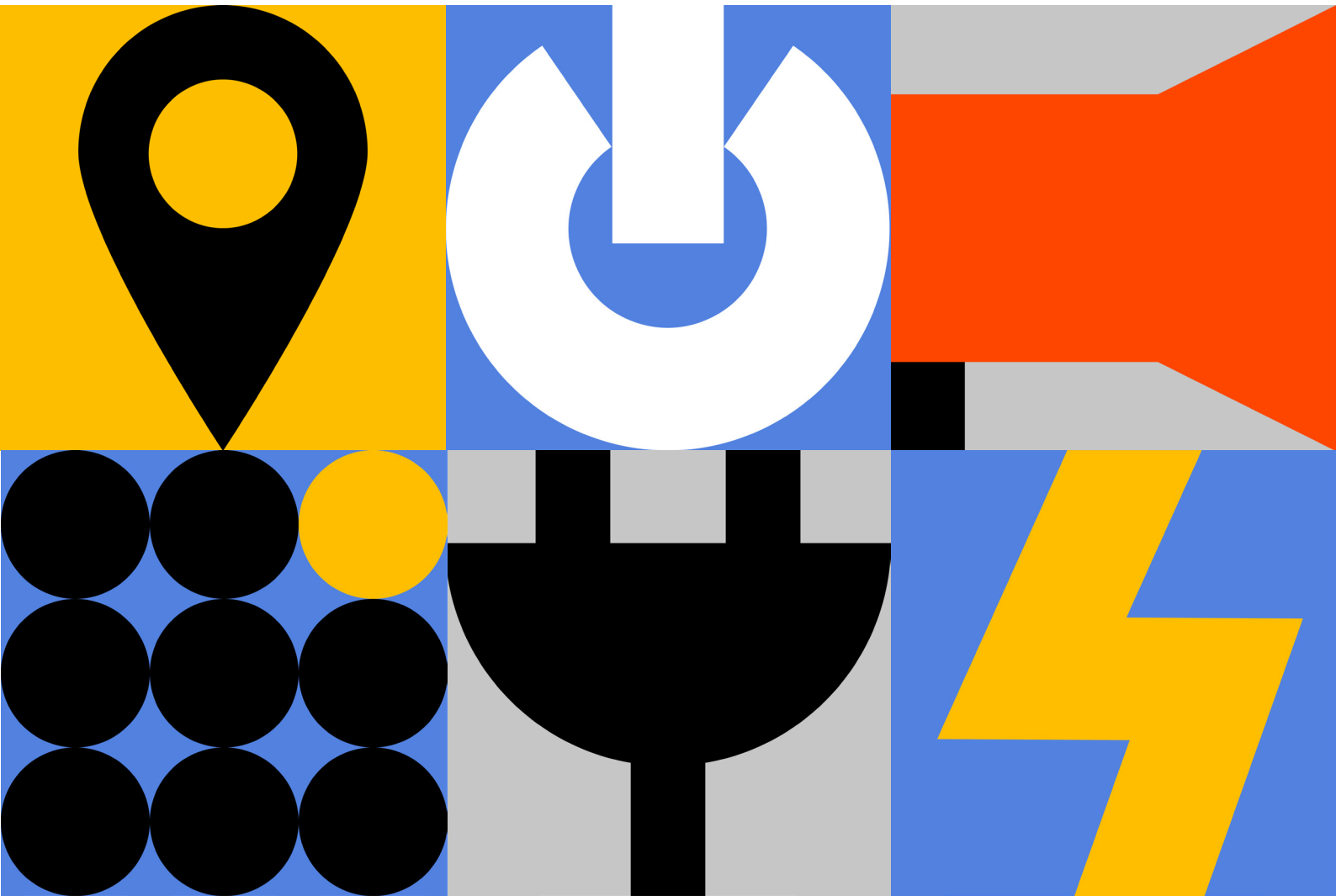
STONEHAVEN

REINVENTING RETAIL ENERGY

Making the energy retail market fit for the next generation



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01 EXECUTIVE SUMMARY



Former Prime Minister Margaret Thatcher's vision for privatisation was to ensure: "the state's power is reduced, and the power of the people enhanced". While some market-based reforms from her premiership have given customers greater flexibility, control, and choice, it is hard to see how privatisation of retail energy has resulted in anything other than a broken and illusory market.

The energy crisis in 2021 brutally exposed an industry unable to safeguard itself or its customers from the impacts of Russia's invasion of Ukraine and the subsequent surge in global wholesale gas prices. In the UK, 31 suppliers went bankrupt, and the Government was forced to intervene with a state-sponsored rescue package. The cost of the £37bn Energy Price Guarantee, introduced in September 2022, will ultimately fall on taxpayers. A levy has already been imposed on our bills to claw back the £2.7bn cost of mass market exit. This crisis revealed a market in urgent need of reform.

A market designed to encourage consumer switching and new market entry has ended with mass market exits, fewer customers switching suppliers than ever before and trust between consumers and the industry at an all-time low. We believe that structural issues in the system have in large part contributed to its current malaise and that these cannot be allowed to continue into emerging retail energy markets.

Currently, suppliers are limited to competing only on costs: creating a system where the only incentive is to offer tariffs as low as possible. This has led to neither clarity nor transparency in pricing while incentivising some suppliers to take financial risks that left consumers dangerously exposed in the energy crisis. At the same time, the Ofgem-regulated licence system for suppliers creates a rigid system which stifles innovation and does little for customer service, choice, or quality.

Over the next 20 years, consumer energy bills will shift from 60% gas and 40% electricity to being heavily biased towards electricity. The future household bill will be made up of today's load – including lighting and appliances like kettles and cookers – as well as all home heating and electric cars. This is a once in a generation shift in household consumption. It provides an opportunity for change: change that could restore power to the consumer, drive innovation, improve customer service and help cut bills.

We need new market models for this change, not to build on the crumbling foundations of the old. This would not be a one-size fits all approach – protections can and must remain in place for vulnerable homeowners and Ofgem has much work to do to make the existing system fit for purpose. But Ofgem and the Government need to accept that the attempts to make the energy retail market work over the last two decades - by judging it



purely on the basis of how many consumers switch suppliers - has failed. Competition is not just a process of switching but a process of rivalry between companies. Innovation must be in the driving seat and companies must be rewarded for delivering what consumers want.

The ongoing roll out of smart meters and Ofgem's commitment to open access data creates new possibilities for any consumer who wants to regain real control over their bills. We propose five reforms necessary to create new business models for this emerging new market.

These are the five reforms on which the new assets market should be built. A market where consumers have the knowledge and flexibility to understand and manage their own energy use, to cut bills and shop around for the best deals on offer. In the same way as mobile phone contracts are built around the individual needs of the user, new asset bills can be created to reflect the lifestyles, work patterns and values of consumers.

The current market is little more than an illusion, where consumers pick up the bill for market failure but enjoy few rewards, and where customers face a household monopoly on their bills and a blizzard of ever-changing tariffs. A new assets energy sector, able to function free from the volatile fossil fuel market, could ensure current suppliers and new firms can deliver high-quality, innovative products to consumers keen to shop around while maintaining necessary protections for the most vulnerable.

We cannot build a new market on the failures of the old – it is time to restore power to where it really belongs: with the people.

