 'Popular Education Network Scotland'. To help us in our campaign, you can:



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The Power to the People campaign was set up in June 2022 to campaign against the dramatic rise in the energy price cap, as well as push for action on fuel poverty. It is a loose, grassroots coalition of activists with networks existing throughout Scotland.



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