



Department for  
Energy Security  
& Net Zero

# Smart Secure Electricity Systems Programme consultation: Summary Document

A consultation package on energy smart appliance, licensing and tariff interoperability proposals to enable a smart and secure electricity system through demand side response.

Closing date: 11 June 2024



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# Ministerial Foreword



The future of energy is smart. Using data and price signals to increase system resilience and efficiency will be a game changer in how we consume our electricity produced here, in Britain. It will be a crucial ingredient in maintaining a more secure system that not only benefits households and businesses, but protects them from volatile global energy markets. Less waste can help us to achieve energy abundance, keeping the cost of energy down through bountiful supply.

Smart energy can also help with our journey to a net zero power system by 2035. Greater efficiency means lower emissions. The UK has a proud record on net zero. We have cut our emissions in half over the past 30 years and exceeded all our carbon reduction targets, which are world leading. We have boosted our share of renewables in electricity generation from just 7% in 2010 to almost half today<sup>1</sup>. Smart energy will make cleaner, smarter heating options more attractive to consumers, increasing uptake of zero carbon heating and driving down their costs.

This document makes clear what we see as the direction of travel for the smart energy sector. Government leadership is important to achieve this: it can set the framework, stepping in where needed and back where necessary.

This consultation outlines the blueprint of a smart electricity market that consumers can engage with confidently. Their data will be handled securely, their energy smart appliances and tariffs will be interoperable, and they will be assured that they will not be locked into contracts. The British smart electricity market for Demand Side Response (DSR) services – as nascent as it is – is already recognised as world-leading in the quality, scope and rigour of its technical standards.

The frameworks for enabling and growing the DSR and smart appliance markets set out in this consultation will help to ramp up business investment in the sector over the next decade. We are third in the world for attracting investment in clean energy and we want to continue that strong record by leading the way on smart electricity systems. Building a set of standards for energy smart appliances, reforming our licensing regime, and ensuring that consumers reap the full benefit from variable energy tariffs will help maintain our lead in drawing investment into the UK and engage consumers in lowering their energy bills.

The smart energy opportunity is real – both for consumers and for businesses. These economic and financial wins are already evident – and with a pragmatic regulatory framework in place, will only become more attractive as the market grows. The framework is built to help

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<sup>11</sup> National Grid ESO, 'Britain's Electricity Explained: 2023 Review', <https://www.nationalgrideso.com/news/britains-electricity-explained-2023-review#:~:text=Overall%2C%20zero%20carbon%20sources%20outperformed,and%201%25%20from%20coal%20stations> (viewed on 11 March 2024)

consumers make their own decisions on energy use, so they save money and the system works better. We look forward to hearing your views.

**Lord Callanan, Minister for Energy Efficiency and Green Finance**

# Executive Summary

## Strategic overview

*It is 2035 and without having to think about it, domestic and small non-domestic consumers of electricity across Great Britain are benefiting from a renewed electricity system. Consumers who have chosen to engage in smart energy now have several options on how to manage their energy use. Drivers of Electric Vehicles (EVs) arrive home from work or leisure and plug their EVs into their smart charge point, safe in the knowledge that their hassle-free tariff will ensure their car is charged during the next low-demand period, saving them money on their energy bill and reducing pressure on Britain's expanding electricity grid. Drivers with bidirectional charging capable EVs may be signed up to export energy from their EV's battery to power their homes during peak use periods – whether that be for lighting, cooking, or entertainment purposes – and still wake up to a charged EV the next morning.*

*Families across Britain whose homes have heat pumps will have the option to heat their homes more efficiently and cost-effectively using their smart heat pumps. Where households have opted for a time-of-use-tariff, their smart heat pump responds instantaneously to pricing signals to switch off or turn down during periods of peak demand - reducing their energy bill - whilst relying on the temperature of their home to be maintained via the thermal inertia of their houses or their dedicated thermal store.*

*Consumers, who were able to choose from an array of competitive flexible tariffs, may also be accumulating credit as their smart batteries sell a bank of stored, but unused, electricity back to the grid at a time of high demand. These same consumers may even consider their EV battery as a revenue source, deploying Vehicle-to-Grid (V2G) bidirectional charging technologies to intelligently discharge the EV battery at peak times to ultimately recharge when electricity unit costs are lower across off-peak periods.*

These scenarios are just an outline of the exciting possibilities that wider use of smart electricity offers.

This consultation package follows a commitment by the government to consult on the further detail of policy positions. This commitment was set out in the previous consultation on Delivering a Smart and Secure Electricity System, in July 2022<sup>2</sup>, and repeated in the subsequent government response<sup>3</sup>, which was published in March 2023. The decisions in the

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<sup>2</sup> GOV.UK, 'Delivering a smart and secure electricity system: consultation on interoperability and cyber security of energy smart appliances and remote load control' (2022),

<https://www.gov.uk/government/consultations/delivering-a-smart-and-secure-electricity-system-the-interoperability-and-cyber-security-of-energy-smart-appliances-and-remote-load-control>, consultation closed 28 September 2022 (viewed on 11 March 2024)

<sup>3</sup> GOV.UK, 'Delivering a smart and secure electricity system: Government response to the 2022 consultation on interoperability and cyber security of energy smart appliances and remote load control' (2023), <https://www.gov.uk/government/consultations/delivering-a-smart-and-secure-electricity-system-the-interoperability-and-cyber-security-of-energy-smart-appliances-and-remote-load-control> (viewed on 7 March 2024)

consultation response set out the government's agreed ambitions for moving towards creating a smart and flexible electricity system.