SPLIT SUPPLIERS

With 55% of all households fitted with smart meters and all homes to be offered the switch by 2025, millions of homes will have the ability to measure different load types through one meter. This gives consumers the ability to receive electricity for their old assets from one supplier and the electricity for their electric car and heat pump through another. This splits the household supplier monopoly and frees up consumers to shop around.

SMART CHARGING

Smart meters also give homeowners the ability to move away from bills based on estimated energy consumption to those calculated by half hourly use. This gives consumers greater control over how and when they consume electricity – helping them to better manage demand and cut bills. It is vital that Ofgem's current 2026 timetable to switch to this type of charging does not drift.

REMOVE THE LICENCE SCHEME FOR NEW ASSETS

This paper argues that new assets should be based on individual contracts with customers, not Ofgem regulated licenses which stifle innovation. The new assets market should operate in a similar way to the privatised telecommunications industry, which offers customers consumer protections through individual contracts while regulator protections continue to exist for those who choose to stay within the current system.

REMOVE THE PRICE CAP FOR NEW ASSETS

The energy crisis exposed the illusion that the current price cap system offers real protection for suppliers or consumers. It is clearly in need of reform. The new assets market should be free to let customers, not a false market, drive competition around pricing, as well as innovation and better customer service.

OPEN ACCESS DATA

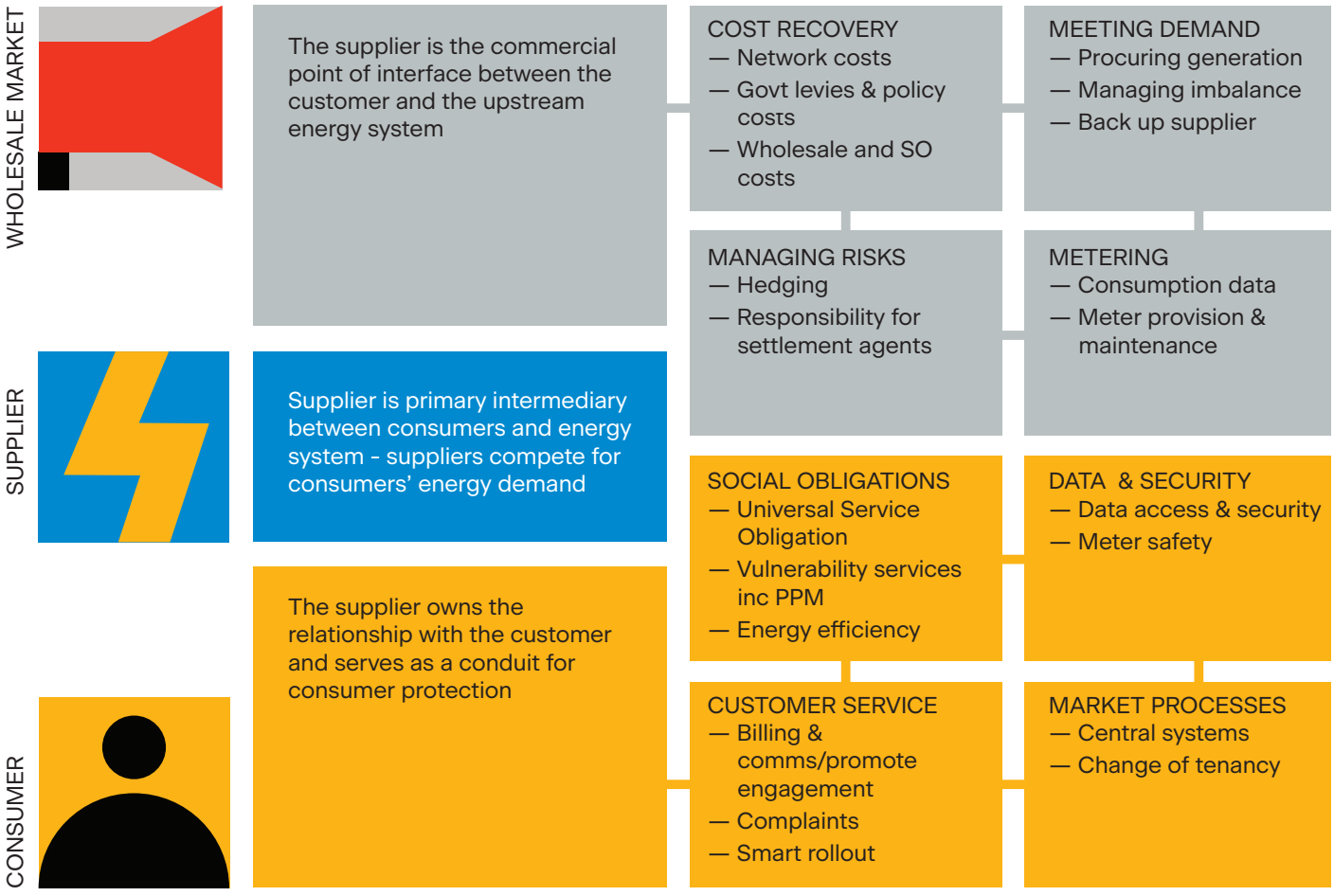
Smart metering is the key to unlocking real consumer choice but that must be allied with an energy sector which is data enabled. Open access to information helps stimulate innovation and new services while cutting costs.

What is the energy retail market?

The energy retail market is where consumers gain access to electricity and gas. Consumer payments to energy suppliers for these commodities flow through to the generators who produce electricity, the gas extractors and importers who supply that fuel, and the networks that bring these commodities into homes and businesses.

In the UK, suppliers act as a "hub" in which multiple parts of the energy system feed. In addition to delivering energy, they are expected to collect taxes, distribute welfare – such as the warm home discount, install smart meters, and deliver home improvements through the energy company obligation (ECO). The consumers, on the other hand, are largely regarded as passive and at the periphery of the system. This system is typically referred to as the "supplier hub model" (see figure 1).

Figure 1: Supplier hub model 1.



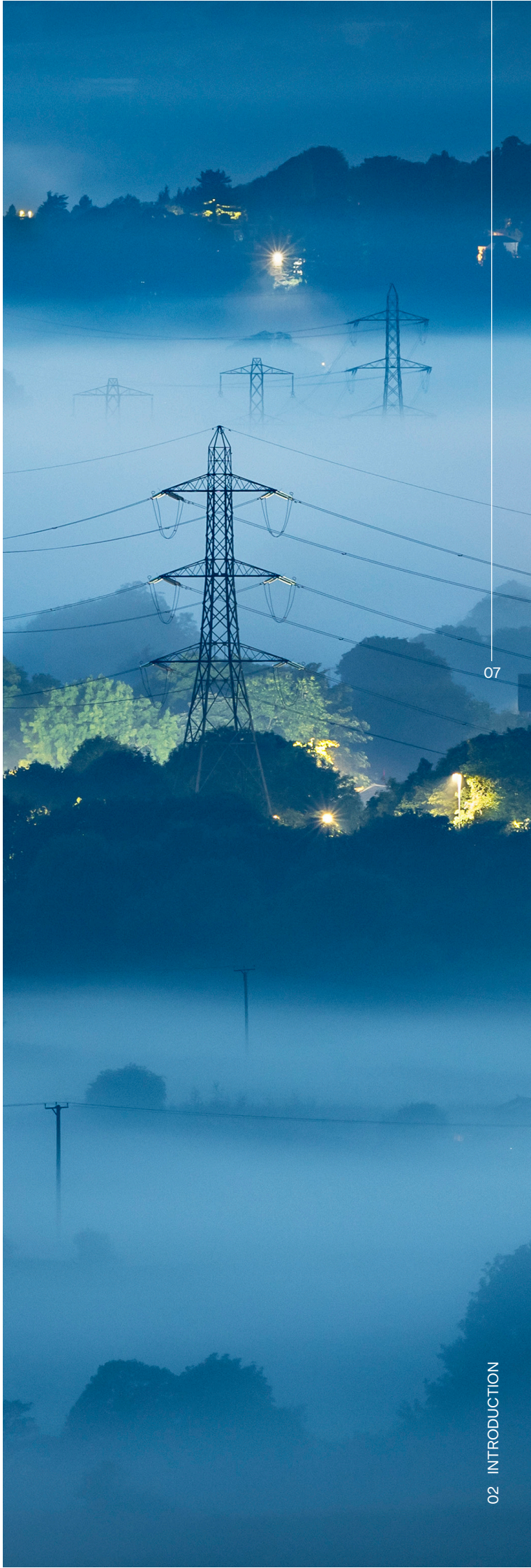
History of the energy retail market

The UK nationalised its energy system in 1947 after the Second World War before privatising gas in 1986 and electricity in 1990. During the decades of public ownership, generation capacity increased considerably and the UK switched its entire gas network away from coal-derived 'Town Gas' in favour of natural gas, newly available from the North Sea. By the 1980s, repeated failures in allocating capital – both over and under-investing in generation and other assets – as well as a general belief in the greater efficiency of competition led the Thatcher Government to put in place a programme of gradually moving these systems out of public hands[2].

Competition in the retail market was thought to improve efficiency and innovation by encouraging switching and market entry, which would, in turn, benefit consumers by enabling the supply of energy at the lowest possible cost[3]. The 1986 Gas Act and 1989 Electricity Act first introduced competition using a phased approach, starting with large businesses and industries with substantial energy demands before moving down the consumption ladder until finally reaching domestic consumers. The process was completed in 1998 for gas and in 1999 for electricity[2]. In 2002, competition was judged "effective across all social groups and all methods of payment" by Ofgem's Chairman, and the transitional price caps in place to prevent price abuse by suppliers were removed[4].

However, in 2008, after a series of price increases, Ofgem expressed concerns about "unfair price differentials" and introduced a non-discriminatory condition in the retail market. Indeed, when the government opened up the market to competition, consumers couldn't choose their suppliers straight away. This led to some incumbents having a temporary monopoly power in some regions and they were therefore able to charge higher prices. The introduction of this non-discriminatory condition marked a move towards increased regulation and state intervention. This decision was intended to "ensure that price differentials are objectively justified by cost differences"[5] but resulted in fewer consumers engaging as price differentiation was reduced[4].

In its 2013 Retail Market Review, Ofgem attributed this lower level of switching to complex pricing structures and implemented a series of reforms aiming to make the UK energy market simpler, clearer, and fairer[6]. By removing tariff varieties, these measures lowered entry barriers and attracted new challenger brands[7]. Nevertheless, in 2016, a report by the Competition and Market Authority (CMA), established that there was a competition problem in the retail market: 70% of consumers had stayed on 'standard variable tariffs' instead of switching to cheaper offers[8,9]. The CMA concluded that earlier interventions in the market had stifled competition and estimated that the associated higher prices constituted a consumer detriment of up to £2bn[8]. However, it did not recommend a "whole of market" price cap and limited its intervention to



the introduction of a prepayment price cap[4,9] which was introduced in 2017. One panel member (Martin Cave – eventual Chair of Ofgem) wrote a dissenting view stating a "whole of market" cap should have been recommended. This was eventually used as the basis for Theresa May's government who introduced a Default Tariff Cap in 2019 with the hope of boosting competition by forcing suppliers to compete under a certain threshold whilst protecting consumers[10] (See figure 2).

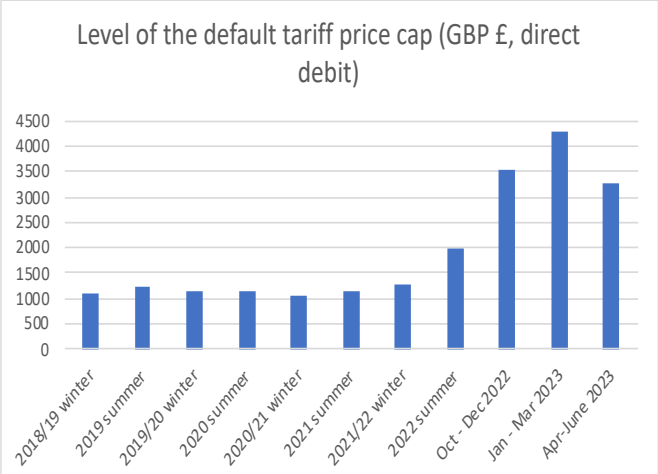


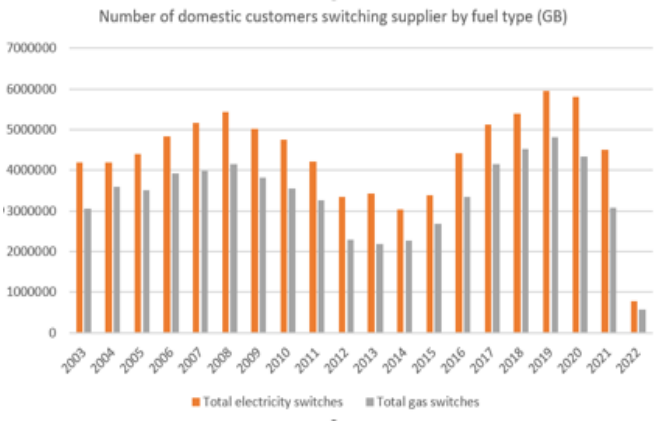
Figure 2: Level of the default tariff price cap (GBP £, direct debit)

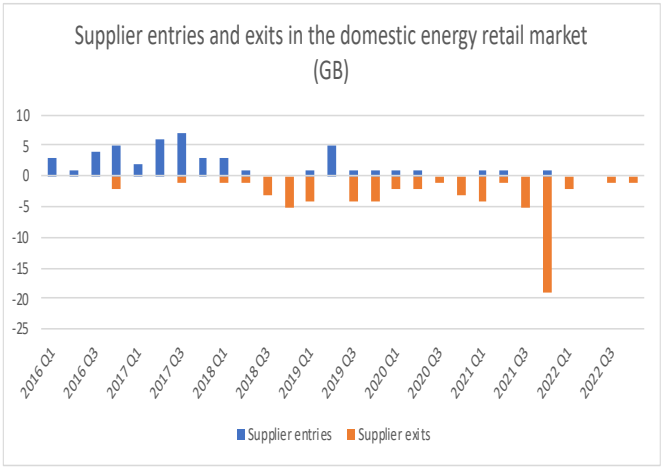
The level of the cap moved marginally for a couple of years until the summer of 2022. To reflect the very rapid increase in prices on the wholesale market following the invasion of Ukraine, the price cap increased by 80% in October 2022. The government thus intervened and introduced the Energy Price Guarantee (EPG) to limit what households pay for their energy. The EPG sets the maximum price suppliers can charge consumers for their energy, and the government compensates suppliers for providing electricity and gas below the price cap. The EPG was originally set at £2,500 for two years (October 2022 to September 2024). It was then changed to £2,500 for the first nine months (until June 2023) and in July 2023 it increased to £3,000. However, in July 2023, the EPG was higher than the price cap, so energy prices still fell. In October 2022, the government also introduced a £400 energy bill discount, paid directly to consumers for a total period of 6 months.