This consultation package builds on these foundations and sets out further detail on policy in three key areas: Energy Smart Appliance Device Regulations; Tariff Interoperability; and the Load Control Licensing Regime. Further information on the proposals within these consultations and where to find them can be found in the 'Navigation' section below.

Our proposals for a smart and flexible electricity system will play an integral role in ending Britain's reliance on fossil fuels to meet increasingly variable electricity demand. They will also work towards lowering household energy bills by offering consumers cheaper tariffs for electricity usage at low-demand periods.

Demand Side Response (DSR) is an umbrella term meaning actions taken by consumers or businesses to shift the time of their electricity use, typically to minimise impact on the wider electricity grid. If DSR is taken up more widely, causing shifting of non-time sensitive electricity demand away from peak periods and towards periods of low demand and/or plentiful supply of renewables, we could 'smooth out' the usual peaks and troughs of electricity use and accordingly reduce the stress on the grid at times of peak electricity usage.

Leveraging the benefits of DSR matters because electricity consumption is set to increase over the next decade. Increasing deployment of Energy Smart Appliances (ESAs) - an appliance capable of adjusting the flow of electricity into or out of itself - such as Electric Vehicle (EV) smart charge points, domestic batteries and heat pumps will similarly gradually increase demand on the electricity system.

Smart devices have high potential for DSR. With DSR functionality – and only at the discretion of the consumer – devices can be automated and remotely managed to minimise their impact on the electricity system; through this, consumers can save money without compromising their experience (for instance, by automatically charging electric cars overnight when energy demand and prices are lower).

Some of these services are being offered today at a small scale. Energy suppliers are working with EV smart charge point manufacturers to offer time-of-use-tariffs (TOUTs) that work in conjunction with the charge point to optimise charging periods to cheaper times of the day – like the middle of the night, for example. As DSR becomes increasingly common, government intervention is needed to ensure that its benefits for consumers are fully realised.

Unlocking untapped consumer benefits is central to many of the proposals within this consultation package. **The government's ambition is to give consumers confidence to participate in, and benefit from, a smart and flexible electricity system through DSR.**

Use of smart systems and flexibility could create 10,000 jobs and increase GDP by up to £1.3bn by 2050. A further 14,000 jobs could also be created by the export potential of these technologies<sup>4</sup>. These measures will also contribute to a cleaner, more secure, and cheaper

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<sup>4</sup> GOV.UK, 'Energy Innovation Needs Assessments' (2019), <https://www.gov.uk/government/publications/energy-innovation-needs-assessments> (viewed on 11 March 2024)

electricity system; overall, the total benefit of DSR to the UK electricity system has been estimated to be between £40-50bn (cumulative, 2022-2050)<sup>5</sup>.

A key principle underpinning the proposals in this consultation package is that consumers will always retain the freedom to choose whether, and to what extent, they will use the smart functionality of a particular smart appliance. **A consumer will always have the option not to use a device in smart mode.**

This consultation package sets out a multi-year programme to support competitive and well-functioning markets in ESA and DSR services. As well as proposing minimum requirements for cyber security, grid stability and product standards in the shorter term, it is the government's intention to allow space for the development of an innovative and world-leading smart and flexible electricity system over the 2020s and beyond.

The proposals in this consultation package have been subject to scrutiny from both inside and outside government in technical working groups and industry advisory groups. Regulations giving effect to these proposals will be subject to Parliamentary scrutiny as stipulated in the powers we have taken in the Energy Act 2023, which will serve as the primary legislative vehicle for delivering a smart and secure electricity system.

We welcome innovative thinking as we seek to develop a technical framework to achieve the ideals articulated in our 2035 vision<sup>6</sup>.

## Policy context for delivering a smart and secure electricity system

**We are driving forward our vision to power the UK through affordable, home-grown, clean energy, subject to security of supply requirements.**

The UK has set ambitious decarbonisation goals, with targets to reduce carbon emissions compared to 1990 levels by 68% by 2030, 77% by 2035 and reaching net zero by 2050. An important part of meeting these targets will be the electrification of heat and transport to help decarbonise these sectors. Doing so will require major upgrades to our electricity networks to handle the increased generation and demand.

The electricity grid will need to meet these additional requirements whilst itself decarbonising by 2035, transitioning to a point at which the bulk of generation requirements are met by intermittent renewables (such as wind and solar) whilst maintaining security of supply and affordability.