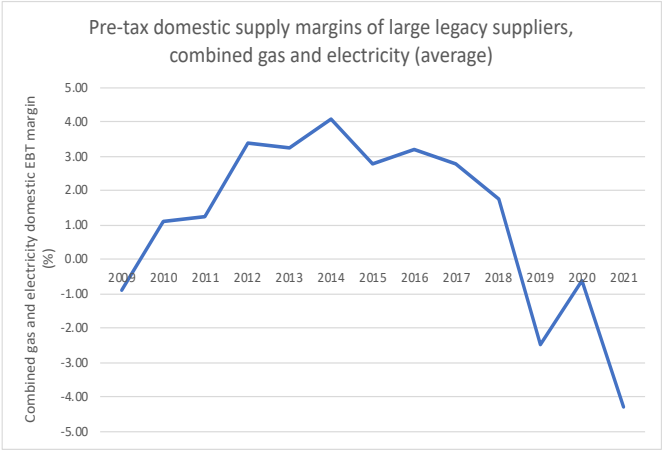
Overall, the continuous lack of long-term consumer engagement in the retail market restricted, distorted and prevented competition as consumers were not responding to price signals. This resulted in continual and increasing regulatory and government interventions in the market. Administrative decision-making on prices – particularly the introduction of the non-discriminatory condition, consumer tariff design rules and the price cap – weakened competition and led to a standardisation of the offers. This granular decision-making about prices and other values, without having either the information needed to make robust and comprehensive choices or a natural correcting mechanism that a true market provides, led to interventions being layered on top of one another to make up for the shortcomings of the initial intervention. While Ofgem has continued to articulate its core role as fostering competition and encouraging switching, in truth it has presided over a long-term non-ideological return to centralised decision-making.

The State of Play

The retail market was designed to encourage switching and incentivise market entry. However, the recent energy crisis caused by the economic rebound following the pandemic and the war in Ukraine illustrated the limits of this system. Indeed, as the market is now characterised by low level of switching and market exit (see figure 3 and 4), the crisis revealed a structurally brittle market with low resilience and reduced scope for suppliers to adjust to changing circumstances due to their inability to increase margins (see figure 5). Moreover, concerns have been raised by some Government bodies and academics regarding the ability of the market to offer value to consumers or help achieve the UK's decarbonisation aims[7].







03 ISSUES WITH THE ENERGY RETAIL MARKET

Competition is solely based on costs.

Under the current retail market, suppliers are effectively limited to competing on costs. Indeed, not only is energy an undifferentiated product – i.e., one unit of energy is the same across all suppliers – which de facto limits suppliers' ability to differentiate, but the price cap reinforces the focus of consumers and suppliers on costs. Although customer service is seen as a differentiator[14], only 14% of customers switch supplier because of customer service, whilst price factors still dominate the reasons for switching[15]. This situation has implications for both suppliers' behaviour and market entry.

Because the only incentive of suppliers is to offer tariffs as low as possible, they are encouraged to take financial risks by gambling on prices in the short-term spot markets. As a result, when prices in the wholesale market surged due to the current energy crisis, suppliers who were not hedged by long-term contracts went bust as both the fixed-price contract terms and the Retail Price Cap prevented them from passing these increased costs to consumers3. From 2021 to 2022, 31 suppliers went bankrupt[16], which will cost consumers £2.7 billion through the supplier of last resort mechanism[17]. With the price cap being determined by a set formula, a sustained increase in the wholesale cost will always lead to an increase in the price and therefore higher prices for consumers. To minimise risk, many suppliers also adopted the same wholesale trading strategy following the set formula within the price cap. This lack of financial resilience was also aggravated by the build-up of consumer debt: Ofgem estimates that the total debt owed by consumers to their suppliers in 2023 amounted to £2.25bn[18].

These increases reflect the inability of the energy retail market to efficiently protect consumers. Consumers currently have no choice but to rely on government interventions (i.e., the EPG and the £400 discount) to limit the increase in their bills, but these interventions only protect consumers in the short-term and present two main limitations. First, their cost is likely to fall on taxpayers over the next few years – in January 2023, the total cost of the EPG was estimated at £37bn[19]. Second, nothing guarantees the longevity of these measures. Indeed, the EPG was originally set at £2,500 for two years, but this level only lasted until June 2023 before increasing to £3,000 in July 2023. While it could be argued that the Government would have had to protect consumers against the energy price spikes since the war on Ukraine began, the fact that there have been continual political and regulatory interventions backdated to 2008 and the price cap predating the war by three years, suggests that over the long-term the energy retail market cannot efficiently protect consumers.

In addition, having a market in which competition is solely based on costs led suppliers to disregard other aspects of service delivery such as customer service. As a result, out-of-date IT and customer management software are still being used by suppliers, with considerable implications for consumers. For example, individuals receiving bills for a time when they didn't live in a property or logging in to their account to see someone else's details are not isolated events in the energy sector[20]. This lack of investment in customer services has led to lower customer satisfaction across the energy sector relative to comparable industries such as water and telecommunications. More importantly,



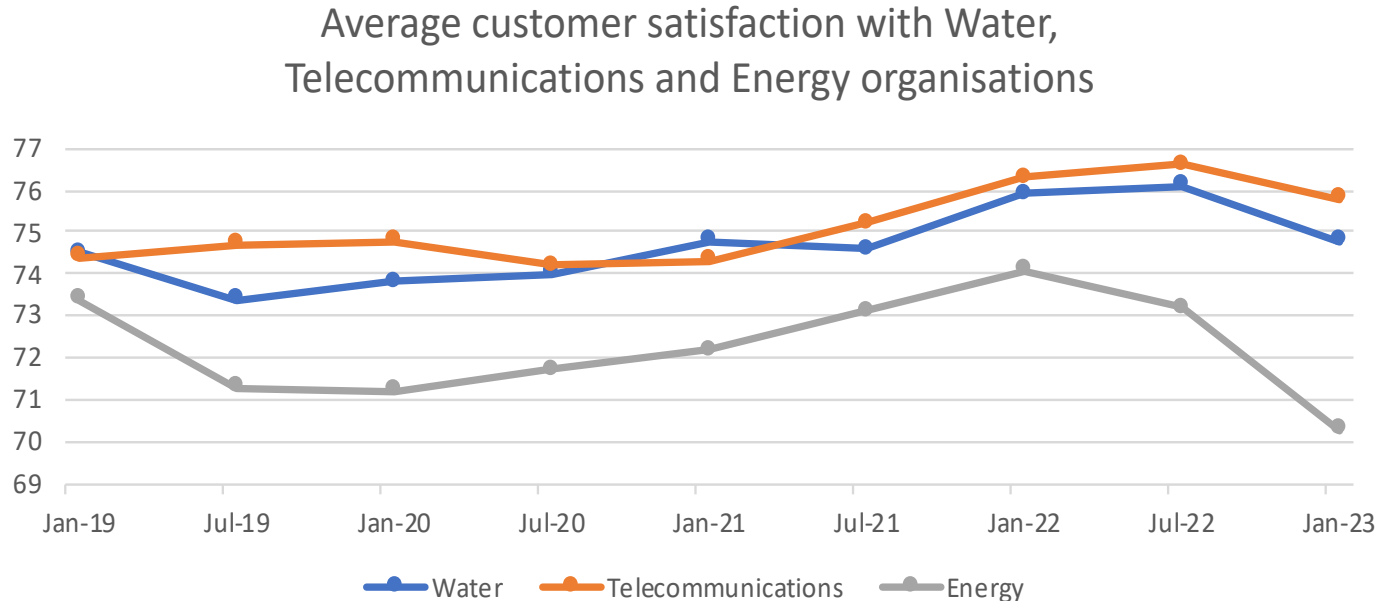
it also contributed to the erosion of consumer trust in suppliers: in 2023, half of the population does not trust their energy supplier[21].

The current form of competition in the energy retail market also constitutes a barrier to market entry for innovative new players. Indeed, not only is competition solely based on costs, but the commercial environment is structured such that companies are unable to add value and develop new services.

First, supply chain pressure, a key component of competition, is almost non-existent within the energy retail market as interactions between parties are pre-determined and price controlled, leaving suppliers with little scope to influence the supply chain[22]. This applies even in the ostensibly value-add domain of trading for the cheapest generation; many contracts are either linked to the day-ahead price and hedging strategies are optimised against the price cap, leaving a market working in lockstep.

Second, risks within the retail market are mutualised and managed by the regulator: for example, the supplier of last resort (SoLR) model, which was introduced in 2016, entails that the risks of suppliers' failures are borne by all consumers and not by the supplier. This socialisation of risks prevents suppliers from differentiating through their risk management strategies. This acts as an entry barrier for new innovators: actors who are experienced in managing complexity and who could be interested by the energy sector – such as food retailers – do not enter the market as they would be unable to differentiate. This limited competition hampers innovation and

Figure 6: Average customer satisfaction with Water, Telecommunications and Energy organisations[22]





consumer choice. Strangely, it is both easy and hard for these players to enter the market. On one hand, they have the capacity, skills, and ability to do so, but on the other hand their inability to differentiate acts as a major entry barrier.

Lastly, the poor alignment of public and private goods in the energy sector creates a low political and regulatory appetite for risk-taking and profitability, which further stifles innovation. One would expect organisations that have the potential to achieve high rewards to be more risk-taking and innovative. But because energy is an essential for life sector most suppliers find themselves focusing on compliance rather than innovation. The energy sector has thus always been culturally conservative, and this has been aggravated by recent supplier failures.

The system is overly centralised and complex.

In order to supply energy, suppliers must obtain a license from Ofgem setting out the conditions they must meet and the industry codes they must respect. These include the universal service obligation – i.e., the ability to provide energy to any customers in the country; and meeting different targets of welfare distribution. This licensing regime lies at the heart of the supplier hub model: by defining suppliers' roles and responsibilities, it enables them to occupy this central position in the UK energy system. Although crucial to the current system, the licensing regime distorts new entry into the retail market. On the one hand, automated "license in a box" tools have been developed that enable new, ordinary entrants easy access to the market (as witnessed by the surge in "price-based" new entrants in the last decade – see figure 4).

On the other hand, cost-based competition is preventing new players from entering the market as they can't differentiate themselves from existing providers. The licensing obligations also hold back market entry as new innovative business models are disallowed because they cannot align themselves with rigid requirements.

Example of players that are de facto excluded by the system include:

— Prosumer models that enable peer-to-peer (P2P) trading with own-generation and storage assets

— Players whose primary interests aren't in the energy industry – such as an electric vehicle (EV) manufacturer who would like to make an offer to consumers by supplying electricity to charge their vehicle

— Players who want to supply just one part of a household's energy use – such as a "heating load innovator" who wants to optimise the cost of electricity for a heat pump only

— Players who want to use the full value chain to optimise costs for consumers cannot do so because the overall system does not permit end-to-end cost reflectivity based on time and level of demand

All of these models are impossible today in the UK because they fall outside the defined requirements of the license. Any new player who wants to differentiate both in terms of business models and on costs is probably either too small or too narrow to acquire a license, and thus enter the market. The administrative burden is just too high and will result in a weaker value proposition.

Although the energy retail market is highly centralised around suppliers, the energy system is complex and reliant on various players such as generators, distributors, transmission operators, and system operators. The energy data landscape suffers from this complexity, and unlike the retail market, is highly decentralised. This fragmentation, coupled with the lack of clear leadership regarding data collection, has created an inconsistent and decentralised approach to data access with few incentives for players to exchange data[23]. Combined with the rigidity of data privacy rules and the industry's struggle to recruit data scientists[24], two main issues have emerged. First, data quality in the energy sector is often poor or missing. Second, the value of the data that exists is not being maximised[25]. This situation has direct impacts on consumers. Switching timescales have historically been too long. Using data to discover different consumer trends or weaknesses in trading or new market opportunities have been limited. Innovation is hampered. The low availability of data prevents new players from developing new products that could improve outcomes for customers and contribute to reaching net zero[25]. Some of the key characteristics of the energy sector have hindered its digitalisation, leaving it behind in the digital transition[25].

04 COMPETITION IN THE RETAIL MARKET SHOULD BE A DRIVING FORCE FOR INNOVATION, AND NOT AN END-STATE

As we have identified, the energy retail market suffers from two structural issues: competition is solely based on costs, and its regulation constrains suppliers' behaviour. These issues have led to major consequences including:

— Suppliers' inability to differentiate

— An incentive to take financial risks which hinders the resilience of the system

— under-investment in customer services

— The creation of a virtual entry barrier which prevents innovation. This lack of innovation is reinforced by the absence of data present in the system

Consumers are being let down by this market. Unfortunately, Ofgem's focus has not been on fixing these problems.

Over the last 40 years, Ofgem and its predecessor regulators have ponderously tried to create a competitive market structure. By focusing narrowly on switching and market entry, Ofgem viewed competition as an end-state, in which multiple players cannot persistently overcharge and earn abnormal profits, and in which participants possess common knowledge about market opportunities[26]. However, because this "competitive end-state" was artificially created, with profits being limited not by competitive forces but by regulation, and because no focus was put on suppliers' behaviour, competition as defined by Ofgem has failed consumers. Therefore, even if Ofgem tried to increase competition by focusing on the level of switching and market entry, they were not able to create a competitive market.

Over the next 20 years, consumers' energy bills will shift from 60% gas and 40% electricity to almost 100% electricity. The future electricity bill will be made up of household electricity (today's load such as lightning and appliances), transport (with electric cars), and heating (with heat pumps). This shift provides an opportunity for change. An opportunity to separate the new electricity loads (transport and heating) from the old and facilitate new innovation in these two components. This requires a shift from Ofgem in how it views competition. Competition must be viewed as a process of rivalry between players, and not as a static end-state.