**The work of the Smart Secure Electricity Systems (SSES) Programme is at the heart of this exciting transformation of our electricity system.**

The SSES Programme has been designed to create the technical and regulatory frameworks to tap the potential flexibility from domestic and small non-domestic ESAs. These devices, like

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<sup>5</sup> GOV.UK, 'Electricity Networks Strategic Framework' (2022), <https://www.gov.uk/government/publications/electricity-networks-strategic-framework> (viewed on 11 March 2024)

<sup>6</sup> GOV.UK, 'British energy security strategy' (2022), <https://www.gov.uk/government/publications/british-energy-security-strategy/british-energy-security-strategy> (viewed on 11 March 2024)

domestic EV smart charge points and smart heat pumps, will contribute to electricity system decarbonisation while ensuring that consumers and the electricity system are protected.

## Flexibility policy context

Government intervention to flatten demand peaks will help manage the cost of running our electricity system, which we expect will only increase as we electrify heating and transport and connect more renewables to the grid.

**The value of flexibility to consumers and the energy system will grow over time, as uptake of appliances grows and our energy system changes.** In the future, as we transition to a clean, net zero electricity system, the way we generate and consume electricity will change. Electricity demand fluctuates throughout the day, peaking in the evening when households typically cook dinner at the same time.

By empowering people to shift how and when they consume electricity, we can smooth out peaks and reduce the need for investment in new energy infrastructure, and lower consumer bills. ESAs such as EV smart charge points can either exacerbate peaks – if, for example, consumers all charge their cars when they get home from work – or help smooth out peaks – if, for example, consumers use smart devices to charge their cars at times of high renewable generation or low demand.

The government is working in partnership with industry and consumer groups to ensure all consumers benefit from a smart, secure and digitalised electricity system. The 2021 Smart Systems and Flexibility Plan laid out actions for government and Ofgem to take forward to fully unlock the benefits of consumer flexibility technologies.

In autumn 2022, National Grid Electricity System Operator (ESO) launched the new Demand Flexibility Service (DFS) as an additional tool to help them manage our electricity system. The DFS gave the ESO the option to pay consumers – through their energy supplier or an approved third-party intermediary – to turn down their demand during particularly high demand periods. During the winter of 2022-23, the DFS scheme incentivised 1.6million households and businesses to lower their electricity demand when requested, saving over 3,300MWh of electricity.

The Smart Charging Action Plan<sup>7</sup>, published jointly with Ofgem in January 2023, set out the steps government will take to deliver flexibility from electric vehicle charging. This includes measures to improve consumers' confidence and readiness to use smart charging. The government also intends to consult on several proposed improvements to the Electric Vehicles (Smart Charge Points) Regulations 2021<sup>8</sup>.

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<sup>7</sup> GOV.UK, 'Electric Vehicle Smart Charging Action Plan' (2023) <https://www.gov.uk/government/publications/electric-vehicle-smart-charging-action-plan> (viewed on 11 March 2024)

<sup>8</sup> Legislation.gov.uk, <https://www.legislation.gov.uk/ukdsi/2021/9780348228434/contents> (viewed on 11 April 2024)



In March 2023, government published Powering Up Britain<sup>9</sup> and the consultation response on Delivering a Smart and Secure Electricity System<sup>10</sup>. The consultation response set out a multi-year programme to support competitive and well-functioning markets in ESAs and DSR services. These markets will facilitate the safe and secure shifting of electricity demand, thus reducing system costs and benefitting consumers by lowering their energy bills.

Government recognises that there is a link between the ESAs that are relevant for DSR and the current suitability of buildings to accommodate them. The Department for Levelling Up, Housing and Communities (DLUHC) will consult later this year on reform of Energy Performance Certificates, including suitable metrics which could include those for smart appliance readiness.

To reduce barriers that are impeding the growth of the domestic and small non-domestic DSR market, communications between devices and services and how tariff information is shared need to be standardised. Once achieved, a wide range of DSR services can be offered and made easily accessible to all domestic and small non-domestic consumers. In the absence of this, consumer access to DSR services may be limited to certain service providers or manufacturers of devices.

Government also needs to ensure there are consumer protections in place to build wider confidence in these new – and to consumers, likely unfamiliar – markets. This will ensure fair contractual arrangements are in place so the benefits of DSR are passed onto consumers.

Finally, while greater use of ESAs and other associated services will bring many benefits in lowering energy bills and reducing peak pressure on the grid, it could pose risks to the electricity system, such as creating new vectors for cyber-attacks and threats to grid stability. With many devices already internet-enabled, the likelihood and impact of those risks will increase without government intervention.

## July 2022 consultation

In July 2022, the government consultation – Delivering a Smart and Secure Electricity System<sup>11</sup> – focused on unlocking greater use of domestic and small non-domestic scale DSR.

This consultation set out proposals in three areas to address barriers and risks - creating the right technical frameworks to unlock the potential of flexibility for domestic and small non-domestic energy consumers; improving the security of the electricity system and giving consumers confidence to engage with a smart energy system.