Focusing on competition as a process of rivalry means focusing on a firm's behaviour in the market. In such a market, firms are encouraged to take risks and develop innovative strategies in order to retain their competitive advantage. Under this paradigm, temporary monopoly power and abnormal profits are healthy, as it rewards a firm for their innovative or risky strategy. Moreover, the gap created by the player earning a bigger market share as a result of their strategy will eventually be closed by other firms replicating or surpassing the initial innovation[26]. Creating the market conditions to enable competition to be a driving force in the market will have two benefits. First, unlike in a situation where competition is an end-state, it will actively drive costs down, as players have the room needed to innovate. Second, it will allow the retail market to be more responsive to consumers' needs. The current market was designed by Ofgem on the assumption that the only thing consumers wanted was lower prices. However, different consumer segments have different needs and it is not possible to centrally design a market that will meet everyone's needs. With competition being a driving force in the market, this information gap is not a problem: only offers responding to consumers' needs will survive whilst the others will be forced to exit the market.

Over the next 20 years, consumers' energy bills will shift from 60% gas and 40% electricity to almost 100% electricity.



05 COMPETITION AS A PROCESS OF RIVALRY

After conducting extensive desk research and interviewing various players in the industry, we have developed a toolkit of reforms that will enable the energy retail market to be resilient, and competitive, whilst delivering value for consumers.

Currently, energy is a commodity – i.e., a basic good interchangeable with other goods of the same type. As such, it is fungible, meaning that one unit of energy is the same across all suppliers, and has no added value. At the other end of the spectrum, energy could be characterized as a service – i.e., a way of delivering value to consumers by helping them achieve desired outcomes. As such, it would be intangible, fulfil a consumer need and vary from provider to provider. In the case of energy, the Energy-as-a-Service (EaaS) approach offers complete management of a consumer's energy consumption, with the supplier engaging in energy efficiency activities and demand management on behalf of the consumer, installing energy assets and providing general energy advice[27].

By viewing the energy retail market as a spectrum between energy as a commodity and a full EaaS model, we break the dichotomy of energy either being a commodity or a service. As such, consumers have the flexibility of adopting EaaS for some of their assets, whilst keeping energy as a commodity for their background consumption. This also creates a new space in the market in which new flexible players can compete. Moreover, as this is a spectrum, there is room for new business models that do not already exist to be implemented at any point on the axis.

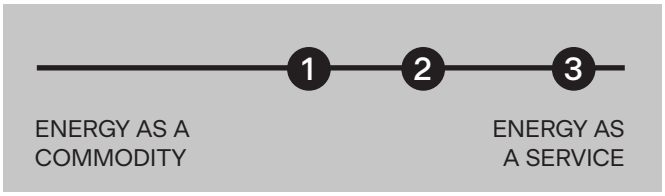


Figure 7: Energy as a service spectrum.

To enable this spectrum, there are five foundational reforms needed to open-up the possibilities within all of these models. Most of these have been debated for years in the energy sector but regulatory and industry intransience have held back implementation. Regulation is currently going in the wrong direction. However, we believe that with the right understanding of competition, Ofgem could implement most of these changes within the next ten years.

The following reforms move the domain of energy regulation into consumer products and standards, potentially blurring the line between different regulatory frameworks. It is crucial for any reform package that these responsibilities are clear and transparent.

Foundational Reforms

REFORM 1

Enable greater supply chain pressure through implementing Half-Hourly Settlements.

As set out, energy suppliers have limited ability to influence their cost-base as interactions between parties are pre-determined and price controlled. Because the time windows for electricity consumption affect the overall cost of the system, customers could save money by changing their consumption profile. However, today most customers' bills are settled according to estimates of their energy use rather than specific reconciliation of their individual use. Smart meters can record the amount of energy consumed within every half hour of the day, which enables a more accurate settlement process. Market-wide half-hourly settlement is therefore a key reform to enable consumers to engage in demand-side flexibility. It enables c.70% of a household electricity cost to be directly influenced by behaviour enabling the supplier to exert great supply chain pressure. Ofgem have continually delayed the implementation of half-hourly settlement and it is currently targeted for implementation in December 2026.

Half-hourly settlements will increase rivalry by unlocking a range of products for consumption modification, opening up the scope for differentiation amongst players.

REFORM 2

Enable greater choice by splitting the meter for multiple providers.

As suppliers represent the main interface between customers and the energy system, customers can only have one licensed supplier at a given time. With electricity consumption tripling (at a minimum) with the adoption of EVs and heat pumps, this represents a significant limiting of choice for consumers. Current smart meters enable the measurement of different load types and reform has already been implemented (code modification P375) to isolate the metering of specific assets. However, two weaknesses remain:

— The settlement system does not enable the buying and selling of electricity from/to multiple providers. This constrains innovation by preventing the multi-supplier model. Supplier centrality under current market arrangement is blocking innovative business models from being implemented. A proposed modification (P379 of the Balancing and Settlement Code) sought to address this situation, but the proposition has been withdrawn by the proposer in March 2021[28]. There are currently no plans underway for this.

— Moreover, if P415 "facilitating access to wholesale markets for flexibility dispatched by Virtual Lead Parties" gets implemented, new players would have complete access to metering points. Therefore, the asset manager should be able to access the meter of the asset and track the electricity flow of the asset.

Splitting the meter would remove the monopoly of supply that suppliers have over their customers, forcing them to compete not just on price for the overall consumption but on price and service and innovation for types of supply.

REFORM 3

Create a digital spine across the energy sector.

As electricity consumption data is the core information basis for competition, a digital spine is needed to facilitate access to this data by market participants. A digital spine is "a network of connected nodes that are deployed by organisations across the energy sector"[29] that "will allow the exchange of energy system data in a secure and interoperable manner"[30]. This digital spine would include: (1) a catalogue of every energy asset; (2) the aggregate consumption/metering data of each asset. Having this data aggregated and not individual protect consumers' privacy. This spine should be open access to foster innovation. To implement this, we need:

— The implementation of a mandatory registration procedure for all assets. For existing assets, this can be done on a platform by simply declaring the number of assets one has. In the future, this can be done by the "asset manager" when a consumer buys an asset. For individuals who already own an asset but are not familiar/ able to use an online platform, they should be able to register their asset by calling their asset provider.

— The collection of individual (asset level) consumption data by the asset manager. This data can then be included in the Digital Spine, without being made public.

Creating a data spine will unlock rivalry by facilitating the development and implementation of new innovations. Indeed, market participants will have a better understanding of consumer engagement and consumer behaviour, which will enable them to develop more and better targeted offers. Successful innovations will then acquire temporary monopoly power, forcing other players to replicate or surpass the initial innovation. This active competition for ideas will drive consumer demand and keep prices low.

REFORM 4

Remove requirement for a supplier licence for EV and heating loads.

Not every consumer will want to engage in the market and those who decide not to, should still be protected. This is why much of the license exists today and this regime needs to continue. However, for new assets such as EV and heating load to not stymie innovation, freedom from requiring a license to supply them with electricity is required. The outcomes suppliers for these end uses are expected to deliver should be based on their contract with the consumer, and not license based.