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<sup>9</sup> GOV.UK, 'Powering Up Britain' (2023), <https://www.gov.uk/government/publications/powering-up-britain> (viewed on 11 March 2024)

<sup>10</sup> GOV.UK, 'Delivering a smart and secure electricity system: Government response to the 2022 consultation on interoperability and cyber security of energy smart appliances and remote load control' (2023), <https://www.gov.uk/government/consultations/delivering-a-smart-and-secure-electricity-system-the-interoperability-and-cyber-security-of-energy-smart-appliances-and-remote-load-control> (viewed on 11 March 2024)

<sup>11</sup> GOV.UK, 'Delivering a smart and secure electricity system: consultation on interoperability and cyber security of energy smart appliances and remote load control' (2022), <https://www.gov.uk/government/consultations/delivering-a-smart-and-secure-electricity-system-the-interoperability-and-cyber-security-of-energy-smart-appliances-and-remote-load-control>, consultation closed 28 September 2022 (viewed on 11 March 2024)

We received a total of 84 responses from a mix of parties, including manufacturers, energy suppliers, network operators, technology companies, consumer groups and other stakeholders. These responses demonstrated a consensus of support for the proposals set out in the consultation.

## Primary Powers and Territorial Scope

On 26 October 2023, the Energy Bill received Royal Assent, and became the Energy Act 2023<sup>12</sup>. Part 9 of the Energy Act includes the enabling powers for the proposals put forward in this consultation package, namely the regulation of energy smart appliances and load controllers.

The territorial extent of the proposals in this consultation package is limited to Great Britain. Electricity supply, transmission and distribution are devolved to the Northern Ireland Executive. Government will continue to engage with the Northern Ireland Executive on the policy proposals within this consultation package as and when they are implemented.

## Commitment to Net Zero

By supporting and promoting the flexibility services needed to help accommodate more renewables, and deal with increased electricity demand as we electrify heat and transport, the proposals in this consultation package will play an important role in achieving net zero by 2050 in a smart and efficient way.

We continue to be committed to an ambition to install 600,000 heat pumps a year by 2028, backed by a 50% increase in the Boiler Upgrade Grant for air source heat pumps to £7,500. EV deployment continues, underpinned by the expectation that a new EV will become cheaper to purchase and run than a traditional internal combustion engine car by the late 2020s. The cost benefits of running an EV already outweigh that of traditional cars.

Building a technical framework for smart policy, as is set out in this consultation package, is also an integral part of helping government achieve its longer-term Net Zero goals in a pragmatic and cost-effective way. This technical framework will provide the foundation from which requirements on areas such as cybersecurity, consumer protection and ESA device standards can be built. This will be of paramount importance to unlock the untapped benefits that increased flexibility and DSR services offer both consumers and the grid.

Fully exploiting these benefits is important, because we expect to see a significant increase in deployment of devices such as EV charge points and heat pumps over the next decade. These devices could significantly increase peak demand on the grid, but they also have high potential for DSR. By 2050, peak demand could be 15GW higher in the absence of effective DSR measures being taken up by the wider public. This is equivalent to requiring 4-5 additional powerplants on the scale of Sizewell C to service that level of demand, plus associated upgrades to network infrastructure.

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<sup>12</sup> GOV.UK, 'Energy Act 2023', <https://www.legislation.gov.uk/ukpga/2023/52/enacted> (viewed on 11 March 2023)

## Navigating this consultation package

This consultation package has three elements. Comments are welcome on any of the consultations from any source, and all the documents will be of interest to those involved in unlocking the potential of DSR from domestic-scale consumers, but many of the detailed proposals may be more relevant for certain industry stakeholders. We are also conscious that many stakeholders may play multiple roles in a smart energy ecosystem; for instance, device manufacturers or energy suppliers may also be load controllers. This section is designed to set out the content of each element of the package at a high level to help readers find which part of the package is most relevant to them.

### Energy Smart Appliances (ESAs) policy consultation

**Key audience:** ESA manufacturers and load controllers

An ESA is an electrical consumer device which can adjust the immediate or future flow of electricity into or out of itself or another appliance in response to a load control signal; and includes any software or other systems which enable or facilitate the adjustment to be made in response to the signal.

ESAs have high potential to provide DSR flexibility and can play a significant role in delivering a smart electricity system. Their deployment is already happening at pace.

The ESA policy consultation sets out several proposals that are designed to establish a set of minimum standards for ESAs that adhere to the principles of interoperability, cybersecurity, data privacy and grid stability. Proposals in the ESA device consultation are split into two main sections consistent with the phased approach to ESA device regulation that was set out in the March 2023 government response.

Proposals in the first half of the consultation document (chapters 2-4) focus on defining a set of minimum requirements for ESAs as part of the first phase ESA regulations. These minimum requirements are aimed at ensuring that ESAs with the greatest load potential are smart and have a defined set of security requirements.

We aim to consult on and lay the draft regulations in 2025. As set out in our 2022 consultation, the latter half of the consultation document (chapters 5-7) provides updates and proposals for the foreseen second phase of ESA device regulations which will build upon and subsume the first phase of regulations. These chapters will consider the technical standards and cybersecurity requirements that will ensure a sustainable regulatory framework for ESAs as well as the necessary governance that will support our transition to a smart electricity system.

We are proposing that once the second phase of ESA regulations are introduced, devices will need to comply with approved interoperability and cyber security standards in order to be sold in Great Britain. As set out in the document, in parallel to this consultation we intend to launch a review of PAS1878 ahead of considering it as a route to compliance with this requirement. We are also open to working with industry on the development of further, complementary standards that could work alongside PAS1878 and provide alternate routes to compliance. Appliance manufacturers, and DSR service providers will want to engage closely with this work to ensure that new standards can be introduced as seamlessly as possible to work with existing business models and services, while avoiding consumer lock-in.

As per our 2022 consultation, our intention remains to draw together all regulations – including EV smart charge points – into a single set of regulations in due course. We will consider this further, with reference to the first and second phases of regulation described in this document, the most appropriate timing to bring together ESA regulations covering EV smart charge points, heat pumps and domestic batteries, and consult further on our approach to doing so in due course.

### ESA Device Consultation Policy Proposals Summary

First Phase ESA Regulations	To seek the views of industry on the proposed minimum requirements to be placed on smart electric heating appliances as part of the smart heat mandate, including requirements around interoperability, monitoring, communication, modulating output, and defaults.
	To seek the views of industry on the proposal to extend the smart mandate to further appliances (including hot water generation and storage, and hybrid heat pumps).
	To seek the views of industry on where the obligation to provide 'ESA functionality' sits, including requirements for manufacturers, sellers, and installers.
	Position on the use of a randomised offset function to mitigate risk to grid stability from large-scale synchronised control ESAs.
	Position on cyber security on the adoption of ETSI EN 303 645.
Second Phase ESA Regulations	To seek views on using a 'designated standards' approach for future compliance with interoperability and other requirements, meaning that devices would need to comply with an approved standard in order to be sold to GB consumers once new regulations come into force.
	To provide an update on the revision of the technical standard PAS 1878, including the outcomes of the SSES programme's ESA Technical Working Group and IDSR innovation programme.
	To update on the SSES Technical Framework, including testing the proposal to move to a multi-standard framework and how an Approved Standards regulatory framework would work.
	To explore Home Energy Management Systems and how these might impact, positively and negatively, SSES policy goals.
	To test with industry the updated list of activities that may be required to support the delivery of the SSES programme second phase standards solution.
	To seek the view of industry of the design of governance for the second phase solution to implement the SSES programme.
	To update on the cost recovery workstream for the SSES programme, including proposals to recover initial costs from network owners and operators.

## Licensing consultation

**Key audience:** Load controllers, consumer facing and representative organisations such as energy suppliers and Citizens' Advice

The SSES programme has proposed introducing regulatory requirements on organisations providing DSR to domestic and small non-domestic consumers.

In the March 2023 government response, we confirmed our intention to introduce new legal requirements on load control services to protect consumers and the electricity system, doing so via a new load control licence administered by Ofgem.

In this consultation, we put forward proposals on what type of organisations will require a load control licence. We also put forward proposals on requirements around consumer protections, data privacy, consumer switching, and management and financial controls. Further, we put forward a framework and our design principles for cyber security and technical requirements in the licence.

The aim is to give consumers the confidence and power to easily compare service offerings whilst ensuring they are not unfairly locked-in or locked-out of contracts and prevent the mis-selling of services. For industry, the proposals aim to support the growth and development of a fair and competitive market that ensures a level playing field between organisations.

Protecting consumers and the electricity system, whilst still allowing for innovative business models to grow, will build and maintain overall confidence in the demand flexibility sector, encouraging more consumers to engage in the services, and thus increasing demand flexibility's potential system benefits. Government intends to establish a competitive flexibility market that delivers offerings befitting a consumer's needs and puts their experience and long-term value at its core.

As we establish a framework that promotes an increased practice of load control by organisations, we expect the wider energy system to be exposed to new risks. For example, malicious or improper control of aggregated ESAs could lead to significant impacts on energy infrastructure. Therefore, this consultation also includes proposals that seek to ensure a future licence will allow government and Ofgem to assure that companies who are controlling ESA load in aggregate are putting in place proper cybersecurity and technical measures that mean the stability of the electricity system is not compromised.