In this instance, Consumer Protection Law is adequate to protect the customer from any form of abuse or negligence on the part of the supplier. In this sense, the removal of a requirement for a licence moves these parts of the energy sector closer to the regulatory model utilised in telecommunications, where all providers of such services are obliged to comply with some general conditions and some carrier-specific conditions, rather than having a single unitary licence.

This new approach should be made available to all parties big and small. They are not aimed at providing a "leg-up" for new entrants (as was the approach in the past). Rather, they are aimed at providing a "leg-up" for new innovation even if that new innovation comes from major players such as Centrica.

Removing the requirement for a licence will unlock rivalry by facilitating market entry for new innovations that cannot meet current licensing conditions. Successful innovations will then help drive competitiveness in the market.

REFORM 5

Remove the price cap and all tariff design restrictions for EV and Heating Load.

The price cap forces all suppliers into similar business models. Delivering the benefits of competition as a process of rivalry cannot work if the price cap remains in place and continues to cover the new loads from EVs and heat pumps. Pricing freedom and tariff design freedom is essential for firms to create competitive advantage, deliver innovations for consumers and drive profits from these new loads. New green tariffs, new time-of-use tariffs, asset-based tariffs, aggregator tariffs, EV and heat pump specific tariffs need to be designed with the consumer need in mind rather than centrally at Ofgem's office. Therefore, new assets such as EVs and heat pumps should be exempt from the price cap.

That said, the core price cap for non-EV and heating loads also needs reform. Price protection of some form is still required to protect the most vulnerable in society. This paper is not directly focused on this issue, but it seems clear that a higher energy discount or a social tariff for specific consumers data matched through the Department for Work and Pensions should be implemented as the price cap is removed. Moreover, in order to further simplify tariffs for new assets and for non-assets, all the environmental costs included in energy bills should become a levy as opposed to a deliverable.

Reforming the price cap will unlock rivalry by freeing meaningful competition on prices and tariffs.

These five reforms provide the basis for a competition based on rivalry in the energy marketplace.

— Half-hourly settlement aligns costs with demand enabling greater supply chain cost pressure increasing the influencing and bargaining power of suppliers.

— Greater choices through splitting consumption and creating a digital spine that allows competitors to enter the market on a level-playing field enables innovation-based new entrants and potential new substitutes.

— Having contractually-based instead of license-based obligations for the new EV and heat loads reduces regulatory capture and frees all players to respond more directly to consumer needs by giving them the flexibility to innovate.

— And finally, freeing the market from the price cap enables competitive rivalry on price and innovation to ensue.

We believe that these five reforms provide the basis for true competition in energy and, while it is impossible to conceive of every possible business model and customer proposition across this competitive spectrum (after all, this is what players in the market will do), we have identified a number of different models that could perhaps be developed over the next few years. All of these would be impossible in today's UK energy market. Moreover, by increasing the choices available to consumers, we believe these reforms will also strengthen consumer engagement.

Potential scenarios

SCENARIO 1

Energy as a service provided by an asset manager.

In this scenario, the consumer would keep their contract with their current supplier who provides energy as a commodity for their background consumption – i.e., lighting, small appliances etc. The consumer would then also engage in another contract with an asset manufacturer, that would provide energy as a service for the specific asset.

This model is based on the telecommunications industry in which a consumer engages in a contract with a phone company for both the phone, and the service. If we take the example of an EV, the model would work in the following way: the customer is being offered a leasing agreement for X miles per week. The upfront capital cost is reduced, and the customer pays for it over time. The leasing company then optimises the charging of the car through automated services engaging in demand flexibility (such as charging the car outside peak hours), thus reducing the cost of energy. For the customer, this means a cheaper cost for the asset, lower running costs, and reduced volatility. On the other hand, the system benefits from the increased capacity and flexibility resources31 (See figure 7 and 8). This example is based on the asset being an EV, but the principle would remain the same for any other type of asset. See annex 1 for a visual representation of this scenario and a detailed pathway to unlock it.

SCENARIO 2

A third-party, or an aggregate managing the different assets for more energy efficiency.

Like in the first scenario, consumers would keep their contract with their current supplier for their background energy consumption, but they also engage in another contract with what we called "aggregate", or third-party. This aggregate would manage all of the consumer's assets on their behalf, following an energy-as-service model. The aggregate would have access to the metering data of all of the assets they have been contracted to manage, giving them a more specific overview of the energy consumption pattern of the customer. With this more specific information, the aggregate is in a better position to optimise demand flexibility in order to further reduce costs and emissions, than if all the assets were managed separately. See annex 2 for a visual representation of this scenario and a detailed pathway to unlock it.

SCENARIO 3

Energy as a service model provided by the supplier.

Under this scenario, the consumer only engages in one contract with their current supplier, but the supplier provides energy using the "energy as a service" model. In this scenario, the supplier is in charge of not only managing the background consumption of the customer, but of all their assets. This scenario guarantees that as much energy as possible is consumed outside peak hours, which not only benefits consumers by providing them with a high level of cost efficiency, but also reduces overall emissions. Under this scenario, the supplier can also become responsible for providing advice on how to further reduce energy consumption, for instance on installing or repairing different assets or any other type of new innovative services. By simplifying all of these processes for the consumer, this has the potential to boost the deployment of low carbon technologies. See annex 3 for a visual representation of this scenario and a detailed pathway to unlock it.

06 ANNEX 1, 2 & 3

ANNEX 1

ENERGY AS A SERVICE PROVIDED BY AN ASSET MANAGER

To unlock this model, the following reforms need to be implemented:

REFORM 1

Since P375 "Settlement of Secondary BM Units using metering behind the site Boundary Point" was implemented, consumers are able to isolate the metering of specific assets. Moreover, if P415 "facilitating access to wholesale markets for flexibility dispatched by Virtual Lead Parties" gets implemented, new players would have complete access to metering points. Therefore, the asset manager should be able to access the meter of the asset and track the electricity flow of the asset. Nevertheless, the asset manager will have to declare to the consumer's existing supplier that they are providing electricity. Additionally, if the asset doesn't have a separate meter, then the ownership of the meters should be switched to the DNOs.

REFORM 2

The asset manager will enter a contractual relationship with the consumer. The contract will need to display the following information (1) duration of the contract, (2) price of the 'initial deposit' for the asset, (3) how much X they will provide (X will vary depending on the type of asset, but instead of being a quantity of energy – e.g., 50kWh; it is the 'final output' – e.g., heat, km...), (4) price per month – including the payment of the asset, and of the service that is being deliver.

REFORM 3

The asset manager should be exempt from obtaining a license, but some form of consumer protection must be put in place. First, the asset manager needs to have a customer service centre. Second, if the asset manager goes bust, it must have an insurance and the customer must be switch back directly to their normal supplier. The contract would then be switch to the normal supplier, who becomes the new "owner" of the asset until it is fully repaid, or until the customer decide to find another supplier. The insurance company would then provide a form of cash compensation for the additional cost this would entail or, it would provide the cash compensation to the supplier. Offering compensation to the supplier directly would enable the supplier to charge the same price the asset manager would have without operating at loss.