## Licensing Consultation Policy Proposals Summary

Scope	We are proposing that those who enter into contracts with consumers for controlling ESAs for demand flexibility will require a licence. We also propose that those carrying out the actual control of devices will require a licence (at times the ‘controller’ is a different organisation to the one contracting with the consumer).
Consumer fairness	We propose an overarching legal requirement that DSR consumer service providers treat consumers fairly – similar to energy supply’s Standards of Conduct and the FCA’s Consumer Duty.
Consumer device control	We propose that when a consumer service provider has an interface for their DSR service, that they give the ability to the consumer to cancel DSR requests – giving consumers ultimate control over their service.
Consumer complaints and redress	We have proposed requiring service providers have a consumer complaints process in line with that required for energy suppliers. We have proposed that consumer service providers also provide access to a redress process – we are minded to this being a single appointed redress provider but are open to multiple providers.
Vulnerable consumers	We have proposed requirements that mean consumer service providers would have to take consideration of consumers in vulnerable situation(s) when recommending and delivering their services.
Consumer switching	We propose practical requirements minimising the non-technical barriers to consumers switching between DSR service providers. Technical considerations around interoperability are addressed in the ESA Consultation.
Data Privacy	We currently propose no further legal requirements for licensees beyond their existing UK-GDPR obligations, but have said we are open to more requirements on data privacy in the future should particular risks in the sector emerge. We have said we are open to supporting an industry-developed Code of Conduct for UK-GDPR enabling good practice.
Cybersecurity	We propose a set of cybersecurity principles to apply to the security assurance of organisations within scope. We also put forward a proposal to use CAF for DSR Load Controllers controlling loads of less than 300MW, as well as Large Load Controllers controlling loads of more than 300MW (as has been previously established). We are minded to create two tailored CAF profiles for DSR: A profile for DSR Load Controllers and a separate profile for Large Load Controllers. We propose developing industry guidance to sit alongside the CAF profiles.
Management and financial requirements	We propose minimum requirements around management and finances of load control licensees – e.g. a financial responsibility principle – to support consumer confidence in the sector.
Implementation and Delivery	We cover proposed timelines and discuss Ofgem’s regulatory approach.

## Tariff data accessibility for flexible services

**Key audience:** energy suppliers, load controllers

Time-of-use tariffs (TOUTs) change the price of energy charged by an energy supplier, based on the time it is consumed. TOUTs will facilitate benefits to consumers and the energy system, through rewarding consumers for shifting consumption to times when supply of energy is most abundant. Historically, there has been low levels of tariff innovation in the energy retail market.

Interoperability of tariff data will make it easier for ESAs used in homes, like EV smart charge points or smart heat pumps, to be used alongside innovative energy tariffs which give consumers the opportunity to save money by optimising their energy consumption. This proposal, alongside others published within the consultation package, will help minimise energy bills, support decarbonisation and increase our energy security.

Tariff data interoperability is aligned with the government's wider plans for the energy retail market, the Smart Systems and Flexibility Plan<sup>13</sup> as well as our Energy Digitalisation Strategy.<sup>14</sup> The government previously consulted on proposals to require energy suppliers to comply with a tariff data standard that enables ESAs to receive and respond to energy tariffs, thus unlocking tariff optimisation and associated flexibility services for domestic and small non-domestic (for example, microbusiness) consumers. Our aim is to allow consumers to optimise their energy usage, save on their energy bills, and support the government's energy security and decarbonisation ambitions.

In the March 2023 government response to the last consultation, the government confirmed its intention to make energy tariff data available in a standardised format that is interoperable, machine-readable, and accessible via the internet, and underscored its commitment to further consultations before implementing the data standard. This consultation outlines the government's proposals around tariff scopes, technical solutions, regulatory and delivery mechanisms towards development and implementation of the tariff data standard.

To develop the proposed tariff data standard, the government now proposes to establish an industry working group, made up of energy supplier representatives and representatives of those that will use the data, such as third parties offering tariff optimisation, DSR and related services. Our aim is to finalise the first phase of the tariff data standard, herein referred to as the initial Minimum Viable Product (MVP) standard specification.

The government has facilitated the development of the required technical, delivery and regulatory solutions needed to ensure ESAs can be used with different tariffs from different energy suppliers, through ensuring tariff data can be communicated to ESAs in an interoperable way. This will help with greater uptake of ESAs and other policies to incentivise flexibility and will stimulate growth in innovative tariffs, ensuring ESAs can receive and respond to TOUTs with minimal technical and consumer barriers.

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<sup>13</sup> GOV.UK, 'Transitioning to a net zero energy system: smart systems and flexibility plan 2021', <https://www.gov.uk/government/publications/transitioning-to-a-net-zero-energy-system-smart-systems-and-flexibility-plan-2021> (viewed on 13 March 2024)

<sup>14</sup> GOV.UK, 'Digitalising our energy system for net zero: Strategy and Action Plan 2021', <https://www.gov.uk/government/publications/digitalising-our-energy-system-for-net-zero-strategy-and-action-plan> (viewed on 13 March 2024)

We are consulting on the proposed regulatory and delivery solutions (which are intertwined). Our core aim is to deliver the minimum level of interoperability offering additional functionality, including, for example, the availability of tariff data associated with a specific consumer, and automatic notification of changes to tariff data.

### **Tariff Interoperability Consultation Policy Proposals Summary**

Delivery	Details of delivery, focusing on use of a supplier-wide standardised Application Programming Interface (API) designed to an agreed tariff information standard.
Tariff information	Details of tariff information standard delivery such as our initial view on what the standard could include based on initial industry engagement as well as from the process of industry working to finalise the tariff information standard.
Regulatory approach	Details of a regulatory approach, such as timescales for drafting changes to energy supplier licensing conditions using the powers given in the Energy Act
Scope	Details on the scope of proposals focusing on the benefits of applying our proposal to domestic and small non-domestic tariffs to help support demand side response rather than only tariffs with multiple unit-rate charges throughout the day.



## Next Steps

This consultation will run from 16 April to 11 June 2024. The government's high-level timeline assumes a phased implementation of our proposals over the 2020s.

Government has worked closely with industry stakeholders in the development of implementation timelines. These timelines are intended to align with an expected increase in the uptake of DSR over the next 5 years and reflect the lead-in times that industry will need to ensure they can adapt their services and product development cycles to new regulatory requirements.

We are committed to continuing engagement with industry to ensure that both policy development and implementation proceeds in the collaborative manner that has characterised it to date.

The Forward Look below is an indication of how government anticipates policy and regulation will develop to 2028, including plans for future consultations. These timelines are only indicative; they will need to adapt to the ongoing evolution of the sector and to evidence that will emerge from this consultation and from future industry engagement. They are also dependent on Parliamentary processes and wider events and are therefore subject to change. More details on next steps and timelines can be found in each of the three substantive consultation documents.

Proposal	2024		2025		2026	2027	2028
<b>Development and adoption of an ESA standard</b>	Development of PAS 1878 standard		Secondary Legislation Developed	Secondary Legislation Consulted on and Laid in Parliament	Secondary Legislation Consulted on and Laid in Parliament	Window for proposals to become operational	
		Develop assurance framework, governance and cost recovery detail					
<b>Introducing the “smart mandate” to heat technologies</b>	Details of proposals consulted on	Finalise "smart mandate" requirements following consultation responses and role of enforcement body		Secondary Legislation Consulted on and Laid in Parliament	Window for proposals to become operational	Secondary Legislation comes into force following 12-18 month implementation period	
		Legal text for Statutory Instrument drafted					
<b>ESA minimum cyber security requirements</b>		Finalise and consult on specific cyber security requirements applicable to ESAs					
	Legal text for Statutory Instrument drafted						
<b>Tariff interoperability</b>	Develop MVP data standard	Associated Code Change Introduced	Prospective window for proposals to become operational		<i>Window for potential further Tariff interoperability enhancements and implementation.</i>		
<b>Introducing a licencing regime</b>	Develop licencing approach and conditions	Regulatory framework and licence conditions consulted on	Licencing regulation put in effect	Window for applications and obligations to become operational		<i>Window for potential further changes to licence to be made reflecting implementation of other proposals</i>	

# Glossary

Term	Definition
Anomaly Detection	A mechanism for detecting one or more messages that are intended to be Remotely communicated to one or more devices and that are identified as being anomalous by virtue of either their content or their quantity.
Alternative Dispute Resolution (ADR)	Types of dispute resolution that do not involve having to go to court; an alternative to litigation.
Application Programme Interface (API)	Code that enables two software programs to communicate. In regard to the tariff data standard proposed in the Time of Use Tariff consultation, an API would be used as the technical solution to enable energy suppliers to share tariff data items.
British Standards Institution (BSI)	The national standards body for the United Kingdom.
Critical National Infrastructure (CNI)	National assets that are essential for the functioning of society, such as those associated with energy supply, water supply, transportation, health, and telecommunications.
Cyber Assessment Framework (CAF)	The framework of that name established by NCSC to assist in carrying out cyber resilience assessments.
Customer Energy Manager (CEM)	A logical entity with functionality for managing one or more ESAs inside a customer's premise to deliver DSR services. The CEM functions between ESA and the DSRSP, translating messages to allow interoperability.
Data Communications Company (DCC)	The company that communicates with Smart Meters in GB on behalf of energy suppliers and other parties.
Demand-Side Response (DSR)	Changing electricity demand to help meet the needs of the energy system, typically to benefit the transmission network, distribution network, or another third party.
DSR Load Controller	Please see definition of 'Load Controller'.
Demand-Side Response Service Provider (DSRSP)	An organisation that contracts with domestic or small non-domestic consumers for services that involve load control of certain ESAs for the purposes of DSR.
Distribution Network / Distribution Network Operator (DNO)	A network or the operator of a network that is authorised to be operated by the holder of an electricity distribution licence.
Energy Smart Appliance (ESA)	A device which is communications-enabled and capable of responding automatically to price and/or other signals by shifting or modulating its electricity consumption and/or production.