REFORM 4

The asset manager will need to pay network costs and some social and environmental costs, but not all of them. This is because by engaging in this sort of scheme, consumers participate in demand flexibility and electrification, which is important for reaching net-zero. However, they can't be fully exempt of every policy cost as this would increase the costs for every other consumer.

REFORM 5

The asset manager will need to respect the following industry codes: connection use of system code, distribution use of system agreement, smart energy code and retail energy code.

REFORM 6

If you have many assets and you want all of them to operate with the highest level of efficiency possible, you can authorise each of the asset manager to access the consumption data of the others. These would enable each of your asset managers to have a most detailed view of your full energy consumption pattern, and not just of your domestic energy consumption. By having access to this detailed view, each asset manager could find ways of maximising efficiency.

REFORM 7

The asset manager would not be subject to the price cap.

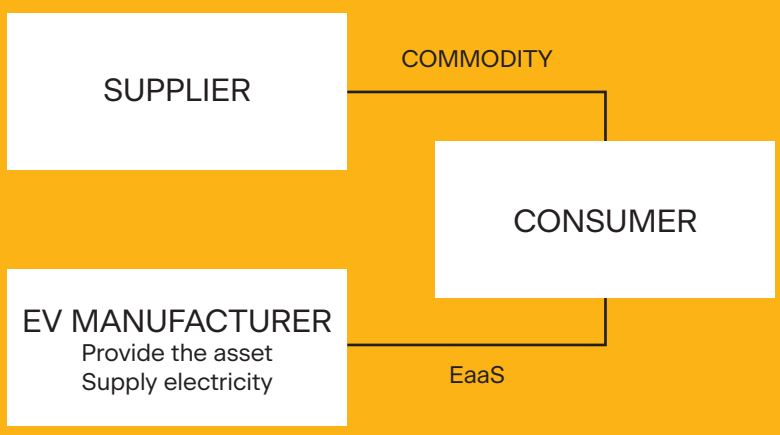


Figure 8: Energy as a Service provided by an asset manager (In this graph the asset manager is referred to as an EV manufacturer, but the principle remains the same for any other types of assets.)

ANNEX 2

A THIRD-PARTY, OR AN AGGREGATE MANAGING THE DIFFERENT ASSETS FOR MORE ENERGY EFFICIENCY

To unlock this model, the following reforms need to be implemented:

REFORM 1

The aggregate will need to access the meters and the same reforms as the ones set out in scenario 3 will need to be implemented.

REFORM 2

The asset provider can offer a contract solely for the asset and not supplying electricity. This is because the aggregate will be in charge of supplying the electricity.

REFORM 3

The aggregate will need to enter a contractual relationship with the consumer. The contract will need to display the following information: (1) which assets the aggregate is going to be managing; (2) for how long the aggregate is going to be managing these assets; (3) the level of comfort/ output that will be provided (e.g., your house will be at 210 and I will give you 200 km on your car per month); (4) price of the service provided per month.

REFORM 4

The aggregate will need to be exempt from obtaining a license but need some form of consumer protection to operate. Indeed, compared to scenario 3, this scenario poses even more risks for the consumer. Indeed, if the aggregate goes bust without any form of protection, the consumer will not be able to operate any of their assets.

— The reforms in terms of consumer protection can be the same as the ones specified in scenario 3.

REFORM 5

The aggregate will need to access individual asset (i.e., meter level) consumption data.

— This is why it's important to include the asset-level metering data in the digital spine. That information needs to be recorded, but it should only be made available if requested and authorised by the assets' owner.

REFORM 6

Concerning the costs, the aggregate will need to pay the same costs as specified for the asset manager in scenario 3.

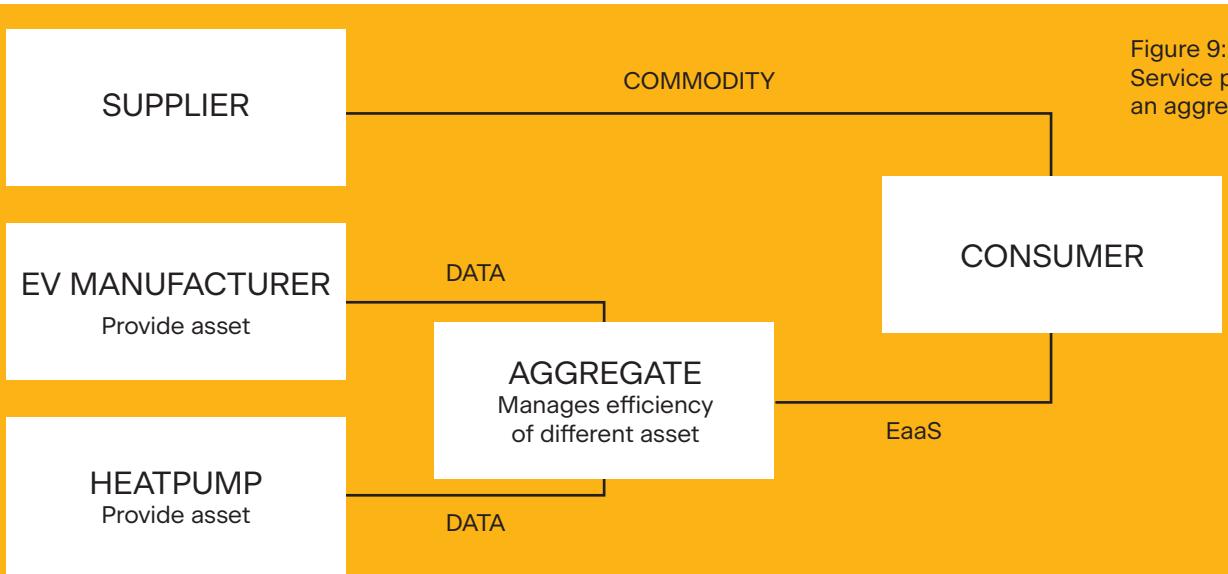


Figure 9: Energy as a Service provided by an aggregate model.

ANNEX 3

ENERGY AS A SERVICE MODEL PROVIDED BY THE SUPPLIER

By creating the conditions to unlock scenario 3 and 4, it becomes easier to implement a full EaaS model. Indeed, because this scenario doesn't involve the entry of new players, there is no need to change anything regarding meter ownership or license obligations.

REFORM 1

A supplier wishing to offer an energy as a service model should be able to offer a bundle of contracts – i.e., a contract for the asset; and a contract for the service. Indeed, in order to enable the deployment of asset at a faster pace, consumer should be able to spread the payment of the assets over a certain period of time, instead of paying the full price at once. If the supplier offers a bundle of contract, the consumers will be able to switch their provider if they're not receiving a fair deal, instead of engaging in a long-term contract in which they might get trapped.

— The contract of the asset needs to include the following information: (1) amount of the initial deposit; (2) duration of the contract; (3) price/ month.

— The contract for the service needs to include the following information: (1) duration of the contract; (2) level of comfort the consumer wants to have; (3) price of the service per month.

REFORM 2

As the supplier will optimise the efficiency of your whole house (i.e., including toaster, kettle, lights...) and not just your assets, they need to have access to the entire metering data, and not just the one of the assets.

Figure 10: Energy as a Service model



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