Term	Definition
Electricity System Operator (ESO)	The organisation that operates the GB electricity transmission system.
Electric Vehicles (EV)	Vehicle that uses one or more <b>electric motors</b> for propulsion. Unlike traditional internal-combustion engine (ICE) vehicles that rely on gasoline or diesel fuel, EVs operate using <b>rechargeable electric batteries</b> and an electric motor.
Extra Help Unit (EHU)	A team within Citizens Advice that raises complaints with energy suppliers on behalf of people who may be considered vulnerable or at risk of disconnection.
Flexibility Innovation Programme	An UK government programme, part of the government's Net Zero Innovation Portfolio, that looks to support innovative solutions to enable large-scale widespread electricity system flexibility.
Future System Operator (FSO)	Please see National Energy System Operator (NESO)
UK General Data Protection Regulation (GDPR)	A set of rules that govern how <b>personal information</b> is used by organizations, businesses, and the government in the United Kingdom.
Home Energy Management System (HEMS)	A device or system that controls and configures the energy usage or production of one or more ESAs, in order to optimise usage across all devices within a consumer premises and factoring in other elements such as local generation, tariffs and carbon intensity.
Interoperable Demand Side Response (IDSR)	One of a number of initiatives within the government's Flexibility Innovation Programme to trial the interoperable provision of DSR services from energy smart appliances.
Interoperability	The ability of a product or system to operate in conjunction with other products and systems. For the SSES programme, interoperability in reference to ESAs, specifically refers to the ability of the ESA to change its DSR service provider without the need for a visit to the premises and whilst maintaining the ability to provide DSR.
Large Load Controller	Please see definition of 'Load Controller'
Load Control	The activity of configuring or controlling the consumption, discharge or production of electricity of energy smart appliances.
Load Controller	Any organisation undertaking the activity of load control. <ul style="list-style-type: none"> <li>• <b>DSR Load Controller:</b> Organisations undertaking load control of certain ESAs in domestic or small non-domestic settings for the purposes of DSR.</li> <li>• <b>Large Load Controller:</b> Organisations undertaking load control of certain ESAs with aggregated maximum potential load of 300MW or above.</li> </ul>
Microgeneration Certification Scheme (MCS)	A scheme that defines industry standards for low-carbon energy technology products, contractors and their installations. This includes heat pumps, solar, biomass, small wind and battery storage.

<b>Term</b>	<b>Definition</b>
National Cyber Security Centre (NCSC)	The organisation of that name established by the UK government to, amongst other things, provide advice in relation to cyber security.
National Energy System Operator (NESO)	Previously denoted as the Future System Operator (FSO), the National Energy System Operator will be the independent, public corporation responsible for planning Britain's electricity and gas networks and operating the electricity system. NESO will be launched in Summer 2024.
Network and Information Systems (NIS) Regulations	The Network and Information Systems Regulations 2018, that require organisations to meet specified cyber security requirements.
Ofgem	The Office of Gas and Electricity Markets, i.e. the organisation supporting the Gas and Electricity Markets Authority.
Operator of Essential Services (OES)	A person to whom the NIS Regulations apply.
Priority Services Register (PSR)	A free support service that makes sure extra help is available to people in vulnerable situations. The register helps energy suppliers and network operators look after customers who have extra communication, access or safety needs.
Publicly Available Specification (PAS) 1878	A technical standard that sets out requirements for DSR-enabled ESAs. It was developed through an industry-led, BSI facilitated process that was funded by government.
Publicly Available Specification (PAS) 1879	A companion document to PAS 1878, PAS 1879 sets out recommendations for DSRSPs for how to work with ESAs that are PAS 1878 compliant.
Public Key Infrastructure	A system for managing cryptographic material that is used to secure and encrypt communications.
Remote	Means in relation to a communication, that is conveyed (at least in part) over a Wide Area Electronic Communications Network.
Retail Energy Code (REC)	A central industry document that sets out how centralised information is managed including, for example, which energy supplier supplies which consumer.
Smart Energy Code (SEC)	A central industry document that sets out how energy suppliers and other parties communicate with Smart Meters via the DCC.
Smart	Means, in relation to a device, the ability of the device to respond in real time to remote communication signals, using digital technologies, to deliver a service.
Smart Secure Electricity Systems Programme (SSES)	A DESNZ programme with the primary objective of unlocking the benefits of a smart and flexible electricity system for domestic and small non-domestic consumers, whilst protecting consumers and the grid
Tariff	The charges applied to a consumer for their energy supply (and the associated contract terms).

<b>Term</b>	<b>Definition</b>
Tariff Interoperability	In relation to an ESA, the ability of an ESA to be used with a tariff from any energy supplier, easily and without a service provider visit to the ESA.
Tariff Interoperability Working Group (TIWG)	A government-established group comprised of external representatives and chaired by government that will develop and finalise the tariff data standards.
Time of use Tariff (TOU)	An electricity Tariff under which the unit price for electricity varies throughout the day.
Vehicle-to-Grid (V2G)	A process whereby EV owners can provide balancing services back to the network to help manage the real-time operation of the electricity system.
Vehicle-to-Home (V2H)	The process whereby electricity that has been stored within the battery of an EV can be used towards meeting the demand of the owner's domestic properties.
Vehicle-to-Everything (V2X)	This relates to the bi-directional charging and discharging of an electric vehicle's battery, Bi-directional charging allows for the vehicle to not only import energy into its battery, but also facilitates the export of energy held within the battery for a variety of use cases.

## For more information

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